



Summary of Features

January, 2004



Photometrix Pty Ltd, PO Box 3023, Kew, Vic 3101, Australia
Phone: +61 3 9830 7977 fax: +61 3 9830 7988
Email: info@photometrix.com.au Web: www.photometrix.com.au

Summary of *Australis* Features

The *Australis* photogrammetric software package is designed to perform highly automated off-line measurements from monoscopic/convergent digital image networks, either using digital cameras or scanned film imagery. It is equally useful for high-precision metrology applications using 'metric' digital cameras (or scanned imagery) or low- to moderate-accuracy measurement employing consumer digital cameras. Through the integrated image measurement, preliminary orientation and bundle adjustment functionality, one can quickly and easily obtain three-dimensional object point coordinates and sensor calibration data from multi-sensor, multi-image networks of an effectively unlimited number of object points. Moreover, depending on the provision of an exterior orientation (EO) device and high contrast targets, the photogrammetric orientation/ triangulation and calibration processes can be carried out fully automatically, in semi-automatic mode, or even with manual image point measurement and a more sequential processing flow. *Australis* is thus ideal for the teaching of photogrammetric principles and practices, and it is a valuable tool in both research and for practical measurement applications.

Salient features:

- **Fully automated orientation/triangulation and sensor calibration when using high-contrast targets, and an EO device (seen by all images)**

This 'one-button' operation includes AutoScanning to measure all candidate targets, centroiding of all valid targets, identification and measurement of the EO device, exterior orientation, image point correspondence determination and final self-calibrating bundle adjustment.

- **Also features step-by-step processing, manual and automatic, for use in the teaching of close-range photogrammetric principles**
- **Able to handle multiple sensors and networks of hundreds of images and thousands of object points**
- **Can accommodate virtually any digital camera, from popular 'off-the-shelf' models to large-array professional CCD cameras**
- **Can measure and photogrammetrically process scanned film images, and incorporates interior orientation capability (fiducial/reseau transformations)**
- **Self-calibrating bundle adjustment incorporates flexible choice of the sensor calibration model and has graphics display of distortion profiles**

- **Incorporates different options for initial network exterior orientation, including Relative Orientation (RO) and Resection/Intersection, with RO requiring no initial object point coordinate information**
- **Bundle adjustment uses either a free-network solution (via inner constraints) or one with a surveyed control point configuration.**
- **Allows interactive assignment of object space XYZ coordinate axes via so-called 3-2-1 method which sets coordinate system origin and axial orientation**
- **Integrates a 3D coordinate transformation function (very useful in conjunction with free-network solutions)**
- **Supports export of XYZ object point coordinates in DXF or ASCII format**
- **Allows imposition of scale constraints in either post adjustment scaling or as distance observations within the bundle estimation process**
- **Supplementary object space analysis functions: distances and best fit line, plane, sphere, circle, cylinder**
- **Convenient, project-based user interface**

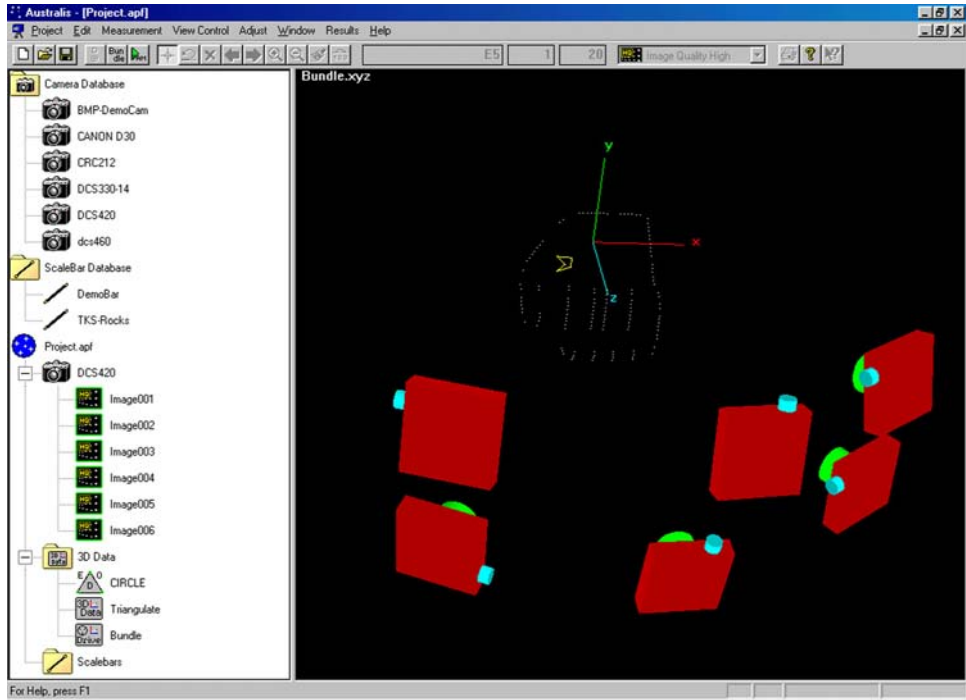
An *Australis* project file stores all cameras, images, scalebars, and measurements. The Camera and Scalebar database contains all available calibrated cameras and scalebars.

- **Centroid and manual target measurement**

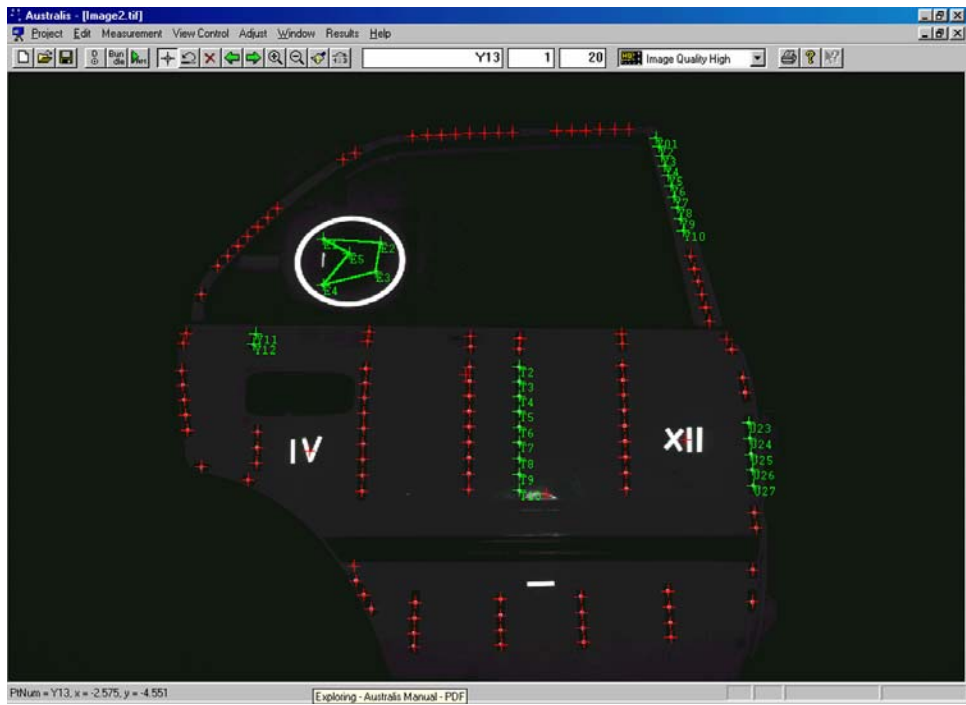
Automated image scanning and centroid measurement of high-contrast targets (typically retro-reflective) or manual measurement of natural features. Supports associated automatic exterior orientation via either 'known points' or an EO device and facilitates 'resection driveback'.

- **Graphics View**

3D graphics view for visualisation of point cloud, cameras, and scalebars. Includes point-to-point distance and best-fit circle, line, plane, and sphere functionality, as well as 2D graphics of various image-related features (residuals, labelling, etc.).



Australis Graphics View



Australis Image View