

Noor Hashim Hamed Updating Urban Cadastral Maps Using Aerial Photos .
University of Technology Department of Building and Construction.M.SC .
Supervisor : Dr . Abbas Zedan Khalaf , Imzahim Abdul Alkareem Alwan . 2012 .
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ABSTRACT

For the time being most if not all the countries around the world try to update their Urban Cadastral Map with the unified well known system. This is the WGS84 UTM system. Simply because most of the currently available surveying instruments (such as GPS) work with the WGS84 system. However, some of the original maps have known different ellipsoid and some of them have unknown ellipsoid. The coordinates systems in Iraq are divided into two systems: the first system was known as the “third system” and the reference point located in AL-NAHRWAN south-east of Baghdad city and CLARK1880 Ellipsoid was used, the second system was established by “Pole Service Company “during 1979-1989, the reference point located in KARBALA “recently is known “, and CLARK1880 Ellipsoid UTM was used.

The production or updating cadastral maps using the traditional land survey instrument are costly and take a lot of time. Furthermore, in Iraq most of the municipalities don't have unified coordinate systems which cause having cadastral maps with different systems. Beside that some of the municipalities have no cadastral map at all. Accordingly the main objective of this research is to produce an updated cadastral map with scale 1:500(metric unit) using aerial photos (2008) have resolution 0.1 m and scale with a unified system WGS84.

In our case study the Ammant (Mayoralty) Baghdad Base Maps has several coordinates systems which are not known specifically. In this research we have used an approach for the updating of the maps (Ammant Baghdad base maps) with WGS84 system regardless their original coordinates system. A photomap was produced from the aerial photo , this photomap would be considered as a base map and consisted of all characteristics of base map, then use this base map as a reference map to update the (Ammant Baghdad base maps) and produce an Urban Cadastral Map. In this research, the study area was chosen in Baghdad city, Hay (district) Al-Wahda, Mahala (quarter) 906 including University Area.

A photomap has been produced for the study area through the use of an aerial photo (2008) and resolution 0.1 m by making a Geometric Correction and

resampling (using ERDAS program)on the aerial photo by using of a set of well distributed ground control points (GCPs) whose coordinates were determined by GPS complies with a precision (10cm) . Plot all the exist streets, blocks, and houses in study area (Mahala 906) by (using ARC MAP Program) to obtain the Base map of the study area (Mahala 906).

Furthermore, in this research a data base was designed which consists of information that will offer an easy and fast access for any parcel shown on the map, the data base includes (Municipality, Hay, Quarter, Main Street, Secondary Street, Zukak no., House no., and Official cadastral no.); the data will be linked to the layers of the updated Urban Cadastral Map (using Arc Catalog program).

Make georeference between Amannat Baghdad base map and the base map that produced from aerial photo, this was done by applying the weighting system to the maps through which we start with the higher weight map, then gradually done to the lowest weight map, the weighting system used in this approach depends on the number of the surrounding maps.

Finally, Urban Cadastral Map can be reproduced according to the query process as well as taking the cartographic criterion in consideration. A precision assessment of the updating approach for Urban Large Scale Cadastral Maps (1:500-1:1000) was $\pm 0.115\text{m}$ and founded to be within the American Social for Photogrammetry and Remote Sensing Standards (ASPRS).