

Research Report

**The Development Of Georeferencing Technique For Conversion Of
Existing Topographic Data To New Geocentric-Based Datum**

Vot 71907

Submitted By

Mr. Abdullah Hisam Bin Omar

Prof. Dr. Abd. Majid A. Kadir

Prof. Madya Dr. Shahrum Ses

For

Centre of Research Management

Universiti Teknologi Malaysia

**Center For Cadastral and Land Info. Studies
Faculty of Geoinformation Science & Engineering
Universiti Teknologi Malaysia**

December 2003

ABSTRACT

In LIS, the most important core datasets to support spatial component are the cadastral and topographic datasets. Cadastre (DCDB) and topographic (DTDB/CAMS) datasets were used in this study are from different coordinates system, sources, accuracy and differing government agencies, and it post a number of problems to integrate. In order to integrate, several issues must be considering, which are data structure, data quality, reference system and GIS environment. Geocentric RSO coordinate system was adopted as reference system in this study. The cadastral dataset NDCDB that obtained has been geo-referenced, namely NDCDB. Thus this research was more focused on georeferencing DTDB/CAMS dataset to establish NDTDB dataset, with purpose of integration. There are two methods of georeferencing, polynomial and datum transformation. Polynomial transformation was performed by nOder-Transform extension module of ArcView. Meanwhile, datum transformation was carried out by using developmental program. The result of test indicated both methods provided comparable georeferencing result, $\pm 1\text{m}$ differentials. In spite of, datum transformation is a more suitable technique of georeferencing for DTDB dataset due to no control point was needed, no limit in block size and no mismatch problem at block border. Furthermore, the integration issues also have been analyzed. Quality result of integration is great influenced by map scale. Incompatible map scale may result in a serious mismatch problem in term of shift between datasets. The integration of both spatial datasets could be suitably carried out in GIS environment by using specialized software of ArcView and ArcInfo. The integrated dataset can be systematically maintained and upgraded to fully GIS ready environment for future development of a National Spatial Data Infrastructure (NSDI).