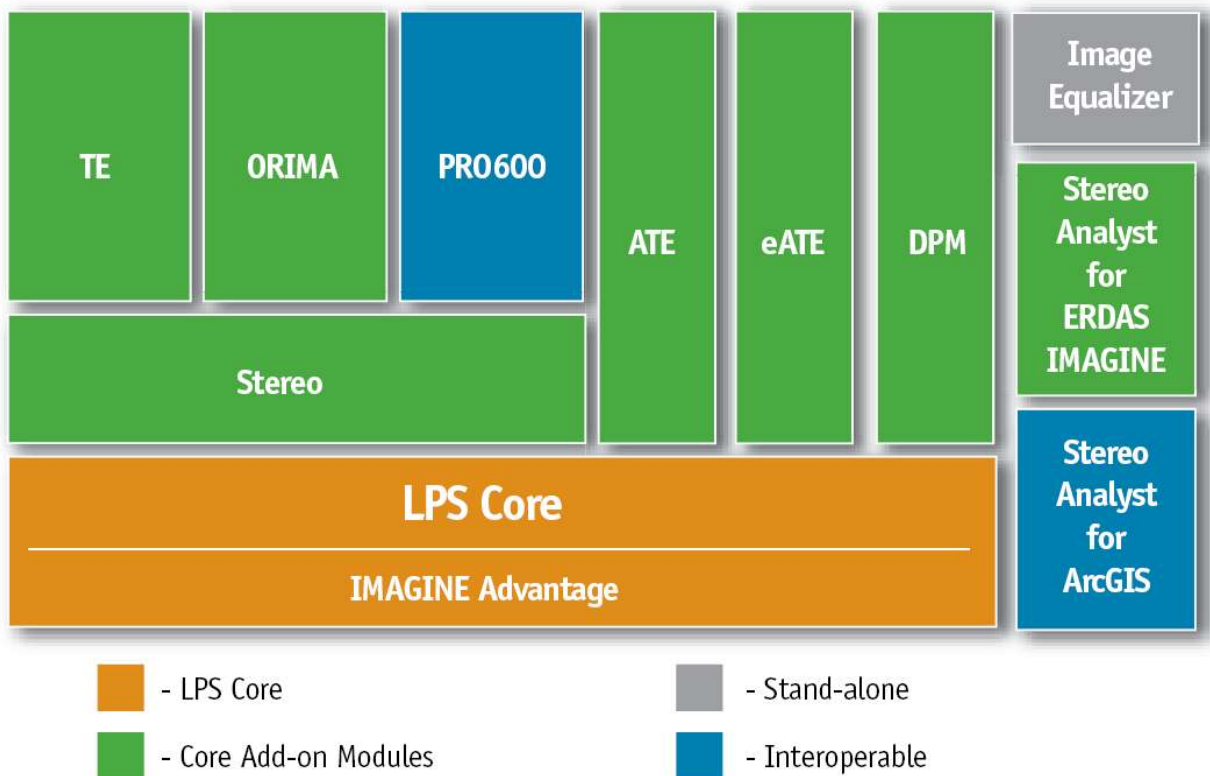


What's New?

LPS 2011

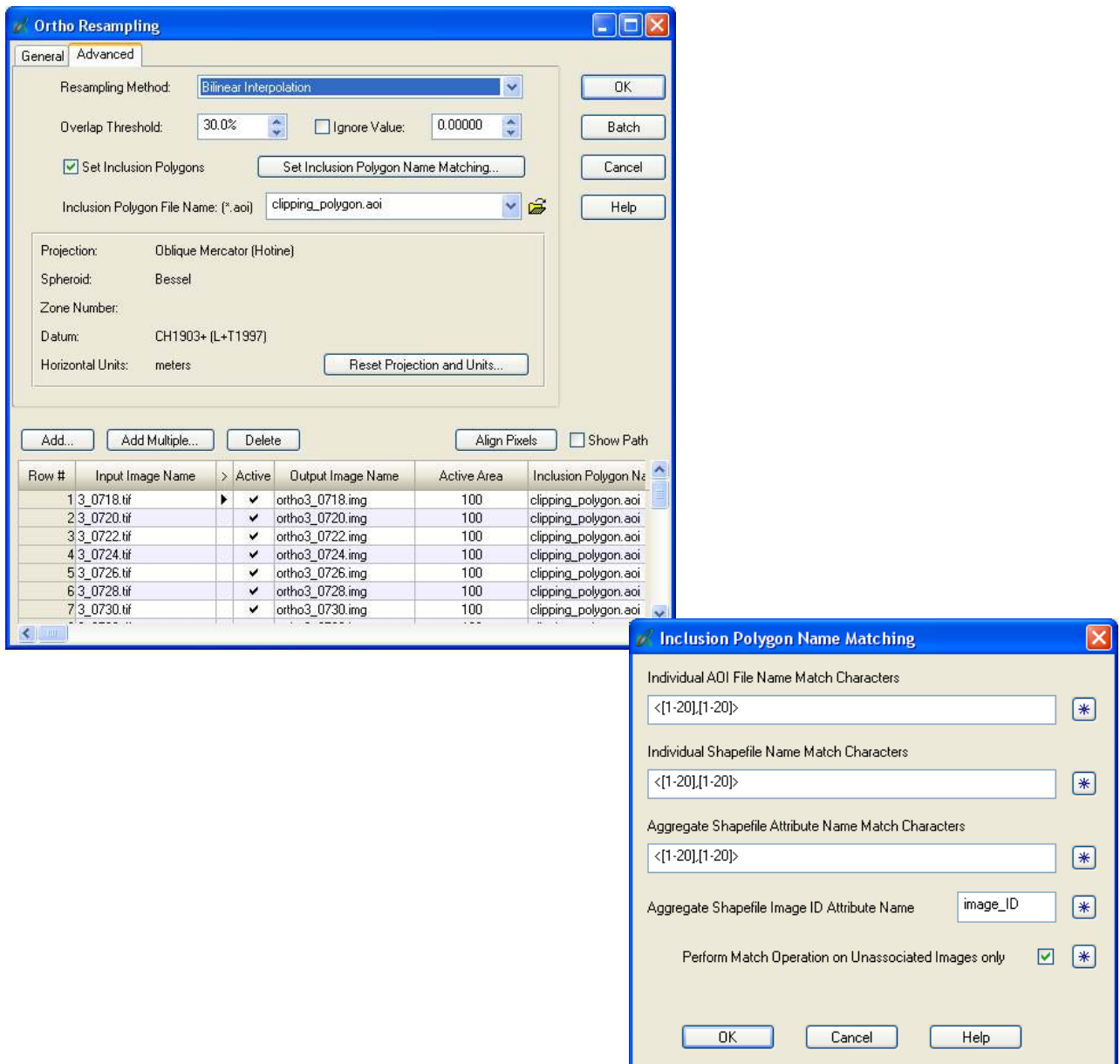
LPS is a collection of seamlessly integrated software applications providing accurate and production-oriented photogrammetric tools for a broad range of geospatial imaging applications. The keys to LPS's productivity are automated algorithms, fast processing and a tight focus on workflow through the unique workflow toolbar. LPS's state-of-the-art photogrammetric and image processing algorithms for automatic point measurement, triangulation, automatic terrain extraction and subpixel point positioning help improve accuracy while simultaneously increasing productivity. Add-on modules provide additional production-oriented tools that help maximize data throughput.



LPS Core

Ortho Clipping with Polygons [more efficient processing]

Ortho generation for an area of interest defined by a shape file or AOI is introduced. Areas of interest in multiple images are handled by matching whole/part of the input image name with an attribute of the AOI or shape file. This reduces production time by excluding unneeded pixels from processing.



The screenshot shows the 'Ortho Resampling' dialog box with the 'Advanced' tab selected. The 'Resampling Method' is set to 'Bilinear Interpolation'. The 'Overlap Threshold' is 30.0%. The 'Inclusion Polygon File Name' is 'clipping_polygon.aci'. The projection is 'Oblique Mercator (Hotine)' with a datum of 'CH1903+ (L+T1997)'. Below the dialog is a table of image processing results.

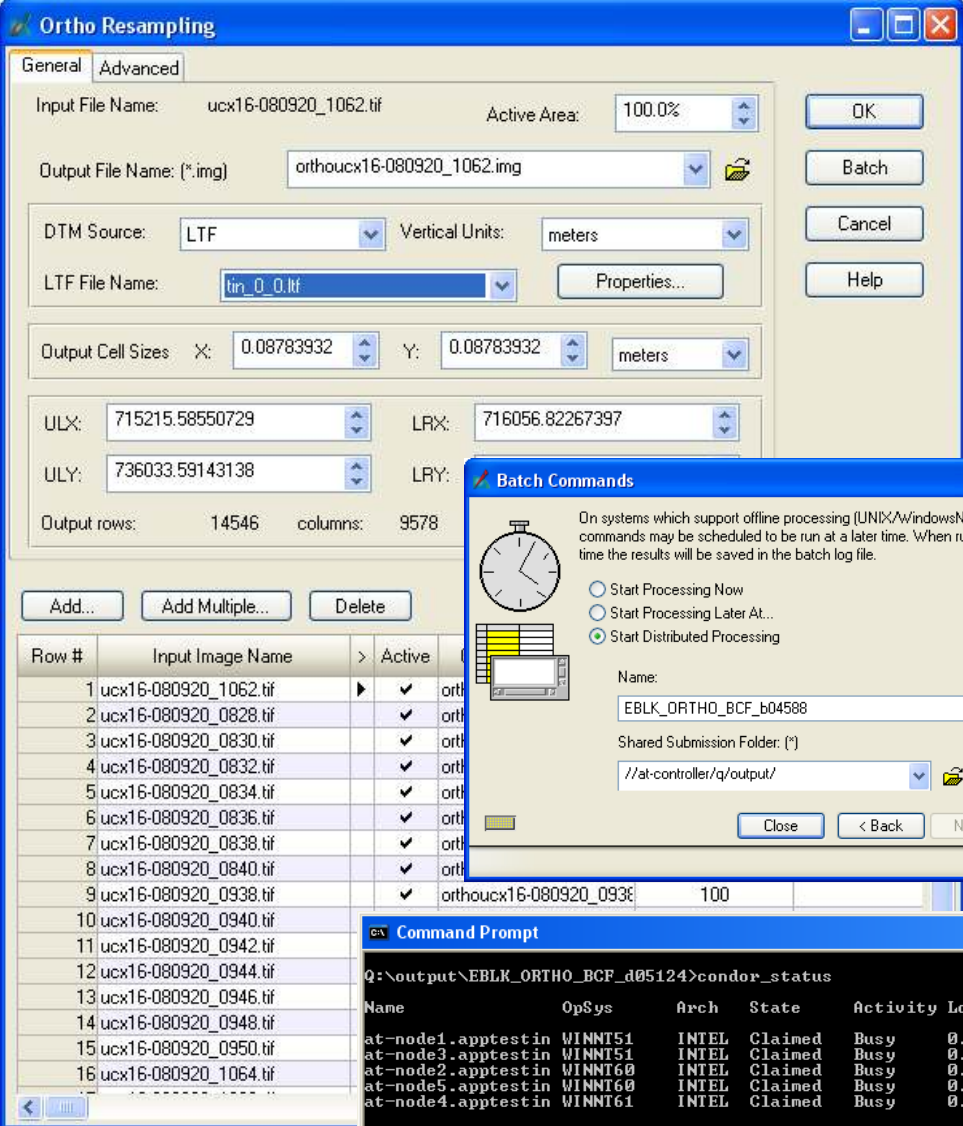
Row #	Input Image Name	Active	Output Image Name	Active Area	Inclusion Polygon Name
1	3_0718.tif	✓	ortho3_0718.img	100	clipping_polygon.aci
2	3_0720.tif	✓	ortho3_0720.img	100	clipping_polygon.aci
3	3_0722.tif	✓	ortho3_0722.img	100	clipping_polygon.aci
4	3_0724.tif	✓	ortho3_0724.img	100	clipping_polygon.aci
5	3_0726.tif	✓	ortho3_0726.img	100	clipping_polygon.aci
6	3_0728.tif	✓	ortho3_0728.img	100	clipping_polygon.aci
7	3_0730.tif	✓	ortho3_0730.img	100	clipping_polygon.aci

The 'Inclusion Polygon Name Matching' sub-dialog is also shown, with the following settings:

- Individual AOI File Name Match Characters: <[1-20],[1-20]>
- Individual Shapefile Name Match Characters: <[1-20],[1-20]>
- Aggregate Shapefile Attribute Name Match Characters: <[1-20],[1-20]>
- Aggregate Shapefile Image ID Attribute Name: image_ID
- Perform Match Operation on Unassociated Images only:

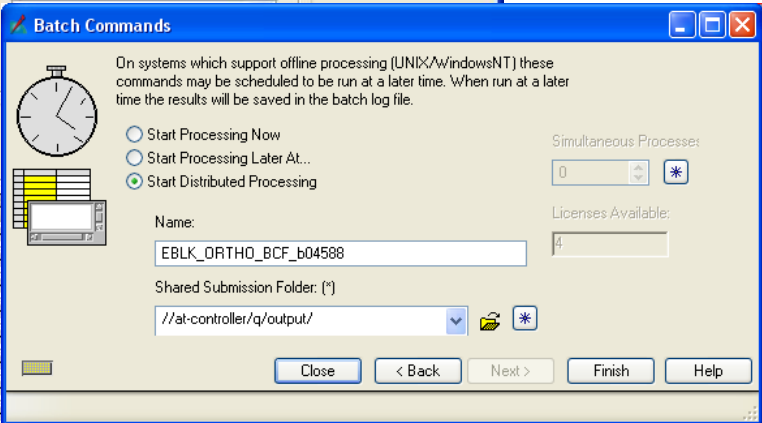
Distributed Ortho Generation [reduce production time]

By combining the batch capability of LPS with Condor[®] (third-party, freely downloadable software), LPS harnesses the power of several networked computers for high throughput ortho generation. On machines with multi-core CPUs, ortho processing can be run on the multiple cores to accelerate the process.

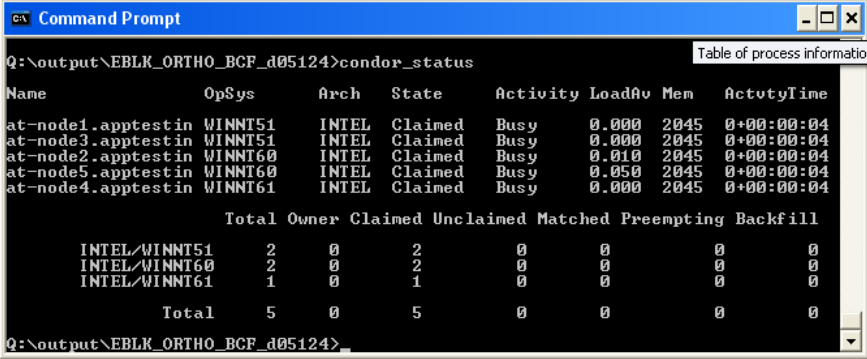


Ortho Resampling dialog box showing configuration for processing multiple input images. The General tab is active, showing input file names, output file name, DTM source (LTF), vertical units (meters), and output cell sizes. A table at the bottom lists 16 input images with their respective active status.

Row #	Input Image Name	Active
1	ucx16-080920_1062.tif	✓
2	ucx16-080920_0828.tif	✓
3	ucx16-080920_0830.tif	✓
4	ucx16-080920_0832.tif	✓
5	ucx16-080920_0834.tif	✓
6	ucx16-080920_0836.tif	✓
7	ucx16-080920_0838.tif	✓
8	ucx16-080920_0840.tif	✓
9	ucx16-080920_0938.tif	✓
10	ucx16-080920_0940.tif	✓
11	ucx16-080920_0942.tif	✓
12	ucx16-080920_0944.tif	✓
13	ucx16-080920_0946.tif	✓
14	ucx16-080920_0948.tif	✓
15	ucx16-080920_0950.tif	✓
16	ucx16-080920_1064.tif	✓



Batch Commands dialog box. It allows scheduling commands to run at a later time. The "Start Distributed Processing" radio button is selected. The Name field is "EBLK_ORTHO_BCF_b04588" and the Shared Submission Folder is "///at-controller/q/output/".

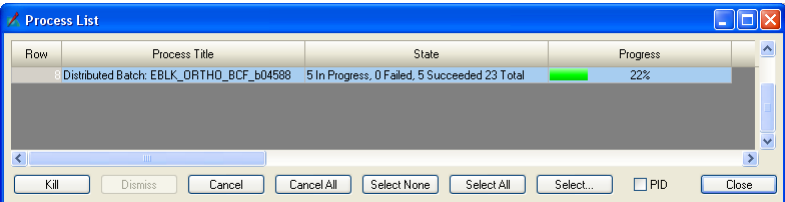


Command Prompt showing the output of the `condor_status` command. The output displays a table of process information for various nodes and a summary of resource usage.

```

Q:\output\EBLK_ORTHO_BCF_d05124>condor_status
Table of process information
Name           OpSys      Arch      State      Activity  LoadAv  Mem      ActvtyTime
at-node1.apptestin WINNT51    INTEL    Claimed    Busy      0.000   2045    0+00:00:04
at-node3.apptestin WINNT51    INTEL    Claimed    Busy      0.000   2045    0+00:00:04
at-node2.apptestin WINNT60    INTEL    Claimed    Busy      0.010   2045    0+00:00:04
at-node5.apptestin WINNT60    INTEL    Claimed    Busy      0.050   2045    0+00:00:04
at-node4.apptestin WINNT61    INTEL    Claimed    Busy      0.000   2045    0+00:00:04

Total Owner  Claimed  Unclaimed  Matched  Preempting  Backfill
INTEL/WINNT51  2      0          2          0          0          0
INTEL/WINNT60  2      0          2          0          0          0
INTEL/WINNT61  1      0          1          0          0          0
Total          5      0          5          0          0          0
Q:\output\EBLK_ORTHO_BCF_d05124>
  
```

Process List dialog box showing the progress of the distributed batch process. The progress bar indicates 22% completion.

Row	Process Title	State	Progress
1	Distributed Batch: EBLK_ORTHO_BCF_b04588	5 In Progress, 0 Failed, 5 Succeeded 23 Total	22%

Better Handling of No-Data & Zero Values for Ortho Generation in DTM [streamlined workflow]

The no-data values that are specified in DTM are now used as the only no-data value during ortho generation. Zero is considered valid data unless it is specifically defined as the no-data value in the DTM.

Persist Coordinate System into LAS Format [flexibility]

Coordinate system information is persisted in the output file when generating DTMs in LAS format.

ADS40 Demand Loading of ODF [better memory handling]

ODF files associated with ADS40 images are loaded when the images are accessed and will be unloaded if the images are not accessed again for a certain period of time.

AUSGEOID98 Vertical DATUM Support [new datum support]

LPS now supports AUSGEOID98, a gravimetric geoid for Australia.

Stereo Point Measurement (SPM) Tool Supports Use of Orthophotos (base maps) as Horizontal Reference Source [improved workflow]

SPMT now supports use of multiple orthophotos (base maps) as a horizontal reference source. Orthos are listed in the image list based on the degree of overlap with the master image and can be loaded in the viewer for identifying reference points.

Use Initial Orientation in SPM [increase productivity]

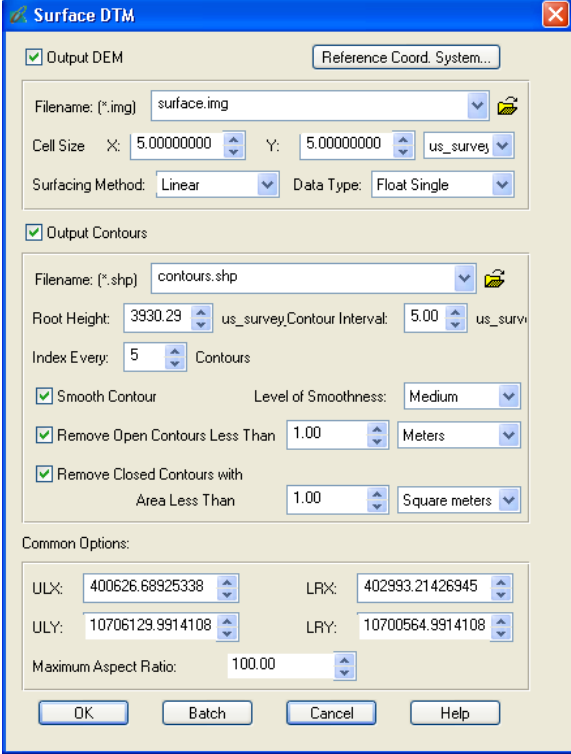
SPMT now uses initial orientation values to compute image footprints and overlaps and perform various operations such as point measurement and prediction.

Rasterization Improvement in Terrain Prep Tool (TPT) [enhanced performance]

The size, number and processing speed of raster DTMs have been significantly improved.

Contour Generation in TPT [improved workflow]

TPT is now able to generate contours while creating surfaces. Contour generation options enable users to specify root height and contour interval, smooth contours, and remove contour lines based on length and area.



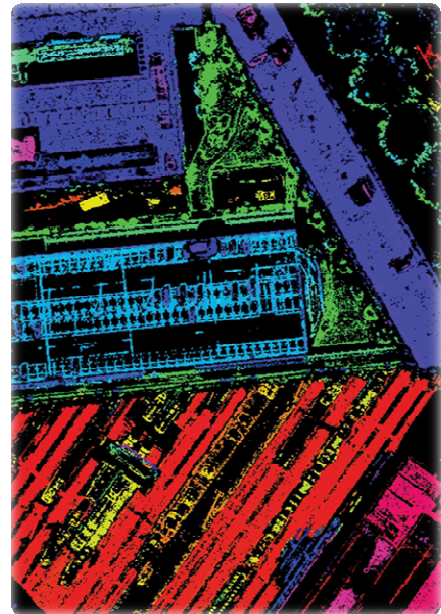
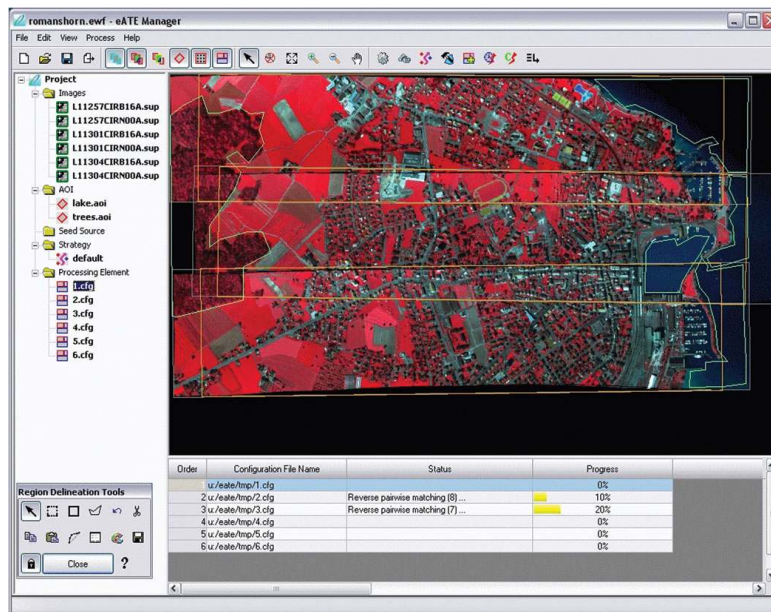
The image shows a screenshot of the "Surface DTM" dialog box in a software application. The dialog is titled "Surface DTM" and has a close button (X) in the top right corner. It is divided into several sections:

- Output DEM:** A checkbox labeled "Output DEM" is checked. To its right is a button labeled "Reference Coord. System...". Below this is a "Filename" field with the text "surface.img" and a file selection icon.
- Cell Size:** Two spinners for "X" and "Y" are both set to "5.00000000". To the right of the "Y" spinner is a dropdown menu set to "us_survey".
- Surfacing Method:** A dropdown menu is set to "Linear". To its right is a "Data Type" dropdown menu set to "Float Single".
- Output Contours:** A checkbox labeled "Output Contours" is checked. Below it is a "Filename" field with the text "contours.shp" and a file selection icon.
- Root Height:** A spinner is set to "3930.29". To its right is a dropdown menu set to "us_survey".
- Contour Interval:** A spinner is set to "5.00". To its right is a dropdown menu set to "us_surv".
- Index Every:** A spinner is set to "5". To its right is the text "Contours".
- Smooth Contour:** A checkbox labeled "Smooth Contour" is checked. To its right is a "Level of Smoothness" dropdown menu set to "Medium".
- Remove Open Contours:** A checkbox labeled "Remove Open Contours Less Than" is checked. To its right is a spinner set to "1.00" and a dropdown menu set to "Meters".
- Remove Closed Contours:** A checkbox labeled "Remove Closed Contours with Area Less Than" is checked. To its right is a spinner set to "1.00" and a dropdown menu set to "Square meters".
- Common Options:** A section containing four coordinate spinners: "ULX:" (400626.68925338), "LRX:" (402993.21426945), "ULY:" (10706129.9914108), and "LRY:" (10700564.9914108). Below these is a "Maximum Aspect Ratio" spinner set to "100.00".

At the bottom of the dialog are four buttons: "OK", "Batch", "Cancel", and "Help".

LPS eATE

LPS eATE is an LPS module for generating high resolution terrain information from stereo imagery. Featuring a completely new design and sophisticated algorithms for generating and classifying dense elevation surfaces, eATE provides an unparalleled environment for processing terrain data. This highly flexible solution provides capabilities for data types ranging from satellite to airborne frame and digital pushbroom sensors and operates in a multi-processor/multi-computer environment.



Distributed DTM Merging [enhanced performance]

The ability to distribute the terrain generation process to multiple cores and/or computers has been extended to include the distribution of the merging process, thereby reducing overall processing time.

Reduced Redundant Processing in Overlap Areas [reduced processing time]

The terrain processing logic has been improved to avoid/minimize redundant processing in areas that are covered by multiple stereo pairs.

Radiometric Processing Introduced [better quality terrains]

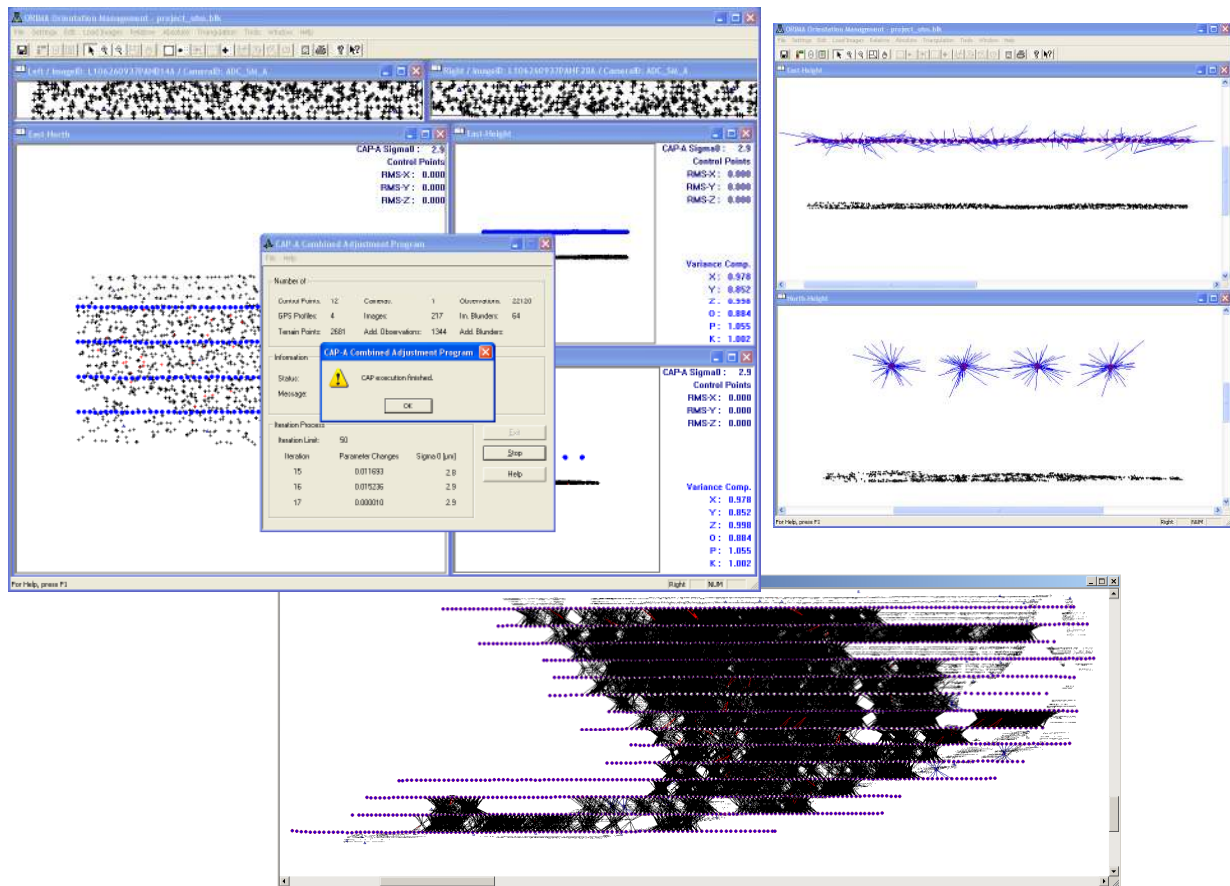
Users can now use optional radiometric processing during the terrain generation process to improve results from images with poor radiometric quality.

Bing™ Maps [flexibility in report generation]

Bing Maps is now available for rendering project area base maps for the XML-based reporting method.

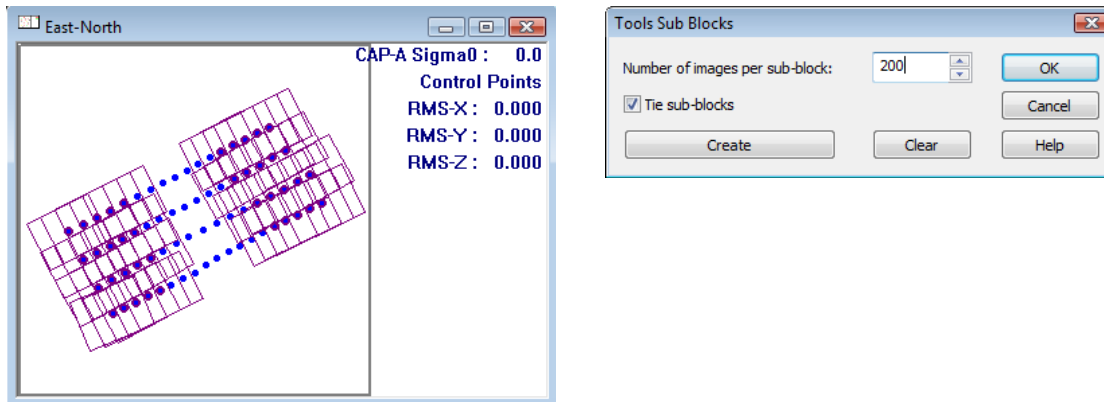
ORIMA

ORIMA is an LPS add-on providing advanced aerial triangulation and visual analysis tools. The premiere solution for frame, ADS40 and ADS80 and other digital sensors, ORIMA is proven and robust technology relied on by photogrammetry professionals around the world. Providing a strong set of analysis tools, ORIMA supports large production jobs requiring high throughput.



Automatic Sub-block Creation for APM [ease of use for large projects]

ORIMA now features a new method to automatically create sub-blocks for APM. The effort required for large projects is reduced as the formerly manual initiation of multiple APMs is now automated.

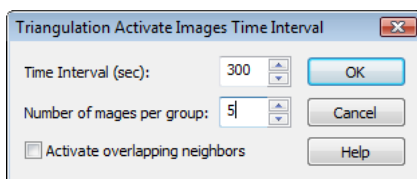


Automatic Start of CAP-A [reduce idle time]

A new option to start CAP-A automatically once the last APM thread completes is now available.

A Complete New Workflow for IMU-supported Projects [speed improvement]

ORIMA now features a new workflow that better utilizes IMU. In this workflow, images are triangulated at certain time intervals along the flight trajectory. For in-between images, orientation values are interpolated from the neighboring images that have been included in the triangulation.



Direct Import of GPS Data to Any Non-LSR Project [ease of use]

GPS data in geographic coordinates based on WGS84 can now be imported directly into any non-LSR project independently of the type of project coordinate system being used.

Import IMU Data that Refer to Map North [increased productivity]

ORIMA now includes a meridian convergence correction option that allows the import of IMU data whose angles refer to map north instead of geographic north.

Use a Block's Exterior Orientation Values as GPS/IMU Data when Starting an ORIMA Project [improved workflow]

During project creation, if ORIMA finds that the orientation status of the block file is "Fixed," it imports the values and stores them in the GPS and IMU data files.

Support for Oblique Frame Images [support for oblique frame imagery]

To support oblique frame imagery, ORIMA features a new algorithm to compute initial values for bundle adjustment.

Improved GPS Profile Assignment of Flight Strips [ease of use]

GPS profile assignment of flight strips has been improved and streamlined into a single-step procedure.

Simplified Group ID Assignment to IMU Observations [ease of use]

Assigning group IDs to IMU observations has been simplified to facilitate projects flown with multiple cameras mounted on a common platform.

Toggle Stereo/Split Screen View in Measuring Mode [flexibility]

For frame projects, a new option in the point measurement dialog enables users to toggle the views between stereo and split screen while in measuring mode.

Convert Image IDs to Lower Case when Importing GPS/IMU Data [reduced preprocessing]

Since in LPS image IDs are always in lower case, ORIMA now converts the image IDs of GPS/IMU data to lower case to match the image IDs of LPS.

Faster Algorithm for Computing Adjusted orientation Data "odf" for ADS [reduced computation time]

A new algorithm to compute the adjusted-orientation data "odf" for ADS is more than five times faster than the previous algorithm.