



# ESRI—The Open GIS Platform

*Support for industry standards and protocols engineered for building interoperable geospatial systems*

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## Unrivalled Support for Standards

ESRI continues to advocate the need for open access to geographic data and functionality through support for widely adopted and practical standards. This document presents an overview of ESRI's supported standards.

The ArcGIS platform is designed and engineered with interoperability in mind and conforms to the open standards that are necessary to implement enterprise systems. Users can incorporate GIS in any application, on a variety of computing and mobile devices, and use geographic information in almost any format, accessed from databases or delivered as Web services.

This enables defense and intelligence organizations to implement ArcGIS in a service oriented architecture as a horizontal, cross-cutting spatial information and application infrastructure. System integrators and other developers can implement capabilities on this infrastructure by using the open programming interfaces of the ArcGIS platform.

This table lists standards and interoperability protocols that ESRI supports in its range of software products. It divides the standards into three domains: information technology (IT); defense & intelligence; and geospatial standards.

This is a sample of standards supported by ESRI; not all standards, formats, and protocols are listed. Read more about ESRI's commitments to standards and interoperability at [www.esri.com/standards](http://www.esri.com/standards).

	Information Technology	Defense/Intelligence Technology	Geospatial
<b>Standards for Platforms, Programming, Security and Application Development</b>	Windows; Linux; Sun Solaris; Windows CE 2.11, CE 2.12, CE 3.0, CE 4.2, CE 5.0; Windows Mobile 2003; Windows Mobile 2003 Second Edition; Windows Mobile 5.0; Microsoft ActiveSync 3.0, 3.1, 3.5, 3.6, 3.7, 3.8; HTML Web browsers; central DBMS servers across a range of platforms; ArcGIS is enabled for grid computing, which scales well in blade computing frameworks; APIs for C++, .NET; Java (J2ME, J2SE, J2EE, ASP/JSP); COM; SOA; Python; Security Protocols (LDAP, SSO, HTTPS, WSS)	<p>Defense Security Compliance ready—for example, DGINet created with ESRI technology has passed DoDIIS Independent Test Authority (ITA) testing in order to operate on JWICS.</p> <p>Commercial Joint Mapping Toolkit (CJMTK) is the standard geospatial toolkit for the Defense Information Infrastructure Common Operating Environment (DII-COE) and Network Centric Enterprise Services (NCES) and is based on the ArcGIS Platform.</p>	
<b>Content Description Standards</b>	Dublin Core Metadata Element Set ISO 15836; OASIS Common Alerting Protocol	<p>Spatial Data Standard for Facilities, Infrastructure and Environment (SDSFIE - INCITS 353:2004); Defense Installation Spatial Data Infrastructure (DISDI) compliant and capable; Digital Nautical Chart (DNC) MIL-PRF-89023; Digital Flight Information Publication (DFLIP) MIL-PRF-89049/8; DNC Version 2 MIL-PRF-89049/4; Digital Topographic Data (DTOP) 1-5 MIL-PRF-89049/3; Digital Topographic Data Minimum Essential Data Set (DTOP-MEDS) MIL-PRF-89049/6; Foundation Feature Data (FFD) MIL-PRF-89049/1; Littoral Warfare Data (LWD) MIL-PRF-89049/7; Tactical Oceanographic Data Level 0 (TOD0) MIL-PRF-89049/10; Tactical Ocean Data Level 1 (TOD1) MIL-PRF-89049/11; Tactical Ocean Data Level 2 (TOD2) MIL-PRF-89049/12; Urban Vector Map (UVMAP) MIL-PRF-89035A; Vector Map Level 0 - 2 (VMap L 0-2) MIL-PRF-89049/2; Vector Relocatable Target Assessment Data (VRTAD) MIL-PRF-89049/13; Vector Vertical Obstruction Data (VVOD) MIL-PRF-89049/9; VPF Interim Terrain Data (VITD) MIL-PRF-89040A; World Vector Shoreline Plus (WVSP) MIL-PRF-89049/5; Vector Map Level 0 (VMap 0) MIL-PRF-89039; DIGEST FACC; DGIWG Feature Data Dictionary (DFDD); NSG Feature Data Dictionary (NFDD)</p>	<p>FGDC Metadata; CEN Metadata Profile; WAF; XML; OAI; OGC ISO 19110—Methodology for Feature Cataloging; ISO 19115-Metadata; ISO/TS 19139 Metadata—XML Schema Implementation; ISO 19106—Profiles; ANSI/FGDC Framework Data Content Standard; ISO 19113—Quality Principles; ISO 19114—Quality Evaluation Procedures</p>
<b>Standards for Basic Geographic Structures</b>		VPF MIL-STD 2407; Digital Geographic Information Exchange Standard (DIGEST) STANAG 7074	<p>ISO 19107—Spatial Schema; ISO 19108—Temporal Schema; ISO 19109—Rules for Application Schema; ISO 19111—Spatial Referencing by Coordinates; ISO 19112—Spatial Referencing by Geographic Identifiers; ISO 19123—Schema for Coverage Geometry; OGC Geography Markup Language (GML); Spatial Data Transfer Standard (SDTS); IHO S-57</p>
<b>Cartographic Standards</b>		<p>Vector Map Level 1 (VMap 1) and 1:250,000 scale Joint Operations Graphic-Air (JOG-A); Vector Map Level 2 (VMap 2) data and 1:50,000 scale Topographic Line Map (TLM); Stereo Airfield Collection Database; Theater Geospatial Databases (TGD) including: Global, Strategic, Tactical, Urban and Image City Maps (ICM); Geospatial Intelligence Feature Database (GIFD) Delivery 4; VMAP Level 2 GIFD Delivery 4; Multinational Geospatial Co-Production (MGCP); GeoBase, GeoFidelis; DoD JOG, TPC, ONC, JNC, GNC Charts; DoD Aeronautical Enroute Charts; DoD Terminal Procedures Chart</p>	<p>ICAO Annex 4 (Aero Charting Standard); Harbor, Approach, Coastal, and General Nautical Charts; USGS Quads; Electronic Navigation Chart (ENC)</p>

	Information Technology	Defense/Intelligence	Geospatial
Data Management Standards	SQL; OLE/COM; Microsoft SQL Server; Oracle 10g, 9i, 8i Tables (nonspatial); Oracle Spatial Relational; Oracle SQL Loader ASCII; IBM DB2 Spatial; IBM DB2 Tables (nonspatial); Informix; INFO; ODBC 1.x, 2.x, 3.x; PostgreSQL Database; Microsoft Access; UML		ISO 19125—Simple Features Access; ISO 19135—Procedures for Registration of Geographic Information
Data Formats Standards	Adobe Illustrator EPS (AI-EPS); Graphic Interchange Format (GIF); JPEG 2000; JPEG File Interchange Format (JFIF JPG); Microsoft Windows Bitmap (BMP); PC Paintbrush (PCX); PICT; Portable Network Graphic (PNG); Tagged-Image File Format (TIFF) versions 4, 5, 6 and later; Adobe Portable Document Format (PDF); Encapsulated Metafile (EMF); Microsoft Excel (.xls); PostScript Color Separates; Text/ASCII; Virtual Reality Modeling Language (VRML); Scalable Vector Graphics (SVG); direct printer output support for Canon Bubble Jet, ENCAD NovaJet, EPSON Stylus Pro Series; Hewlett-Packard Raster Transfer Language; CalComp Raster Format interleaved for inkjet printers; CalComp Raster Format; Versatec Raster Format; Raster Graphics Input	ADRG (ARC Digitized Raster Graphic) MIL-A-89007/ STANAG 7108; NITF 2.0 and 2.1 (National Imagery Transfer Format); RPF/CADRG (Raster Product Format/Compressed ADRG) MILPRF-89038; RPF/CIB (Raster Product Format/Controlled Image Base) MIL-PRF 89041; DTED Level 0, 1, 2 (MIL-PRF-89020A and MIL-PRF-89020B); USRP (UTM Standard Raster Product); ASRP; AML; KMRG; VPF MIL-STD-2407; Digital Geographic Information Exchange Standard (DIGEST) STANAG 7074; EDBS; ASRP (ARC Standard Raster Product); DFAD Levels 1, 2, 1-C, 3-C (Digital Feature Analysis Data); FalconView Reader; ITD/PITD (Interim Terrain Data/Planning Interim Terrain Data); SEDRIS Transmittal Formats (STF)—Vector Data Formats (VPF-in-STF [VITD & DTOP], TSGA-in-STF, WARSIM-in-STF, Standard Linear Format (SLF); ITD/PITD (Interim Terrain Data/Planning Interim Terrain Data); Digital Feature Analysis Data (DFAD) Levels 1, 2, 1C, 3C	Aeronautical Information Exchange Model (AIXM); XML version 4.5; ISO 8211 and ISO 19118 Encoding; ArcSDE Raster; AVHRR Dundee; AVHRR ESA SHARP; AVHRR NOAA to NOAA KLM; Digital Bathymetric Database—Variable Resolution (DBDB—V); Digital Ortho Quad JPEG (DOQ JPEG); ENVI Raster Image; ERDAS 7.5 GIS and LAN (*.gis, *.lan); ERDAS IMAGINE (*.img); ERDAS RAW (*.raw); ESRI BIL, BIP and BSQ (*.bil, *.bip, *.bsq); ESRI GRID (*.grd); ESRI GRID Stack (*.stk); ESRI Image Catalogs; Generic Raster Data (BIL, BIP, BSQ); GeoTIFF (*.tif, *.tiff, *.tff); British Columbia Ministry of Environment and Parks (BC MOEP); C60 Format (AED-SICAD); Canadian Centre of Geomatics Interchange Format (CCOGIF) Reader, Writer, Card; Centre for Topographic Information Sherbrooke Data Transfer Format (CTIS/QLF); ComGrafix Data Exchange Format (CGDEF); Comma Separated Value (CSV); CubeWex Multidimensional Data Format (MDF) Writer; Danish National Format—DSFL; Danish National Format (Danish DSFL) XML (XDK); Danish UFO; dBASE; DES  Design Files (DGN) Version 7 and 8; DFD (MultiGen Paradigm); DFK, Digital Map Data Format (DMDF); ESRI ArcInfo Export (E00); ESRI ArcInfo Generate; ESRI ArcSDE 9.0,8.x,3.x; ESRI ArcInfo Coverage; ESRI ArcSDE for Coverages; ESRI Enterprise Geodatabase (SDE); ESRI Geodatabase (XML); ESRI PC ARC/INFO Coverage; ESRI Personal Geodatabase (Access) 8.3,9.0; ESRI File Geodatabase; ESRI Shape; Facet XDR; FME Feature Store (FFS); GATE/ADA; GDF; GDS (Graphic Data Systems); GEODESYS StruMap; GEOgraf (grafbat-ASCII); Geographic Data Management System; Geographix CDF; Gridded Binary (GRIB weather data); Indian Remote Sensing (IRS); JPEG 2000; LANDSAT 7 Fast L7A; NetCDF Multidimensional Data; ISO 12087 Part 5 BILF; NLAPS, Radarsat; SeaWiFs; SPOT CCRS; SunRaster; Thematic Mapper (TM) Landsat; TM Landsat 7 HDF; USGS Digital Orthophoto Quadrangle (DOQ); Vertical Mapper Grid (NGrid); Canadian Digital Elevation Data (CDED DEM)  ERMMapper (*.ers); ERSCN; ERSIS; GRASS; GRD (Surfer: ASCII/Binary); USGS Digital Elevation Model (DEM); Autodesk AutoCAD DWG; Autodesk AutoCAD DXF; Autodesk GIS Design Server (VISION), GINA and Native; Autodesk Map Object Reader; Autodesk MapGuide SDF (binary); Autodesk MapGuide SDL; AutoKa Transfer File (FF); BC Electronic Submission Framework (ESF) ABR; BC Electronic Submission Framework (ESF) FTA GML; BC Electronic Submission Framework (ESF) FTA GML; BC Electronic Submission Framework (ESF) RESULTS GML; BGrund; Geographix CDF; Geogrid OVL/ASC; GEOnet Names Server (GNS); GeoTask; GICAD; Google Earth KML; GPS eXchange format (GPX); Graphic Technologies, Inc. GTViewer Format (GTI GTViewer); GTI/RDB; IBM IFF; IDRISI Vector Format; Incremental Update File (IUF); Intergraph (*.cit ad *.cot); Intergraph FRAMME; Intergraph FRAMME SEF (Standard Exchange Format) Writer; Intergraph G/Technology; Intergraph GeoMedia Access Warehouse (Windows only); Intergraph GeoMedia SQL Server Warehouse; Intergraph MGE; INTERLIS  KLT Atlas ASCII; Landmark ZGF (Zycor Graphics File); Landonline (LandXML); LaserScan Gothic; LaserScan IFF; Latitude DMF; Leica GSI; Leica Independent Data Exchange Format (IDEX); MapGIS; MapGIS ASCII; MapInfo MID/MIF; MapInfo TAB; Mercator MCF; Microstation Geographics V7/V8; MrSID Reader; MZK; Nen1878; NTX Caris and NTX Soundings; PenMetrics GRD; PHOCUS PHODAT; PLANET; PostGIS Database; OGC Geography Markup Language (GML); Ordnance Survey (GB) National Transfer Format (NTF); REGIS; rmDATA MXF; OTBin-STF; SEG-P1; SICAD (SQD); SOTF; SPANS; Spatial Archive and Interchange Format (SAIF); SuperMap; Swedish KF85 (KF85); Swedish MASIK (MASIK); TOP10GML; Topologically Integrated Geographic Encoding and Referencing (TIGER/Line); USGS Digital Line Graph (DLG); VALIS/ASC; WLDGE; Z-MAP (ASCII) Reader; Z-MAP (RAW) Reader; Z-MAP Writer; Run Length Compressed (RLC); ArcSDE Raster Catalog; ESRI Published Map File (PMF); ONORM; OS MasterMap (DNF) (GML-2); Vector Markup Language (VML); XP11 Pixmap (XPM); International Hydrographic Organization IHO S-57 Electronic Data Transfer Standard for Electronic Navigational Charts (ENC)
Standards for Coordinate Systems and Spatial References		2,722 Projected Coordinate Systems Supported (e.g., North American Datum 1927 UTM Zone 19N) and 660 Geographic Coordinate Systems Supported (e.g., World Geographic Coordinate System WGS 1984); MGRS	
Visualization and Analysis Standards	Map, Scene and Globe; OpenGL; OpenSceneGraph; Java™ Binding for the OpenGL® API (JOGL); Dynamic Display; AJAX	MIL-STD 2525 Military Symbols; GeoSym; APP6A	INT-1 (Hydrographic Charting); INCITS 415: 2006 Information technology—Homeland Security Mapping Standard—Point Symbolology for Emergency Management
Standards for Web Services	SOAP; WSDL; UDDI; W3C; AXL; HTML; XML; JSR 168 capable	OGC Web Map Service (WMS); OGC Web Coverage Service (WCS); OGC Web Feature Service (WFS); OGC Web Map Context (WMC); OGC Styled Layer Descriptor (SLD); ISO 19128—Web Map Service Interface; OGC OpenGIS Location-Based Services: Core Services—Part 1, Directory Services—Part 2, Gateway Services—Part 3, Location Utility Service—Part 4, Presentation Service—Part 5, Route Service; OGC Catalog Services—CS-W ebRIM/ISO Metadata and Z39.50 Profiles; ISO 19119—Services	