

## The present state and the future aspects of WEND

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I am very grateful that you invited me to speak at this Conference. Being asked to give a keynote speech is a particular honour and privilege. And there is one aspect that I appreciate in particular: Following the American Heritage Dictionary a keynote speech is an opening address that outlines the issues to be considered. So this speech gives the key to open a door, but leaves it to others to enter, to look around and in the very end to close the door again, which means to come to final conclusions. So I only have to provide you with some basic information, some discussible observations and remarks, but I can leave it to others to thoroughly discuss the items and to find solutions.

### 1. Introduction

It is quite obvious that an official ECDIS service cannot be provided on a national level only, but requires co-operation of hydrographic services. The discussion in which way such a co-operation could be organized started at the beginning of the 90ies of last century. When we first considered this matter my personal view was that we should follow the example given by INMARSAT and either authorize IHO or establish a separate international organization to provide an official ECDIS service. However, this idea met a lot of opposition. One of the arguments was that such a solution would require a binding intergovernmental agreement, probably an international convention, and therefore it could take 10 years before such an organization really would become operational. So we chose a much more pragmatic approach.

### 2. The WEND System

The WEND Committee, originally established by the 14<sup>th</sup> International Hydrographic Conference in 1992 elaborated a system for a Worldwide Electronic Navigational Chart Data Base (WEND) which is based on the co-operation of participating IHO member states following jointly agreed principles. This system consists of regional

integrated data bases, called regional ENC Coordinating Centers (RENC). The establishment of a RENC should be reached by co-operation of hydrographic services within the region in question. The RENC is provided with the data by the national hydrographic services to operate an integrated data base and to issue ENC services to distributors for international shipping including the updating work. The RENCs of different regions co-operate and care for the exchange of ENCs.

The responsibility for preparation, provision and validation of digital data for waters of their national jurisdiction should be with the national hydrographic services. For areas outside national jurisdiction additional responsibilities of hydrographic services for providing data should be established. Updating is recognized as a very important part of the system. National hydrographic services are responsible for update information in a timely manner.

To ensure a high quality of the ENC services recognized standards of quality management should be employed. There should be compliance with all relevant IHO and IMO standards and criteria. Data standards and service practices should be harmonized between RENCs.

### 3. Implementation of the WEND system

These so called WEND principles adopted by IHO are the basis for the ongoing work to establish worldwide ENC services for international shipping. The full implementation of the WEND system has to face two major problems: the production of ENC and their distribution via RENCs established for that purpose.

#### 3.1 The ENC production

The production of ENCs is a rather challenging and time consuming work which is going on in different parts of the world. Some progress has been achieved. However, we are still far from a global coverage which would meet the needs of international shipping. The latest overview about the present situation has been given last week at the 6<sup>th</sup> meeting of the WEND Committee. It shows big gaps and underlines that

additional efforts are needed, in particular to cover congested areas and harbour approaches in various parts of the world. This problem can only be solved if additional capacity for the ENC production is accomplished. The hydrographic services are requested to give high priority to the production of data that are validated and conform to the ENC product specification. The regional IHO bodies, i.e. the regional hydrographic commissions and international chart committees, have to intensify their efforts to promote the production of ENCs in their region. A first step could be a better overview about the needs and priorities to identify still existing gaps and discuss possibilities how to fill them. In addition hydrographic services should consider their possibilities to support others concerning capacity building and technical assistance. This may also include the participation of private industry.

One other factor in the delay of ENC production is the impact of GPS positioning which could markedly vary from the local datum. This sometimes requires a re-survey.

### 3.2 The establishment of RENCs

As ECDIS is one of the major contributions to improve safety of navigation the IHO has strongly recommended that their member states create the appropriate climate for regional and international co-operation and establish RENCs for the national, regional and international distribution of ENCs in accordance with the WEND principles. However, not only due to the lack of ENC production the establishment of RENCs, either, makes only very slow progress. Today there is one RENC which is really operational. That is the European RENC working under the brandname of PRIMAR. In North America ENC services issued by Canada and NOAA are in existence. Though they are no regional, but national services, they could be acknowledged as RENCs taking into account the large area they cover. Hydrographic services in other regions of the world are still discussing, planning and preparing RENCs. That goes for the Mediterranean as well as for Southeast Asia where the establishment of so called Virtual RENCs is considered. In addition the establishment of RENCs is under consideration in India and South America.

The WEND Committee has identified a number of problems that may have hindered the development of distribution of ENC's through RENCs. They include the reluctance of states to agree on a modus operandi. This could be a result of national priorities, lack of hydrographic infrastructure, inability to produce consistent or uniform data. Numerous hydrographic services still see problems with regard to quality assurance and necessary security systems to protect the data. They still face problems to operate ENC updating services. As long as the ENC coverage is not satisfactory and international shipping is not using ECDIS services on a broad level also the cost of establishing and operating a RENC is one of the main hindrances. Of course, sometimes there also exist political difficulties to agree on a joint regional service together with neighbouring countries.

#### 4. Today's situation

So what is the conclusion of today's situation? Did the WEND system fail? No, not at all. But implementing such a system is much more complicated than was envisaged 10 years ago even if you choose a pragmatic approach. Sometimes one could even get the impression that a more systematic institutional and organizational approach could have helped to avoid one problem or the other. For promoting the distribution of ENC's and for solving still existing problems, experiences gained with the establishment of PRIMAR as the only existing RENC at present may be of some interest. Without any prioritisation let me mention the following items.

##### 4.1 The RENC organisation

The establishment of a regional center requires to formalize the co-operation of the participating hydrographic services. In Europe we have done so by a Co-operation Arrangement of 11 hydrographic services. The UK and Norway operate the RENC on behalf of all participating services. However, it is not so very easy for two governments to run a joint service without establishing a responsible entity of its own. Furthermore the participating services have got a strong interest in influencing the work of the operators. These problems are envisaged to be solved by carrying out the tasks of the operators through a government owned company and by increasing the

influence of the participating services by establishing a Steering Committee. However, stronger influence may also mean that they have to contribute more to the costs for example by holding shares of the company. How to regulate this through a revised arrangement is presently under consideration by the participating services.

#### 4.2 The tasks of a RENC

The tasks of a RENC are to acquire, quality assure and assemble the official data of hydrographic services into a consistent, uniform ENC service which has to be made widely available in order to contribute to the safety of navigation, the protection of the environment and the effective operation of maritime activities. However, it cannot be the task of a RENC, to directly provide the data to the enduser. This has to be done via approved distributors. They include traditional chart agents, service providers and marine electronic suppliers. This requires close and reliable co-operation between the RENC and private industry by making clear that the RENC is no competitor but acts as an agent between hydrographic services and distributors. By this distributors are given all possibility to add any values to their service as long as they assure that this service will meet all relevant requirements of IMO and IHO.

#### 4.3 Range of ENC services

The primary task of a RENC, following the WEND principles, is to issue official ENC services, in particular to international shipping. However, there is a growing market for official ENC data to be used for a variety of non ENC services, including pleasure craft as well as marine GIS applications. So the question comes up whether a RENC should also provide data for all these purposes or leave that to the national hydrographic services. The decision for the European RENC is to concentrate on the official ENC service and leave all other data provision to the hydrographic services, but to give technical support to them if they wish so.

#### 4.4 Area of coverage

The European RENC which started as a North European RENC showed very soon that there is an interest and a need for enlarging the area of coverage. This might be done by hydrographic services formally acceding to the co-operation arrangement as has been done by Portugal and Spain. The hydrographic services in the Mediterranean and the Black Sea in principle have decided to co-operate with PRIMAR. As an alternative bilateral agreements with individual hydrographic services as well as with other RENCs, if established, are possible allowing greater flexibility to respond to particular needs and wishes. In the long run this may lead to a close co-operation network which will support the global implementation of the WEND system.

#### 4.5 The network system

The more such a network is developing the more it becomes evident that the data base structure of PRIMAR has to be re-assessed. Whereas at the beginning a centralised uniform data base was definitely needed in future the migration to a more virtual RENC may facilitate the co-operation. The idea is to move from a centralised to a distributed data base service by using the Virtual Private Network (VPN) technology: the data will still reside on a server in the RENC but the hydrographic services will be able to access their ENC's and manage and manipulate them more easily.

#### 4.6 PRIMAR's contribution to standardization

The establishment of PRIMAR has also shown that before efficiently operating a RENC a great number of managerial and technical problems have to be solved. Among others they cover service standards, validation and quality assurance, security systems, distribution and updating requirements which I cannot deal with in any detail. All these problems have thoroughly been discussed by PRIMAR and the co-operating hydrographic services. The solutions they have found may be of an extreme help for all others who are still preparing ENC services. I hope very much that IHO will accept all these solutions as common standards in order to avoid that the wheel will be re-invented several times.

In this context responsibility and liability for ENC services are important and difficult issues. Problems concerning the responsibility for digital data are one of the reasons for the slow progress of ENC production even in the PRIMAR frame. However, in principle these problems do not differ from those hydrographic services have to face with traditional paper charts.

#### 4.7 Acceptance of ECDIS

The success of ECDIS will strongly depend on shipping and their interest in using the new services. Of course this depends on the ENC coverage, on pricing, on availability of distribution schemes. But it also depends on the fact that ECDIS is an equivalent to the traditional paper chart. This is the fundamental difference to so called ECS services which may voluntarily be used in addition, but not instead of paper charts. Some maritime administrations, however, are of the opinion that they have to formally accept ECDIS as an equivalent. The situation becomes even more complicated as some administrations give approval for ECDIS equipment on board ships which do not meet the performance standards whereas other administrations do not accept the type approval granted for example by a body notified under European law. In the light of the new Chapter V of SOLAS hopefully these problems will soon be solved. And let me add one observation. In particular as a follow-up of very recent maritime accidents ECDIS will appear on the political agenda as one of the relevant possibilities to improve safety of navigation. So the promotion of ECDIS will be one of the items of a ministerial meeting of the Helsinki Commission which is responsible for the protection of the Baltic Sea and which I have the honour to chair.

#### 5. No conclusions – but turning the key

Coming to the end let me express my very firm conviction that ECDIS will become a success story. It is only the beginning of a much more sophisticated navigation and information system which will include more and more additional components: not only radar and GPS but also AIS and a lot of additional information including currents, ice coverage, water level, tide predictions and many more.

I have turned the key now. The door is open. You may enter. And you may watch that the room is not empty, but full of expectations and possibilities showing that WEND is the appropriate system for promoting and establishing worldwide ENC services as a major contribution to safety of navigation.