

SUITABILITY TEST REPORT

for

**ERDAS[®], Inc.
Imagine, Version 8.2
Solaris**

Mapping Services Component

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Prepared by



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1.0 SCOPE

1.1 Introduction

This Suitability Test Report (STR) defines and records the test preparation and test results from suitability testing the Imagine version 8.2 suite of mapping service applications developed and marketed by ERDAS[®], Inc.

The ERDAS[®], Inc. Imagine product suite utilizes a point-and-click graphical interface for visual analysis of multiple data types, image enhancement and map production. The product suite consists of two core packages, Imagine Vista and Imagine Production. Imagine Vista provides basic GIS functionality, whereas, Imagine Production includes Imagine Vista plus additional analytical capability for more extensive project demands. Purchasing additional add-on modules can also expand the functionality of the core software packages.

1.2 Test Environment

Imagine was suitability tested against command center product line requirements and architectural constraints, utilizing a test workstation comprised of a SUN Ultra 1 installed with Solaris 2.5.1. The results of the testing are documented in this report. The following ERDAS[®], Inc. Imagine core product was tested.

Part Name	Version	Descriptive Name	Manufacturer
Imagine Production	8.2	Imagine 8.2 for Solaris 2.5	ERDAS [®] , Inc.

The following optional modules were also used during testing. These modules are included as part of the Imagine 8.2 product. However, the appropriate key code to activate each additional module must be purchased from ERDAS[®], Inc. before it can be used.

Module Name	Descriptive Name	Manufacturer
Perspective View	3D Perspective Software	ERDAS [®] , Inc.
Image Catalog	Data Management Software	ERDAS [®] , Inc.
OrthoMax	Terrain Mapping and Geopositioning Software	Autometric, VA

2.0 SYSTEM REQUIREMENTS

The following system requirements are recommended by the vendor:

Disk Space	250 MB
Swap Space	110 MB
Memory	32 MB (64 MB when using a 24-bit display)
Window System	Open Windows Version 3.3
Operating System	Solaris 2.5

3.0 TEST RESULTS

The results obtained during testing of the ERDAS[®], Inc. product Imagine are shown in the following table. The table contains the *Criteria Number*, *Criteria Description*, *Test Result*, *Explanation*, and *Test Method*. The test methods used to perform the suitability testing included:

Inspection - consists of investigation, without the use of special equipment or procedures, to determine compliance with requirements. Inspection may include comparison of requirements to the vendor supplied product, documentation, and/or information.

Test - is the evaluation of functional operation by use of equipment or instrumentation, simulation techniques, and the application of established principles and procedures to determine compliance.

4.0 CRITERIA SOURCE REFERENCES

The criteria used in the suitability testing process were developed from the following source references:

- Interoperable Mapping Software (IMS) GOTS/COTS Functional Report, DMA, 25 Aug 1995 draft report.
- IMS COTS/GOTS Market Survey, DMA RFI draft, undated draft.
- Product Assessment Report (PAR) for the Geographic Information System (GIS) component for the Portable, Reusable, Integrated Software Modules (PRISM) Program, 11 May 1993.

Criteria Number	Criteria Description	Test Result	Explanation	Test Method
1.0	<i>Architectural Characteristics</i>			
1.1	The Mapping Services processes are self-contained to allow a potential user to easily evolve their environment to meet changing requirements (modular).	Yes		Inspection
1.2	The Mapping Services distributes its processes among servers or workstations allowing users to configure their particular application to meet different domain requirements and architectures.	Yes		Inspection
1.3	The Mapping Services provides modular, add-on capabilities which can selectively be integrated into specific applications, allowing developers/users to select only that portion of the total functionality they require.	Yes		Inspection
1.4	The Mapping Services runs on a variety of platforms.	Yes		Inspection
1.5	The Mapping Services accommodates a variety of operating systems that include but are not limited to POSIX or POSIT compliant.	Yes		Inspection
2.0	<i>Implementation Constraints</i>			
2.1	The Mapping Services supports X11 Release 4 or higher.	Yes		Inspection
2.2	The Mapping Services supports Open Systems Foundation/Motif graphical user interface style guide.	Yes		Inspection
2.3	The Mapping Services is POSIX and/or Windows (3.1, 3.11, NT, 95) compliant.	Yes		Inspection
2.4	The Mapping Services does NOT assume a stand-alone environment, e.g., does not capture system interrupts.	Yes		Inspection
3.0	<i>Security Features</i>			
4.0	<i>Mapping Services Requirements</i>			
4.1	The Mapping Services supports standard Defense Mapping Agency (DMA products (ADRG, DCW, WVS, WDBII, DTED), plus the ability to import/register imagery.	Yes	ADRG and DTED are supported directly, however, DCW, WVS and WDBII must be imported using the Vector Product Format.	Inspection
4.2	The Mapping Services supports map projections:	Yes		Inspection
4.2.1	Mercator	Yes		Testing
4.2.2	Oblique Mercator (Hotline)	Yes		Testing
4.2.3	Transverse Mercator	Yes		Testing
4.2.4	Orthographic	Yes		Testing
4.2.5	Azimuthal Equal Area	Yes		Testing
4.2.6	Universal Transverse Mercator (UTM)	Yes		Testing
4.2.7	Stereographic	Yes		Testing
4.2.8	Polar Stereographic	Yes		Testing
4.2.9	Gnomonic	Yes		Testing
4.2.10	Azimuthal Equidistant	Yes		Testing

Criteria Number	Criteria Description	Test Result	Explanation	Test Method
4.2.11	Three-Dimensional	Yes		Inspection
4.3	The Mapping Services supports coordinate transformations between UTM, latitude/longitude, radians, and pixels.	Yes	UTM, latitude/longitude and radians are supported. However, pixels are not supported.	Testing
4.4	The Mapping Services supports calculations:	Yes		Inspection
4.4.1	The Mapping Services computes and display range rings from a given point.	No		Inspection
4.4.2	The Mapping Services supports Range:	Yes		Inspection
4.4.2.1	Distances can be generated based on Great Circle	No		Inspection
4.4.2.2	Distances can be generated based on Rhumb Line	No		Inspection
4.4.2.3	Distances can be generated based on Rectangular Lat/Long algorithms.	Yes		Testing
4.4.3	The Mapping Services supports Bearing:	Yes		Inspection
4.4.3.1	True North	Yes		Testing
4.4.3.2	Magnetic North.	No		Inspection
4.4.4	The Mapping Services supports Line of Sight.	Yes		Testing
4.4.5	The Mapping Services supports Radar Coverage/Fire Fan (sensor output simulation, threat envelopes):	Yes	This requires an additionally purchased module, "GSD" (ERDAS), customized for military users.	Inspection
4.4.6	The Mapping Services supports trial Intercept Calculations.	No		Inspection
4.4.7	The Mapping Services supports Azimuth.	Yes	This requires an additional module, "Imagine Perspective View" (ERDAS).	Testing
4.4.8	The Mapping Services supports spatial queries (e.g., closest approach).	Yes	This is a limited capability. However, the following can be used to perform spatial queries: GIS Analysis/Clump/Modeler to locate contiguous blocks of GIS classes or group GIS clumps or use AOI in queries and/or modeler to select GIS classes within a specific area.	Testing
4.4.9	The Mapping Services supports Point-to-point slope.	Yes	This requires an additional module, "Imagine Perspective View" (ERDAS).	Testing
4.4.10	The Mapping Services supports Terrain shading.	Yes	This requires an additional module, "Imagine Perspective View" (ERDAS).	Testing
4.4.11	The Mapping Services supports Area calculation.	Yes		Testing
4.4.12	The Mapping Services supports Volume calculation.	No		Testing
4.4.13	The Mapping Services supports MIN/MAX elevation readout.	Yes	This requires an additional module, "Imagine Perspective View" (ERDAS).	Testing
4.4.14	NOT USED			
4.4.15	The Mapping Services supports Terrain masking (by area).	Yes		Testing
4.4.16	The Mapping Services supports Shortest path along network.	No		Inspection

Criteria Number	Criteria Description	Test Result	Explanation	Test Method
4.4.17	The Mapping Services supports Spatial adjacency search.	No		Testing
4.4.18	The Mapping Services supports Nearest neighbor search.	Yes		Testing
4.4.19	The Mapping Services supports Optimal path.	No		Inspection
4.5	The Mapping Services supports contours:	Yes		Inspection
4.5.1	Spacing	Yes		Testing
4.5.2	Labeling	Yes	Automatic contour labeling is not a feature. However, contour values can be entered one at a time into a map file containing contours.	Testing
4.5.3	Colors.	Yes		Testing
4.5.4	The Mapping Services supports displaying land contours in 3D	Yes	This requires an additional module, "Imagine Perspective View" (ERDAS).	Testing
4.5.4.1	Allows specification of vertical exaggeration.	Yes	This requires an additional module, "Imagine Perspective View" (ERDAS).	Testing
4.5.4.2	Allows specification of position of illumination/light source.	Yes		Testing
4.5.4.3	Allows surface rendering (as a cartographic display operation).	Yes		Testing
4.6	The Mapping Services supports latitude/longitude grids:	Yes		Inspection
4.6.1	Spacing	Yes		Testing
4.6.2	Labeling	Yes	This requires an additional module, "Image Catalog" (ERDAS).	Testing
4.6.3	The Mapping Services allows setting grid line attributes:	Yes		Testing
4.6.3.1	Weight and style	Yes		Testing
4.6.3.2	Colors	Yes		Testing
4.6.4	The Mapping Services allows turning off and on of map features.	Yes		Testing
4.6.5	The Mapping Services displays with annotation at a specified scale and coordinate system:	Yes		Testing
4.6.5.1	Neat lines	Yes		Testing
4.6.5.2	grid lines	Yes		Testing
4.6.5.3	tick marks	Yes		Testing
4.6.5.4	cross hairs.	Yes		Testing
4.7	The Mapping Services supports processing of overlays:	Yes		Testing
4.7.1	Saving	Yes		Testing
4.7.2	Loading/Activating	Yes		Testing
4.7.3	Creating	Yes		Testing
4.7.4	Editing	Yes		Testing
4.7.5	Deleting	Yes		Testing

Criteria Number	Criteria Description	Test Result	Explanation	Test Method
4.7.6	Linking to Map	Yes		Testing
4.7.7	The Mapping Services allows selective display of overlay from Vector Data:	Yes		Inspection
4.7.7.1	Text	Yes		Testing
4.7.7.2	Symbols	Yes		Testing
4.7.7.3	Rivers	Yes	Overlays that include these attributes as separate entity options are not supplied. However, a representation of these can be created on a separate vector layer and recognized as a representation of this entity.	Testing
4.7.7.4	Roads	Yes	Overlays that include these attributes as separate entity options are not supplied. However, a representation of these can be created on a separate vector layer and recognized as a representation of this entity.	Testing
4.7.7.5	Rails	Yes	Overlays that include these attributes as separate entity options are not supplied. However, a representation of these can be created on a separate vector layer and recognized as a representation of this entity.	Testing
4.7.7.6	Boundaries	Yes	Overlays that include these attributes as separate entity options are not supplied. However, a representation of these can be created on a separate vector layer and recognized as a representation of this entity.	Testing
4.7.7.7	Urban	Yes	Overlays that include these attributes as separate entity options are not supplied. However, a representation of these can be created on a separate vector layer and recognized as a representation of this entity.	Testing
4.7.7.8	Vegetation.	Yes	Overlays that include these attributes as separate entity options are not supplied. However, a representation of these can be created on a separate vector layer and recognized as a representation of this entity.	Testing
4.7.8	The Mapping Services supports selection of Vector Data Only.	Yes		Testing
4.7.9	The Mapping Services supports selection of Raster Data Only.	Yes		Testing
4.7.10	The Mapping Services supports selection of both Vector and Rater Data.	Yes		Testing
4.7.11	The Mapping Services supports boolean AND, OR, XOR, NOT overlay operators for vector data:	No		Testing
4.7.11.1	polygon in polygon	No		Testing
4.7.11.2	point in polygon	No		Testing
4.7.11.3	point in line	No		Testing
4.7.11.4	line in polygon.	No		Testing
4.7.12	The Mapping Services supports boolean AND, OR, XOR, NOT overlay operators for raster data:	Yes		Inspection

Criteria Number	Criteria Description	Test Result	Explanation	Test Method
4.7.12.1	polygon in polygon	Yes		Inspection
4.7.12.2	point in polygon	Yes		Inspection
4.7.12.3	point in line	Yes		Inspection
4.7.12.4	line in polygon.	Yes		Inspection
4.7.13	The Mapping Services supports the ability to weigh features within a data category or data categories during the overlay process.	Yes	The different features must be created and placed on separate layers and then arranged manually by layer according to priority.	Testing
4.7.14	The Mapping Services supports the ability to superimpose one data category on another with replacement.	Yes		Testing
4.8	The Mapping Services supports symbology:	Yes		Inspection
4.8.1	The Mapping Services supports User Creation of symbology:	Yes		Inspection
4.8.1.1	The Mapping Services defines icons via icon editor and/or bitmaps.	Yes		Testing
4.8.1.2	The Mapping Services provides icon hook capability of symbology.	Yes		Testing
4.8.2	The Mapping Services symbology supports multiple colors.	Yes		Testing
4.8.3	The Mapping Services symbology is scalable.	Yes		Testing
4.8.4	The Mapping Services symbology is rotatable.	Yes		Testing
4.8.5	The Mapping Services symbology supports associated text:	Yes		Testing
4.8.6	The Mapping Services supports map lines.	Yes		Testing
4.8.7	The Mapping Services supports legends.	Yes		Testing
4.8.8	The Mapping Services supports bar and text scales.	Yes		Testing
4.8.9	The Mapping Services supports north/south arrows.	Yes		Testing
4.8.10	The Mapping Services supports the ability to select point symbols and icons, line types, area fill patterns, and character fonts from existing tables.	Yes		Testing
4.8.11	The Mapping Services supports naming, storing, and retrieving (user created symbols).	Yes		Testing
4.8.12	The Mapping Services supports interactively positioning (user created symbols).	Yes		Testing
4.8.13	The Mapping Services ensures that annotations and icons attach to a location and remain in place during panning and zooming.	Yes		Testing
4.8.14	The Mapping Services supports movement of icons on the screen (for tracking purposes):	Yes		Testing
4.8.14.1	Allows automatic updating of tracking information for a target.	Yes		Testing
4.8.14.2	Allows displaying all or a subset of ancillary data on demand and/or constantly, following position changes of icons or points.	Yes		Testing
4.8.14.3	Allows displaying satellite footprint/ground track with position based on current time or user specified time.	Yes	This requires an additional programming module, "C Programmer's Toolkit" (ERDAS).	Inspection
4.8.14.4	Allows a breadcrumb (track history) trail capability.	Yes		Testing

Criteria Number	Criteria Description	Test Result	Explanation	Test Method
4.8.14.5	Allows cross-country movement.	Yes		Testing
4.8.15	The Mapping Services displays catalog information (coverage, scale, contents) of disparate data sources (ADRG, VPF, Arc, etc.)	Yes	This requires an additional module, "Image Catalog" (ERDAS).	Testing
4.9	The Mapping Services supports screen navigation:	Yes		Inspection
4.9.1	Panning	Yes		Testing
4.9.2	The Mapping Services supports Zooming In/out:	Yes		Testing
4.9.2.1	Zoom to top Zoom to the highest (default) level (in the QDR, the full world view).	Yes		Testing
4.9.2.2	Zoom in center (i.e., causes the currently displayed map to be redrawn, using the same center point, at one magnitude of resolution greater).	Yes		Testing
4.9.2.3	Zoom via a bounding box (i.e., map is zoomed to selected area and resized to fill the entire drawing widget).	Yes		Testing
4.9.3	Save Map Views	Yes		Testing
4.9.4	Load Saved Map View	Yes		Testing
4.9.5	Dynamic Map Resizing	Yes		Testing
4.9.6	The Mapping Services generates maps that are larger than the physical dimensions of the output display device that can be composed in a mosaic of the larger area.	Yes		Inspection
4.9.7	The Mapping Services supports coordinate key-in.	Yes		Testing
4.9.8	NOT USED			
4.9.9	The Mapping Services are able to access the current scale (magnitude).	Yes		Testing
4.10	The Mapping Services supports various types of drawing capabilities:	Yes		Inspection
4.10.1	Lines	Yes		Testing
4.10.2	Polygons	Yes		Testing
4.10.3	Ellipses	Yes		Testing
4.10.4	Rectangles.	Yes		Testing
4.10.5	The Mapping Services supports filled objects:	Yes		Inspection
4.10.5.1	Allows for creating, naming, storing, and selecting default fill patterns.	Yes	The product has the capability to select default fill patterns. However, patterns can't be created, saved or named.	Testing
4.10.5.2	Allows for interactively assigning a fill pattern.	Yes		Testing
4.10.5.3	Allows for crosshatch fill areas by specifying hatch color, line type, rotation angle, and distance interval.	Yes	Hatch color, line type and distance interval can be specified, but not the rotation angle.	Testing
4.10.6	The Mapping Services supports points:	Yes		Inspection
4.10.6.1	Allows for creating, naming, storing, and selecting default point symbols	Yes		Testing
4.10.6.2	Allows for interactively assigning a point symbol to a point.	Yes		Testing

Criteria Number	Criteria Description	Test Result	Explanation	Test Method
4.10.7	The Mapping Services supports text:	Yes		Inspection
4.10.7.1	Allows to specify font type, case, character size, color and string orientation for text entries	Yes		Testing
4.10.7.2	Allows capability to automatically position text entries at pre-specified point locations (e.g., polygon centroids), supplemented with the capability to interactively move or rubberband respective entries	Yes		Testing
4.10.8	The Mapping Services supports arcs.	Yes		Testing
4.10.9	The Mapping Services supports creating, naming, storing, and selecting default line patterns for line-based graphic objects (e.g., lines, boxes, circles, etc.):	Yes	The product has the capability to create and select default line patterns. However, the capability to save or name the newly created line pattern did not exist.	Testing
4.10.9.1	Allows the width drawing attribute.	Yes		Testing
4.10.9.2	Allows the style drawing attribute.	Yes		Testing
4.10.9.3	Allows the color drawing attribute.	Yes		Testing
4.10.9.4	The Mapping Services supports various drawing attributes including: XOR, transparent, opaque, filled, open, and closed.	Yes	The product supported transparent, opaque, filled, open and closed drawing attributes. However, not the XOR capability.	Testing
4.10.10	The Mapping Services supports interactive assignment of line type or line width or other definable line attribute to a line or line-based graphics object.	Yes		Testing
4.10.11	The Mapping Services supports interactive assignment of color to a graphics object.	Yes		Testing
4.11	The Mapping Services supports unit data type representations as specified by the operator:	Yes		Inspection
4.11.1	Range (distance) data	Yes		Inspection
4.11.1.1	Nautical miles	Yes		Testing
4.11.1.2	Miles	Yes		Testing
4.11.1.3	Statute miles	Yes		Testing
4.11.1.4	Kilometers	Yes		Testing
4.11.1.5	meters	Yes		Testing
4.11.1.6	feet	Yes		Testing
4.11.2	Allows various units of angle data	Yes		Inspection
4.11.2.1	degrees	Yes		Testing
4.11.2.2	mils	No		Inspection
4.11.2.3	radians	Yes		Testing
4.11.3	Allows various precision of displayed UTM data	Yes		Inspection
4.11.3.1	1000 meters	Yes		Testing
4.11.3.2	100 meters	No		Testing

Criteria Number	Criteria Description	Test Result	Explanation	Test Method
4.11.3.3	10 meters	No		Testing
4.11.3.4	1 meter	Yes		Testing
4.11.4	Allows various units for position data	Yes		Inspection
4.11.4.1	Lat/Long Degrees, Minutes and Seconds	Yes	This requires an additional module, "Imagine OrthoMax" (ERDAS).	Inspection
4.11.4.2	Lat/Long in Decimal Degrees	Yes		Testing
4.11.4.3	Lat/Long Packed	Yes		Testing
4.11.4.4	UTM with sheet numbers	No		Testing
4.11.5	Allows various precision of displayed lat/long data	Yes	This requires an additional module, "Imagine Perspective View" (ERDAS).	Testing
4.11.5.1	0 decimals	Yes	This requires an additional module, "Imagine Perspective View" (ERDAS).	Testing
4.11.5.2	1 decimal	Yes	This requires an additional module, "Imagine Perspective View" (ERDAS).	Testing
4.11.5.3	2 decimals	Yes	This requires an additional module, "Imagine Perspective View" (ERDAS).	Testing
4.11.5.4	4 decimals	Yes	This requires an additional module, "Imagine Perspective View" (ERDAS).	Testing
4.11.6	Allows various units of speed data	Yes	This requires an additional module, "Programmers' Toolkit" (ERDAS).	Inspection
4.11.6.1	Knots	Yes	This requires an additional module, "Programmers' Toolkit" (ERDAS).	Inspection
4.11.6.2	miles per hour	Yes	This requires an additional module, "Programmers' Toolkit" (ERDAS).	Inspection
4.11.6.3	kilometers per hour	Yes	This requires an additional module, "Programmers' Toolkit" (ERDAS).	Inspection
4.11.6.4	mach	Yes	This requires an additional module, "Programmers' Toolkit" (ERDAS).	Inspection
4.11.6.5	meters per second	Yes	This requires an additional module, "Programmers' Toolkit" (ERDAS).	Inspection
4.11.7	Allows various units of altitude data	Yes		Inspection
4.11.7.1	Feet in thousands	Yes	These units are not provided automatically, however, the height value can be entered, placed and sized manually. A note must then be created and placed on the map image specifying what the altitude value represents.	Testing
4.11.7.2	Feet in hundreds	Yes	These units are not provided automatically, however, the height value can be entered, placed and sized manually. A note must then be created and placed on the map image specifying what the altitude value represents.	Testing
4.11.7.3	feet	Yes		Testing
4.11.7.4	meters.	Yes		Testing

Criteria Number	Criteria Description	Test Result	Explanation	Test Method
4.12	The Mapping Services supports location functions:	Yes		Inspection
4.12.1	Go to a specified point:	Yes		Testing
4.12.1.1	Accept point specification in latitude/longitude.	Yes		Testing
4.12.1.2	Accept point specification in UTM.	Yes		Testing
4.12.1.3	Accept point specification in cartesian (radian) coordinates.	No		Testing
4.12.2	Identify location of a point:	Yes		Testing
4.12.2.1	Accept point specification in latitude/longitude.	Yes		Testing
4.12.2.2	Accept point specification in UTM.	Yes		Testing
4.12.2.3	Accept point specification in cartesian (radian) coordinates.	No		Testing
4.13	The Mapping Services supports selection of spatial or attribute data:	Yes		Testing
4.13.1	Within a specified rectangular area.	Yes		Testing
4.13.2	Within a specified circular area.	Yes		Testing
4.13.3	Within a specified polygonal area.	Yes		Testing
4.13.4	By feature name or groups of names.	Yes	This can be accomplished by placing data on a separate layer and naming the layer in such a way that the name reflects the data contained on the layer.	Testing
4.13.5	By boolean retrievals on attributes.	Yes		Inspection
4.13.6	By graphic hooks (e.g., digitized point).	Yes		Testing
4.14	The Mapping Services supports capabilities to restructure information for display enhancement:	Yes		Inspection
4.14.1	Allows interactive or automatic joining of geometrically adjacent data resolving gaps and overlaps within default or user-specified tolerances.	Yes		Testing
4.14.2	Allows modification of raster cell size through re-sampling.	Yes		Testing
4.14.3	Allows reduction of unnecessary coordinate detail (weeding) while retaining corner points, general sinuosity, and shape.	Yes		Testing
4.14.4	Allows smoothing of line data to recover general sinuosity and shape.	Yes		Testing
4.14.5	Allows generation of contours from either random or gridded Z value data points, and conversely generate gridded Z value data points from contour data.	Yes		Testing
4.14.6	Allows generation of a triangulated irregular network from random or gridded Z value data points or from contour data.	Yes	This requires an additional module, "OrthoMax" (ERDAS).	Inspection
4.14.7	Allows generation of gridded data or contour data from a triangulated irregular network.	Yes	This requires an additional module, "OrthoMax" (ERDAS).	Inspection
4.14.8	Allows constraining of contour generation by specifying barriers (e.g, fault lines) or constraints (e.g., ridge and stream lines).	Yes	This requires an additional module, "OrthoMax" (ERDAS).	Inspection
4.14.9	Allows image registration.	Yes		Testing
4.14.10	Allows image warping.	Yes		Testing

Criteria Number	Criteria Description	Test Result	Explanation	Test Method
4.15	The Mapping Services supports raster cell operations:	Yes		Inspection
4.15.1	Allows capability to assign binary (0/1), discrete (0-32768) or real continuous data values to cells in a raster data set.	Yes	Binary and discrete values can be assigned from 0 to 1. However, each time a value greater than 1 is assigned, the value automatically reverts back to 1.	Testing
4.15.2	Allows capability to perform mathematical operations on two or more raster data categories:	Yes		Testing
4.15.2.1	add	Yes		Testing
4.15.2.2	subtract	Yes		Testing
4.15.2.3	multiply	Yes		Testing
4.15.2.4	divide	Yes		Testing
4.15.2.5	minimum	Yes		Testing
4.15.2.6	maximum.	Yes		Testing
4.15.3	The Mapping Services supports capability to perform mathematical operations on a single raster data category:	Yes		Testing
4.15.3.1	exponentiate	Yes		Testing
4.15.3.2	logarithm	Yes		Testing
4.15.3.3	natural logarithm	Yes		Testing
4.15.3.4	absolute value	Yes		Testing
4.15.3.5	sine/arcsine	Yes		Testing
4.15.3.6	cosine/arccosine	Yes		Testing
4.15.3.7	tangent/arctangent.	Yes		Testing
4.15.4	The Mapping Services supports capability to replace cell values with a new value reflecting some mathematical combination of neighborhood cell values:	Yes		Testing
4.15.4.1	average	Yes		Testing
4.15.4.2	maximum	Yes		Testing
4.15.4.3	minimum	Yes		Testing
4.15.4.4	total	Yes		Testing
4.15.4.5	most frequent	Yes		Testing
4.15.4.6	least frequent	Yes		Testing
4.15.4.7	mean deviation	Yes		Testing
4.15.4.8	standard deviation	Yes		Testing
4.15.4.9	user defined.	Yes		Testing
4.16	The Mapping Services supports supervised and unsupervised clustering capability.	Yes		Testing

Criteria Number	Criteria Description	Test Result	Explanation	Test Method
4.17	The Mapping Services supports generation of slope, aspect, and sun intensity data categories.	Yes	This requires an additional module, "Imagine Perspective View" (ERDAS).	Testing
4.18	The Mapping Services supports generation of 3D orthographic and two-point perspective view plots of gridded surfaces or other Z value data categories.	Yes	This requires an additional module, "Virtual GIS" (ERDAS).	Inspection
4.19	The Mapping Services supports composition of displays interactively or use default map composition layouts.	Yes		Testing
4.20	The Mapping Services supports the capability to specify the location, size, scale, and orientation of multiple view ports on a single display.	Yes		Testing
4.21	The Mapping Services supports access to control cursor type and position:	Yes		Testing
4.21.1	Coordinate readouts	Yes		Testing
4.22	The Mapping Services supports access to position of cursor.	Yes		Testing
5.0	<i>Interfaces to External Devices</i>			
5.1	The Mapping Services supports hardcopy output to standard laser printer.	Yes		Inspection
5.2	The Mapping Services supports hardcopy output to a plotter.	Yes		Inspection
5.3	The Mapping Services supports importing of standard DoD imagery products as scanned/electronic map data.	Yes		Inspection
5.4	The Mapping Services supports importing of standard DoD imagery products as scanned/electronic photographic data.	Yes		Inspection
5.5	The Mapping Services supports reading/displaying data formats directly from source media.	Yes		Inspection
5.6	The Mapping Services supports manual digitizing.	Yes		Inspection
5.7	The Mapping Services supports scanner interface.	No		Testing
6.0	<i>User Language</i>			
6.1	The Mapping Services supports languages:	Yes		Inspection
6.1.1	C	Yes		Inspection
6.1.2	C++	No		Inspection
6.1.3	The Mapping Services supports Ada:	No		Inspection
6.1.3.1	Allows Ada bindings to POSIX (IEEE 1003.5).	No		Inspection
6.1.3.2	Allows Ada bindings to embedded SQL (ANSI X 3.168).	No		Inspection
6.1.4	Proprietary/closed	No		Inspection
6.1.5	User command macro.	Yes		Inspection
6.2	The Mapping Services has a development environment integrated to the toolkit/runtime.	Yes		Inspection
6.3	The Mapping Services supports toolkit implementation:	Yes		Inspection
6.3.1	Allows for building of macros, shell scripts, and/or batch files to	Yes		Inspection

Criteria Number	Criteria Description	Test Result	Explanation	Test Method
	automatically execute complex functions from an aggregate of simpler individual functions.			
6.3.2	Allows error handling that can be redefined and controlled by the developer via API.	Yes		Inspection
6.3.3	Allows ability to develop custom mapping applications.	Yes		Inspection
6.3.4	Allows existence of an API for customizing applications.	Yes		Inspection
6.3.5	Allows tools for developing custom applications.	Yes		Inspection
6.3.6	Allows macro commands for creating working procedures.	Yes		Inspection
6.3.7	Allows linking to external function libraries.	Yes		Inspection
6.4	The Mapping Services vendor provides technical support: Dedicated technical support staff	Yes		Inspection
6.4.1	The Mapping Services vendor provides material support (other than documentation) e.g., code templates.	Yes		Inspection
6.4.2	The Mapping Services vendor provides users manual and tutorials.	Yes		Inspection
6.4.3	The Mapping Services vendor provides hardcopy documentation.	Yes		Inspection
6.4.4	The Mapping Services vendor provides training/end-user learning support.	Yes		Inspection
6.4.5	The Mapping Services vendor provides help screens.	Yes		Inspection
6.4.6	The Mapping Services vendor establishes third-party development programs.	Yes		Inspection
6.4.7	The Mapping Services vendor provides system integration support.	Yes		Inspection
6.4.8	Hotline support.	Yes		Inspection
7.0	Performance			
7.1	NOT USED			
7.2	The Mapping Services includes vector redraw in less than 1second.	Yes		Testing
7.3	The Mapping Services includes raster redraw in less than 5 seconds.	Yes		Testing
7.4	The Mapping Services supports 3D mapping functions should execute in less than 30 seconds (average).	Yes	This requires an additional module, "Imagine Perspective View" (ERDAS).	Testing
7.5	The Mapping Services accommodates real-time mapping display of 2,000 objects without degradation.	Yes	This requires an additional programming module, "C Programmer's Toolkit" (ERDAS).	Inspection