Feature Collection with SOCET SET®
Organizational Overview

- BAE SYSTEMS develops photogrammetric applications to support map-making, GIS applications, photo-interpretation, and 3D visualization
  - ~100 person commercial software organization
  - HQ in San Diego
  - 3 regional sales/support offices in US
    - Denver, CO
    - Tampa, FL
    - Reston, VA
  - 2 international sales/support offices
    - UK
    - Australia

- Our applications extract data from stereo imagery
  - 2.5D feature/vector data, DTM/DTED, 3D models, true orthophotos, orthomosaics, and airport obstruction databases

- 3 primary applications
  - SOCET SET®
  - DataThruWay ®
  - ClearFlite®
Organizational Overview, cont.

• Photogrammetric Software customer base includes:
  – US Government Mapping Organizations
    • National Geospatial Intelligence Agency
    • NOAA/NGS – Remote Sensing Division
      – Shoreline Mapping and Aeronautical Survey Programs
    • US Geological Survey
    • FAA
    • USDA – APFO
    • US Forest Service
    • Department of Defense
    • Department of Homeland Security
  – Commercial Mapping Firms
    • Large
    • Medium
    • Small
  – State DOT’s
  – Federal Government sub-contractors
  – ~3,000 active licenses – Worldwide
Organizational Overview, cont.

• SOCET SET
  – Mature and stable product
  – Industry standard photogrammetric mapping application
  – End to end photogrammetric application
  – Robust commercial sensor model import
    • IKONOS, QuickBird, LANDSAT, SPOT, JERS, IRS, ERS, RadarSAT
  – Triangulation, DTM/DTED, Orthophoto, Feature Extraction

• DataThruWay
  – SOCET SET’s classified image import application
  – TFRD, DPPDB, S2, S3, S6, NITF SDE, and Predator
    • TIFF, NITF, JPEG2000

• ClearFlite
  – Airport obstruction identification and mapping application
  – Supports Ron Brown Airfield Initiative
  – Support FAA Part 77 and 5010
Feature Extraction Overview

- SOCET SET's Feature Extraction is a significant component of NGA and NOAA/NGS topographic database production
  - D/E Alpha replacement
  - Includes Outsourcing Contractors
  - De facto application for vector collection
  - JOGA, TLM, VMAP

- Manual collection of points, lines, polygons and 3D polyhedrons using the following:
  - rigorous sensor model info.
  - DTED, DEM (optional)

- Stereo roam collection

- 3D modeling tools

- Collect and edit in same application
Drawing/Collection Tools

- Static Mode -- Straight Lines
- Curve Mode -- spline based on >= 4 points
- Arc Mode -- circle based on >= 3 points
- Stream Mode -- continuous sampling
- On-the-fly-Square -- Forces right angles as the user is sampling
- Square-after-Accept -- Forces right angles after Accept
- Rectangle -- Created by pressing and holding down sample button
- Circle -- Created by sampling 3 points on a circle
- Semi – Automatic Feature Extraction -- Roof Tool
- Semi – Automatic Feature Extraction -- Lake Tool
- Semi – Automatic Feature Extraction -- Refine Tool
**Individual Edit Tools**

- Select Feature
- Select Vertex
- Move Feature
- Delete Feature
- Copy Feature
- Rotate Feature
- Scale Feature
- Insert Vertex
- Delete Vertex
- Split Line
- Redraw
- Stretch
- Polygon Union
Batch/Group Edit Tools

• COPY- Copies all features to a new or existing feature database

• DELETE – Deletes all features in the feature list

• MOVE – Copies all listed features to a new or existing feature database and then deletes them in the old feature database

• SPLIT FEATURES - Splits features where a fence box crosses them

• INTERSECT NODES – Adds vertices at all the intersections based on a Z tolerance

• TRIM & EXTEND – Removes overshoots and undershoots based on a XY tolerance and a Z tolerance

• CHANGE CLASS – Changes features from one class to another

• CREATE GROUP - Groups multiple features into one feature

• APPLY ATTRIBUTE – Applies feature and graphics attributes to selected features
**Additional Tools**

- Feature Specification File Editor
  - Used to create and edit specification files for feature extraction attribution
    - Descriptive and dimensional
- Class and Attribute Editor
- Create TLM, JOGA, VMAP, or user defined specification files for attribution
- Access Feature Attribute Coding Catalog (FACC)
Additional Tools, cont.

- SOCET SET’s Feature Extraction can automatically populate up to 10 attributes per feature

- Dimensional and non-dimensional attributes
  - Average Circular Error
  - Average Linear Error
  - Area
  - Width
  - Perimeter
  - Length
  - Height
  - Elevation
  - Angle of Orientation
• Double Line Drain Tool

• Create a double line drain by delineating two banks

• After the banks are created, Feature Extraction will automatically adjust the elevations to ensure the lines are monotonic
Additional Tools, cont.

- 3D modeling tools
- Semi-automated process
- Create 3 basic roof top types
  - Flat, peaked, gabled
- After creating roof, user assigns elevation values
  - Enter value
  - Measure
  - DTM/DTED file
- Tools are available for more complex modeling
  - Dome
  - Spline
Additional Tools, cont.

- Simultaneous Collection
- Allows users to collect to delineate features simultaneously
- Add secondary features to a primary feature automatically
  - different attributes for secondary features
Additional Tools, cont.

- Feature Database Merge
- Merges two adjacent feature databases into one feature database
- Performs geometry edge matching and feathering and attribute merging, editing, and mismatch detection
Upcoming Releases

• SOCET SET v.5.2
  • SOCET for ArcGIS
  • Users see SOCET SET stereo view port in ArcGIS environment
    • Utilize SOCET SET’s rigorous sensor model library in an ArcGIS environment
  • ArcMap/Editor tools now work in 3D (SOCET SET Stereo)
  • Works with personal or multi-user GeoDatabase, or 3D shapefiles
  • Versioning and topology are supported via Arc…
  • Requires SOCET SET v5.2 or later on the Windows platform and ArcMap 8.3 or later
  • Available in November 2004
Upcoming Releases, cont.

• Feature Analyst for SOCET SET
Questions??