

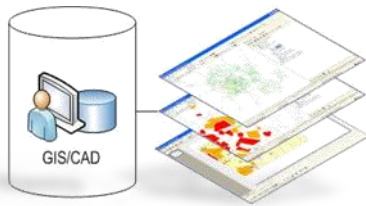
sbs Solutions Overview

The concept is simple: Almost every department within an enterprise benefits greatly when its geospatial information is integrated into mainstream business systems.



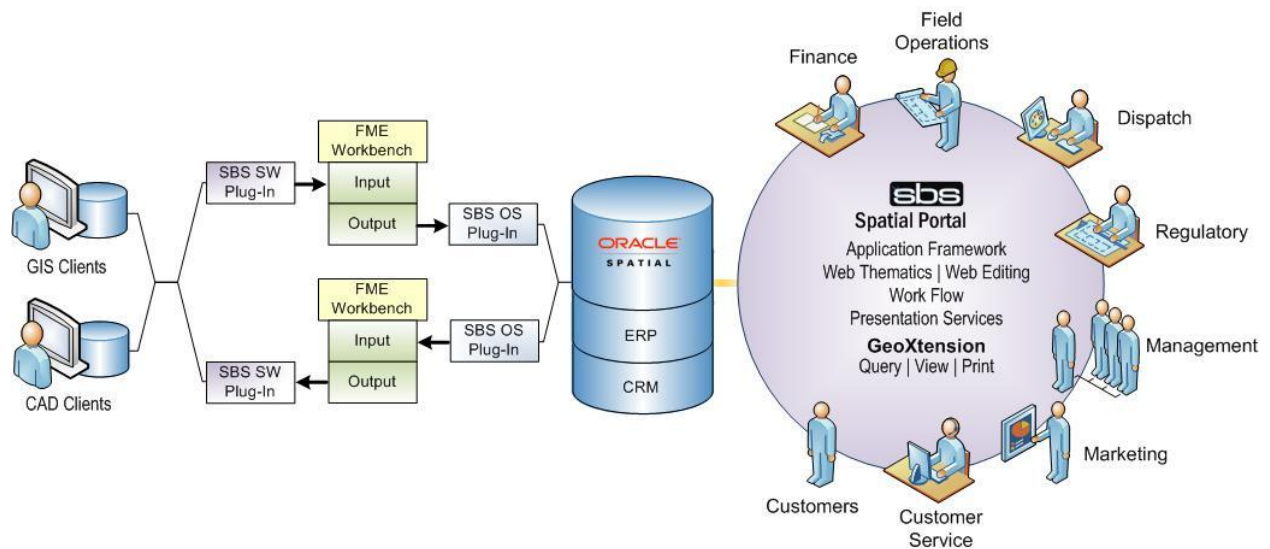
Customer Service | Field Operations | Dispatch | Finance | Management | Marketing | Regulatory | Customers

While the *concept* is simple, actually delivering company GIS data to new users as an easy-to-use business application can be very complex. Most large enterprises including utilities, communications companies, and governments have specialized Geographic Information Systems (GIS) and Computer Aided Design (CAD) systems which contain substantial amounts of location intelligence which can be applied to improve decision making in strategic business operations and everyday business routines.



Yet the potential for mainstream application of spatial information remains largely untapped. Specialized GIS systems are complex, proprietary and available only to a small number of expert data technicians. These systems are typically in data 'silos' with mapping output generated by specialized requests.

Expanding the utilization of geospatial knowledge found in legacy GIS systems to mainstream business systems and non-expert users requires a detailed process of interoperable data sharing. Data must flow in both directions between the legacy systems and applications based on mainstream database technologies such as Oracle Spatial. This changing paradigm also opens up numerous opportunities to re-engineering existing business processes that rely on geospatial data.

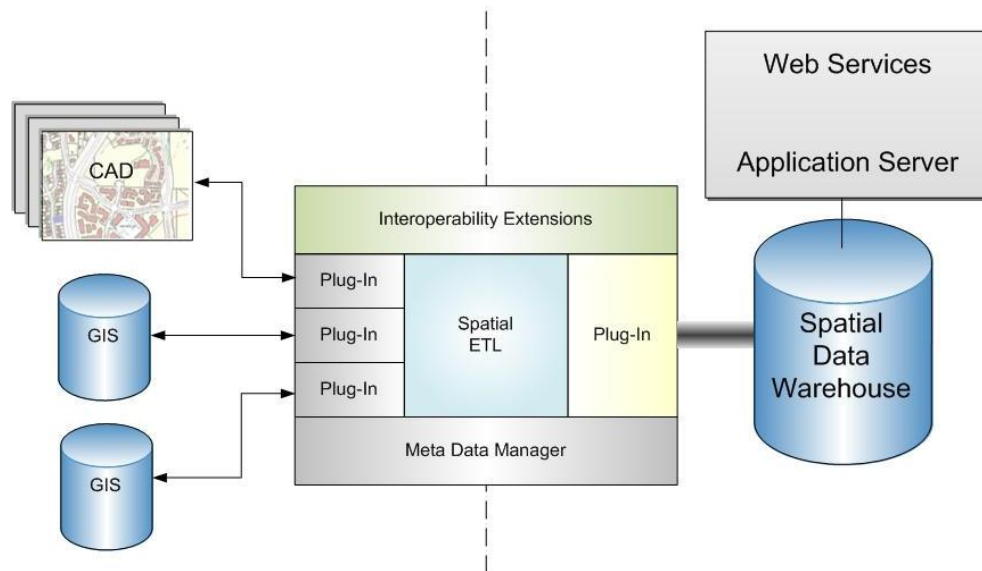


Spatial Business Systems (SBS) addresses interoperability with a unique combination of powerful data translation tools, detailed knowledge of both proprietary and open platforms and an understanding of the business requirements at each end.

Interoperability allows the shift from legacy GIS systems to the mainstream database and service-oriented architecture in an evolutionary manner. This allows organizations to move application development to mainstream computing environments in accordance with business demands while retaining existing applications. As the web-based applications continue to expand within the organization more and more legacy GIS applications can be retired, as appropriate.

Spatial Business Systems accomplishes this process with powerful software tools and data translation products, including platform specific plug-ins for Safe Software’s Feature Manipulation Engine (FME) which is the industry’s mainstay for spatial ETL. SBS has deep experience with the industry’s leading GIS and CAD systems including GE Energy Smallworld, AutoCAD, ESRI, and others. SBS also has detailed experience with the Oracle Spatial database platform and leveraging the usage of industry-standard Java EE application servers working with thin-client applications.

Key elements of the interoperability solution include:



Spatial Extract-Transform-Load (ETL) software provides the ability to translate the core data from the source GIS to the spatial data warehouse. This technology is well-established and supports all major vendor formats.

Interoperability Extensions extend the capability of the ETL to support the unique requirements two-way spatial data translation such as incremental changes and conflict resolution. These functions are often closely tied to the capabilities of the source GIS products.

Plug-ins address unique data format differences between different GIS and CAD products

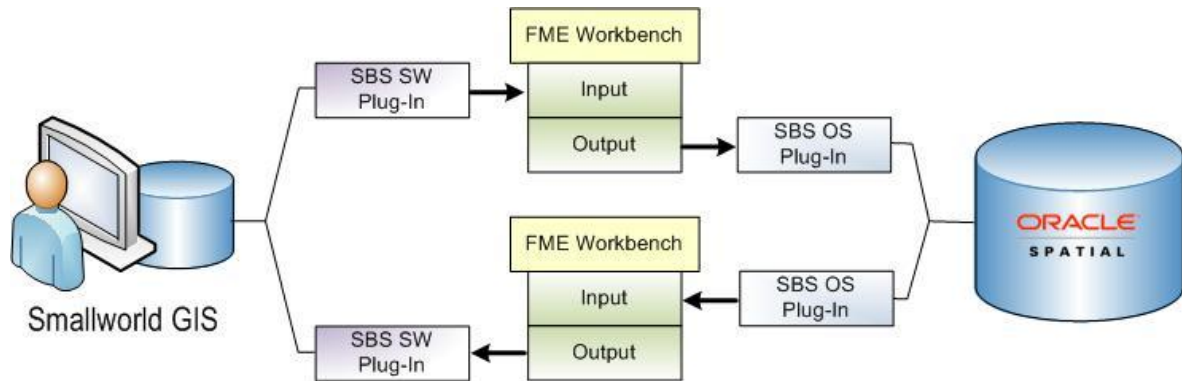
Metadata Management consists of tools to capture such things as map styles from the source systems to the spatial data warehouse. This is used mainly for initial set up of systems.

Spatial Business Systems plug-in and data translation products include:

The Smallworld Plug-In for FME (SpatialBiz plug-in): The plug-in provides the functionality to integrate GE Smallworld with the FME product suite. This solution allows full control of translations with the FME Universal Translator, FME Workbench and the FME Universal Viewer. SpatialBiz is the most accurate and fastest plug-in for translation of data from the Smallworld database.

Oracle Spatial Plug-In for FME: This plug-in is a specialized translator into the Oracle Spatial database that supports the rich data exchange requirements necessary to ensure proper data interoperability between Oracle Spatial and traditional GIS products. The OSpatial Plug-in for FME also supports the unique metadata requirements of the Smallworld GeoXtension Product.

SW Connector: A powerful set of APIs for GE Smallworld which gives users the ability to read and write all types of data from Smallworld for applications in .NET, C++, and Java. SW Connector reduces the need for custom development in Smallworld's Magik language thus allowing applications to be developed using the mainstream development environments.



Spatial Extract-Transform-Load (ETL): GIS data (including Metadata) is translated out of the Smallworld system into the Oracle Spatial database utilizing SpatialBiz, the SBS Smallworld Plug-in for Safe Software's Feature Manipulation Engine (FME) and the SBS OSpatial Plug-in for FME which manages data in and out of the Oracle database.



Delivering Spatial Data and Applications to the desktop and mobile

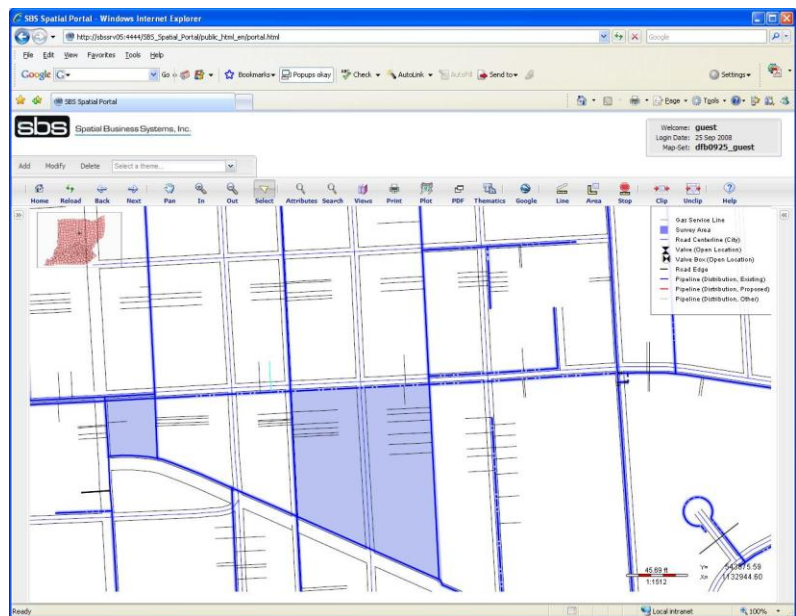
Bringing spatial information together with business information in order to build web-based applications is possible with a mainstream relational database with native spatial capabilities. The Oracle Spatial option is available as an add-on module for the Oracle Enterprise Edition database. Oracle Spatial is arguably the most widely adopted mainstream spatial database in the market today and now supports the key features needed to meet the needs of organizations with geospatial requirements.

When GIS and CAD data are available in the Oracle Spatial Environment it is possible to couple that information with other enterprise data from corporate Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) systems which are typically available in mainstream relational databases.



The environment for spatially enabled business applications is based on leveraging industry standard application servers working with thin-client applications (desktop and wireless browsers). Application server environments offer the ability to deliver very scalable applications and easily integrate into most corporate computing environments.

The geospatial component is delivered as a thin-client application to a browser or can be made available as an embedded component of a traditional business application. The geospatial software supporting these applications is typically lightweight since the database and the application server provide such a significant amount of capability. This is consistent with the need for the users to have a simple, easy-to-use interface when dealing with the mapping components of these applications. In some cases the spatial functions can be done completely in the background without having to present a map to the user.



The vast, potential user base is already equipped with client technology: browsers, personal computers and hand-held devices connected via local area networks and cellular connections. Beyond casual map viewing, address verification and spatial reference, web service based applications will allow workers throughout an organization to routinely include a spatial component in the completion of their tasks.

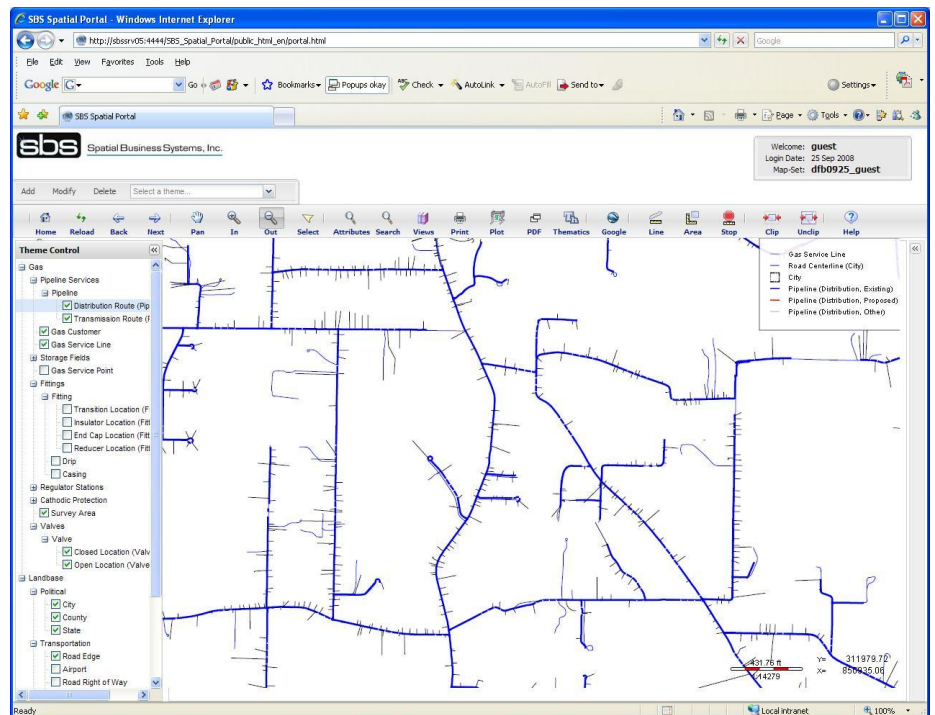
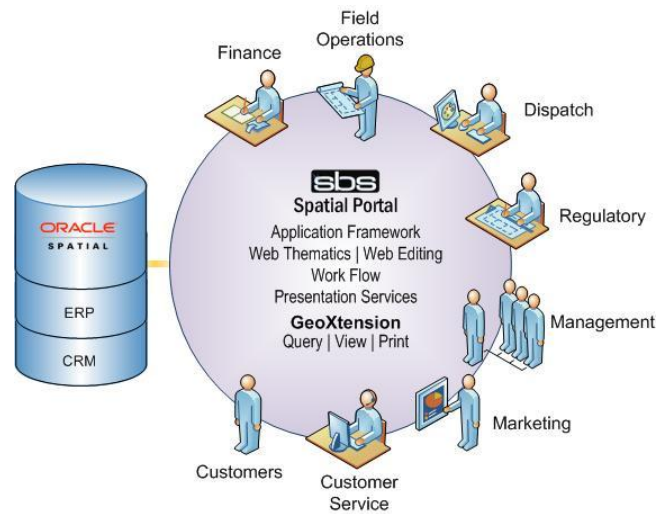
sbs Spatial Portal

The SBS Spatial Portal is a web services platform for advanced application development, viewing, and editing of geospatial and business information in a service-oriented architecture, based on the Oracle Spatial database and GE's GeoXtension web client platform.

Spatial Portal dramatically expands the availability of location based data to non-expert users for review, editing, and analysis. It enables fast and efficient creation and configuration of tailor-made, intuitive geodata applications for broad bases of users who require geospatial information integrated with business intelligence. Task oriented, intuitive applications are available to end users via intranet or internet without any plug-ins or software installation on client computers.

Spatial Portal extends the basic functions of GE Energy's GeoXtension platform and is deployed on Oracle's Application Server based on data from the Oracle Spatial Database. It has been developed in Java EE service oriented architecture, allowing cost-effective and manageable integration of valuable geodata with other enterprise systems such as ERP, CRM, Billing, Dispatching and commercial data resources. The Oracle Spatial database technology allows data from different sources to be integrated into a spatially enabled data warehouse.

The platform provides web based editing and data management components including tools for handling meta data, data synchronization, thematic mapping, work-flow, and project management. It allows data technicians to combine, layer, evaluate and edit data sets of differing origin. For example a data editor could review data from the corporate GIS database with customer address information and corporate assets. The combinations of data sets can easily be used to build end user applications in the GeoXtension viewer, query and reporting tools.



Integration of spatial data into business processes is straightforward and cost effective. It provides leverage of large GIS investments to a larger number of non-technical users with limited implementation costs.

With spatial information and enterprise data available in a mainstream database technology, applications are built to meet the specific needs of departmental users. Both data and business rules from financial systems, customer tracking systems, scheduling systems, are combined with locational information and mapping components to build these end-user applications. The service-oriented architecture allows application developers to define how data will be accessed and presented. The SBS Spatial Portal includes standard applications and the framework for building user/task specific web-based applications.

Application Framework: Rich user interface to support easy-to-use geospatially enabled applications. The Application Framework includes configurable application components to quickly enable powerful, new user applications.

WebThematics: An easy-to-use tool for performing rich visualization of spatial data elements. It enables users to define the appearance of maps to their own preferences and requirements.

Presentation Services: Includes enhancements to the GeoXtension plotting system, including map-window based plotting. The Google Earth interface is a convenient way for users to display their mapping data within Google Earth. Spatially enabled reporting capabilities are available via integration with Oracle Application Express. Integration with Microsoft Office provides an easy-to-use, intuitive way to incorporate your spatial data within such applications as Excel.

Work Flow: The work flow module supports the ability to define work tasks, such as updating of addresses or boundaries within the GeoXtension environment. Work flow is a system for creating editing jobs, assignment, editing and quality control.

Web Editing: Web-based editing capabilities are provided to support the integration of map updates within an organization's business processes. Web editing includes point, line and polygon editing and snapping capabilities, including node and polygon splitting as well as Window Clipping.

Applications can be built for a wide variety of uses and purposes, ranging from strategic, corporate performance analysis to routine operations and customer service tasks. Executives, managers and workers now have the ability to query financial, customer, market, asset and other business data with a spatial dimension.

The hybrid, spatial/business perspective provides new capabilities for almost every department.

- Strategic Asset Management
- Geographic Market Analysis
- Damage Analysis
- Reverse 911
- Dispatch/Scheduling/Routing
- Field Maintenance
- Parts and Supplies Inventory Management
- Customer Self-Service
- Regulatory Reporting and Compliance
- Strategic Financial Analysis.

Features

<ul style="list-style-type: none"> • Display of geodata and attributes from all data sources • Theme control reveals individual themes or mix of groups/themes • Scale-dependent rendering (improves performance) • View, panning, and zoom operations • Value (attribute) display • Search dialog (with pre-defined queries) • Measure select tools (lines and areas) • Dynamic legends and scale module • Quick Navigator (configurable) • Store and retrieve views and thematics • Configurable attribute edits (codelists, constraints) 	<ul style="list-style-type: none"> • Digitize interactors for geometry placement and edits • User / role-dependant representation of GUI and data • Print and PDF plotting • Graphic tooltips • SAP adapter (Optional module) • Google Earth Adapter • Thematic spatial analysis • Long term transactions with history and versioning • Topology and tracing • Linking and embedding of documents • Measurement functions • Redlining
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Benefits

The SBS Spatial Portal has been developed to integrate geodata in business workflows and serve them via standard browser to the end user for review, edit and analysis. Spatial Portal enables fast and efficient creation and configuration of tailor-made, intuitive geospatial applications.

<p>Spatial Portal and GeoXtension for spatially enabled web services</p> <ul style="list-style-type: none"> • Generate tailor-made, task-oriented front end applications • Provide intuitive applications that require no special skills or training • Publish spatial data on intranet and internet without extra software installation • Create web mapping services as defined by OpenGeospatial Consortium • Allow for data creation and edit on a pure zero client (browser) <p>Spatial Portal and GeoXtension for spatial integration solutions and Business Intelligence</p> <ul style="list-style-type: none"> • Integrate spatial data into business processes fast, and cost-effectively • Plug into existing Business Process Management (BPM) solutions • Create a portal solution with spatial reference • Support workflows spanning various systems and data sources • Provide spatial services in service oriented architectures (SOA) • Manage spatial data in a state-of-the-art IT environment 	<p>Cost advantages through:</p> <ul style="list-style-type: none"> • Reduced GIS client license costs • Improved processing efficiency • Reduced system administration costs by utilizing existing skills-base • Reduced development costs by using mainstream development platforms • Reduced training expenses • Improved security through use of a common set of security services. <p>Qualitative advantages:</p> <ul style="list-style-type: none"> • Additional support for streamlining work processes • Improved analysis of existing data sources in a common data processing environment • Ability to exploit a wide variety of existing data in a spatial context • Support for new applications based on spatially enabling core business processes • Improved turnaround of management decisions based on improved data availability • Overall better management of critical, spatially-oriented business information.
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About Spatial Business Systems

Spatial Business Systems Inc. is a premier provider of advanced IT solutions specializing in the integration of spatial information with traditional information systems. Headquartered in Lakewood, Colorado, the company is staffed with a professional consulting team, which has over 200 years of experience in the application of information technologies to solve the unique needs of managing spatial data in enterprise environments. Contact us for more information about the SBS Spatial Portal.

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