Development of an Economical Quadcopter for Mapping Purposes

M.N.P. Fernando[1#], Plnr C.P. Ranawaka[2], Mr. A.M.A.R. Geethalankara[3], Lt. A.A. A. Chinthaka SLN[4]

[1] *Student, Department of Spatial Sciences, Southern Campus (KDU), Sooriyawewa, Sri Lanka*

[2]*Senior Lecture, Department of Spatial Sciences, Southern Campus (KDU), Sooriyawewa, Sri Lanka*

[3]*Lecturer, Department of Spatial Sciences, Southern Campus (KDU), Sooriyawewa, Sri Lanka*

[4]*Center for Research and Development, Ministry of Defence, Homagama, Sri Lanka*

[#] M.N.P. Fernando ;< nipunafernan@gmail.com>

Abstract-Drones are another innovative product of War. The field of Drones has accretion in worldwide in the past years. It has wide range of applications such as agriculture, mining, disaster management, construction & Engineering and aerial photography.

Low Altitude Drone solutions are being turned rapidly to the surveying and mapping purposes to perform work better as an alternative to high cost cumbersome traditional photogrammetry and ground surveying. Presently, it is obvious that branded drones produced for surveying and mapping purposes are cost effective for survey professional. Therefore, GPS enabled consumer grade drone technology can be used for designing and assembling a drone with accuracy and required facilities using parts available in the open market.

This study is focused to analyse suitability of developing a low altitude local quadcopter by assembling quadcopter parts available in the open market for mapping purposes with specific requirements as well as required accuracy.

This study reveals that assembled quadcopter with GPS, Magnetometer, Barometer, Gyro, Accelerometer and stabilized camera can be used to take aerial images and prepare Otho-mosaic for the area covered by the drone. The results were further compared with a ground surveying technique and google earth images of sample area. Results show that locally assembled drones can be used to prepare map for an area and map updating in the scale of 1:5,000 to 1: 50,000

key words: Low Altitude Drone, Quadcopter, Aerial Photogrammetry, Otho Mosaic