UNIVERSITI TEKNOLOGI MARA

FORMING THE ACCURATE CADASTER DATASET FROM LOW LEGACY DATABASE.

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Thesis submitted in fulfillment
of the requirements for the degree of
Bachelor of Surveying Science & Geomatics
(AP220)

Faculty of Architecture, Planning and Surveying

January 2019

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Compared to the latest positioning technologies, such as those based on Global Navigation Satellite Systems (GNSS), these data sets typically have relatively low position precision. The discrepancies between the legacy data set and GNSS positioning solutions are becoming increasingly apparent. Many data providers are therefore looking for ways to update their spatial data sets.

The rapid development and wide- ranging applications of satellite positioning technology have not necessarily made the basic assumption "control systems remain stable and unchanged". Positional accuracy improvement (PAI) is a process of improving the position of the geometric coordinates of a feature in a geospatial dataset to represent its actual position. This current position concerns the absolute position within the specific coordinate system and its relationship to the characteristics of the district. The PAI concept is inevitable, in particular, in the cadastral database, because space based technology is growing especially with the Geographic Information Systems (GIS) and the GNSS (Global Navigation Satellite System). Integrating legacy data sets with higher precision data sets such as GNSS observation is a potential way to improve the legacy data sets.

By merely integrating both datasets, however, the relative geometry will be distorted. The improved data set should be further processed to minimize inherent errors and to fit the new accurate data set. The main focus of this study is to describe a method of angular Least Square Adjustment (LSA) for the legacy data set PAI process. The existing high-precision dataset known as the National Digital Cadastral Database (NDCDB) is then used as a benchmark to validate the results. It was found that the proposed technique is highly possible to improve the positional accuracy of legacy spatial data sets.

TABLE OF CONTENTS

CHAPTER FOUR: **RESULT AND ANALYSIS**