

Optimizing the Digital Processing Workflow Using Direct Georeferencing

Mohamed M. R. MOSTAFA, Canada

Key words:

SUMMARY

Recently, airborne commercial professional digital cameras have been acquired and used by several mapping organizations in the public and private sectors from around the world. These imaging systems have been designed to accommodate a direct georeferencing system to directly measure the exterior orientation parameters of each single digital image. This way, almost all map production can take place without the need for neither the traditional aerial triangulation nor ground control; except for Quality Control purposes. The advantages of this design include allowing the user to have a number of imaging and navigation sensors integrated at the design level. However, the optimal workflow is not yet attained in some cases nor published in other cases. On the other hand, some imaging configurations with some of these digital camera systems allow for using pure direct georeferencing coupled with quality control, while others require using the integrated sensor orientation concept. In this paper, the concept of optimizing the digital processing workflow will be discussed in some detail. This includes, but not limited to, introducing the basic concept of image georeferencing using different techniques and its application for different mapping products in a typical production workflow. The necessary algorithm optimization for different imaging configuration such as different imaging scale and geometry will be discussed in some detail. The use of new analytical, graphical, and visual software tools for controlling the quality of the typical data streams, namely digital images, GPS, and inertial data during processing. The presentation will be focused on the advantages of the seamless integration of multi-stream data and software tools and libraries, which eventually present the mapping professional and the supervisor with controlling the quality of the image and navigation data in a graphical fashion.

CONTACTS

Mohamed M.R. Mostafa, Ph.D.
Chief Technical Authority - Airborne Systems
Applanix Corporation
85 Leek Cr.
Richmond Hill, Ontario
CANADA L4B 3B3
Tel. + 1 905 709 4600, ext 274
Mobile + 1 416 854 6724 (Toronto), Mobile + 20 12 366 1190 (Egypt)
Fax + 1 905 7097153
Email: MMostafa@applanix.com
Web site: www.applanix.com