GPS_DAO – APPLICATION TO USE GPS FOR TOPOGRAPHIC AND CADASTRAL PLANS

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ABSTRACT

The Global Positioning System (GPS) was developed by the U.S.D.O.D, United States Department Of Defense, to support military applications. Recently, the civilian users stretch the limits of this technology and they explore its suitability for civil applications. Some of the nonmilitary uses of GPS can be listed below:

- hydrographic surveys,
- geodetic network densification,
- crustal deformation monitoring
- civil engineering,
- cadastral surveying … etc.

Civilian users, surveyors in particular, have known that GPS can replace conventional surveys employing a theodolite and level or a total station because this technology that has been extended and used in various fields measures geographical coordinates, velocity and time with astonishing speed and accuracy. Therefore, the use of GPS in land surveying proved a great efficiency and permitted to accelerate data acquisition and maintained the accuracy needed for topographic and cadastral plans.

Within the section of topography, at the IAV Hassan II, after purchasing an Ashtech Z-surveyor GPS, we conducted a research designed to develop software for setting up topographic and cadastral plans by using this new technology.

The aim of this study is to conceive a new methodology to set up, automatically, topographic and cadastral plans from survey data files obtained with GPS method.
The application so called GPS_DAO, developed within section of topography includes three important tasks:

- Conceiving of an efficient methodology for land surveying by GPS,
- Import of co-ordinate files resulting from post processing by GPS software (WinPrism) in order to codify and arrange observed points.
- Automatic drawing of topographic and cadastral plans in AutoCAD environment.

The most important decision that surveyor has to make is to choose the right survey software. But, he must initially choose the suitable hardware. For that raison, it's necessary to present in the first time the hardware components. These are the GPS receivers, their antennas and the computer with high and suitable characteristics.

On the other, the software components used can be listed as fallow. Firstly, the WinPrism as a GPS survey software, secondly the AutoCAD, drawing environment and finally the Visual Basic language for creating and maintaining the processing modules of GPS_DAO.

In addition, the new methodology conceived to draw automatically topographic and cadastral plans would be described in this paper. We also, discuss the results of case studies applying this application.

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