

Pure Web Editing

iSMART

iSMART® from eSpatial is a software product for web multi-user business applications incorporating GIS functionality and web services, in standard Enterprise IT environments including Oracle Spatial. iSMART includes capabilities for pure-web spatial editing, powerful enough to replace traditional desktop-installed specialist GIS Tools for a large variety of business solutions.

Introduction

iSMART provides pure web spatial editing components to be embedded in multi-user enterprise-class business applications. This makes use of leading new technologies such as AJAX to provide a Web 2.0 GIS with greatly increased capabilities and responsiveness compared to older Web GIS offerings.

The web editing facility provides a robust and responsive editing capability with session management, undo & redo, locking, etc in addition to a wide range of editing functions. This goes far beyond simple web based redlining capabilities and can be used instead of desktop-installed GIS or CAD tools for a large variety of business solutions.

This is currently being used by a number of organisations including Verizon Communications (for outside plant engineering planning in "Verizon Enterprise Geospatial Application"). (Note that, for mobile / offline use and very rich functionality such as client-side topology validation, iSMART also includes a spatial editing applet. Separate documentation is available for this). Figure: Web Editing Example Application

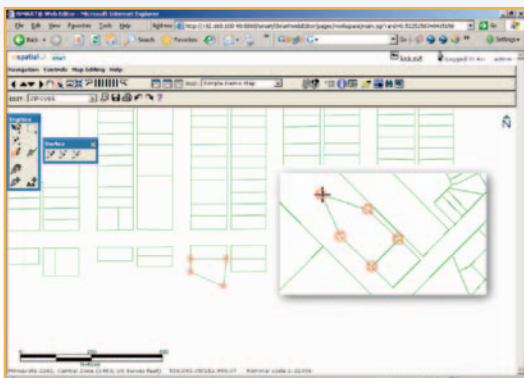


Figure: Web Editing Example Application

Key Features

Some of the many functions provided by iSMART Web Editing are:

- **Pure Web Support:** All functions including editing are provided in a pure web environment with no active-X control, plug-in, applet or download needed in the browser.
- **Map Viewing:** including pan, zoom, zoom to area, zoom to map extents, previous view, control layer and label visibility, locate to co-ordinates. Map layer styling may be configured, and toggled on and off either manually or at pre-defined scales. Layer precedence may be set by administrators and overridden by users. Also Map Bookmarks may be saved and viewed
- **Digitising:** iSMART enables clients to digitise all major spatial data types, including: Lines, Polygons, Symbols, Labels, including the following functions:
 - Linear Element placement, including multi-lines, and arcs in lines
 - Polygon placement, including multi polygons and complex polygons (holes, arc segments...)
 - Point & Symbol placement and moving
 - Polygon, Linear Modification: inserting, moving, and deleting vertices
 - Attribute information viewing and editing
 - Selection –
 - Single Selection of a feature
 - Multiple Selection
 - Select by Buffer from an element
 - Selection within Boundary
 - Delete Feature
 - Move Feature
 - Undo / Redo
 - Delete multiple vertices
 - Decompose complex elements
 - Partial delete of linear elements (Split)
- **Dynamic Snapping** including hot keys, snap options (e.g. to end-points, vertices, center points), and Autotrace, Union, and Convex Hull functions
- **Search:** by attributes and by spatial criteria.



- **Labelling:** Labels may be automatically generated or text entered, may be automatically placed, or dragged. A wide range of labelling options are provided including label positioning & label rotation, font, scalable labels, halo, box, anchor point, offset, duplicate text suppression (with user toggle), partial object labelling, clash detection, user session changes to label style, change label style when moving, SQL Query based labels (including multiple database columns), and option in Layer Control to display labels only for layer..
- **Thematics:** Users may define and display thematic queries, including by range, discrete values, database joins, and spatial and SQL functions.
- **Query Builder:** User Interface to build, save, and execute SQL queries including multiple attributes and tables, and options to highlight results on map, and/or export to Excel.
- **Printing:** iSMART provides map printing with a user interface to customise print layouts. This includes the ability to deliver vector data in PDF files to the web browser for plotting to scale.
- **Role Based Access Control** for data sets and for functions.
- **Web based Administration:** easy-to-use web set-up of spatial data sources, Maps, styling, role-based access restriction, and other options.

Data Sources

The native data store for iSMART is Oracle Spatial / Locator. Spatial data sources supported by iSMART include:

- Vector (SDO) – points, lines, and polygons,
- Oracle 10g Georaster,
- Oracle 10g Geocode
- geo-referenced imagery and Topology are also supported for Oracle Locator and for Oracle 9i.
- OGC Web Map Services (WMS).
- Other Web Map Services: Yahoo Maps¹,
- Tabular (alphanumeric) data.

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

¹ It is necessary to comply with any licensing and other restrictions imposed by Yahoo on the use of their mapping services.

Development

The iSMART Web Editing capability is deployed from iSMART Server – A scalable, secure, transactional, multiuser server for custom spatial applications. This runs within industry-standard enterprise java (j2ee) application servers, and uses Oracle Spatial / Locator databases.

The web editing capabilities are provided from an javascript AJAX API. iSMART provides sample applications with source code and developer's guides, including a fully functional Web Editing Tool which may be used as the starting point for building custom business applications. For completely flexible development there is also the iSMART Java API – A rich set of Java objects for custom application development. See the iSMART suite data sheet for further details, including the range of platforms and software environments supported, and technical specifications.

Benefits

Benefits of iSMART pure web editing for Oracle include:

- **Replace desktop-installed GIS / CAD Tools in business solutions:**
- **No need for desktop user licenses.**
- **Reduced Installation & Maintenance Costs as no desktop installation required.**
- **Consolidated Database for all applications and users enforced through a controlled web user interface rather than tools that can create local files. This gives improved data quality, timely data availability across the organisation and business benefits such as improved Inventory Management.**
- **Script GIS interactions by business task, embedding GIS functions in business workflows. This can greatly increase both productivity and data quality.**
- **The business application and GIS capability use the same standard web application technologies, leading to faster, cheaper development, deployment and maintenance.**