

SUBJECTS OF LIS/GIS INTO THE INSTRUCTION OF PHOTOGRAMMETRY AND REMOTE SENSING

Patmios E. Professor, Lasaridou M., Surveyor
Laboratory of Photogrammetry-Remote Sensing
Dept. of Civil Engineers Polytechnic School
Aristotle University of Thessaloniki GREECE

Commission VI

ABSTRACT

At first a general analysis of the content of LIS and GIS takes place.

Critical research for a suitable combination of instruction of subjects of LIS/GIS with Photogrammetry and Remote Sensing follows.

The facing of the subject takes place mainly from the point of instruction, research and applications in the frame of Civil Engineer's requirements (it concerns the Department of Civil Engineers of the Polytechnic School in Aristotle University of Thessaloniki).

1. INTRODUCTION

LIS/GIS nowadays have wide dissemination.

Considerations as well applications concerning them are many sided.

Among others, the purpose of each LIS/GIS is a determinative factor for the whole planning.

Interrelations of the possibilities of LIS/GIS with different scientific and technologic directions are of particular importance.

Relatively to Photogrammetry and Remote Sensing the interest is continuously growing.

In the context of University courses the above gain great importance.

In this paper we refer relatively to the Department of Civil Engineers in Aristotle University of Thessaloniki.

In this Department from the academic year 1986-87 the following subjects were introduced and are being instructed

Photogrammetry and

Photointerpretation Remote Sensing Geoinformation Systems.

Relevant observations to the activities in these scientific directions (subjects that are being instructed, diplomas, thesis, research etc.) were presented in the past (5).

The Department of Civil Engineers includes the following divisions:

Structural Engineering

Hydraulics and environmental Engineering

Transport and Organization and

Geotechnical Engineering.

Many objects of these divisions have the necessity to be served by the possibilities of LIS/GIS. This, of course, can be done without referring to Photogrammetry and Remote Sensing.

What we are interested in and consists the subject

of this paper is the cooperation-combination of Photogrammetry-Remote Sensing with LIS/GIS and furthermore the combined contribution to the study of subjects that the above four divisions are interested in.

From this point of view a suitable revision of (5) concerning teaching subjects is being done emphasizing on several-specific subjects.

2. ASPECTS CONCERNING THE COMBINATION OF LIS/GIS TO THE INSTRUCTION OF PHOTOGRAMMETRY AND REMOTE SENSING

2.1 The above purpose is faced mainly on the base of the following necessities-factors-directions:

-Developing requirements of the country (at national and local level).

-Particularities of the Greek area (natural and cultural environment).

-Location and study of the areas of interest of the divisions in the Dept. of Civil Engineers that may be served by the combination of Photogrammetry-Remote Sensing with LIS/GIS.

-Considerations relatively to the structure and the applications of LIS/GIS.

-Directions of developing methods and equipment of Photogrammetry-Remote Sensing.

-Other relevant technologic evolutions (computers etc).

-Experience from the instruction of Photogrammetry and Remote Sensing in the Dept. of Civil Engineers.

2.2 The above compose determinative factors to the formation of the teaching framework of Photogrammetry-Remote Sensing and LIS/GIS, concerning their combination-cooperation to face better the subjects of the divisions in the Dept. of Civil Engineers.

Data, Software and Hardware can be considered as the basic parts of LIS/GIS.

In this phase, we are interested mainly in Data, that is, for the formation of a teaching framework of subjects of Photogrammetry-Remote Sensing that can serve the acquisition of suitable data according to the intentions.

This leads to the necessity to emphasize to the teaching of some subjects, mainly to the ones that concern applications.

On the base of what we mentioned and of our experience in instruction, the subjects are formed gradually as following:

- 2.2.1 Introduction to Photogrammetry
 - Relevant subjects of Mathematics and Physics
 - Cameras
 - Planning of flight
 - Field work
 - Stereoscopy
 - Photography
 - Rectification
 - Orthophotography
 - Instrumentation (particular reference to new, low-cost instruments)
 - Non topographic Photogrammetry
 - Aerotriangulation
 - Sattellite Photogrammetry
 - Applications of Photogrammetry on subjects of Civil Engineer (Geotechnical Engineering, Transport and Organization, Hydraulics and Environmental Engineering, Structural Engineering)
 - Applications of Photogrammetry on subjects of cultural environment (studies of monuments and historic centers)

- 2.2.2 Introduction to Remote Sensing
 - Radiation and Instrumentation in Remote Sensing
 - Radiometric characteristics of aerial photographs
 - Spectral attribute of earth characteristics
 - Data-processing methods and Systems
 - Multispectral Scanning and Spectral Pattern Recognition
 - Remote Sensing from Space
 - Aerial Thermography
 - Microwave Sensing
 - Applications Geomorphology, Geology, Soils, Forestry, Geography, Urban area Analysis, cultural environment (monuments, historic centers), Subjects of Civil Engineer (Geotechnical Engineering, Transport and Organization, Hydraulics and Environmental Engineering, Structural Engineering)

- 2.2.3 Geoinformation Systems
 - Introduction
 - Data
 - Software
 - Hardware
 - Organization of GIS

3. CONCLUSIONS-DISCUSSION

The cooperation of Photogrammetry-Remote Sensing and LIS/GIS can be searched through and studied to various directions according to the purpose or/and the consideration level (that is parts of LIS/GIS: Data, Software, Hardware).

In this paper, the aim was to search through and come to relevant conclusions concerning the chapters that must be instructed (2.2.1, 2.2.2, 2.2.3) so that the cooperation of Photogrammetry with LIS/GIS to become useful in areas that interest a Civil Engineer.

The research (in this phase) was done mainly at the level of data.

The cooperation of Photogrammetry-Remote Sensing with LIS/GIS at other levels of the structure of LIS/GIS (Software, Hardware) can be further searched through.

REFERENCES

1. Drummond J., 1985, "An Introduction to Geographic Information Systems for the C#A.C Specialization in Cartography" I.T.C The Netherlands.
2. Drummond J., 1985, "Georeferencing for LIS" I.T.C The Netherlands.
3. Freiling M.J, 1982, "Data Base Management" Alfred Handy Guide, Alfred Publ. co.
4. Mulder N. J. 1984, "Data Bases, Geoinformation Systems" I.T.C The Netherlands.
5. Patmios E., 1990, "Photogrammetry and Remote Sensing In Civil Engineering" ISPRS, Commission VI Phodes, Greece 13-16/IX.