

iSMART⁵

The iSMART® Enterprise Spatial Suite from eSpatial is a set of software products providing web-deployed and mobile / offline enterprise GIS tools and a deployment platform and rapid development environment for geospatial applications and web services in standard Enterprise IT environments, including Oracle Spatial.

Components

The iSMART Enterprise Geospatial Suite includes the following components:

iSMART Server – A scalable, secure, transactional, multi-user server for custom spatial applications and for eSpatial's applications – GeoPortal and Editor. Runs within industry-standard enterprise java (j2ee) application servers, and uses Oracle spatial databases and Open Geospatial Consortium web services. This includes the **iSMART Web** application framework.

iSMART Developer

- **iSMART Web Developer** – Rapid Development of spatially-enabled web applications: Custom tag libraries (JSP) for web applications; Extension to Macromedia Dreamweaver for authoring of web pages; Plug-in for the Eclipse development environment for code-free definition of application server logic; Extensive documentation; and Sample applications.
- **iSMART Java API** – A rich set of Java objects for custom application development. eSpatial can also provide the source code of iSMART Editor built using this API as a basis for custom application development.

iSMART GeoPortal – A general purpose multi-user pure-web application for viewing (“web map publishing”), editing, and analysing spatial data. May be extended.

This includes:

- **iSMART Data Administration** – easy-to-use web set-up of spatial data in Oracle and geospatial web services, including definition of Maps, and role-based access restriction.
- **iSMART Editor** – a Java applet providing powerful editing capabilities for spatial data. iSMART Editor may be embedded in applications, and may be customised or extended.

- **iSMART Mobile** – iSMART Editor may be used off-line or occasionally connected, with later synchronisation of editing changes to Oracle.

iSMART Open Web Services (OGC) – iSMART provides server and client support for an expanding range of OGC web services and standards, including WMS, WFS, and GML.

iSMART Explorer – An easy-to-use desktop tool to view the contents of Oracle Spatial databases (free for non-commercial personal use).

Key Features

Some of the many functions provided by iSMART are:

Viewing and Analysis: including pan, zoom, locate, search, query, measurement and other. Map layers may be configured for appearance, and toggled on and off either manually or at pre-defined scales.

Digitising: iSMART enables clients to digitise all major spatial data types, including: Lines, Polygons, Symbols, Labels, etc.

Pure Web Editing: All functions including Editing may be provided in a pure web environment with no active-X control, plug-in, applet or download needed in the browser.

Thematics: Definition and display of thematic queries.

Batch and Web Printing: iSMART provides map printing from the server, client, and web, with a user interface to customise print layouts.

Integrated Reporting: May use standard reporting tools in iSMART, including the open source Jasper Reports. This can embed maps and spatially derived data in business reports, and embed reports in iSMART applications.

OGC Web services (WMS, WFS, GML): iSMART can expose all data via OGC WMS and WFS servers and can use data from remote WMS servers.

Metadata - Configure, Enter, View, Search. This capability enables iSMART users to easily find useful spatial data sets and add them into maps for viewing, editing, and analysing across an organisation or the internet. This is also an essential capability for Spatial Data Infrastructures (SDI). It supports ISO 19115 and ISO 15836 (“Dublin Core”)

metadata standards, and provides the ability to define metadata profiles to support various other standards such as eGMS, Gemini and FGDC.

Oracle 10g MapViewer

Now iSMART provides even deeper support for Oracle functionality, including integration with Oracle Mapviewer. This facility enables use of this Oracle application server component for visualising spatial data.

It allows data rendered by Mapviewer to be combined with other data managed by iSMART such as from OGC web services, live / tracking data feeds, image stores, and custom data sources, for display, analysis and editing, and provides iSMART's "out of the box" powerful end user tools for data management, visualisation (GeoPortal), and Editing to Oracle Mapviewer.

It also increases the range of data types that may be viewed using iSMART tools and custom applications (including 10g GeoRaster GRID, and Network Data).

Database

Oracle Spatial / Locator

The native data store for iSMART is Oracle Spatial / Locator. A single iSMART server can access multiple data sources in a **distributed database environment**, with full transactional support.

iSMART includes a **Shapefile Import** utility.

Data Types

Types of spatial data supported include tabular, **vector (SDO)**, **Oracle 10g georaster**, **Oracle 10g Geocode**, **Oracle 10g Topology**; and topology, geo-referenced imagery and GRID for Oracle 9i and 8.

Temporal Data

iSMART supports temporal mark-up and analysis of spatial data.

Live Feeds / Tracking

iSMART can process high volume / multiple live data feeds, directly updating both its in-memory spatial cache and the database.

Custom Data Sources

iSMART allows custom data sources to be added – including live data feeds, proprietary data formats, image servers, etc.

Technical Specifications (selected)

- **OGC:** WMS 1.1.1, GML 2.1.2, WFS 1.1
- **Java,** JavaBeans, EJBs: J2EE 1.3, EJB 2.0
- **Image** output: jpeg, png, tiff, bmp

Software Requirements

User Interface

- **Web Browser (including GeoPortal, PDA)**
Microsoft Internet Explorer v6+ Also Mozilla FireFox 1.0+
- **iSMART Editor and Mobile**
Java J2SE 1.4.2

Application Server

- **Supported Java Application Servers**
Oracle 10g AS (10.1.2), 9iAS (9.03) or OC4J with Java J2SE 1.4.2_03+
- **Supported Operating Systems**
Windows XP, Windows 2003 Server, Windows 2000, RedHat Enterprise Linux 3, Novell SUSE Linux Enterprise Server 9, SUN Solaris 8.

Hardware Requirements

Hardware configuration required depends on the scale of the system to be deployed, likely data sizes, expected load, usage patterns, etc. iSMART is typically deployed with separate application and database servers. It may be clustered for reliability and scalability. Separate web servers may also be deployed.

Development Workstation

/ Minimum Configuration for Server

- **Pentium III 1GHz+, 1 CPU, 1GB+ RAM, 6GB+ Disk**
(For application server, Oracle database, development tools)

The configurations below are recommended for **typical larger scale** deployments.

Database Server

- **Pentium III / Xeon 1GHz+, 2+ CPUs, 8GB+ RAM, 1GB Cache**
- or – **2+ Sun UltraSPARC III CPUs, ...**
(e.g. SunFire 6800 Server)
- **Data-Store: RAID 5+, 100GB+ capacity**
(may be external RAID array)

(May use database clustering with >1 database server)

Application Server

- **Pentium III / Xeon 1GHz+, x2+ CPUs, 16GB+ RAM, 6GB+ Disk, 1GB Cache**

(May cluster application servers. Individual server Specifications are typically reduced when clustered.)

Web Server (optional)

- **Pentium III / Xeon 1GHz+, x2+ CPUs, 2GB+ RAM, 6GB+ Disk**

(May cluster web servers)

User Workstations

- **Any device capable of running a web browser**