ITEMS OF CADASTRAL COMPUTATIONS IN THE PBLIS OF KCSC

Prof. Byung-Guk KIM, Kwang-Seok KWON and Donghoon JEONG, Korea

Key words: LIS, Cadastral Computations, PBLIS, KCSC.

INTRODUCTION

Public land surveying (cadastral surveying) in Korea is performed exclusively by the KCSC(Korea Cadastral Survey Corporation). The KCSC deals with 31,331,000 parcels of land and 3,420,000 parcels of forest (or forestry land) as of the year of 2000. The total of 34,751,000 parcels are recorded and maintained in the forms of "cadastral records" and "cadastral maps", and also are registered in the local registry offices, which is under the local courts. (Cadastral records consist of 'land records', 'house records', and 'forest records'; Cadastral maps consist of 'land maps' and 'forest maps') and the KCSC is in charge of managing the records and the maps as well as surveying and updating the parcel maps.

The KCSC is encouraged to develop a Parcel Based Land Information Systems (PBLIS) using the digitized records and the digitized maps. The project began in 1997 and parts of the system (the land surveying session assistant module and the land surveying computation module) came into being existence, and the test version of the system is out to the users for debugging purpose.

In this paper, the items necessary for land surveying measurements and computations are collected and implemented for the perspective PBLIS. The screens for the data input, computations, and display are also developed.

ITEM DEVELOPMENT

Computation items were developed after interviewing the surveyors in the KCSC. Almost all the computation items they use in preparation, in field work, in office work, and in recording and map making are believed to be identified including the frequently used items, time consuming ones and complex ones. In the job procedure, "field surveying and recording" is the one this paper is focused on. The field surveying can be classified in two categories, control point surveying and detail surveying, and each of which has 3 and 6 sub-categories respectively.

A computation function can be used in SM(Cadastral Triangulation), BO(Cadastral Complementary Triangulation), DO(Supplementary Control Surveying), and/or SE(Detail Surveying). In the case of complementary triangulation, it uses most of functions for the triangulation and the supplementary control surveying, but the computational accuracy differs a little.

CONCLUSIONS

Items of cadastral survey computations, as parts of the PBLIS, are developed and modules are implemented for inputting data, computation and adjustment, and outputting in certain formats. The process adopted in the development is resembling the process currently being used by the KCSC surveyors in the manual manner. It is found to be necessary to revise the way of data collection, input and output formats (by revising the provisions of laws) because there are many cases that the old method are no longer valid in the new era of computers and DB environment. The cases are: logarithm calculations for the trigonometric al functions, repeated steps and writings of the calculations, rounding offs after every calculations and significant figures problem, and the provisions of sketch maps. Also, GPS data collection and process must be considered and included in the modules.

CONTACT

Assoc. Prof. Byungguk Kim, Ph.D. PE
Dept. of Geoinformatic Engineering
INHA University
Yonhyun-dong
Nam-gu
Incheon 402-751
KOREA
Tel. + 82 32 860 7603
E-mail: Byungkim@inha.ac.kr

Kwang-Seok Kwon
Department of Geoinformatic Engineering
INHA University
Yonhyun-dong
Nam-gu
Incheon 402 751
KOREA
Tel. + 82 32 865 5110
Fax + 82 863 1506
E-mail: kskwon002@hanmail.net

Donghoon Jeong
Department of Geoinformatic Engineering
INHA University
Yonhyun-dong
Nam-gu
Incheon, 402-751
KOREA
Tel. + 82 32 865 5110
Fax + 82 863 1506
Email: g2001331@inhavision.inha.ac.kr