

The Product Pipeline of BAE Systems for Photogrammetry & Remote Sensing

Stewart Walker, BAE Systems, San Diego, USA

54th Photogrammetric Week, University of Stuttgart, 9 September 2013

Release of this guide is approved as of 11/01/2013. This document gives only a general description of the product(s) or service(s) offered by BAE Systems and, except where expressly provided otherwise, shall not form part of any contract. From time to time, changes may be made in the products or conditions of supply.



Outline

- BAE Systems
- Geospatial eXploitation Products (GXP)
- Historical background
- Current product palette
- Product roadmap
- Closing remarks

BAE Systems

BAE Systems is a global defense, aerospace and security company employing around 93,500 people worldwide. Our wide-ranging products and services cover air, land and naval forces, as well as advanced electronics, security, information technology, and support services.

- Major operations across five continents
- Customers and partners in more than 100 countries
- Consistently ranked in U.S. Defense Department's list of top ten contractors



Geospatial eXploitation Products (GXP)

The Geospatial eXploitation Products (GXP) business provides licensed software capabilities and geospatial technology R&D. GXP is a commercial group within a defense contractor

- Commercial-off-the-shelf software
- 25 years in commercial mapping and image exploitation
- More than 13,000 licenses installed
- ~190 employees worldwide
- Headquartered in San Diego, Calif., USA
- Regional offices and training centers
 - U.S.: San Diego, Reston, Tampa, Denver, St. Louis, Rome, NY, Plano, TX
 - Cambridge, U.K.
 - Canberra, Australia
 - New Delhi, India

www.baesystems.com/gxp



SOCET SET

- Commercial product derived from military workstations developed in 1980s by Helava Associates and General Dynamics
- Introduced to commercial market autumn 1990; Windows® in 1995
- Based on rigorous photogrammetric foundations, including sensor models, triangulation and elevation extraction
- Thousands of seats in 80 countries
- Version 5.6 introduced in 2011
- Currently in support mode only



VITec

- Developed to support graphics cards before there were standards
- Evolved into software sold in its own right
- Company sold to BAE Systems in 1997
- Focused on military image analysis, with appropriate strengths such as fast display and smooth roaming
- In support mode for several years

SOCET GXP

- Project began in 2002
- Goal was a single product to meet the needs of several groups of users, mainly in defense – image analysts, geospatial analysts, photogrammetrists, mappers, etc.
- First major release to image analysts in 2005
- Huge demands from enthusiastic users changed focus to image analysis capabilities rather than photogrammetry
- Focus moved back to photogrammetry three or four years ago

The products in context: the GXP Enterprise Solution

Release of this guide is approved as of 11/01/2013. This document gives only a general description of the product(s) or service(s) offered by BAE Systems and, except where expressly provided otherwise, shall not form part of any contract. From time to time, changes may be made in the products or conditions of supply.



OPTIMIZE YOUR WORKFLOW — FROM DISCOVERY, TO EXPLOITATION, TO PRODUCT GENERATION.



Get more done with fewer resources — BAE Systems has created an enterprise solution that improves productivity by streamlining the analyst's workflow.

COMMON INDUSTRY DILEMMAS

- In today's enterprise, data does not reside in a single data store
- Statistics show that analysts spend up to 50 percent of their time locating the data for their tasks across different systems, networks, and geographical locations
- Additional time is spent downloading the various types of data found
- Specialized software applications are required to perform analysis and exploitation creating a time-consuming, cumbersome, and costly workflow

The GXP Enterprise Solution

GXP Xplorer® > GXP WebView® > SOCET GXP®

BAE SYSTEMS



Analysts can quickly locate the data they need across the enterprise, instantly view and select the assets for their mission, and easily publish products in industry-standard file formats with push-button export capability.

The GXP Enterprise Solution

GXP Xplorer® > GXP WebView® > SOCET GXP®

BAE SYSTEMS

1. FIND DATA

2. VIEW DATA

3. EXPLOIT DATA

4. BUILD & PUBLISH

5. ACCOMPLISH MISSION

GXP Xplorer

Streamline the data search and discovery process.



BAE Systems developed the GXP Xplorer data management and processing application to maximize the efficiency of enterprise-wide search and discovery.

The GXP Enterprise Solution

BAE SYSTEMS

GXP Xplorer® > GXP WebView® > SOCET GXP®

1. FIND DATA

2. VIEW DATA

3. EXPLOIT DATA

4. BUILD & PUBLISH

5. ACCOMPLISH MISSION

GXP Xplorer

Streamline the data search and discovery process.



1. FIND DATA

2. VIEW DATA

3. EXPLOIT DATA

4. BUILD & PUBLISH

5. ACCOMPLISH MISSION

GXP WebView

A lightweight ELT with the ability to view images instantly.

- Catalog data in place — leverage your investment in existing data stores
- Perform both structured and unstructured searches
- Federate with other GXP Xplorer installations for an enterprise solution
- Perform all tasks in a standard Web browser, no special software required



GXP WebView is built for both the analyst and image analyst. Instantly stream and view data in any format with this lightweight ELT module of GXP Xplorer.

1. FIND DATA

2. VIEW DATA

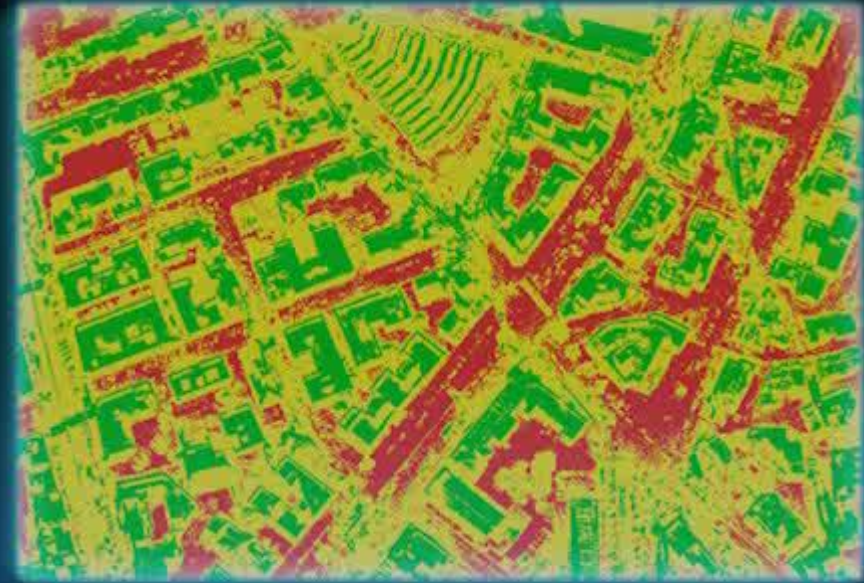
3. EXPLOIT DATA

4. BUILD & PUBLISH

5. ACCOMPLISH MISSION

GXP WebView

A lightweight ELT with the ability to view images instantly.



- Perform accurate measurements with MSP
- Rapidly execute image enhancements
- Quickly annotate and create products
- Perform on-the-fly format conversions

The GXP Enterprise Solution

GXP Xplorer® > GXP WebView® > SOCET GXP®

BAE SYSTEMS

1. FIND DATA

2. VIEW DATA

3. EXPLOIT DATA

4. BUILD & PUBLISH

5. ACCOMPLISH MISSION

SOCET GXP

The premiere geospatial analysis and exploitation tool.



Exploit discovered data in the industry's leading exploitation and image analysis tool.

1. FIND DATA

2. VIEW DATA

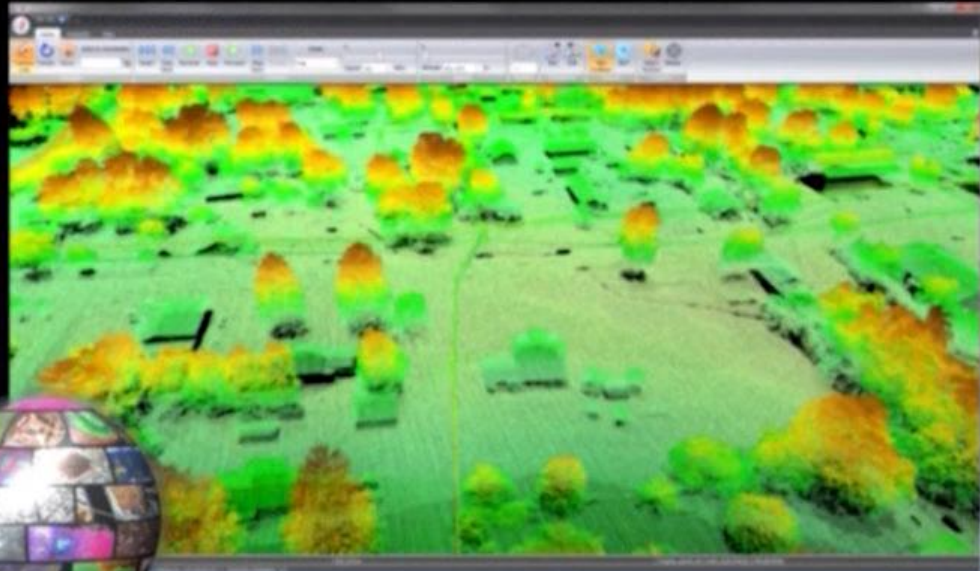
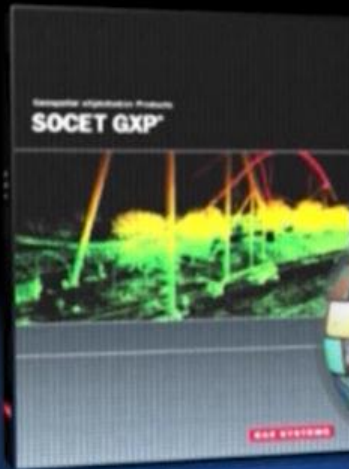
3. EXPLOIT DATA

4. BUILD & PUBLISH

5. ACCOMPLISH MISSION

SOCET GXP

The premiere geospatial analysis and exploitation tool.



- Create detailed custom geospatial products and reports
- Collaborate with colleagues and mission partners in the field
- Preview and exploit local network and wide area network data holdings from GXP Xplorer with the previous SOCET GXP

The GXP Enterprise Solution

GXP Xplorer® > GXP WebView® > SOCET GXP®

BAE SYSTEMS

1. FIND DATA

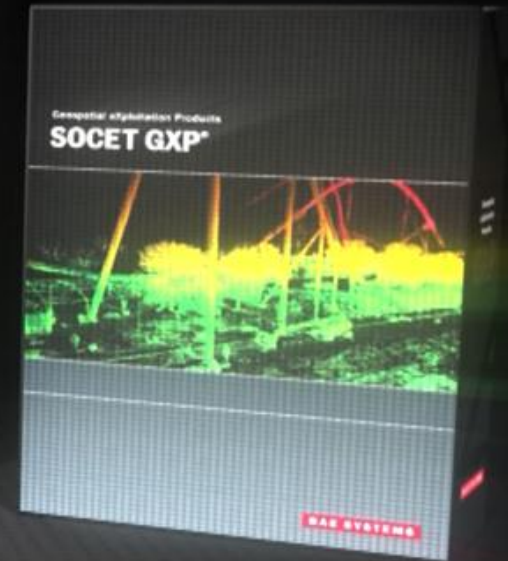
2. VIEW DATA

3. EXPLOIT DATA

4. BUILD & PUBLISH

5. ACCOMPLISH MISSION

Discover how the GXP suite of products can minimize the cost and duration of your mission.



Visit BAE Systems GXP online for more information or to schedule a software demonstration today.

www.baesystems.com/gxp

Sensor models planned for SOCET GXP in 2013

- Identity
- Four Corner
- Frame
- General 3D polynomial
- Direct linear transformation
- SPOT (6/7 in work)
- Landsat (8 in work)
- Panoramic
- Ortho
- Cartographic map
- Image America
- Rational polynomial
- Perspective scene
- USGS DOQ
- Cubic rational polynomial
- Multi polynomial
- Close range
- SAR
- Generic pan
- Generic whiskbroom
- Generic pushbroom
- QuickBird
- SPOT5
- Affine
- WorldView NCDRD
- Orbview-3
- Conformal
- TerraSAR-X
- Radarsat-2
- EROS B
- Formosat-2
- COSMO-SkyMed rigorous
- ASTER
- Frame advanced
- GeoEye-1
- ALOS PRISM RPC
- ALOS PRISM rigorous
- ALOS AVNIR-2
- ALOS PALSAR
- Kompsat-2
- ADS40/80
- CSM
- VisionMap A3
- LiDAR
- RapidEye
- Pleiades
- CartoSat (in work)

Enhancements from third parties

- Esri
 - SEE and SOCET for ArcGIS – links to Geodatabase
 - Triangulation service for ArcGIS 10.2
- Applied Analysis
 - AAIC atmospheric correction; RINAV littoral and riverine analysis
- Cardinal Systems
 - VrOne for feature collection and editing
- Dr. Kruck & Co.
 - File transfer relationship with BINGO
- Safe Software
 - FME for OpenFlight and other format conversions
- Stellacore
 - OrthoVistaXtreme
- TerraGo Technologies
 - Export of 2-D and 3-D GeoPDFs; GeoXray

Development efforts in SOCET GXP

- Sensor modeling
 - Landsat 8, LiDAR, SAR, extra-terrestrial
- Video georegistration
- 3-D visualization
- Automatic Spatial Modeler
 - More sophisticated algorithms than NGATE
 - GPGPU implementation
- Spectral/radiometric capabilities
- Infrastructure to allow separation of core capabilities

Closing remarks

- SOCET SET customers can transition to SOCET GXP
 - SOCET SET will be retired but customers supported
- Overall product direction is towards enterprise solutions
 - Catalog, search and discovery with GXP Xplorer
 - Simple viewing and analysis with WebView
 - Full analytical capabilities with SOCET GXP
 - GXP Mobile App
- New directions include comprehensive online and all-source capabilities
- Next stage is to extract common core capabilities and make them more standalone
 - Use as building blocks for new products – reduce development times
 - Offer to customers in their own right as OGC-compliant web services
- Thank you for the invitation to be an OpenPhoWo Partner
 - Please come to see our product demonstrations