

CROATIAN RIVER INFORMATION SERVICES

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Abstract

In the year 1998, the European Union officially defined the concept of River Information Services (RIS). Concept is based on using the information about ships and about traffic roads. In the year 2002 all countries on Rheine and Danube made a commitment of making a pan European system of river information services. For that purpose project COMPRIS is made. In the year 2004, Croatia is included in project through its CroRIS (Croatian RIS) project. In Croatia soon will be formed *National RIS Control Centre* (NCC). When Croatia becomes a member of European Union it can be expected a drastic transport enlargement on roads and railway. So, it is important for Croatia to be prepared for the alternative and new ways of transport models. One of them is river transport. A significant part of river transport is and will always be some kind of a chart. In the near future will be much more used so called *Inland Electronic Navigation Chart* (Inland ENC). We should make possible that it is always up to date. For that purpose experiences from marine cartography can be used.

Introduction

Electronic navigation was invented at the end of 20th century. Nowadays it is widely accepted at world seas navigation, not only on large trade vessels, but also on tourist vessels and yachts. Similar technology to one used at sea started very soon after its development for the purpose of river trafficking. European Union recognized advantages of passengers, tourist and especially trading river trafficking, its economic, ecologic and many others advantages and immediately started the action of higher development of that way of trafficking. Croatian river trafficking is a part of that action.

RIS in general

Europe has over 30.000 km of canals and rivers that link together hundreds of key industrial towns and areas. The core network of around 10.000 km connects Austria, Belgium, Bulgaria France, Germany, Hungary, Luxembourg, Netherlands, Poland, Romania, Slovakia, and Ukraine within the EU and Croatia, Montenegro, Serbia outside the Union. That is the reason why the European Commission recognized the great potential of inland navigation as an alternative transport mode for freight transport.

In the year 1998, based on the results from several research projects and various applications, the European Union officially defined the concept of River Information Services (RIS). RIS is a concept of harmonised information services to support traffic and transport management in inland navigation, including interfaces to other modes of transport. Its goal is to optimise transport operations through effective information exchange, providing advantages for inland navigation and enabling it to be integrated into the inter-modal logistic chains. Concept is based on using the information about ships and about traffic roads (river, lake or canal) (European Commission, 2005). RIS consists of information technology and telecommunication infrastructure:

- *Inland Electronic Navigational Chart* (Inland ENC) and *Inland Electronic Chart Display and Information System* (Inland ECDIS),
- Internet applications for *Notice to Skippers*,
- Electronic ship reporting system,
- Vessel tracking and tracing technologies such as *Automatic Identification System* (AIS),
- Radar systems
- Route and voyage planning applications,
- Applications for optimizing fuel consumption and so on (SPIN-TN, 2006).

In September of 2002 on a conference in Rotterdam all countries on Rheine and Danube made a commitment of making a pan European system of river information services. For that purpose COMPRIS project is made.

It deals with harmonisation and standardisation of all RIS elements on Rheine and Danube (63 partners from 13 countries). To enhance the existing concept of RIS and to make it feasible throughout Europe, COMPRIS developed a technical, organisational and functional architecture for RIS. To be implemented directly in all participating countries, ship-based, shore-based, traffic-oriented and transport-oriented, systems and applications were designed and tested. Special tension was made for international procedures for seamless border crossings.

On national level some of the RIS service applications are *Advanced River Navigation* (ARGO), *Barge information and Communication System* (BICS), *Inland Navigation Intelligent Demand and Supply System* (BIVAS), *Croatian River Information Services* (CroRIS), *Donau River Information Services* (DoRIS), *German Electronic Waterway Information System* (ELWIS), *Informatisering Binnenscheepvaart* (IBIS), *Gestion Informatisée de la Navigation* (GINA), IVS90, *Nautischer Informations-Funk* (NIF), VNF2000 and so on (European Commission, 2005). In further text CroRIS will be closer described.

CroRIS

In the beginning Croatia, Serbia and Montenegro were excluded from COMPRIS project due to not been able to get finances from European Union funds. Later on, in the year 2004, Croatia is included in project through its CroRIS (Croatian RIS) project. It is an independent project, but in it all the assistance of COMPRIS was used.

River Traffic Inland Water Agency is a government agency formed for the purpose of maintenance and further development of CroRIS project.

Through CroRIS project the knowledge of RIS implementation in Croatia is even further developed. Project has two phases:

1. research and development (ended at the end of year 2005) and
2. full implementation of RIS on Croatian part of Danube (ended at the end of year 2008).

In second phase are formed CroRIS regional centres in town Vukovar and then in town Osijek. In Figure 1 it can be seen the further development of CroRIS network in Croatia. Experiences from phase one and two will be used in applying the system to Croatian river Sava.

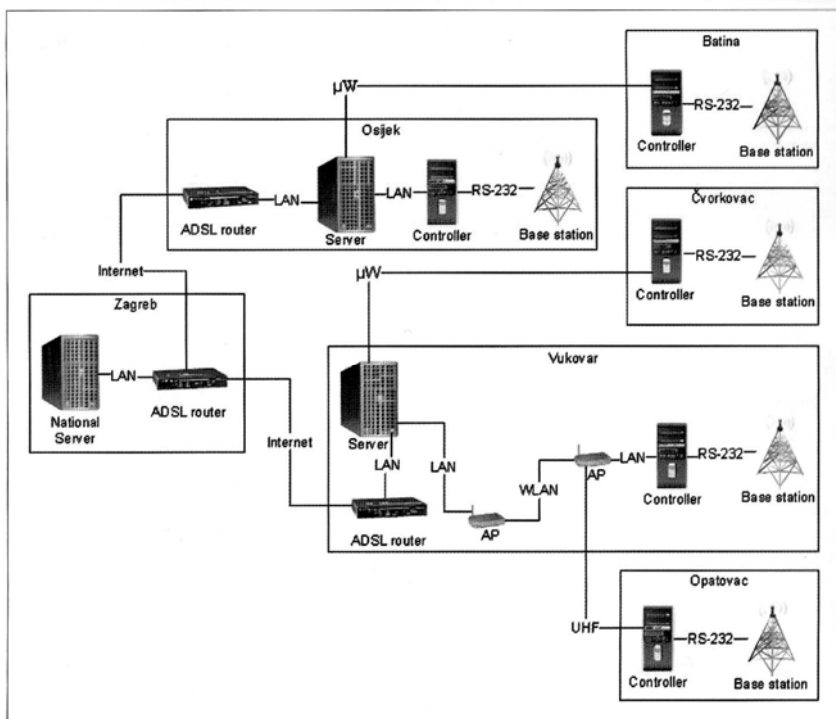


Figure 1. CroRIS project network (Vojković, 2007)

Current situation in Croatia is such that Croatian river traffic takes part in whole Croatian traffic of only 1 to 1.5 % and in European Union countries percentage is 6 to

24 %. Croatia is marine country, but it also has many rivers of which some can be used efficiently for river trafficking (CRUP, 2009).

Complete length of existing Croatian river traffic is 804.1 km. 539.2 km of that traffic is international and 264.9 km is state or trans-national river traffic. 264.9 km of international river traffic serve conditions for international river traffic of class IV (Ministry of the Sea, Transport and Infrastructure, 2008).

It is expected that *National RIS Control Centre* (NCC) will be formed. NCC will be in charge of protocol harmonisation and coordination of Croatian RIS with other European RIS. When Croatia becomes a member of European Union it can be expected a drastic transport enlargement on roads and railway. It is important for Croatia to be prepared for the alternative and even better and cheaper ways of transport models. One of them is a river transport (CRUP, 2009).

CroRIS Inland Electronic Navigation Chart (Inland ENC) updating

First step in discussing Inland ENC updating will be to define subjects such as *Inland Electronic Navigation Chart* (Inland ENC), *Inland Electronic Chart Display and Information System* (Inland ECDIS) and *Inland System Electronic Navigational Chart* (Inland SENC). To do that I will first define ECDIS, ENC and SENC as they are defined in marine navigation. They have the same meaning in inland navigation.

Electronic Chart Display and Information System (ECDIS) is a navigation information system which can be accepted as complying with the up-to-date chart required by regulation V/20 of the 1974 SOLAS Convention, by displaying selected information from a system electronic navigational chart (SENC) with positional information from navigation sensors to assist the mariner in route planning and route monitoring, and if required display additional navigation-related information. The performance requirements for ECDIS are defined in the Performance Standard for ECDIS developed by IMO/IHO/IEHG (Inland ENC Harmonization Group).

Electronic Navigational Chart (ENC) is a database, standardized as to content, structure and format, issued for use with ECDIS on the authority of government authorized hydrographic offices. The ENC contains all the chart information necessary for safe navigation and may contain supplementary information in addition to that contained in the paper chart (e.g. sailing directions) which may be considered necessary for safe navigation.

System Electronic Navigational Chart (SENC) is a database resulting from the transformation of the ENC by ECDIS for appropriate use, updates to the ENC by appropriate means and other data added by the mariner. It is this database that is actually accessed by the ECDIS for the display generation and other navigational functions. The SENC may also contain information from other sources (Economic

Figure 2. CroRIS ENC of part of Danube (Vojković, 2007)

Updating of ENC goes through *Notices to Mariners* and of Inland ENC through *Notices to Skippers*. In Croatia Inland ENC are still in process of manufacturing. But as soon as they are made the question of their regular updating will be pulled out.

The main question is how can we, in Croatia, use, not only foreign experiences in that field, but also how can we use our cartographic experience in data collecting and updating of the ENC in marine cartography. It is specially an issue, since *Hydrographic Institute of the Republic of Croatia* (HIC) already made most of Croatian marine ENC and is involved in their updating. HIC issues their *Notices to Mariners* monthly.

River Traffic Inland Water Agency should closely discuss that matter with HIC due to their long years of experience. For the inland waters the matter should be even more significant because in them the changes are more often. Now is the right time to discuss that matter and write it down in some form of regulations.

Conclusion

Implementing RIS in Croatia, as in other European countries, enhanced the efficiency and security of transport activities and environmental protection. It also increases competitiveness and improves traffic safety as it has already done by use of *Electronic Chart Display and Information System* (ECDIS) in marine navigation.

Very important RIS part is Inland ECDIS and Inland ENC. How safe the navigation will be depends on those two subjects in great deal. Updated charts were always one of the top priorities in navigation. That is why it should be taken in consideration most carefully.

Safety of inland navigation as well as safety of marine navigation is one of the main goals in navigation system development. Every step closer to that goal is a step forward.

Quality data on charts and chart updating should get the most attention in every RIS, because having an accurate charts leads to safe navigation.

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