



**HEXAGON**  
GEOSPATIAL

SOLUTION DESCRIPTION

# M.APP X

## FEATURES



M.App X is an enterprise solution for System Integrators that provides easy-to-manage and deploy tools for the exploitation of imagery and the creation of imagery-derived information products and reports. It includes a rich web-based client application for all users to create and share information across the enterprise. M.App X also provides tools to capture geospatial tradecraft and share it as dynamic services across the enterprise.

M.App X can be hosted on-premises or for the Cloud and provides an extensive platform for System Integrators to deliver innovative and industry-specific solutions. M.App X is sold as an enterprise license.

- Platform for System Integrators
- Includes the top features users of geospatial data require for viewing, analyzing, and reporting geospatial information
- Simplified data access and defense workflows
- Can be hosted on-premises (private cloud) or on a public cloud
- Centralized storage and computation
- All software managed in one place, greatly simplifying version management
- Includes a rich web-based client application for all users
- Supports modern browsers
- Workstations can range from desktop to laptop to tablet

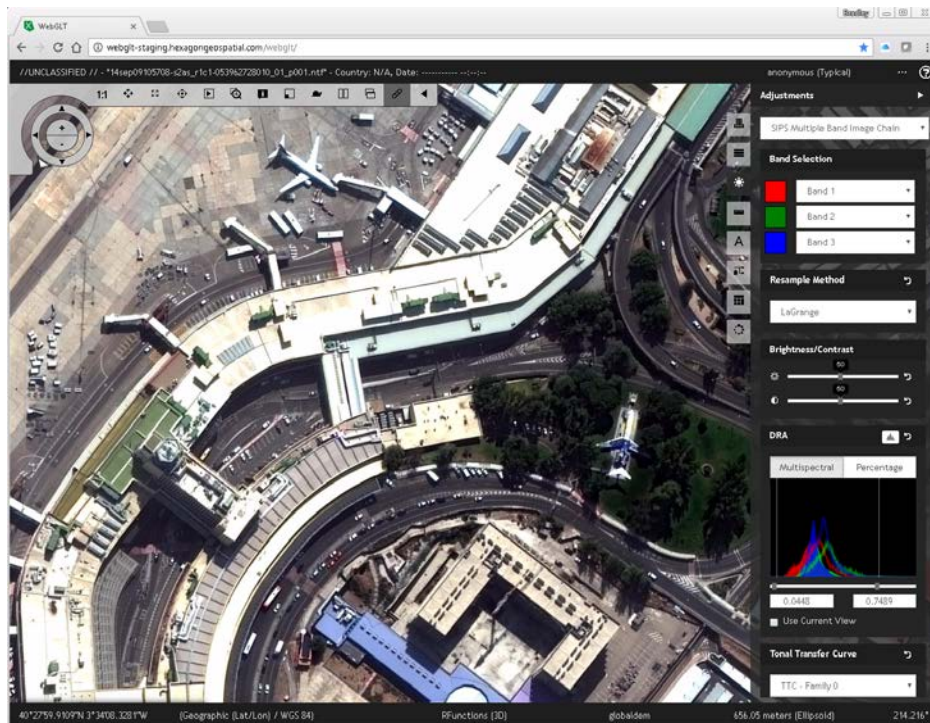


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## KEY CLIENT-SIDE FEATURES



### Smart Control

Viewing control and manipulation all in one location.

- Can be hidden to remove clutter
- Zoom in and out
- Pan up, down, right, left
- Indicate and control rotation
- Control scale (1:1, Fit to Frame, Fill Frame, Zoom to Area)
- Display feature attribute information
- Control overviewwindow
- Track areas viewed (Snail Trail)
- Split and dual screen with linking



### Fast Image Display

- Display images in image space
- Display images in map space
- Display images in stereo
- Geometric and radiometric image adjustments are applied on the fly, preserving image integrity





### Overview Window

- Shows full extent and orientation of image
- Current area of view in red indicator box
- Indicator box can be moved for quick access to area of the image



### Split Screen, Dual Screen, and Link

- Multiple views within the same tab, or in different tabs
- Use multiple screens to see more
- Link views to facilitate image-to-image comparison



### Panels

Panels provide focused sets of tools.

- Can be collapsed to provide maximum image viewing space
- Functional areas include:
  - Data management (Shoebox)
  - Map management (Contents)
  - Image display quality (Image Adjustment)
  - Precise measurements (Measure)
  - Flexible markup (Annotation)
  - Feature collection and editing
  - Extensible geoprocessing





## Contents – Manage Map Layers

Manage the order of map layers.

- Control layer visibility
- Remove layers
- Control layer opacity (Transparency)
- Control styling of vectors
- Change detection tools for the top layer (Blend, Swipe, Flicker)



## Smart Data Management

A Shoebox is a list of all the working data associated with your open project or projects. The data can be organized by specific groups or images, and can be focused on accomplishing a task.

- Manages and organizes the data per user
- Each user can create one or more Shoeboxes
- Shoeboxes can be shared for collaboration
- Shoeboxes manage:
  - Images
  - Feature sets and collections
  - Terrains
  - Annotations
  - Stereo pairs
  - Other documents





### Dynamically Adjust Imagery

Specific image processing chains, such as SIPS Singleband, SIPS Multiband, SIPS Pseudocolor, Multispectral, Panchromatic, Shaded Relief, and Thematic, are applied on the fly by the server to images. SIPS is the Softcopy Image Processing Standard of the United States National Geospatial-Intelligence Agency (NGA).

- Based on image statistics
- Applied on the server to images on the fly
- Interactive histogram adjustments



### Interactive Change Detection

Compares the top image with those below.

- Swipe moves a split in one of four directions
- Blend fades among the top image and those below
- Flicker cycles the top image on and off



### Precise Mensuration

Measurements use rigorous sensor models.

Measure:

- Position
- Bearing
- Angle
- Height from displacement
- Polygon area and perimeter
- Rectangle from three points
- Circle from center and edge
- Circle from three points on the edge
- Ellipse from center and three points on edge
- Ellipse from four points on the edge



## A Smart Annotation

Create annotation with rich styling using symbols, lines, brushes, polygons, and text.

- Rich styling for lines and fills
- Extensible symbol sets (PNG files)
- Coordinates are reported and stored in map space to facilitate overlay on other imagery
- Text can have callout box
- Text can create sequences and coordinate information
- Annotation files can be named and saved in current Shoebox



## Reports

Reports are generated from the current view using selectable templates.

- Templates are HTML with replaceable tags for the various map elements
- Metadata fields are definable and editable in the right-hand panel
- Report is dynamic
  - Map can be scaled, panned, and rotated
  - Text fields can be edited and are updated immediately
  - Scale bar and North Arrow update appropriately
- Print to PDF or save the map as a PowerPoint file



## Feature Collection

Create, replace, update, and delete features from a WFS-T service.

- Collect 2D or 3D coordinates
- Collect in image space and use the sensor model to extract precise ground coordinates
- Edit attributes on one or many features
- Create and manage multipart geometries





## Stereo Display and Point Measurement

Create epipolarstereo pairs.

- Manage stereo pairs in the Shoebox
- Adjust stereo display
- Make stereo point measurements using the cursor



## Geoprocessing

Extensible set of geoprocessingtools,including:

- Terrain Profile
- Line of Sight
- Create KML Paths for Google Earth
- Generate missingNITF reduced resolution data sets (RSETs)
- Helicopter Landing Zone
- Raster Expurgation
- Image to Image Change Detection
- Mosaic images
- Create Slope Map
- Create Aspect Map
- Adjust Georeferencing 2D and 3D
- Automatic Point Measurement
- Orthorectifyimagery
- Generate Epipolar Stereo Pairs







### Interactive Line of Sight

Create Line of Sight maps showing only those areas visible (or invisible) from a specified point.

- User-selectable terrain source
- User-defined observer and target heights
- Green indicates visible
- Red indicates not visible



### 2D and 3D Georeferencing

Assign map coordinates to image data and resample the pixels of the image to conform to the map projection grid.

- Collect points using one screen or two
- Use automated point matching to find tie points
- Use 2D models with least squares adjustment
- Use 3D models with bundle adjustment
- Match image to image
- Reference scanned map to image



### Web-based Spatial Recipe Editor

Build, share, and consume tradecraft in spatial recipes created in the web-based Spatial Recipe Editor. Drag and drop operators and existing recipes to the canvas, connect them, then publish and deploy as a service.

- Create new services
- Hundreds of basic operators
- Driven by the Spatial Modeler/RecipeEngine
- Can be extended in two ways:
  - Command line operators to access third party apps
  - Spatial Modeler Software Developer Kit (SMSDK) custom operators





### Spatial Modeler SDK (SMSDK)

C/C++ toolkit for building, modifying, and running workflows on geospatial data.

- Extensible via a plugin mechanism
- Used to build add-ons for the Spatial Modeler/Recipe Engine

## SERVER-SIDE OVERVIEW

M.App X is installed onto a server – no software is installed on the client systems. Instead M.App X provides a lightweight client that runs in a modern HTML 5 browser.

### For a Single Node Environment a minimum configuration (6-8 users) would be:

Hardware:

- Quad Core Xeon Processor 2.9 GHZ or better
- 16GB RAM or better
- 60GB System Disk or better
- 300GB Data Disk or better (depends on the amount of data)
- GB Network connectivity

Software:

- Windows Server 2012 R2

### For a Clustered Environment

The software can be configured and installed in a multi-node environment. The design of that environment depends upon factors such as number of users, type of processing to be done, amount and type of data to be served.

### Integration, Configuration and Customization

- Authentication - M.AppX is meant to integrate into an existing infrastructure, and therefore user authorization must be configured before launching the M.App X client
- Report Templates – Defined using HTML 5 based templates
- Symbols – Add additional PNG symbols to the provided set, or plug in a custom symbol service
- Cursors – Add new cursor shapes
- Search – Add custom search interfaces to integrate with an existing data library



- CSM – Add and configure Community Sensor Models (CSM)
- Elevation Source – Define the elevation source to be used for measurements
- Geoprocessing – Add new geoprocessing panels
- Record and Playback – Integrate with record and playback for user commands
- Preferences – Configure Site Preferences for many different aspects of the system

## ABOUT HEXAGON GEOSPATIAL

Hexagon Geospatial helps you make sense of the dynamically changing world. Known globally as a maker of leading-edge technology, we enable our customers to easily transform their data into actionable information, shortening the lifecycle from the moment of change to action. Hexagon Geospatial provides the software products and platforms to a large variety of customers through direct sales, channel partners, and Hexagon businesses. For more information, visit [hexagongeospatial.com](http://hexagongeospatial.com) or contact us at [marketing@hexagongeospatial.com](mailto:marketing@hexagongeospatial.com).

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