

# **Nationwide ICT Infrastructure Introduction and its Leverage for Overall Development**

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## **EXECUTIVE SUMMARY**

This paper describes ten years of efforts in introducing the state-of-the-art information and communication technologies (ICT) and development of ICT infrastructure on the national level. The aim of the project was to build Internet in Croatia and to foster its leverage in the broad range of activities of public interest in the society as a whole. The prime target group was academic and research community, as a vehicle for the overall development in the society.

Croatian Academic and Research Network (CARNet) had been started as a project in 1991, and, after five years, it was transformed into a government agency. A broad range of activities had been started, from building and maintaining private nationwide communication and computer network to information services, user support, education, pilot projects and promotion.

The academic community has been treated not only as the main customer, but also as an active partner in developing and providing services.

CARNet has been fully funded by the state budget for ten years, without any participation of the commercial sector, domestic donations or international financial support.

Although CARNet is treated as Croatian success story, recognized inside and outside of the country, the question is whether the initial goals have been realistic and achievements sufficient, considering the low penetration of ICT into the Croatian society.

Likewise, budget cuts, continuous struggle for political recognition and authority, as well as fights with national telecommunication monopoly, have created an array of questions to be answered at the beginning of the second decade of this highly ambitious endeavour.

## BACKGROUND

The late eighties of the 20th century had found Croatia as a part of the former Yugoslavia, with relatively poorly developed national telecommunication infrastructure and absolutely no academic network infrastructure. Due to the extremely difficult economic situation, the academic and scientific community had almost no access to the international scientific publications as well as scarce resources for traveling.

CARNet initiators perceived the Internet, and computer networks in general, as the possible way around this crucial obstacle to scientific and professional activity and development.

In 1990, Croatia had declared its independence from the former Yugoslavia, which triggered military intervention of the former Yugoslavian army and eventually led to a full-blown war.

CARNet initiators had three guiding principles regarding the future of the country. Firstly, the future Croatian independence was to depend significantly upon the strength of its economy. Secondly, the modern economy was to be information-based and future industry was to heavily depend on the scope, level, intensity and quality of application of information technology. Thirdly, much as in developed and progressive countries, implementation and deployment of new technologies were to be trusted to scientific community.

Those three principles led to a natural conclusion that Croatia needed a change agent. As a step forward, the national computer network was to be built in the academic community. The community was supposed to use it for its own education and work as well as to gain experience in pilot projects in various areas of human activities, and then to use the gained knowledge, skills and experience in helping industry and society as a whole to embrace and leverage the information technology for the development and strengthening.

This conclusion had been made by a small group of very young scientists already involved in computer networking development and deployment on the small scale. They prepared a simple proposal and approached Ministry of Science and Technology (MST), basically advocating establishment of national educational and scientific computer network. The Ministry accepted the proposal, the initial group and project director had been appointed and the seed money of \$ 1 million was allocated. The project was dubbed "Croatian Academic and Research Network – CARNet."

In the first year of the operation, basic computer infrastructure and connectivity for about 40% of the community were established and were included in the Internet. From that point on, the project grew significantly, not only in the number of institutions to be connected, but also in introducing new activities and services like education, information services, pilot projects, etc.

This required technological and organizational changes in the project, as well as repositioning the whole project within a more operational institution than the Ministry was.

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