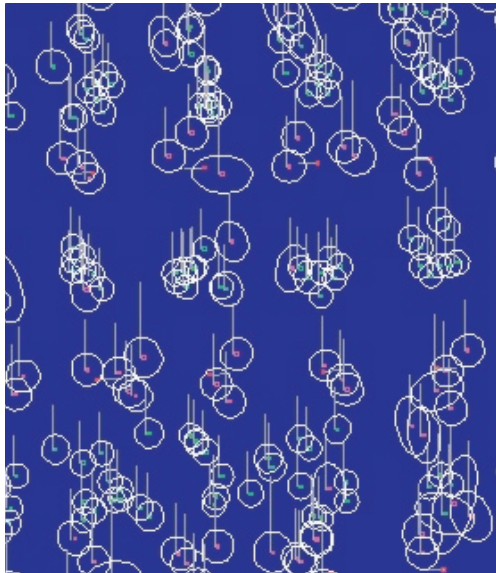


BINGO for SOCET SET®

BINGO for SOCET SET is a high performance software solution for photogrammetric bundle adjustment with self-calibration, closely integrated into SOCET SET.



Based on rigorous mathematics and capable of handling a broad range of imagery and associated data, BINGO is comprehensive and powerful. Integration with SOCET SET expedites measurement and re-measurement, resulting in a flexible workflow giving the shortest path to accurate results. BINGO's a posteriori statistics ensure that quality control is straightforward.

Triangulation—key to successful production photogrammetry

Success in production photogrammetry depends on linking various processes into a smooth workflow capable of generating results to the required accuracy and carrying out quality assurance to ensure that specifications are met. Products such as digital terrain models and orthorectified imagery require correctly oriented images with known accuracy. For most customers, therefore, bundle adjustment is critical: accurate orientation information must be estimated from the image, sensor and ground data very rapidly and must include not only sensor self-calibration but also comprehensive statistics for quality control.

BINGO meets all the requirements. In addition to airborne film and digital imagery, it can handle SPOT satellite and close-range imagery, GPS and IMU data and terrestrial

survey measurements. Initial orientation values are estimated automatically. The program runs very fast and there is no limit on block size. Both interactive and automatic blunder elimination are available and the results include a wide range of statistical quality estimates.

BINGO exploits SOCET SET's capabilities for image handling and viewing, and its strengths in both interactive and automatic measurement of image points and ground control. Operations are controlled from the BINGO Manager, which is selected from a pull-down SOCET SET menu. The user can design the most comfortable, efficient workflow, switching between measurement, adjustment, quality assessment and re-measurement as required. After the results are accepted, the SOCET SET image support files are updated. The user can also benefit from the wide range of data export functions in both SOCET SET and BINGO.

BENEFITS

Very fast adjustment of huge blocks. Smooth, reliable triangulation leads to rapid product creation

Quality control checks using the latest statistical techniques. Easy to learn methods of ensuring accuracy

GPS, IMU and ground measurements all included in the adjustment in a totally rigorous way

Renowned, reliable software used worldwide gives confidence in the results

Integration with SOCET SET brings image import, measurement, adjustment, re-measurement and quality control close together in a productive, intuitive workflow

Economical: the combination of SOCET SET and BINGO produces excellent results quickly, so the investment is repaid quickly

KEY CAPABILITIES

Examples of leading-edge performance

BINGO's extensive capabilities, versatility and superb mathematics are proven and acknowledged throughout the photogrammetric world. Recent advances underline the remarkable value that the package unleashes. A survey net project in California in 2004 involved the adjustment of 712,297 points, 2,890,308 unknowns, and 4,376,589 survey measurements. The normal equations and their inverse were 10 GB each. BINGO computed the results successfully in only seven hours on an ordinary PC. Also at the leading edge of performance is BINGO's recent encompassing of Combined Phase Ambiguity Solution (CPAS), which makes use of GPS reference systems where available, rigorously models GPS errors, and keeps them separate from datum changes or interior orientation parameters, without the need for drift parameters or cross-strips.

SOCET SET's established capabilities for project management, image import, viewing, and interactive and automatic point measurement

BINGO Manager for complete control of processing

Easy to learn graphical user interface for input of parameters and preferences

Processes data from many sensors and sources, including airborne, oblique or vertical, film or digital; close-range film or digital; SPOT; ground survey (angles, distances, directions, height differences, coordinates); GPS; IMU; lake leveling points

Names for points, photos and cameras up to 15 characters

No restrictions on exposure directions: automatic estimation of exterior orientation parameters for vertical and oblique airborne and close-range imagery, using balanced L2-Norm adjustment for robust error elimination

No limitations on block size or geometry

Easy selection of sub-set of images for processing

Rigorous handling of GPS data, including antenna offset and CPAS

Rigorous estimation of boresight alignment for IMUs without ground control points

Full camera self-calibration with interactive or automatic selection of parameters

Free network adjustment, for cleaning image observations without influence from control points

Statistics include a posteriori precision and reliability estimates for all unknowns and observations

Extremely fast processing, expedited by integrated data problem recognition and management: automatic removal of rank defects; recognition of point numbering errors; interactive and automatic blunder elimination using Baarda's rigorous data snooping; balanced L2-Norm adjustment for error removal along strips; rigorous RANSAC strip transformations for error removal across strips

Checking of weights by variance component estimation

Informative graphics to illustrate camera calibration, residuals, precision, reliability, block layout with true footprints, etc.

Export model set-ups for photogrammetric workstations

Continuously developed and enhanced since the early 1980s by Dr. Erwin Kruck, recognized authority in triangulation and founder of Gesellschaft für Industriephotogrammetrie mbH (GIP) in Aalen, Germany (renamed in 2002 to Geoinformatics and Photogrammetric Engineering)

Windows® 2000/XP and SOCET SET v5.0 or later

FOR MORE INFORMATION CONTACT:

Americas
Telephone (800) 316-9643 or (703) 668-4385
Fax (703) 668-4381
Email socetgxp.sales@baesystems.com

Europe, Middle East and Africa (EMEA)
Telephone +44 (0) 1223 370023
Fax +44 (0) 1223 370040
Email socetgxp.emea.sales@baesystems.com

Asia-Pacific
Telephone +61 2 6273 0111
Fax +61 2 6273 0368
Email socetgxp.asia.sales@baesystems.com

www.socetgxp.com

© 2006 BAE Systems. All trademarks used are the property of their respective owners. BAE Systems products are subject to the export control laws and associated regulations of the United States, including but not necessarily limited to the International Traffic in Arms Regulations and Export Administration Regulations. As such, parts of the functionality described herein may be available to certain customers only.
BSS 3/06