GIS - A GOAL OR A TOOL?

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ABSTRACT:

Designing spatial information systems we have first to answer the question: should they be a goal for the geo-specialists or rather a tool we could use to carry out wider projects. Problems presented at the lecture delivered at the ISPRS WG VI/3 Meeting in Padua are summarized in the paper.

RÉSUMÉ:

En élaborant des systémes d' information spatiale il faut tout d' abord répondre á la question si ces systémes comme tels constituent le but des travaux des géo-spécialistes ou sont plutôt un instrument servant á la solution de plus larges probl—mes. L'article présent résume les questions discutées dans une conférence exposée au ISPRS WG VI/3 Meeting tenu á Padoue.

KURZFASSUNG:

Die Entwicklung der Geo-Informationsysteme stellt vor uns die Frage, ob die Systeme als solche das Ziel der Arbeiten der Spezialisten bilden order vielmehr als Instrument bei der Lösung bedeutungsvller Probleme dienen sollen. Eine Besprechung dieser Frage in einem auf dem ISPRS WG VI/3 Meeting gehaltenen in Padua Vortrag ist hier kurz dagestellt.

The development of computer technologies and systems has created entirely new possibilities of acquisition, processing, collecting and transmitting of information. It concerns especially information about land and environment which is nowadays assembled in digital maps and spatial systems. The expansion of these systems offers to the geo-scientists and professionals new opportunities, but originates simultaneously wholly new problems. We have also to remember, that a rational and effective utilization of the new technologies significantly depends on transformations of the human consciousness which are indispensable for the creation of innovatory modes of operating, free form the influence of old habits.

Surveyors, astronomers and cartographers, joined later on by geodesists and photogrammetrists, had, since centuries, the principal duty to gather information about the geometrical configuration of the geographical environment, applied to draw up maps and transmitted for their use to other specialists. The responsibility of geo-scientists and surveyors was thereby explicitly defined and recorded in their own consciousness and the consciousness of all the users of the results of their work. The range of these duties is actually no more so obvious, as various sources of information are utilized (Figure 1) for the elaboration of digital maps and spatial systems. This means that the acquisition and collection of data requires the co-operation of representatives of different disciplines. The obligations of geo-scientists are also not limited now to the construction of digital maps, but comprise afterwards the administration of the spatial systems, continuous completing and up-dating of the data-bases, as

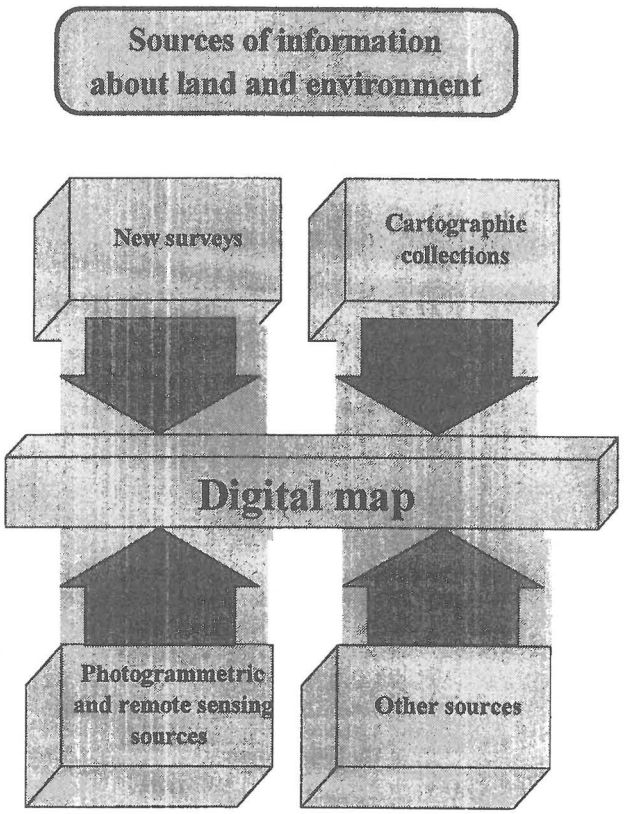

Figure 1

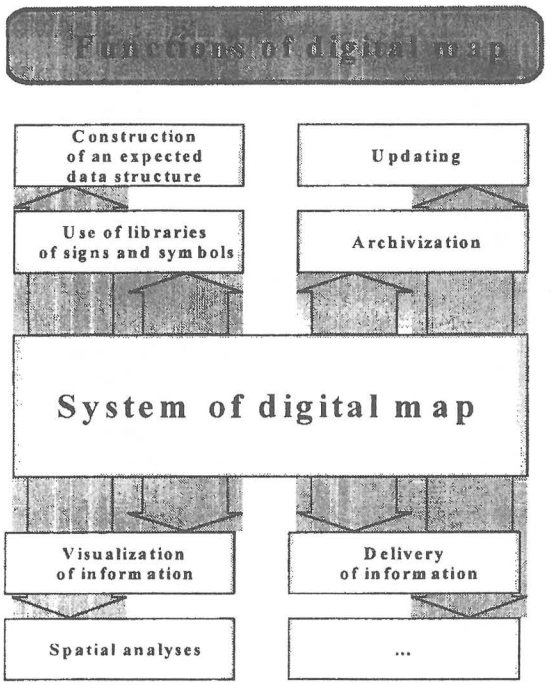

Figure 2

well as the preparation of information to be used in spatial analyses and decision-making (Figure 2).

The radical extension of the field of work, in which geo-professionals may and have to co-operate in connection with the development of spatial information systems demands new definitions of the geo-professions. Significant modifications of the geo-education programmes are consequently necessary,

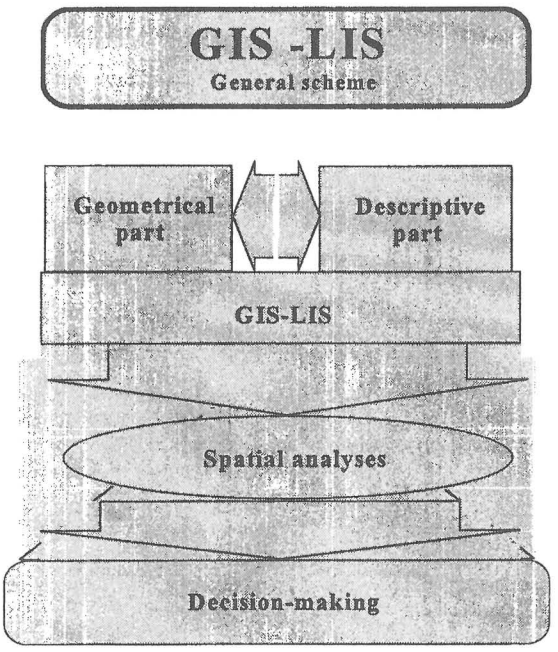

Figure 3

since the construction of digital maps and the administration of spatial information systems demands a thorough knowledge not only of computer science and programming, but also of all the disciplines, in which spatial systems are applied. It means as well that we have to answer the question formulated by the title of this paper: have we to consider spatial information systems as our goal, or rather as a tool we should develop and use to carry out wider projects?

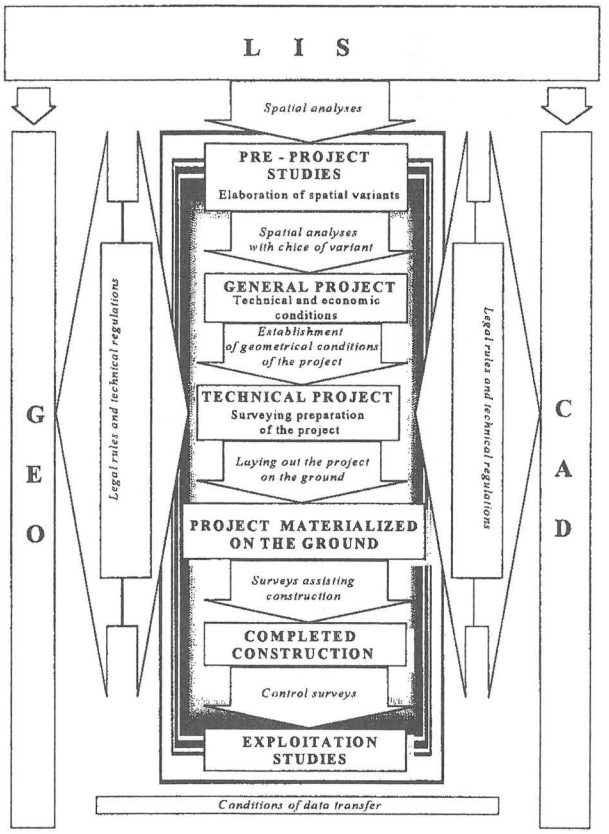

Figure 4

In order to answer this question we have to refer to the general scheme of the GIS-LIS (Figure 3). When we consider the first part of the scheme, which is connected with the construction of systems, we might rather describe them as the goal of our work. The second part, however, is bringing forward the other role of the systems - as tools used in several disciplines in which spatial information is indispensable for an effective administration and efficient decision-making.

We have to indicate that spatial information systems are treated so far by the geo-professional community more as the goal of researches and practical activities. It means that new and new, more and more efficient and extensive, and expensive as well, computer devices and systems of programs, created by computer-scientists, are installed. On the other hand, it is to be pointed out that we should treat these ready-made products as excellent tools and concentrate on thorough examination of the already installed systems in order to adapt them to the requirements of geo-science and practice. At first we should take common decisions about the co-ordinates systems, the composition of digital maps and the structure of data-bases, and elaborate as well suitable

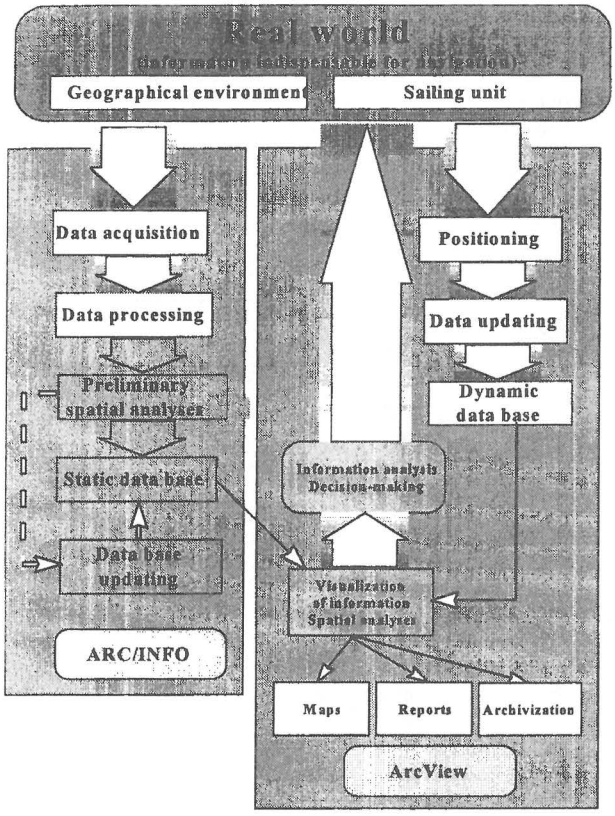

Figure 5

application programs. The achievement of these tasks could contribute to a fully rational utilization of ready-made systems, an effective conversion of spatial information and an efficient technology transfer.

It is also worth to accentuate the usefulness of spatial information systems as tools to be exploited by the geo-scientists in co-operation with representatives of other professions. We propose to approach here two examples. The first one (Figure 4) presents the scheme of an application of the LIS as a basis for the designing of constructions, combined with the surveying elaboration of the project, where the CAD systems and programs for surveying computations (GEO) are utilized as additional tools (Bojarowski, Szacherska, Wasilewski, 1997). The second example (Figure 5) shows a spatial information system, including static and dynamic data-bases, designed to assist maritime navigation (Bojarowski, Szacherska, 1996).

The comments presented here were selected from the more detailed lecture delivered at the ISPRS WG VI/3 Meeting on „International Co-operation and Technology Transfer", Padua, February 3rd-7th, 1997. Our intention was to provoke a discussion leading to an answer to the basic question formulated in the paper and allowing in consequence to define the necessary conditions of an intelligent exploitation of the GIS as an efficient tool, well adapted to meet the requirements of geo-sciences and practice. For the achievement of these aims the international co-operation, so well initiated by the WG VI/3 Meeting in Padua, is of foremost importance.

Refererences:

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