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esri India

ArcIndia News

Esri India Magazine

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Article

GIS Solutions for Business Localization, Not Location

Case Study

Assessment of vulnerability to climate risks and insurance demand using gis techniques

Business GIS

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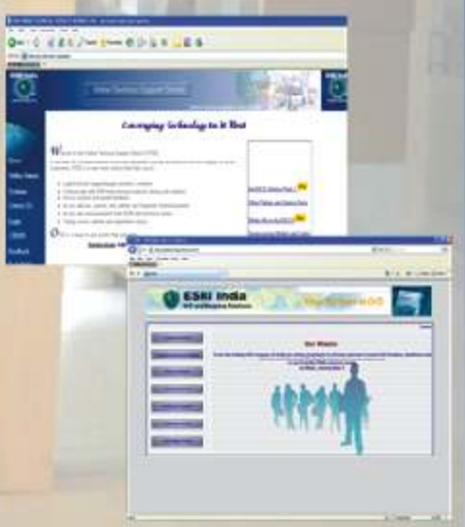

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Today no conversation about information technology (IT) is complete without a discussion about big data, the cloud, or the consumerization of IT. However, arguably, the most impactful technology in IT has been analytics. Businesses are clamoring for more data, better insights and actionable intelligence and analytics play a key role in this. Economic slowdowns in India and elsewhere are forcing organizations to rethink how they operate. Many are realizing that they need to find a new and smarter way to do business using in-house resources. Time has come to invest in newer technologies and geographic information systems (GIS), is in focus - a solution that has helped many organizations overcome their operational challenges and deliver improved profitability.

Today GIS has been assisting in many ways: marketing, optimizing business openings and closings, segmenting consumer data, and managing fleets. GIS can visualize, manage, and analyze any business asset (employees, customers, and facilities, all the way to the supply chain network) because it has a place in the world.

Virtually every important question can be asked in the context of where. Esri Location Analytics extends the value of traditional BI applications by linking business results to location in a highly visual way. The result is clear insight into performance, with key business measures viewed in a geographic context.

With fast pace in technology Esri Business Analyst is available , where you can collaborate and share models and analyses within your organization and use dashboards to quickly publish the most important and pertinent information. You can quickly implement out-of-the-box Web applications and services to help you solve complex business problems via a browser-based, thin-client interface.

Extending IBM Cognos, we link GIS and BI, two highly complementary technologies, in an integrated solution. Esri Maps for IBM Cognos integrates Esri's enterprise GIS platform into the IBM Cognos BI architecture, leveraging in-place security, deployment capabilities, and scalability. The result is a truly enterprise location analytics solution. This integrated solution combines the best of both worlds adding value that transcends the sum of the individual technologies.

The companies are taking decision to integrate GIS as a scalable technology within its existing systems means that any staff member, from any segment within the organization, can gain the benefits of mapping intelligence without any training and at any time. Time is opportune for all of us to see beyond the map and integrate solutions to create better decision making, location intelligence provides a significant competitive advantage, that involve location technology and analytics.

S Sridhar

INSIDE

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Creative Bowl

Esri UC Honors Kanpur Nagar Nigam for Outstanding Applications of Geospatial Technology

Esri recognized more than 170 organizations during the Special Achievement in GIS (SAG) Awards ceremony at the annual Esri International User Conference (Esri UC) in San Diego, California. The SAG Awards acknowledge innovative and intelligent applications of GIS technology. Esri UC honors span of industries including agriculture, cartography, climate change, defense and intelligence, economic development, education, government, health and human services, telecommunications, and utilities

"Each year, the SAG Awards highlight extraordinary achievements and efforts to improve our world," says Esri president Jack Dangermond. "At Esri, we are always deeply impressed with the work of our users. This recognition is well deserved for how they've applied geospatial technology to address the needs of their industries and communities. They are defining GIS best practices."

This year from India Kanpur Nagar Nigam was honored with Esri SAG Award for their outstanding use of Geospatial Technology to develop required infrastucture, software, a property tax assessment list, online property tax calculation, and an information and payment system based on an geographic information system (GIS). This web based GIS Application enabled for the first time the e-governance in practice and forms a spatial decision support system in a local government. The system has resulted in enhancing the coverage by more than 50% and doubled property-based tax revenue compared to the system that existed prior to the introduction of the GIS-based application. The other positive fallouts of this endeavour have been the following:

- Transparency in governance
- Reduction in delays in government processing of grievances
- Online tax payment and status verification facility, removing intermediary agents facilitating the same
- Better revenues for investments into civic facilities

Esri and Microsoft to Provide Online Maps and Applications during Disasters

Companies Improve Public Safety Information Sharing and Response Capabilities

Esri announced a strategic alliance with Microsoft to assist public and private agencies and communities around the world during disasters. Microsoft will display Esri public information maps on its cloud-based Disaster Response Incident Portal, as well as point citizens to the maps via its online outlets, such as MSN and Bing. Esri's ArcGIS integration within a number of Microsoft's disaster response management solutions will provide governments and leading aid organizations with a more comprehensive set of tools to address key challenges.

Esri and Microsoft unveiled the alliance during the Esri International User Conference at the San Diego Convention Center in California.

"Esri is excited to work with Microsoft because of its world-leading software and services," says Russ Johnson, global director of disaster response for Esri. "This alliance leverages the strengths of both companies. The first phase involves using our technologies to support affected organizations and provide public information faster and in a more intuitive web map format during crises."

"The ability to include Esri intelligent, interactive web maps with Microsoft's suite of disaster response offerings increases our ability to assist government agencies and private citizens," says Harmony Mabrey, senior operations manager, Microsoft Disaster Response. "Both responders and citizens will have access to a more detailed level of knowledge about the impacts of a disaster, enabling them to make more informed decisions." These growing efforts will exponentially increase situational awareness and information sharing during disasters.

Benefits include the following:

- Rapid data dissemination to targeted audiences and the general public during a disaster
- Better situational awareness through Esri and Microsoft technologies for critical decision support
- More information management resource availability for governments and leading response organizations through the combined efforts of Esri and Microsoft

West Bengal State Council of Science & Technology (WBSCST) Contributes towards SIS-DP Project

India is one of the top-ranking advance countries in the field of Satellite based information system. The Indian Research and Technology sector is regarded as one of the most powerful instruments of growth and development, especially in context of the emerging scenario and competitive economy in present. At the instance of Planning Commission, Government of India, ISRO/DOS has taken up this task of supporting state center in creating, updating, development of Geo ICT tools and its dissemination for planning at grassroots level. This programme on "Space Based Information Support for Decentralized Planning (SIS-DP)" is being taken up at various State levels. It is envisaged to involve state identified departments/space application centre as partners in this mission, WBSCST is one of the partners contributing towards this goal. West Bengal State Council of Science and Technology was established with the objective of promoting new areas of Science & Technology and to play the role of a nodal department for organizing, coordinating and promoting S&T activities in the state. WBSCST has chosen Esri Technology for ongoing SIS-DP Project. The goal of the project is to develop ICT enabled geospatial platform using space based EO systems and engaging local bodies for planning and carrying out area developmental activities in a decentralized, speedy and transparent manner.

Through its dedicated GIS lab, the potential and capability of remote sensing and GIS will be exploited for providing cost and time-effective resource database. District Resource Atlases will be produced using remote sensing and GIS techniques to strengthen various aspects of decentralized district level planning through a coordinated approach

Esri Maps for Office Extends Location Analytics throughout Organizations

Microsoft Office Add-in Now Available with ArcGIS Online Organizational Subscriptions

Esri released Esri Maps for Office, a new analysis tool that allows business professionals to visualize data by creating and sharing interactive maps directly within Microsoft Office. Esri Maps for Office is a downloadable add-in for Microsoft Office 2010 that helps organizations make better decisions through location analytics.

"By bringing the power of location analytics to Microsoft Office, Esri Maps for Office extends mapping and geographic intelligence capabilities to new people and departments," said Jack Dangermond, Esri president. "Esri Maps for Office is the next necessary step to offering more robust business analytics throughout an organization."

With Esri Maps for Office, business professionals can quickly create interactive maps from their data in a Microsoft Excel spreadsheet. These live maps, which can be based on any geographic component, such as customer locations or sales by ZIP Code, can be simply added to Microsoft PowerPoint presentations or shared through Esri's cloud mapping platform, ArcGIS Online. Maps shared through ArcGIS Online can then be distributed throughout an organization or embedded into mobile or web applications.

The interactive maps and presentations business professionals create with Esri Maps for Office provide a powerful way of exploring issues ranging from gaps in existing service to opportunities for growth. Esri Maps for Office allows analysts to investigate their data as color-coded maps, point maps, or heat maps, and provides full control over the way data is displayed on the map. Organizations can overlay their data on a set of standardized Esri background maps or search through the extensive library of geospatial content available through ArcGIS Online.

Esri Maps for Office is available as a free download to organizations with ArcGIS Online subscriptions. For more information on Esri Maps for Office, visitesri.com/maps4office ●

Odisha Mining Corporation takes new leap in Spatial Domain

Odisha Mining Corporation Limited (OMC) established in 1956 as a joint venture Company of Govt. of Odisha and Govt. of India to explore and harness mineral wealth of the State of Odisha and make value addition. The major minerals mined by OMC are chrome, iron and manganese ore which cater to the requirement of mineral based industries such as steel, sponge iron, pig iron, ferro-manganese, ferro-chrome, etc.

OMC is pioneer in adopting latest technologies. To harness the growth in mining segment they have recently adopted Esri technology for establishing dedicated GIS lab. ArcGIS software will be used for various mining applications – planning, site selection, operations, rehabilitation etc. Apart from GIS they have already adopted ERP tool since 2004 to streamline its business processes, bring synergy in functional activities across the organization, handle numerous business locations and expanding volumes. With adoption of newer technologies and integrating it with existing ones,OMC aims that it will be benefitted in bringing greater transparency in financial transactions and effective monitoring and financial control enabling the organization to take informed and timely decisions ●

Letters to Editors

Dear Readers,

This section of Letters to Editors has been an important section of Arc India News and your comments/suggestions are valuable to us. We would like to have the opinion and feedback of all our readers with respect to the content being published and how its has been useful to them in day to day GIS advancement. You may also let us know what you expect to see in terms of application and technology in the magazine.

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Editorial Board

Build Dynamic Mapping Applications with ArcGIS Runtime

Esri Creates a New Technology for Fast and Easy Application Development

Esri has released ArcGIS Runtime, a new technology to help developers create powerful, lightweight GIS applications that display quickly and are deployed easily. ArcGIS Runtime features a modern architecture for building focused, stand-alone mapping applications for both desktop and mobile devices.ArcGIS Runtime is a new generation of tools for developers. It has a very lightweight footprint, meaning it's about the same size as Adobe Reader. It doesn't need any administrative privileges to be installed and provides you with very fast capabilities to display maps, do editing, and perform analysis

ArcGIS Runtime works with software development kits (SDKs) available from the Esri Developer Network. SDKs simplify the creation of custom applications that integrate geospatial data and GIS capabilities. Esri also offers ArcGIS Runtime SDKs for building and deploying custom mobile mapping applications on iOS, Android, and Windows Phone platforms.

Developers can use ArcGIS Runtime with Windows Presentation Foundation (WPF), Java, and various mobile platforms to embed dynamic mapping and geospatial applications into existing applications or build new custom applications. With applications based on Runtime, users can author maps, content, and GIS functionality in ArcGIS for Desktop or publish web services, which can be consumed in the custom applications. An ArcGIS Runtime application can also be a client to ArcGIS for Server or run completely disconnected from the server environment. Advanced geoprocessing, editing, and analytical capabilities can be integrated into applications.

ArcGIS Runtime will help you do the following:

- Rapidly build GIS-enabled applications with out-of-the-box developer controls, templates, and samples
- Display and navigate maps and data created with ArcGIS for Desktop
- Create and edit geographic features stored in enterprise and file geodatabases
- Perform geographic operations that leverage the power of ArcGIS geoprocessing tools

For more information on ArcGIS Runtime, visit esri.com/runtime ●

Improved Support for Landsat Imagery in ArcGIS 10.1

To assist scientists and land and resources managers in evaluating the earth's changing landscape, Esri announced today that it has further improved support for Landsat imagery, including simplified workflows for ArcGIS 10.1 for Desktop and improvements in the World Landsat Services on ArcGIS Online. In addition, Esri and the Department of the Interior (DOI) worked closely to make all Landsat Global Land Survey (GLS) imagery, including the latest—GLS2010—available through dynamic, multispectral, multitemporal image services on ArcGIS Online. Landsat 7, the current earth observation satellite, produces 30-meter-resolution, calibrated, multispectral imagery in 185 x 185-kilometer scenes. The imagery is free for use by everyone and has become a rich data resource for agriculture, forestry, natural resources exploration, and many other industries.

The existing Landsat image services were refined by adding the GLS 2010 dataset and improving the visual quality with radiometric enhancement. Ten services were added including the following:

- A single service end point that combines 26 separate image services products
- A service that returns tasseled cap transforms
- A 15-meter panchromatic image
- Services for better visualization such as a natural color combined with hillshading

Esri has also updated the easy-to-use web-based Landsat Change Matters viewer for visualizing, analyzing, and detecting change using these image services. For more information on Esri's support for Landsat imagery, visit esri.com/landsat ●

ArcGIS for Maritime Promotes Better Chart Production and Data Management

Esri Solution Helps Organizations Manage Maritime Information Systems and Efficiently Generate Navigational and Nonnavigational Products

Esri has released a new solution to support users in port management, maritime transport, coastal management, offshore energy, nautical chart production, and maritime defense. ArcGIS for Maritime: Charting and ArcGIS for Maritime: Bathymetry are part of the ArcGIS system and enable users to create, manage, and share maritime-related data and metadata. Together, these solutions provide a comprehensive geospatial platform for nautical chart production and bathymetric data management.ArcGIS for Maritime will save time and money for organizations that use bathymetric and nautical data. This solution will provide the market with the only end-to-end capability from collecting sensor data to publishing it in the cloud. ArcGIS for Maritime: Charting (previously Esri Nautical Solution) improves, standardizes, and increases data and workflow management by allowing nautical data to be captured, maintained, and managed in a centralized database. Users can produce electronic, paper, raster, and custom charts as well as integrate their nautical data with other spatial information. Sharing with other groups, including the public, is one of the many advantages of this approach. ArcGIS for Maritime: Charting provides the ability to do the following:

- Manage data and products in both enterprise and desktop environments
- Integrate with other spatial information to create custom charts for a variety of industries
- Publish data and metadata internally or to the public through web services

ArcGIS for Maritime: Bathymetry solves challenges traditionally found in the hydrographic community such as the creation of nonstandard metadata and data duplication that leads to massive amounts of stored data. Now, bathymetric data and metadata can be indexed, searched, and modeled for more efficient management. ArcGIS for Maritime: Bathymetry allows organizations to do the following:

- Visualize bathymetric data by querying and filtering entire data holdings on the fly based on metadata and spatial location
- Compose multiple datasets into a seamless bathymetric surface model in real time without data duplication
- Harness the power of GIS technology for analysis, production, and sharing.

ArcGIS for AutoCAD Offers Advanced CAD and GIS Interoperability

New Version Introduces Geodatabase Editing

The latest release of ArcGIS for AutoCAD, Esri's free AutoCAD plug-in, improves the ability to exchange data and information between the ArcGIS and AutoCAD platforms. ArcGIS for AutoCAD users with read/write access to ArcGIS for Server feature services can now edit geodatabases through AutoCAD. This enables easier data dissemination between CAD and GIS users across the enterprise, reduces the duplication of work, and increases efficiency.

CAD professionals can use the free downloadable application to add, create, and edit GIS data within AutoCAD drawings. For example, users can add maps and map services from enterprise or cloud servers, such as ArcGIS Online, to their drawings, giving the design a geographic context and a common operating picture for the organization.

ArcGIS for AutoCAD is the interface to the ArcGIS system and all of its rich data content, sharing, and data management. The possibilities presented by the combination of AutoCAD and ArcGIS services to automate editing and data maintenance workflows are going to result in an exponential leap in value for those who take advantage of them.

The new release also includes access to image services and a geolocation service for navigating within an AutoCAD drawing. AutoCAD 2010/2011/2012 (32-bit and 64-bit) systems are supported. To learn more about or to download the new release of ArcGIS for AutoCAD, visit esri.com/autocadapp.

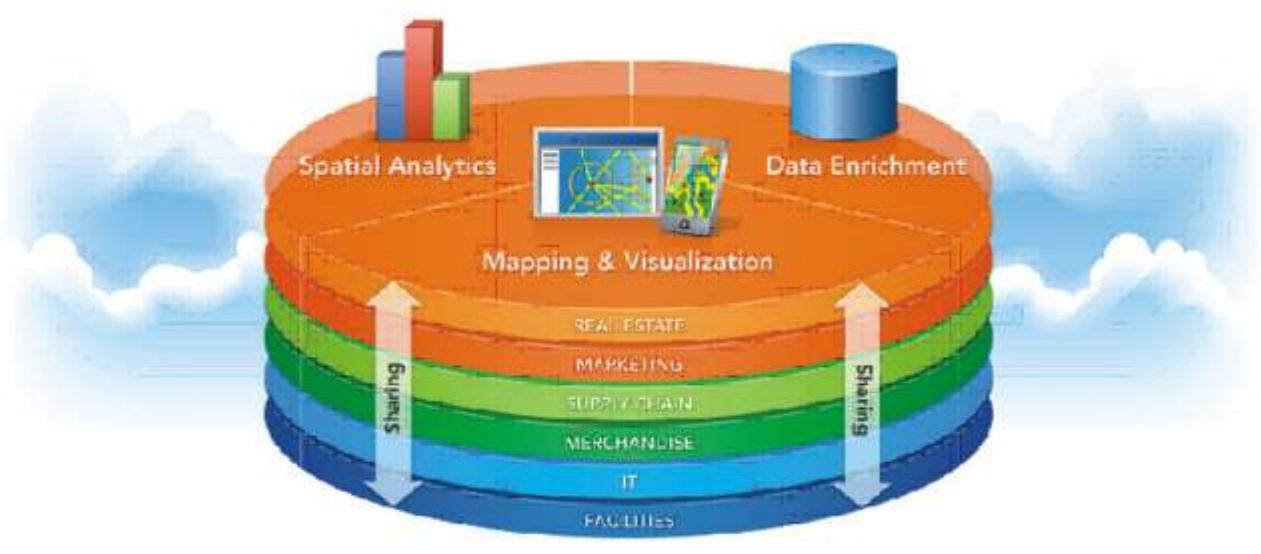
Corrigendum

"The Article Entitled "Multi Criteria Decision Making System for Sustainable Shrimp Farming using Remote Sensing and GIS Techniques 'Published in April June 2010 issue of ArcIndia News Volume 4: Issue2, Presents a methodology developed at "Central Institute of Brackishwater Aquaculture, (Indian council of Agricultural Research), Chennai" and is not a sole work of Ms N.Kavitha as indicated by her."

Esri Business Analyst

The Business Analyst System

Esri Business Analyst is a complete system for analyzing data to reveal insights and patterns in your business. You can perform deep analysis of demographic and consumer data and combine it with your own data to gain greater understanding of your customers, competition, market, and trends. Business Analyst can be configured to share data, analyses, and insights throughout your entire organization.



Enterprise

With Business Analyst Server, analysts can collaborate, share, and publish important information across your enterprise.

Desktop

For analysts, Business Analyst Desktop combines GIS analysis and visualization with an extensive data package to generate custom analyses and reports for specific locations.

Web

With the Business Analyst Online web application, real estate, retail, and business professionals can generate maps, analyses, and reports on demographics, competition, consumers, and their lifestyles and buying behavior.

Mobile

Anyone can access data, reports, and maps from anywhere using a smartphone or tablet running the BAO Mobile apps. Enhance enterprise data by entering and correcting data, or adding photos, from the field.

APIs

Web developers use the Business Analyst Online API to build custom web, desktop, and mobile applications for mapping and location analysis.

Data

Esri demographic, consumer, and business data, used alone or to enrich your data, helps you derive new insights.

Esri Business Analyst Server

The GIS and Data Solution for Enterprise Business Analysis

ESRI® Business Analyst Server combines geographic information system (GIS) server technology with extensive business, demographic, and consumer spending data.

This server-based solution integrates into your enterprise workflows and comes with out-of-the-box Web applications and services to help your organization publish and share business data, maps, analyses, models, and reports.

Use Business Analyst Server to help analyze your market and competition, find the ideal site for a new business location, evaluate the success and profitability of existing facilities, and perform advanced customer analytics.

- Business Analyst Server offers the following benefits:
- Provides browser-based access to geographic analyses, queries, and reports
- Centrally managed for lower cost of ownership
- Includes prebuilt workflow templates for complex analytic processes and allows you to create your own customized templates
- Supports cross-platform deployment
- Integrates with other business applications
- Ability to create and deploy custom applications

Business Analyst Server helps standardize geographic processing techniques and workflow scenarios, reduce software deployment costs, and ease implementation burdens.

Author

Business Analyst desktop users can design and execute models and analyses locally and use Business Analyst Server to publish the results so they can be viewed and utilized throughout the organization. Publication-quality maps, reports, and analysis output can be combined into market studies and distributed in a ready-to-use, Web-browser-based application.

Serve

These models and analyses, developed by Business Analyst desktop users, are now served throughout the organization for consumption by Web clients. Application developers can also consume the services published with Business Analyst on the desktop when building new or customizing existing applications, without having to become GIS experts. For example, an application developer can quickly build an easy-to-use Web application for a company's real estate department that will screen potential facility locations. Users can pan and zoom on the map from a citywide view to a street-by-street analysis, all while Business Analyst Server does the geoprocessing behind the scenes.

Use

End users can access focused applications for solving site location problems and customer targeting and analysis with a standard Web browser. The integration of Business Analyst Server with a simple reporting application enables users in a marketing department to perform a market-ranking analysis that evaluates the success of a marketing campaign for a series of given cities.

Key Features

With Business Analyst Server, collaboration on models and analyses are enabled across the enterprise. Analysts can build and customize models for regionalization, accessing a common data repository, and create dashboards to share information with executives and key stakeholders.

Collaborative and Distributed Applications

Create browser-based business applications that support a large number of users from a central location without requiring individual desktop applications or GIS knowledge. Through these applications, dashboards, analyses, and models can be shared across the organization and provide a common platform for the decision-making and planning process.

Workflow Frameworks

Business Analyst Server includes a workflow framework that combines individual Business Analyst Server actions with attachments, scorecards, and reports in a coordinated workflow template. Workflow templates offer organizations the ability to create consistent and repeatable processes for analyses and geoprocessing activities.

Application Developer Tools

Use APIs and Application Development Framework (ADF) for .NET, JavaScript, and Flex, as well as Web services for mapping, imagery, locators, and geoprocessing to build custom applications.

Advanced Spatial Analysis

Perform customer and store market analysis and competitive and site evaluation using simple rings, threshold rings, data-driven rings, drive times, and desire lines.

Customer Prospecting

Identify characteristics for targeting profitable new customers by analyzing the demographic variables in the areas that contain target customers. Locate desired areas using Principal Components Analysis (PCA) or Floor and Ceilings values.

Facility, Asset, and Supply Chain Management

GIS network tracing can determine and optimize product routing, as well as provide data management and reporting support for sophisticated product transaction management systems. Business Analyst Server enables the visualization of current inventory status, locations, travel distance, and drive times between suppliers and distributors.

Business Continuity and Risk Management

Business Analyst Server helps businesses perform business continuity planning by modeling what-if scenarios for natural or man-made disasters, supplier disruptions, and transportation options; optimizing driving routes inside and between facilities; and determining facility vulnerabilities due to response times.

Simple Web applications can be created for basic analytic tasks.

What's New in Esri Business Analyst Server

Performance Enhancements

- Work more efficiently with significant improvements in performing data summarization, benchmark comparisons, and market ranking.
- Many tasks can now be completed 60 times faster; some in less than one second.

Custom Report Templates

- Easily create custom report templates for your specific needs and share them across the organization.
- Developers can consume the report output in XML format to supply data for application features.

New Reports and Improved Formatting

- The following new reports are available:

  Average Drive Time

  Customer Demographic Comparison

  Tapestry Profile Volume

Segmentation Study

Market Area Expected Potential

Market Area Gap Analysis

Developing Marketing Strategies

- The layout and formatting of most reports has been updated to a more modern and professional look.

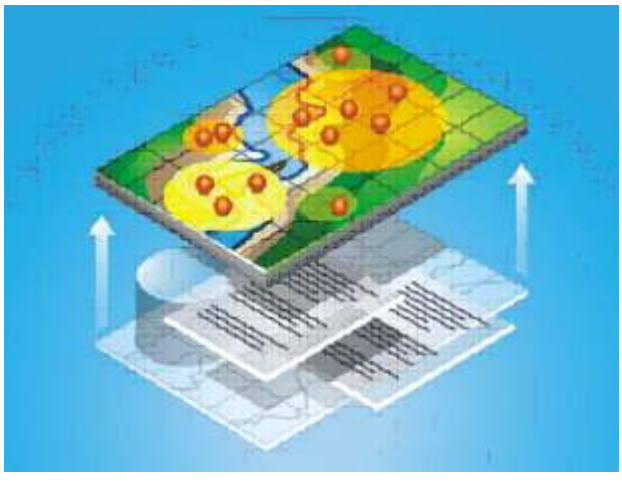
More Developer Support

- Flex and Silverlight SDKs provide complete sets of developer objects that encapsulate the REST API for Business Analyst Server.
- Thematic Mapping APIs for Flex and Silverlight provide high performance server-side processing for creating color-coded Maps.
- Query business listings by geographic extent, SIC or NAICS codes, business name, number of employees or sales ranges with the "Add Business Listings" for Flex, REST, and Silverlight.
- Live interactive sample viewers for Flex and Silverlight will soon be available to test-drive the SDKs.

Esri Maps for Office

Map-Enable Your Data

Making a map of your Excel data is as easy as creating a graph or chart. Quickly map locations and other geographic data such as sales by territory, state, or ZIP code. You have control over how the maps are styled, so you can emphasize the information that's important. And because the maps you create are dynamic, not static, you can quickly start exploring your data in a whole new way.



Impact Your Audience

With Esri Maps for Office you can quickly share both static map images and interactive maps.

Sharing your maps is easy: with a single click you can add any map you create in Excel as a slide in your PowerPoint presentation or copy and paste the map into your documents.

Make Maps in Excel

- Color-coded Maps

  Your sales by ZIP code.

- Point Maps

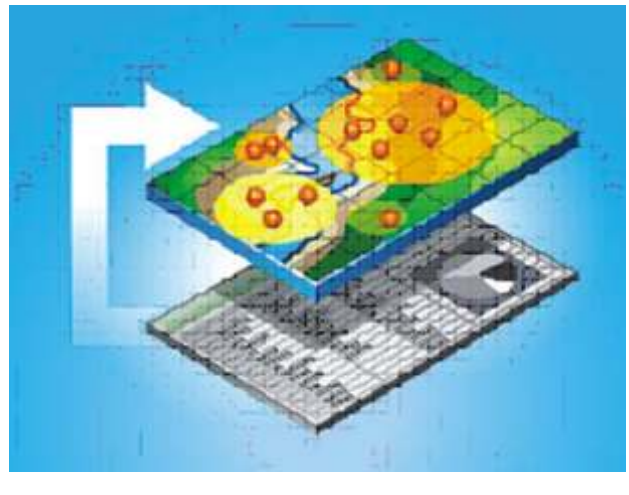
  Your customer locations.

- Clustered Point Maps

  Great when you have many points to map.

- Heat Maps

  Helpful to show concentrations of points. Make maps in the language of your choice. In addition to English, Esri Maps for Office also supports Arabic, Chinese (Simplified Han), French, German, Italian, Japanese, Portuguese (Brazil), Spanish, and Russian.



GIS and Business Intelligence: The Geographic Advantage

Historically, business intelligence (BI) and geographic information system (GIS) technology have followed separate development and implementation paths. Customer requests for a more complete operational picture and the ability to be more proactive have led to the combination of these two technologies. Regulatory requirements have also raised the visibility of both technologies within many organizations. In response to BI and GIS users, leading BI providers have been integrating the two technologies and providing innovative solutions to a growing number of end users. The users are responding with new applications that leverage the synergy of the combined technologies.

This article describes the purpose and benefits of both GIS and BI, the technological advancements that have fostered their integration, and the synergistic benefits of integrated applications that can benefit the entire organization without disrupting existing IT environments.

GIS

Today's GIS recognizes the location component of data and associates data with geographic features maintained in a GIS. Features in a GIS are graphic representations of actual features, such as roads, rivers, and forests, and conceptual features such as political boundaries or service areas. Associating data with features lets users organize data based on the geographic location of each record in the data. This geographic organization, presented as a map, reveals spatial relationships and influences that cannot be identified in traditional tabular views of data.

Geographically organizing data allows the utilization of new data that may not have anything in common with existing data other than location. For instance, GIS analysts for insurance companies can map the addresses of insured structures and overlay floodplain boundaries to identify all structures within the floodplain. With this information, they can calculate the total financial impact on reserves from a potential catastrophic flood. Other

organizations, private and public, can perform this same analysis to determine potential impact on facilities, supply chain, and employees.

Business Intelligence

The term business intelligence was coined in the mid-1990s to describe the emerging practice of transforming raw data from an organization's disparate operational data into a common data warehouse that could be used for discovering and reporting information. Users interact with an easy-to-use interface that exposes the results of the extraction, transformation, and loading (ETL) process used to populate the data warehouse. The same interface is also the gateway into a structured reporting environment that distributes operational reports and business decision results throughout the organization.

Recently, service-oriented architecture (SOA) has begun supplanting or augmenting data warehousing in BI implementations. One of the business advantages of this platform is that reporting and decision making are based on a common operational picture, or "single version of the truth."

Reporting, a mainstay of BI, has become more graphics intensive. Business graphics, typically charts, are now a common component of reports. As access to BI data became more timely, graphic dashboards were developed to monitor key business processes. Dashboards, named for their similarity to automobile dashboards, convey operational information at a glance.

The Intersection of GIS and Business Intelligence

GIS and BI were being implemented as the IT landscape was evolving to embrace common ways of compiling, storing, using, and distributing data. Proprietary systems, used by both private and public organizations, had become a hindrance in a business environment that demanded agility to operate effectively.

To address this issue, standards and common ways of interacting with data were proposed by various organizations and IT providers. When these standards were adopted by IT providers, it became easier for applications to interact because they shared common technology foundations. During this time, Internet technology matured and had become a viable communication protocol for exchanging information between the operational units of an organization.

During the adoption of standards, BI and GIS application providers were concentrating on working with the data that was most important to current core users. The BI providers were creating connectors for the most common file formats used by business applications, and Esri, a GIS provider, was creating connections and transformations for the geographic feature formats then in use worldwide.

The adoption of standards and the rise of the Internet as a data and information exchange medium led, in part, to the vision of enterprise implementations of applications. While Esri and BI application providers have technology platforms and applications that can meet the needs of enterprise implementations, BI and GIS applications are commonly implemented in unrelated operational units within an organization.

Knowing how BI and GIS were actually deployed in organizations presented opportunities for the proliferation of these technologies. If BI and GIS applications could work together, the benefits of these respective technologies could be realized by operational units not currently using both technologies. This would result in integrated applications expanding throughout the enterprise.

Innovators in the public sector who wanted to extract more actionable information from existing data came to the same conclusion. Exposure to "new" technologies in the context of homeland security raised interesting possibilities for improving processes not directly related to homeland security. The fact that public agencies were looking at BI with the idea

of integrating it with GIS was not lost on the BI providers whose success in the private sector had not been matched in the public sector.

Esri and various BI providers realized that the earlier adoption of standard technology architectures would make integrating GIS and BI much easier. Furthermore, each discipline brought solutions to problems that were perceived as major obstacles to enterprise implementations of the respective applications.

For a GIS provider, using tabular data from hundreds of database and file systems could be difficult and expensive. This was a problem addressed by BI providers by using the ETL process or connectors that allow BI applications to use native file formats. Conversely, BI providers were hard-pressed to deal with the variety of geographic data formats, CAD data, and imagery. The myriad of projections and datums used in GIS maps were also challenging. The GIS sector had addressed these issues by adopting standards for the interoperability of GIS data. Two of the major obstacles to integration had already been addressed but had not been effectively communicated between the two application environments.

Integration Strategies

A typical BI implementation consists of applications selected from a suite of applications comprising the entire BI technology stack. This ability to "pick and choose" applications results in solutions tailored to the specific needs of end users. However, there are applications that tend to be common to nearly all implementations by a given provider. These common applications are the most cost-effective points of integration for GIS. The ArcGIS® family of products is well suited to this implementation environment, and BI providers have been quick to see the value in the integration options offered by ArcGIS. Some of these applications are seen in segments such as Insurance, Retail and Services, Manufacturing Warranty Analysis, Sales Force Efficiency, Supply Chain Management, Product/Service Deliveryand Fraud Detection.

Desktop Integration

Early adopters of GIS-enabled BI most often used an ArcGIS Desktop application such as ArcView®. Connector, or "bridge," applications permitted the GIS application to access and geographically analyze data directly from the BI data repository. Results of geographic analysis could be passed back to the BI data repository for eventual reporting or further nongeographic analysis. While this model supports sophisticated analytics, it has one glaring BI shortcoming no actual maps are created in the BI reporting environment. Maps presenting analytic results must be composed and published entirely within the GIS environment. As Jack Dangermond, president of Esri, stated, "While business intelligence platforms provide access to data across the enterprise, GIS is able to present this aggregated data as context-rich maps. These maps give organizations a powerful new tool to proactively manage their operations."

There has been recent renewed interest in bridging applications as rapid development and proof-of-concept tools. Also, as server-based integrations make mapping more visible throughout organizations, demand has risen for more cartographically pleasing maps for formal presentations.

Server Integration.

Server-based BI and GIS integration efforts were driven by end users wanting to utilize the BI reporting environment to distribute GIS-generated maps.

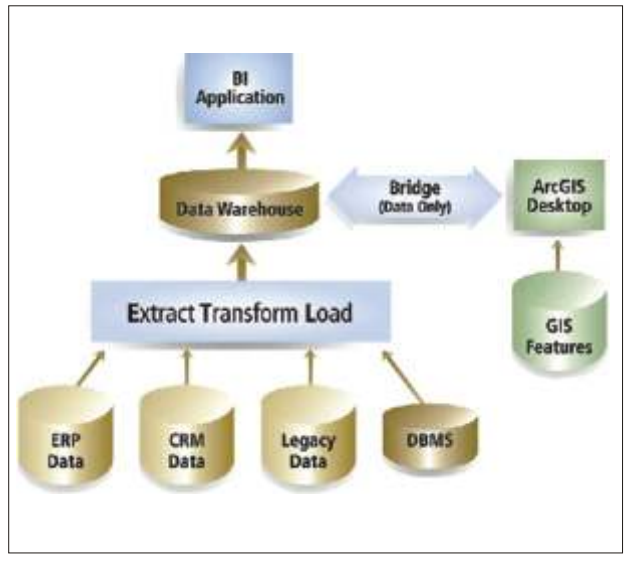


Figure 1 A simple example of using a bridge to integrate GIS and business intelligence applications via a data warehouse. The user interface is either ArcGIS or the BI application; there is no integrated user interface.

Esri'sArcIMS® fulfills this requirement with a Web-based application that is easily integrated with today's BI Web-based reporting environments. Publishing a thematic map as a business graphic in a report, a low level of GIS functionality, met the early requirements of the BI community.

However, BI developers exposed to the capabilities of ArcIMS expanded the scope of their efforts to allow bidirectional interaction with BI data via the map interface of ArcIMS. A user can now select areas on the map and have those selections be reflected in the table portion of the report.

Conversely, records in the table portion can be selected and appear as selections on the map. The latest ArcIMS integrations permit map layers to be turned on and off; map feature identification by clicking; and the addition of transparent, or acetate, layers that superimpose pertinent business data over the appropriate map feature.

While ArcIMS was being implemented to meet the map reporting needs of the BI community, the BI landscape was shifting. Reporting and dashboard applications had been successful in providing consistent visibility into operations and timely performance monitoring but were not forward looking. The ability to more successfully plot the future course of business has increased demand for predictive analytics in BI

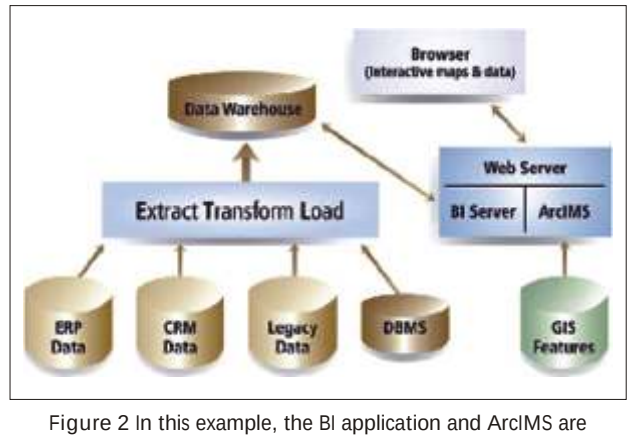


Figure 2 In this example, the BI application and ArcIMS are integrated via one or more Web servers. The user experiences an integrated map and data application within a Web browser.

implementations. GIS has long been used for predictive analytics. Urban planners have been using GIS for decades to predict population growth and migration patterns to effectively plan infrastructure projects. Reinsurers have long used GIS to analyze environmental risks, such as flood and wildfire zones, to determine if there are sufficient reserves to meet potential needs.

However, these analyses have historically been done by trained GIS technicians using powerful desktop GIS applications. This domain expertise-intensive approach to analytics is the antithesis of what end users expect of BI applications.

BI providers adopted ArcGIS Server integration to provide sophisticated GIS analysis in a user-friendly format. Esri and BI providers work closely with the user to define a set of persistent analytic requirements that can be initiated with very little input from the user. In essence, the end user runs a preconfigured model that does the

heavy business and geographic analysis on the server and returns the results to the user in the form of a Web report. Because ArcGIS Server takes a centralized approach to GIS management and application support, it requires that an organization either has GIS expertise available in-house or can access outside GIS application support.

The recent adoption of SOA by organizations has expedited the utilization of server based BI and GIS. Early BI providers excelled in developing connections to disparate operational data assets. However, these connections can be more than just connectors or data translators for populating a data warehouse; they can sense activity in the parent data store and initiate higher-level services.

SOA can take advantage of these sophisticated connections, or adapters, to periodically update a higher level of data aggregation, such as an online analytical processing (OLAP) cube, and/or run a persistent model in real time. An example of this could be the adapter detecting a new customer record in the customer relationship management (CRM) system and initiating a geocoding service that would in turn populate the features data with a new customer location or point. This ability is now available to all participants in the SOA environment, not just the BI server.

Applications in ArcGIS Server can use aggregated data managed by the BI serverand utilize its reporting platform. The ArcGIS Server could also use enterprise resource planning

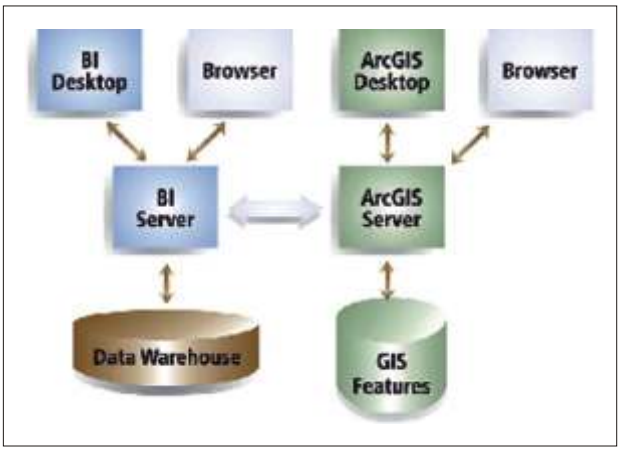


Figure 3 In this example, the BI application and ArcGIS Server are integrated to expose GIS functionality, or the results of geographic analysis, in the BI user interface. Conversely, BI functionality, or the results of statistical business analytics, can be exposed in the GIS user interface.

(ERP) orCRM data via a service independent of the BI server.SOA environment, it is not required for their implementation. Most organizations will meet the need for BI and GIS analytics by linking the BI and GIS servers with an adapter, independent of an enterprise SOA.

ArcWebSM Services.

A number of issues concerning GIS data have been obstacles to wider adoption of GIS in the business community. While the value of GIS can be grasped by nearly all businesspeople, data issues can have a very negative impact on IT personnel tasked with researching an implementation.

Traditionally, GIS data providers or GIS application providers

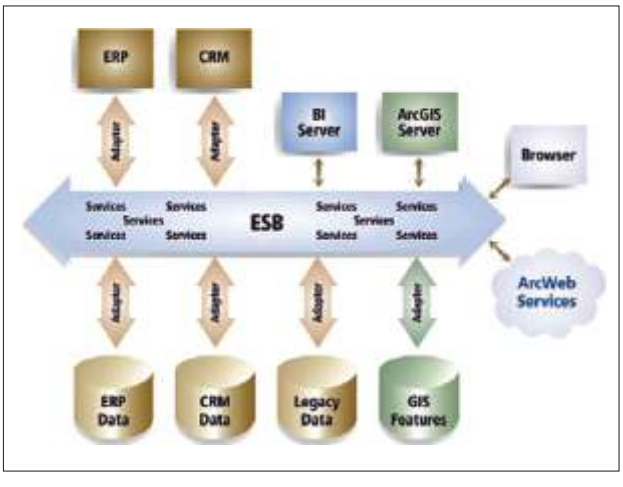


Figure 4 A simplified view of service-oriented architecture utilizing the enterprise service bus (ESB) to pass services between various applications. Applications in ArcGIS Server can use aggregated data managed by the BI server and utilize its reporting platform. The ArcGIS Server could also use enterprise resource planning (ERP) orCRM data via a service independent of the BI server.

have addressed many of these issues by providing packages of data tailored to the user. However, whendata is provided, the user needs some understanding of GIS to get the data into the system without disrupting operations.

The cost of purchased data can also be prohibitive when large geographic areas are being analyzed at a detailed level. High-resolution imagery for large areas also requires a tremendous amount of storage capacity.

ArcWeb Services addresses these issues by making GIS-ready data available as a service on a subscription basis. Esri hosts the data, maintains currency, and cartographically enhances it for seamless incorporation into ArcGIS software-enabled BI applications. Among the many types of data available from ArcWeb Services are those most commonly used in BI applications: demographics, streets, aerial imagery, and Federal Emergency Management Administration floodplain boundaries.

While this integration overview suggests that an organization needs to identify a single way of integrating GIS into BI implementations, this is not necessarily the case. Some organizations will choose a bridge application to build models and geographic datasets with the intent of migrating them into an ArcGIS Server or ArcIMS environment. Other organizations may choose to have an ArcIMS integration to serve map-enabled reports to a large audience and an ArcGIS Server implementation to serve applications to a smaller audience of analysts •

Source: www.esri.com/business

GIS Solutions for Business

Mapping geography is one of humanity's most ancient arts, but today it is on the cutting edge ofinformation analysis. Maps created using GIS help people make better decisions. Whether in a singledepartment or across an entire organization, GIS offers boundless possibilities.

GIS is computer software that links geographic information (where things are) with descriptive information (what things arelike). With a flat paper map, "what you see is what you get," but a GIS-generated map has many layers of information for many ways of thinking about a geographic space. For example, if you look at a store represented on a paper map, you see the name of the store and a point denoting where it is located. However, if you view a GIS map on your computer, you can click on the same store and see its location, name, annual revenue, customer flow, square footage, product mix, quarterly sales, and the store manager's name. You can even see a photo of the storefront and receive a virtual tour of the facility.

Geographic Data

What is geographic data? It is data connected to a physical location somewhere on the earth's surface. Companies maintain databases full of geographic data they may not even be aware of such as

- Customers' street addresses and postal codes.
- Sales data including store locations and product registration information.
- Equipment location such as telephone poles and electrical transformers.
- Delivery routes and the addresses of stops along those routes.

These pieces of geographic data are integral parts of your company's data assets. Whether you maintain your store revenues, customer spending patterns, use of health care facilities, or sales force results in a data warehouse, in data marts, or in a relational database management system (RDBMS) such as IBM®, DB2®, Oracle®, or Microsoft® SQL Server, you can take advantage of this geographic data to gain insight and make better business decisions.

Target Marketing

GIS market analysis tools can help you determine which products and promotionsmatch the lifestyles and buying patterns of your customers. You can create a multidimensional snapshot of trends to create trade areas, predict sales, design sales territories, plan media, and much more.

Routing and Logistics

GIS integrates mapping and analysis into decision support for everything from calculating arrival times to customer sites as well as scheduling requests. Businesses can track assets in motion, analyze delivery patterns, predict road volumes, and much more.

Marketing and Advertising

GIS market analysis tools can help you determine which products and promotions match the lifestyles and buying patterns of your customers. Create a multidimensional snapshot of trends to create trade areas, predict sales, design sales territories, plan media, and much more.

Site Selection

GIS offers a better way to find the right site for your next store, distribution center, or service department. With a GIS, you can blend customer surveys with census data to visualize market penetration, market share, and trade areas. When markets change, GIS can help you plan exit strategies and asset disposal.

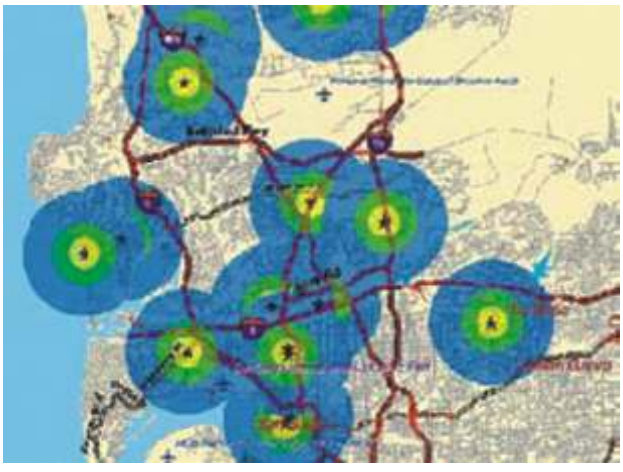
Territory Management

How do you manage business territories? Where can you set up noncompetitive franchise areas? When and where should a new business be opened without cannibalizing existing

Why GIS?

Companies like yours are already using geographic data and Esri's GIS software to operate their businesses more effectively. These companies find that GIS

- **Saves time and money**
- **Promotes internal organizational efficiency**
- **Helps make better business decisions**



storefronts? You can use GIS to make sense of the data and show you the best scenarios for expanding, protecting, and leveraging your business.

Real Estate

Real estate companies count on GIS to find not just any site but the best site. They analyze data around locations—demographics, aerial photographs, traffic counts, shopping centers, merchandise potential data, and competitors—to find the best location for properties. They generate maps of locations to show potential buyers where locations exist relative to other locations or attractions and to show off the "ideal" location of particular sites. ESRI GIS allows real estate companies to meet the diverse and evolving needs of their organizations—for the occasional project, for multipurpose departments, and on a large scale across the enterprise.

Customer Care

Keeping a customer is one-fifth the cost of attracting a new one. ESRI's GIS software helps you take better care of customers by making it easy for them to find the information they need in a form they can understand. In today's information-rich society, GIS and mapping software help your customers find what they need with minimum cost and time to you.

Business Continuity Planning

One in five businesses a major business experiences disruption each year. For those that do experience a disruption, many do not resume operations or will fail within 24 months. Disruption can be caused by power outages, internal flooding, fire, ter¬rorism, crime, transportation issues, or severe weather events. While a portion of businesses have deployed measures for ensur¬ing business continuance, few have implemented a BCP that encompasses front- and back-office systems, employee safety, and supplier and client management.

Why Use GIS to Plan for Contingencies? GIS technology allows businesses to quickly display, analyze, and determine vulnerabilities, exposures, and weaknesses. Develop¬ing mitigation strategies, modeling against potential events, and analyzing consequences can be done quickly and efficiently. GIS enables a business to mitigate risks that disruptions pose in areas such as health and safety liability, loss of productivity from downtime, loss of work to competitors, failures within the supply chain, penalties from regulators, and higher insurance rates. Regardless of industry or size, all companies have responsibilities from a compliance standpoint. GIS provides an intuitive medium through which a consolidated and coordinated common operational picture (COP) can be developed. This visual snapshot can be enriched and extended by spatial analysis and modeling of events as they occur, thereby improving decision making and response execution.
Keep It Simple

GIS has been recognized as a powerful tool for developing effective BCPs due to the geographic nature of the data and models. GIS helps businesses develop an effective plan by addressing the following:

- Damage assessment and repair during emergencies
- (and family) notification
- Evacuation
- Facilities management
- Mitigation strategy development
- Office relocation
- Supply chain assessment
- Threat assessment
- Vulnerability analysis

Weather mapping

Stay Connected GIS integrates many seemingly unconnected data sources. Because a fundamental part of creating a BCP is determin¬ing the location of a company's assets, even the most basic GIS application (determining where things are) adds value to a standard BCP. Using GIS to show locations of assets lets BCP analysts evaluate them in relation to potential disruptions in ways that are not possible with text or tabular representations of the same data. GIS enables businesses to visualize and maintain overall situational awareness during emergencies and normal operations.

See Your Company

GIS can provide a visual snapshot that shows where assets and employees are located. Using GIS to model what-ifscenarios can capture the infrastructure, business processes, and locations of an organization in a meaningful way.Through GIS-based dashboard-type applications, managers can quickly obtain a high-level overview of a situation and understand what needs to be done to reestablish critical business functions in the event of a disruption.

Relocate Operations

Every BCP must address the relocation of personnel, operations, and assets. In some industries, specific rules govern what must be included. GIS is well suited to relocation analysis, allowing BCP analysts to factor in locations of the company's most critical employees from a day-to-day operations perspective and determine a temporary operations site that is accessible and optimal in relation to these employees.

Business Continuity Post Disaster A BCP that is tied to a community's disaster management strat¬egy will allow for a quick recovery of the community as a whole, meaning the public, private, and citizen sectors are collaborating toward a common goal of resuming normal operations. Without a proper business continuity plan, a natural or man-made disaster can compromise a community's ability to do business, thereby impeding the response and recovery process. The speedy recovery of commerce can mitigate the effects of a disaster by reestablish¬ing civic quality of life within the community.

Building a Comprehensive Business Continuity Plan

- Analyze business workflow and involve key departments:
  - Compliance and Operations
  - Corporate Communications
  - Corporate Security
  - Employee Relations
  - Executive Management
  - Facilities Management
  - Human
  - IT
  - Legal
- Assess risk and identify mitigating strategies.
- Develop strategy and create response plans.
- Communicate the BCP to staff, then rehearse.
- Refine the BCP through the identification of weaknesses in lines of communication and the decision-making process.
- Implement operational redundancy where appropriate for mission-critical services.
- Establish backup or off-site facilities for data storage.
- Advise key clients, suppliers, and partners of the BCP and their part in its execution.

Enterprise GIS Integrates Business Continuity Operations

An Esri enterprise GIS is an integrated, cross-departmental resource composed of interoperable components that support all aspects of the business continuity mission. It provides broad access to geospatial data and analysis through a common standards-compliant application architecture.

Esri enterprise GIS customers can realize major improvements to the way they analyze, plan, and mitigate threats associated with business interruption and disaster management. These benefits include

- Improved collaboration and communication across command, control, and response teams
- Reduced data redundancy coupled with improved accuracy and management integrity of geographic information
- Increased ability to analyze and respond to events as they unfold by using a single, common view of the field of operations
- Improved analysis, visualization, and decision support
- Common operating views to understand areas of business risk as well as business opportunity

Source: www.esri.com/business

APPLICATION ARTICLE

Localization, Not Location

Web and smart phone applications support winning retail strategies

Access key demographic and market facts about any location in the U.S., using your iPhone, iPad, or iPod touch with the free BAO for iOS app.

For many of us, the world changed forever on September 15, 2008. On that day, the current global financial crisis began when Lehman Brothers filed the largest bankruptcy petition in United States history. The ensuing recession has turned much of our thinking about how we run successful businesses on its head and created new realities. Three years after the onset of the greatest recession in modern history, there is a new kind of normal. We have new consumer behavior, revised expectations, innovative ways of doing business, and different opportunities. GIS is one of the technologies that has helped organizations survive and thrive in the face of all this change. By finding new strategies and a better understanding of different drivers in local markets and the global economy, the retail industry is empowered with more accurate information and is forging in new directions.

The Consumer Is King

Today, consumers are holding the cards. It's no longer a case of "build it, and they will come." Overinflated expectations of store numbers, profit margins, and gross revenues during the boom years have been replaced with conservative management, controlled build-out, and revised business strategies. Every aspect of driving success and maximizing return on investment is location dependent. Localizing merchandise and correctly configuring sites to maximize profits based on the profile of the people in an area and their needs are significant challenges in today's economy. This is where GIS is helping. Localization is the mechanism for balancing market opportunity with supply and demand. To do this, owners and managers need to be able to apply a range of geographic analysis, models, and know-how. Chain operators seeking growth and profitability from fewer, better-located stores require better techniques for accurately modeling potential.

Customers Are Their Locations

Markets are not uniform, nor is their potential. Markets vary based on what is already available; what can be supported economically; the types of people in the catchment; and the predominant flavor, lifestyle, or culture of the area. Physical infrastructure such as roads and transit networks—together with transportation barriers—limits access and defines whether intersections and destination points are attractive. Pueblo County GIS consultancy service helped a local web-based business improve its market penetration nationwide. This map shows market penetration areas in and around New York City.

Cities can change many of these factors by modifying transportation networks and building new roads, but retail

developments are often organic. Retailers are not part of a master plan; instead, they compete against each other for locations, often pitting neighborhoods against each other. The traditional approach to defining markets based on a primary trade area is out-of-date. Anyone analyzing actual customer data struggles to find that elusive boundary where a customer chooses one store rather than another. GIS can help. Reviewing demographic reports by geography gives business owners and operators a much more accurate picture of the landscape. As an enabler of marketing insight, GIS provides a detailed view into the potential performance of a business under different market conditions and economic factors. It's almost impossible to consistently predict sales using primary trade areas, but business owners have become so used to them that they are willing to put up with the failures. Or are they?

Where customers live or work is not necessarily where they buy something. Purchasing behavior and shopper frequency are driven by convenience. Organizations need to capture and understand shopping habits, not just buying habits. It's no longer acceptable to use the distance from a store to model changes in sales potential or increased competition. The distributions of sales for real-world stores are too divergent and diverse to continue with this historic technique, because today, overbuilt means overexposed.

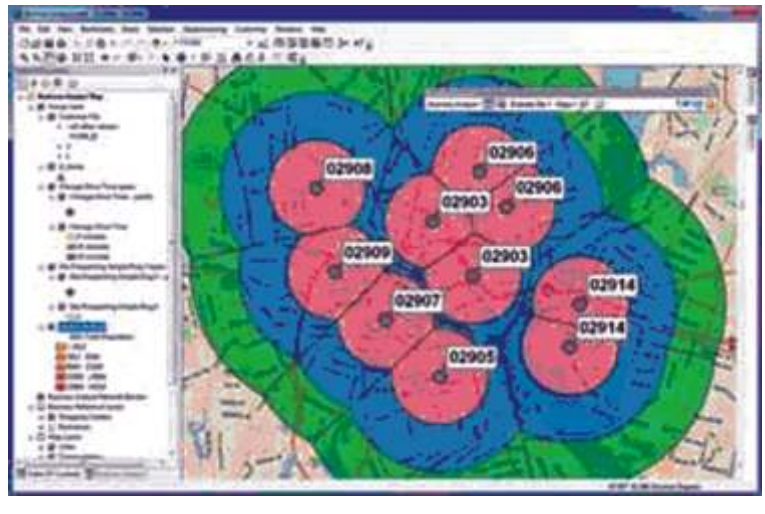
Bring the Store to the Customer

Given the varying demographic profiles of customers, how does one individualize the store, restaurant, or service center to provide the one-to-one, personalized experience consumers now demand? In a world where cheap is chic and coupons are cool, how does a franchise succeed with fewer loyal, value-oriented customers and customers who are trading down but expecting much more? The traditional approach to defining markets by primary trade area is outdated. Finding that elusive boundary where a customer goes to one store rather than another is challenging. GIS can

help.

Business owners need to understand not only whether a business is in the right place but also whether it's a suitable business for that market. This is where local owners and operators are so important. Owners and operators are the front line in any neighborhood. They care about the local area because they live there too. They know neighborhood and customer tastes and have daily exposure to habits and changing behavior. Investing personal assets to create and maintain a business ensures that owners and operators of franchises think long and hard about every decision. Smart organizations are using location analysis to empower local

operators to use profiles of the people in an area to localize merchandise and correctly configure stores to maximize profits. From beverage selections to localized price promotions and location marketing, getting the product and service mix right affects the bottom line every time. This can mean configuring the format and size of the store to different market needs, providing product choices, and sometimes even moving to a new location to reduce competition and optimize revenues.



The Circle of Life

Today's GIS technology embraces the modern, consumer-oriented world. Through iPhone apps and web-based applications, businesses can use GIS without training and with minimal financial outlay. Market research; customer analytics; and the creation of extensive demographic, spending, and income reports let anyone in the franchise industry understand surplus and demand in specific locations and create forward-looking plans. A wide range of analytic techniques and sophisticated models have been published by experts. These resources are readily available. Ranking and scoring a market or franchise territory are now easier than ever. Because this data is continually updated, businesses stay current with market changes and variations in economic factors.

However, benefits don't stop there. GIS is applicable throughout the entire business life cycle. Initially, the technology helps in site selection and market planning by helping owners and operators match opportunities with budgets and expectations. As a retail network matures, GIS helps optimize the growth strategy and maximize returns from investment by creating more efficient systems and optimal store placement. Using GIS, businesses can not only understand where and how they should expand but also better manage the scale, format, and pace of expansion. As an enabler of marketing insight, GIS provides a detailed view into the potential performance of a business under different market conditions and economic factors. Using these tools, many franchises have outperformed other industry sectors during the recent recession. Better insight into changing income and age profiles, house valuation, disposable incomes, lifestyles, spending patterns, and consumer habits has helped companies tune their franchises to match consumer demand. By doing so, many have enjoyed increased gross margins, reduced inventories, and enhanced customer loyalty. This has resulted in much healthier balance sheets than many analysts predicted. Don't Just Get Answers—Get Answers That Matter Even in an economy that has slowed, GIS helps business owners and operators understand their long-term potential, manage the bottom line, and align operations with opportunity. Better business decisions are made by asking the right questions. With GIS, franchisees and franchisors get answers that matter. The technology helps test hunches and investigate scenarios with real-world data using insight gained from information and experience. Whether it is used to look at the possibilities for one location or develop growth strategies for an entire store network, GIS can unlock the market potential of areas and reveal what the expectations are for each. For more information, visit esri.com/business.

By Simon Thompson,
Esri Commercial Business Industry Manage

CASE STUDY

Assessment of vulnerability to climate risks and insurance demand using gis techniques

Abstract

Adaptation to climate change is inevitable and risk transfer mechanisms through insurance can be an important adaptation measure as mentioned in the 2007 Bali Action Plan. Similarly, the UNFCCC Cancun Agreements (2010) state the need to develop climate change related disaster risk reduction measures such as insurance, including microinsurance. Microinsurance tailored to the needs of resource-poor communities is an innovative financial tool for people most vulnerable to climate change. MIA and BASIX are project partners in an intervention called 'Climate Resilience through Risk Transfer' (RES-RISK) which aims at reducing the vulnerability of low-income communities through introducing participatory, composite microinsurance solutions for health, livestock, and agriculture against climate related risks. In this study, we analyze the vulnerability of rural communities to climate change and climate variability and study which factors influence their demand for insurance. Vulnerability is assessed as a function of exposure, sensitivity and adaptive capacity. Factors which were considered to be possible determinants of insurance demand comprise vulnerability, exposure, sensitivity, adaptive capacity, literacy, awareness of insurance, income diversification, social capital and percentage of daily wagers. The data used for this study includes primary data collected through an extensive baseline survey (4200 household interviews), complemented by secondary data from sources like Indian Meteorological Department, Disaster Management Authority, District Agriculture Office and Census Department. This study is conducted at village level and provides valuable insights on which areas would be worst affected by climate change and what factors influence demand for insurance.

Introduction

The anticipated impacts of the climate change in India are an increase in temperature, change in precipitation patterns including monsoons, rise in sea levels and melting of Himalayan glaciers (INCCA 2010). Subsequently, an upscale in frequency and intensity of droughts and floods is expected, with adverse effects on human health, agriculture and livelihood particularly of those who are at the Bottom of Pyramid (BoP). Hence, enhancing the resilience of vulnerable communities to the impacts of climate change through adaptation is becoming increasingly important (Downing and Patwardhan 2005). "Risk management and risk reduction strategies, including risk sharing and transfer mechanisms such as insurance" are identified as an effective adaptation tool in Bali Action Plan at the 13th Conference of the Parties and the 3rd Meeting of the Parties in December 2007 in Bali (Warner, Ranger et al. 2009). The UNFCCC Cancun Agreements (2010) state the need for "risk management and reduction, risk sharing and transfer mechanisms such as insurance, including options for micro-insurance". They also mention the "possible development of a climate risk insurance facility to address impacts associated with severe weather events. However, poorer communities which tend to be more exposed and less resilient to economic shocks have limited access to conventional insurance (Steinmann 2012). Innovative microinsurance solutions tailored to the needs of rural communities can protect the excluded, vulnerable, and poor (Dror and Jacquier 1999).

This context inspired the Climate Change and Development Division of the Embassy of Switzerland to mandate the Micro Insurance Academy (MIA) and BASIX to implement with local field partners the multi-year project 'Climate resilience through risk transfer' (hereafter RES-RISK). The overall goal of the project is to enhance the resilience of vulnerable communities to climate change by developing pro-poor microinsurance solutions. The insurance schemes would offer composite benefit packages comprised of health, agriculture and livestock coverage. Financial protection against losses caused by natural catastrophes (like floods and droughts) will also be offered as extreme weather events are on the rise due to climate change (IPCC, 2007). The pilot areas of the first phase of the project lay in two states of India; Vaishali district in Bihar and Ahmednagar district in Maharashtra – both being exposed to different catastrophes. While Bihar is more prone to floods and irregular monsoon patterns, Ahmednagar is one of the most drought-prone regions in Maharashtra (Guhathakurta 2012). Thus, it is important to map those areas which are more exposed to adverse events, sensitive to get affected and have lesser adaptive capacity to deal with or combined are more vulnerable to climate risks. In order to quantify the vulnerability, a 4-step approach has been applied in the past in various vulnerability assessment studies (O'Brien, Leichenko et al. 2004, Heltberg and Bonch-Osmolovskiy 2011). The 4-step approach of vulnerability assessment is a function of three components, namely exposure, sensitivity, and adaptive capacity (O'Brien, Leichenko et al. 2004, Heltberg and Bonch-Osmolovskiy 2011) which are calculated individually and then in the fourth step, all the individual three scores (for exposure, sensitivity and adaptive capacity) are overlaid to get an estimate of vulnerability. Exposure to catastrophes/adverse events changes the risk perception and demand for insurance according to Carson and Fier (2009). Understanding the factors affecting demand for insurance is also important for the implementation of microinsurance schemes in the RES-RISK project. We present in this study how vulnerability to climate risks varies across different villages and how demand for insurance is associated with various factors like exposure to adverse events, vulnerability to climate risks, awareness and literacy in our target area.

Study Area

The study area is comprised of 52 villages of Bihar and Maharashtra. The villages are located in Hajipur, Bidupur and Vaishali blocks of Vaishali district in Bihar; Shrigonda and Karjat blocks in Ahmednagar district in Maharashtra – two blocks which lie in different agro-ecological zones. The extensive household survey was conducted in those villages by using multi-stage stratification sampling technique. In our study we have two cohorts; the first cohort (intervention group) consists of households, where at least one individual is a member of a self-help group (SHG) of our partner organizations (namely, VAFSA, NIDAN and Sampada Trust).

The second cohort (control group) consists of households, where none of the members is associated to our partner-SHGs. The intervention group will be beneficiaries of the microinsurance project, while the control group will serve as a comparison group and will be excluded from the project intervention. Figure 1: Location map of villages sampled in selected blocks in Vaishali districts (inset map of Vaishali district is taken from Wikipedia)

Input Data

The data used in this study includes both primary and secondary data as shown in Table 1. The primary data consist of the household survey. The secondary data entails rainfall and temperature data from Indian Meteorological Department (IMD), 2001 census data from Census Department, and disaster statistics from Department of Disaster Management.

Methodology

The four steps followed in vulnerability assessment are as follows:

1. Identifying indicators and assessing adaptive capacity: Adaptive Capacity is considered as a function of wealth, education, levels of social capital, and presence of alternative livelihood options (Heltberg and Bonch-Osmolovskiy 2011). The indicators were estimated using field calculator in ArcGIS 9.3 and then overlaid to give assessment of adaptive capacity.
2. Identifying indicators and assessing sensitivity: Sensitivity is a function of susceptibility of population, assets and livelihoods that are exposed to risk. Regions that are exposed to same exposure may have differential vulnerability due to their inherent susceptibility. Overall 12 indicators are identified and estimated using field calculator of ArcGIS 9.3 and then overlaid to give assessment of sensitivity.
3. Identifying indicators and assessing exposure: Exposure is the degree of climate stress upon a particular unit of analysis (Heltberg and Bonch-Osmolovskiy 2011) that may include the frequency of an extreme event like flood.

S.No.	Data used	Source	Details
1	Household data	Household survey (primary data)	Household data for total 4200 households in both Bihar and Maharashtra
2	Rainfall data (daily) Available at block Level	IMD	Shrigonda: Beginning of 1901 to end of 2004 (100 years) with missing years Karjat: Beginning of 1901 to end of 2004 (101 years) with missing years Hajipur: Beginning of 1901 to end of 2006 (88 years) with missing years Bidupur: Beginning of 1964 to end of 2006 (28 years) with missing years Vaishali: Beginning of 1968 to end of 2006 (28 years) with missing years
3	Temperature data (daily minimum and Maximum) at district level	IMD	Ahmednagar: Beginning of 1970 to end of 2008 (36 years) with missing years Patna: Beginning of 1970 to end of 2007 (38 years) with no missing years
4	Census data at village level	2001 Census	Total population, total households, total literate, and tota l population below 6 years
5	Frequency of floods at block level	Department of Disaster Management, Bihar	From 1987 – 2010 (24 years)
6	Data on self-help groups (SHGs)	Primary data	Collected by field coordinators of RES-RISK field partners

Table 1: Details of data used in vulnerability assessment

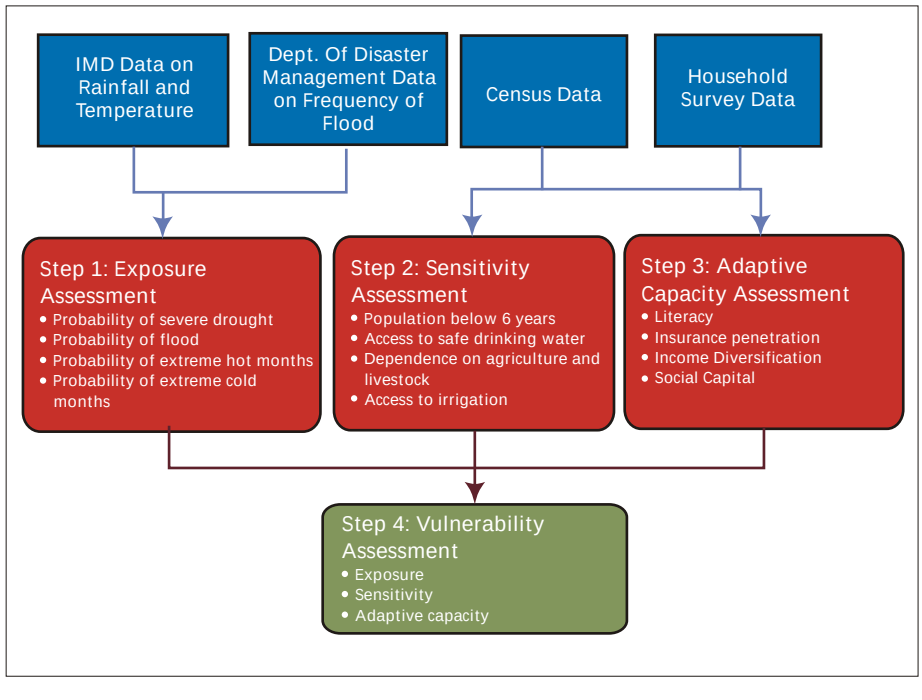


Figure 2: Vulnerability assessment: A 4-step approach

4. Vulnerability Assessment: In mathematical terms, vulnerability is quantified using equation given below (Heltberg and Bonch-Osmolovskiy 2011). Exposure, sensitivity and adaptive capacity have been scaled to values between 0 and 100.

More details on the indicators identified for vulnerability assessment are mentioned in our paper (Sharma and Jangle, 2012). Figure 2 gives an overview of the four steps followed for vulnerability assessment.

To understand how exposure and vulnerability to climate risks might affect the demand for insurance, we analyzed data on stipulated demand captured in household survey and data on vulnerability. These factors were regressed to find if there is any statistically significant relation between the two. Besides vulnerability, the three parameters used to assess vulnerability, i.e. exposure, sensitivity, and adaptive capacity, were also regressed with demand for insurance. Apart from these, some demographic and socio-economic factors were also regressed with demand for insurance. These factors included: a) awareness about insurance, b) literacy, c) income diversification, d) per capita income, e) social capital expressed through percentage of households in a village belonging to SHGs, f) percentage of daily wagers in a village. It is commonly believed that the more people are exposed to climate risks, the more they will demand for insurance (Browne and Hoyt, 2000). However, it may not hold true for areas where awareness of insurance is limited and literacy is low as our study suggests. The demand for insurance also may be influenced by income level. People who struggle for survival are less willing to take up insurance which might benefit them at a later point in time (Jütting, 2003). All these analyses were performed using ArcGIS 9.3, SPSS 16.0 and Microsoft Excel 2010.

Results and discussion

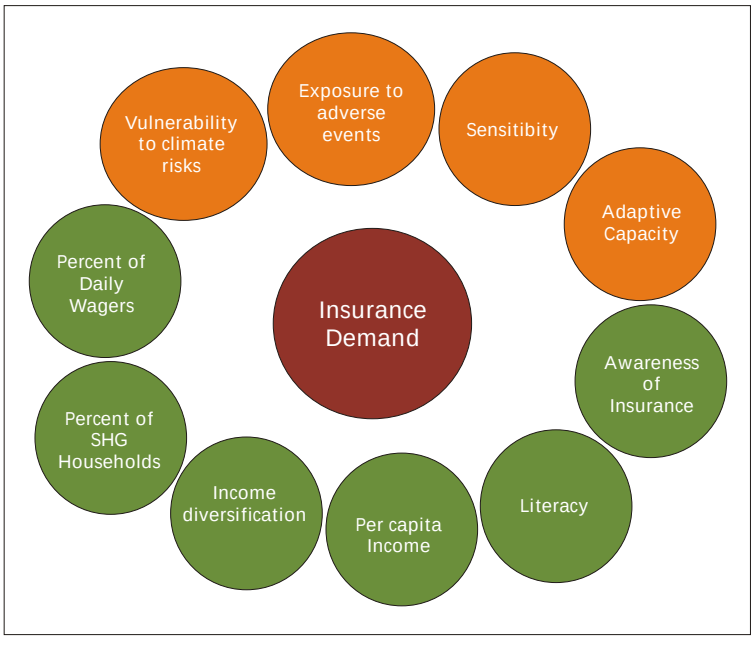


Figure 3: Factors regressed against insurance demand

The data analysis reveals the following findings:

i. Penetration of agriculture and livestock insurance is very low in both Maharashtra and Bihar. There could be supply and ability to pay, but not willingness to pay, maybe because of low awareness or inappropriate insurance products.

ii. Very high percentage of SHG households was found in Vishanpaidu village of Bidupur block, Chakpitambar and Benipur village of Vaishali block in Bihar. However, other villages show a rather low coverage of SHGs. This indicates that social capital is inhomogeneous in the intervention area.

iii. Literacy is much higher in Ahmednagar district than in Vaishali district. iv.Access to agricultural extension services is much higher in Ahmednagar district in comparison to Vaishali, highest in Suregaon and Gavhanewadi in Shrigonda block.

v. In case of health problems, people prefer going to private health clinics over governmental hospitals mostly in Ahmednagar district. Further analysis is required to understand the reason behind this preference. People might perceive that private health clinics provide better treatment and are willing to invest more money in their treatment.

vi. There are more households in Ahmednagar district that have agriculture and livestock as their primary source of income even though water scarcity is more common in this district. However, there are more households in Vaishali district with members being farm laborers.

vii. There is a very clear trend that more households in Ahmednagar rely on unsafe sources for drinking water which could be attributed to water scarcity. However, households in Ahmednagar district mostly use one or the other practice to make water safe for drinking in contrast to Vaishali district.

viii. A lot of households in Ahmednagar and Vaishali district lack a toilet facility. ix.Exposure is much higher in Hajipur and Bidupur blocks in Vaishali district because of the very high frequency of floods and the relatively high frequency of droughts.

x. Vulnerability maps produced after combining exposure, sensitivity, and adaptive capacity using Arc GIS showed highest vulnerability for Imaidpur Sultan of Hajipur district in Vaishali encircled in Figure 4. Even though the sensitivity of the village is medium, low adaptive capacity and high exposure caused high vulnerability.

Table 2 summarizes the findings of the regression analysis. The interpretations of these results are given below

1)Unlike the findings from previous research (Carson and Fier, 2009), in this study it was found that in regions of higher vulnerability to climate risks, demand for insurance was lower. The relation between vulnerability and insurance demand was highly significant.

2)Similarly, the statistical analysis shows that higher exposure to adverse weather events is associated with lower demand for insurance with high significant p-value.

3)Adaptive capacity and sensitivity did not display any significant relation with insurance demand. 4) With good statistical significance, insurance awareness is associated with insurance demand.

5) Per capita income, income diversification and percentage of SHG households did not show any significant relation with insurance demand.

6) Literacy levels are associated with good statistical significance with demand for insurance.

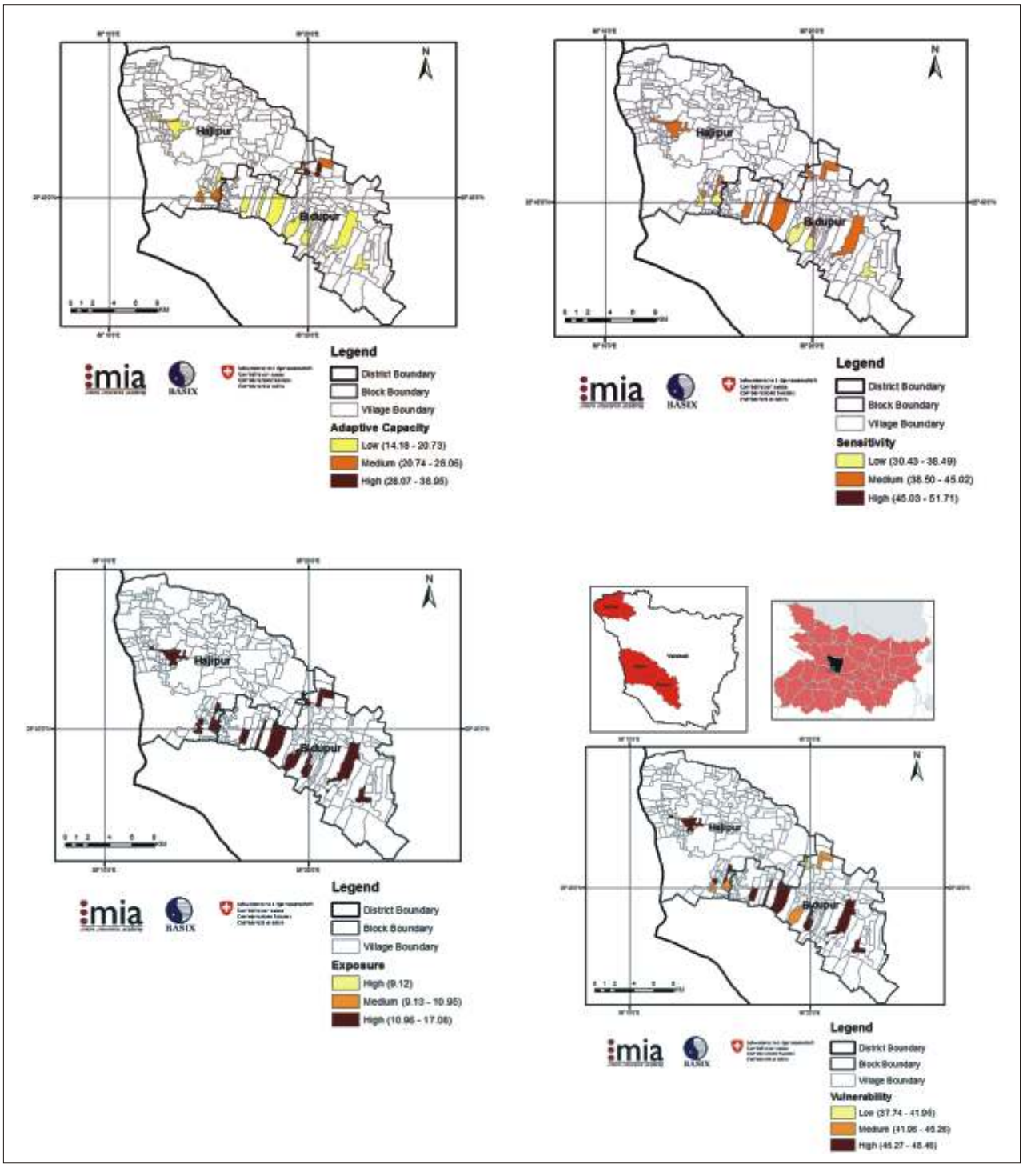


Figure 4: Adaptive capacity, sensitivity, exposure and vulnerability maps for Hajipur and Bidupur blocks in Vaishali district (Bihar)

7) With high statistical significance it can be stated that people relying on daily wages for income have lower demand for insurance.

Conclusions

Vulnerability mapping in this study helped in identifying the areas that might be worst affected in case of calamities like flood and drought and other extreme weather events. Exposure is homogeneous across the villages within a block, sensitivity varies across villages within a block but not so significantly, but adaptive capacity, on the other hand, varies significantly. This leads to varying vulnerabilities within a block. In addition, vulnerability and exposure not always point in the same direction. Thus, estimating vulnerabilities only on the basis of exposure to extreme events may not give a holistic picture as there are many intrinsic characteristics of the region that may influence the impact of an adverse weather event. These intrinsic characteristics are defined by sensitivity and adaptive capacity which are necessary to be considered for vulnerability assessment.

Contrary to the common belief that higher exposure to adverse weather events increases the demand for insurance, we found in our intervention areas that higher exposure is associated with lower demand. Further research should be conducted to reveal the reasons. On the other hand, we found that lower insurance awareness is highly positively correlated with lower insurance demand. These findings suggest for our intervention the need to increase the insurance awareness and thus to translate the need for

Table 2: Results of regression to assess factors associated with insurance demand

Dependent Variable	Independent Variable	Slope	p-value	Interpretation
Insurance Demand	Vulnerability	-1.068	0.004***	Positively related
Insurance Demand	Exposure	-1.594	0.000***	Positively related
Insurance Demand	Sensitivity	-0.065	0.74	No significant relation
Insurance Demand	Adaptive capacity	0.311	0.15	No significant relation
Insurance Demand	No awareness of insurance	-0.267	0.01**	Positively related
Insurance Demand	Per capita income	0.002	0.70	No significant relation
Insurance Demand	Literacy	0.221	0.027**	Negatively related
Insurance Demand	Income Diversification	0.084	0.45	No significant relation
Insurance Demand	Social Capital	-0.015	0.83	No significant relation
Insurance Demand	Daily wage	-0.163	0.000***	Positively related

*Significant (p-value < 0.10 and >=0.05), **Very Significant (p-value < 0.05 and >=0.01)
, ***Highly Significant (p-value < 0.01)

insurance into solvent demand. We also observed that in villages with higher percentage of daily wagers the demand for insurance was lower. It would have to be further investigated whether a situation of uncertain income reduces the willingness to invest in insurance. Again, increasing insurance awareness and explaining the value proposition of insurance might increase the demand for insurance even for daily wagers. Especially when the ability to pay is low, insurance solutions have to be needs-based and administration costs reduced as much as possible. In the RES-RISK project, we emphasize the creation of insurance awareness to increase the demand for insurance and the willingness to pay. Through the implementation of participatory microinsurance schemes located in the social context of the communities, we increase the trust of the target communities and reduce administration costs.

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School of Environment & Natural Resources

Doon University

Uttarakhand is well known for the high standards of its school education. To cater to the educational needs of bright students leaving the schools, the Government of Uttaranchal approved the establishment of a University that would become a centre of higher learning in modern disciplines. The Doon University bill, 2005 was passed by the Uttaranchal Legislative Assembly and assented to by the Governor on April 23, 2005. The University shall have its headquarters located at Dehradun with the provision that it may establish additional campus at such other placesas necessary.

Doon University aims to be the premier institution of learning in India by promoting excellence in teaching and research. Established by the Government of Uttarakhand (Uttaranchal AdhiniyamSankhaya 18 of 2005).Also, recognized and enlisted under UGC Section 2(f) and 12(b). The university recognizes its stakeholders beyond its boundaries. The first academic session has been started from 6th august 2009, but its aim at not only to impart good academic knowledge to the students but also to nurture them to improve their employability.

School of Environment & Natural Resources, Uttarakhand is one of the hyper-diversity states of the country home to more than 4,200 species of flowering plants which is 23 percent of the total flowering plants of India. Many of these plant species are sourcing for medicinal herbs used in Ayurveda, aromatic plants, and numerous non timber forest produce (NTFP) of commercial importance. This valuable plant wealth needs to be conserved, sustainably utilized and benefits arising out of biological resources shared equitably among stakeholders.To tackle such environmental challenges scientifically and proactively, trained professionals in specialized areas of environmental sciences and natural resources are urgently required. Taking cognizance of increasing environmental problems, the Doon University has established a School of Environment and Natural Resources.

The School of Environment and Natural Resources aims at meeting the needs of the society by providing advance training to students in environment and natural resources management through a structured curriculum with integrated multidisciplinary approach involving latest advances in the fields of physical, chemical and biological components of the environment. Wherever needed emphasis will be given to geo-morphological attributes, and socio-ecological and socio-cultural aspects of mountain ecosystem highlighting issues and problems illustratedwith Case Studies.

Course Curriculum School of Environment and Natural Resources runs a two year Integrated Masters Program (M.Sc.) in Environmental Sciences in

- Environmental Studies
- Natural Resource Management

Geomatics Course (EES – 514) is one of the course module in this Integrated Masters Program contributing to 3 credits to the entire M.Sc. program. This course module aims to cover General Introduction to Geomatics; Introduction to Remote Sensing; Applications of Remote Sensing, Techniques of visual interpretations and Digital Image processing; Introduction to GIS; Applications of GIS with different modules. The course module also involves 3 month Internship and 6 month dissertation on geomatics.

Infrastructure & Research Facility The School is well equipped with modern laboratories (Instrumentation , Analytical and Field Laboratories) equipped with quality equipments required for teaching and research in Environmental Studies and Natural Resource Management. In addition, the Geomatics Lab is well equipped with 40 interactive computer terminals with multiple functions of teaching/ practical in Statistics, Geomatics (Remote sensing and GIS) and communication (animation) and general use for internet browsing, word processing, statistical analysis of data, etc. The Geomatics Facility includes most of the geospatial softwaressuch as ARC GIS licenses, ERDAS, SPSSand.STATISTICA and relevant instruments as required in the Geomatics domain. Research Projects

Currently, four research projects sponsored by National Initiative on Climate Resilient Agriculture, UCOST, GTZ and Ministry of New and Renewable Energy, The other research areas in Geomatics is Geo-Botany using Remote Sensing and GIS (Geomatics); Mobile Mapping with Participatory Approach; Disaster Mitigation and Management; Training Need Analysis (TNA)

For More Details Contact:

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Env. Studies, School of Environment and Natural Resources,
Doon University, Dehradun

ArcGIS Explorer Desktop

What is ArcGIS Explorer Desktop? It is a free Downloadable Desktop Client (2D/3D GIS Viewer) that gives you an easy way to explore, visualize, and share your GIS information across the organization with facilities like:

- Access ArcGIS Online basemaps and layers,
- Fuse your local data with map services to create custom maps,
- Add photos, reports, videos, and other information to your maps.
- Perform spatial analysis (e.g., visibility, modeling, proximity search).

Tips and Tricks

1. Creating your own map slides quickly

Step i: Open the presentation tab on the Home tab, in the Presentation group, click Edit Presentation:

Step ii: Arrange and prepare the map to display the content you want

You can adjust the viewpoint, turn items in the Contents window on or off, add notes, image overlays, etc.

Step iii: Capture the slide

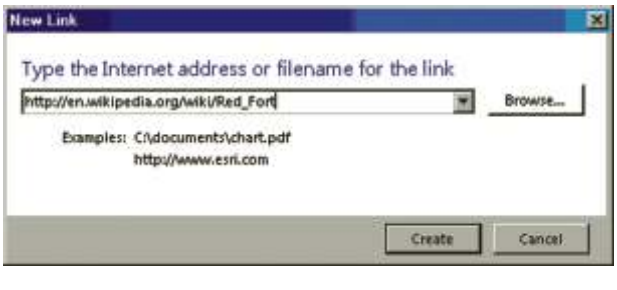
On the Presentation tab, in the Slides group, click Capture New Slide. ArcGIS Explorer adds the slide to the Slides window, positioned after the selected slide, if one exists:

To create the next slide, repeat steps 1 through 3. Optionally you can add titles

2. Link documents / websites for providing additional information

Step i: In the Create group on the Home tab click Link.

Step ii: Specify an URL, a UNC or local path file specification for the link, then click Create.



Link will appear as the first item in the Contents window.

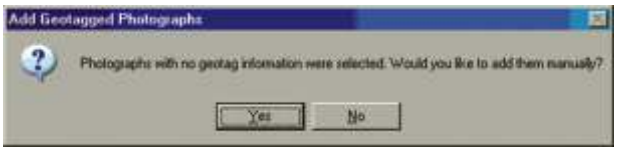
3. Add Geotagged Photographs

Step i: On the Home tab, in the Map group, Step ii: click Add Content and then click Geotagged Photographs... you will see a windows file browser that you can use to add photographs. Selected photographs that contain geotags

Use the arrow buttons to view each picture.

will be added directly to the map as point notes.

Step iii: Photographs that are not geotagged will be loaded



The photograph will be geotagged with coordinates from the clicked location.

For more information and for free download visit.

http://www.esri.com/software/arcgis/explorer OR

Contact: support@esriindia.com

Purpose: Development for Android Application using Esri Map Services.

Environment:

- Windows XP (32-bit), Vista (32- or 64-bit), or Windows 7 (32- or 64-bit)
- OpenGL ES 2.0 support.
- Intel® processor with support for VT-x, EM64T, and Execute Disable (XD)Bit functionality
- Intel Hardware Accelerated Execution Manager
- Android software development kit (SDK) platforms 2.3 (API 10) and above.
- Eclipse 3.6.2 (Helios) or greater
- JDK 6 (JRE alone is not sufficient)

Description:

This module demonstrates the implementation of Java implementation for Android phones using ESRI online Map Services. Methods given below show Map on container, Click and create Point on Map, GPS location search.

Code Snippet:

```
import com.esri.android.map.*;
import com.esri.android.map.ags.ArcGISDynamicMapServiceLayer;
import com.esri.android.map.ags.ArcGISTiledMapServiceLayer;
import com.esri.android.map.event.OnLongPressListener;
import com.esri.android.map.event.OnSingleTapListener;
import com.esri.android.map.event.OnStatusChangedListener;
import com.esri.core.geometry.Envelope;
import com.esri.core.geometry.GeometryEngine;
import com.esri.core.geometry.LinearUnit;
import com.esri.core.geometry.Point;
import com.esri.core.geometry.SpatialReference;
import com.esri.core.geometry.Unit;
import com.esri.core.map.Graphic;
import com.esri.core.symbol.SimpleMarkerSymbol;
import com.esri.core.symbol.SimpleMarkerSymbol.STYLE;
Public class MapActivity extends Activity
{
MapView mapControl;
final static double SEARCH_RADIUS = 5;
String tiledMapUrl=
"http://server.arcgisonline.com/ArcGIS/rest/services/ESRI_StreetMap_World_2D/MapServer";
private GraphicsLayer graphicsLayer;
private  android.location.LocationManager
locationManager=null;
LocationListener locationListener= null;
double _xpoint;
Public void onCreate(Bundle savedInstanceState)
{
    Super.onCreate(savedInstanceState);
try {
    setContentView(R.layout.map);
    // Retrieve the map and initial extent from XML layout
    mapControl = (MapView) findViewById(R.id.map);
    ArcGISTiledMapServiceLayer tlLayer= new
    ArcGISTiledMapServiceLayer(tiledMapUrl);
    //Add Mapservice to Control
    mapControl.addLayer(tlLayer);
    final ImageButton btnZoom = (ImageButton)
    findViewById(R.id.imgBtnMap);
    btnZoom.setEnabled(false);
    mapControl.addLayer(tiledLayer);
    graphicsLayer = new GraphicsLayer();
    mapControl.addLayer(graphicsLayer);
    mapControl.setOnStatusChangedListener(new
    OnStatusChangedListener() { private static final long
    serialVersionUID = 1L;
    public void onStatusChanged(Object source, STATUS
    status)
{
    if(source==mapControl && status==STATUS.INITIALIZED)
    {
        btnZoom.setEnabled(true);
    final ImageButton btn = (ImageButton)
    findViewById(R.id.imgBtnEdit);
    Btn.setEnabled(false);
    BtnZoom.setOnClickListener(new OnClickListener()
{
    public void onClick(View v)
    {
        GetGPS()
    }
});
MapControl.setOnSingleTapListener(new OnSingleTapListener)
{
private static final long serialVersionUID = 1L;
//Click on Map, convert screen Coordinates to Map
Cooridates and to create a point
public void onSingleTap(float x, float y)
{
graphicsLayer.removeAll();
Point pt = mapControl.toMapPoint(new Point(x, y));
        _xpoint=pt.getX();
        _Ypoint=pt.getY();
```

```
Graphic graphic = new Graphic(pt, new
SimpleMarkerSymbol(Color.BLUE, 15,
STYLE.CIRCLE));graphicsLayer.addGraphic(graphic);
Btn.setEnabled(true);
btn.setOnClickListener(new OnClickListener()
{
    public void onClick(View v)
    {
        String lat = String.valueOf(_ypoint);
        String lng = String.valueOf(_xpoint);Intent
        mapPtIntent = new Intent(
        getApplicationContext(), MapPointActivity.class);
        mapPtIntent.putExtra("lat", lat);
        mapPtIntent.putExtra("lng", lng);
        startActivity(mapPtIntent);
        }
    });
}
    });
    }
    catch (Exception e)
    {
    // TODO Auto-generated catch block
        e.printStackTrace();
    }
}
    protected void onPause()
    {
        Super.onPause();
        mapControl.pause();
    }
    protected void onResume()
    {
        super.onResume();
        mapControl.unpause();
/// GPS location search on Map
void GetGPS()
{
    try
    {
    locationManager = (LocationManager)
    this.getSystemService(Context.LOCATION_SERVICE)
    locationListener = new LocationListener()
    { if(location != Null)
        boolean GPSFixed=true;
        double locy = location.getLatitude();
        double locx = location.getLongitude();
        Point wgspoint = new Point(locx, locy);
        Point mapPoint = (Point) GeometryEngine
                .project(wgspoint, SpatialReference
                .create(4326), mapControl
                        .getSpatialReference());
        Graphic graphic = new Graphic(wgspoint,
                new SimpleMarkerSymbol(Color.BLUE, 15,
                                        STYLE.CIRCLE));
        mapControl.centerAt(wgspoint, true);
        mapControl.zoomTo(wgspoint, 100);
        locationManager.removeUpdates(locationListener);
    }
}
        public void onProviderDisabled(String provider)
        {
        showGPSAlert();
        }
        public void onStatusChanged (String provider, int
        status, Bundle extras){}
        public void onProviderEnabled(String provider){}
};
locationManager.requestLocationUpdates(LocationManagerG
PS_PROVIDER,0,0, locationListener);
}
Catch(Exception e) {}
finally{}
};
private void showGPSAlert() {
        //if GPS is off on device – alert to switch on.
        AlertDialog.Builder builder = new
        AlertDialog.Builder(this);
        Builder.setMessage("GPS Disabled, like to enable
        Location Settings? Either It will take default
        Location")
        .setCancelable(false).setPositiveButton("Yes", new
        android.content.DialogInterface.OnClickListener()
{
        public void onClick(android.content.DialogInterface
        dialog, int id)
{
        Intent myIntent = new Intent(
        Settings.ACTION_LOCATION_SOURCE_SETTINGS );
                startActivity(myIntent); }})
                .setNegativeButton("No", new
                DialogInterface.OnClickListener() {
        public void onClick(DialogInterface dialog, int id)
        {
            MapActivity.this.finish();
        }
        });
        AlertDialog alertdialog = builder.create();
        alertdialog.show();
    }
}
```

Global Page MacKenzie Adopts ArcGIS Online and Opens Up New Lines of Business

Esri's Cloud-Based Solution Increases Commercial Opportunities and Expands Marketplace

Redlands, California—MacKenzie Commercial Real Estate Services, one of the largest commercial real estate firms in the greater Baltimore, Maryland, metropolitan area, is expanding its service model with the help of Esri's ArcGIS Online. Using the cloud-based solution, MacKenzie is able to provide its clients with a new generation of strategic decision-making tools and information services. The new opportunities ArcGIS Online has opened up have prompted MacKenzie to become an Esri partner so it can offer its web-based solutions to a broader range of customers.

ArcGIS Online allows MacKenzie to organize retail partner information based on need and ensure that it can be accessed from anywhere on any device. "I think about the world I was in just 10 years ago—me having to build applications and run analyses for people—and now the technical and operational barriers have been lifted," said Matt Felton, managing director of MacKenzie's GIS & Research group.

MacKenzie's team has created dashboards, known as MapDash, that provide C-level decision makers (CEO, COO, CFO) with a map-based portal for accessing both business data and market intelligence. One of these dashboards, MapDash for Leases, allows owners of multisite businesses to quickly access information about a particular asset. This dashboard makes access to even the largest portfolio intuitive, quick, and easy. Since MacKenzie removed the complexity and hassle of managing books of property information, brokers can now focus on delivering superior client advice services and ensuring that portfolios perform at their highest and best level.

MacKenzie's success in applying GIS to business strategy has prompted the MacKenzie Companies to create a new business venture, which will be officially launched in January 2013. It will extend MacKenzie's GIS capabilities beyond Maryland and into new disciplines such as banking and health care.

"We are pleased to see MacKenzie translate its own business advantage into new opportunity for its clients. ArcGIS Online and the iPad application are moving the discussion from the back office to the field, the very place where you need to make decisions based on a complete, factual understanding of site operations and opportunities," said Simon Thompson, director, commercial solutions, Esri. "As a result, MacKenzie's customers benefit from an accelerated ability to respond to changing consumer behavior and market conditions, which will help them be more successful. This is good for everyone."

To learn more about MacKenzie's offerings, visit www.SayItWithAMap.com. To find out how Esri solutions can help your business, visit esri.com/business ●

Con-way Freight Selects Esri Technology to Improve Route Planning and Optimization

Redlands, California—Con-way Freight (NYSE: CNW) has signed an enterprise license agreement (ELA) with Esri that gives the company unlimited access to Esri software. The ELA provides an integrated geospatial technology solution that supports Con-way's nationwide less-than-truckload lot (LTL) freight transportation network in North America.

With a fleet of 9,100 trucks and 25,000 trailers operating from 300 locations, Con-way Freight is one of the top trucking companies in the United States. The company will use Esri technology to assist with route planning, optimization, and business analytics activities.

The first phase of Con-way's deployment will be implemented to visualize and track trucks within local delivery areas, providing more accurate geospatial data to support better decision making in pickup and delivery operations. This will support future projects aimed at optimization of such operations and identifying available capacity for new business.

"Esri technology will drive increasing efficiencies into our business while supporting operational improvements that will lead to faster, more reliable deliveries for our customers," said Mark Schue, director of information technology at Con-way. "In addition, it creates efficiencies for our IT organization by allowing us to support a single platform that can serve all our geospatial needs."

The integrated ArcGIS solution will help the company easily compile, analyze, visualize, and share geospatial data, facilitating faster and more efficient freight delivery and improved ability to meet customer expectations. The agreement also enables any Con-way company to purchase ArcGIS software under the same master license, extending the benefits of the technology to Con-way Freight's affiliated businesses.

To learn more about the benefits of Esri's ELA program, please visit esri.com/ela ●

GIS TRIVIA

Did you know that…..

How a GIS represents and models Geographic Information

All geographic information is represented and managed using three primary GIS data structures:

- Feature classes
- Attribute tables
- Raster datasets

These three fundamental data types can be extended with additional capabilities to manage data integrity, model geographic relationships (such as network connectivity and flow), and add important geographic behavior.

Each GIS has a collection of data sets

Typically, a GIS is used for handling several different datasets where each holds data about a particular feature collection (for example, roads) that is geographically referenced to the earth's surface.

A GIS database design is based on a series of data themes, each having a specified geographic representation. For example, individual geographic entities can be represented as features (such as points, lines, and polygons); as imagery using rasters; as surfaces using features, rasters, or TINs; and as descriptive attributes held in tables.

In a GIS, homogeneous collections of geographic objects are organized into data themes such as parcels, wells, buildings, orthoimagery, and raster-based digital elevation models (DEMs). Precisely and simply defined geographic datasets are critical for useful geographic information systems, and the design of layer-based data themes is a key GIS concept.

GIS datasets are logical collections of geographic features

Geographic representations are organized in a series of datasets or layers. Most datasets are collections of simple geographic elements such as a road network, a collection of parcel boundaries, soil types, an elevation surface, satellite imagery for a certain date, well locations, or surface water.

In a GIS, spatial data collections are typically organized as feature class datasets or raster-based datasets.

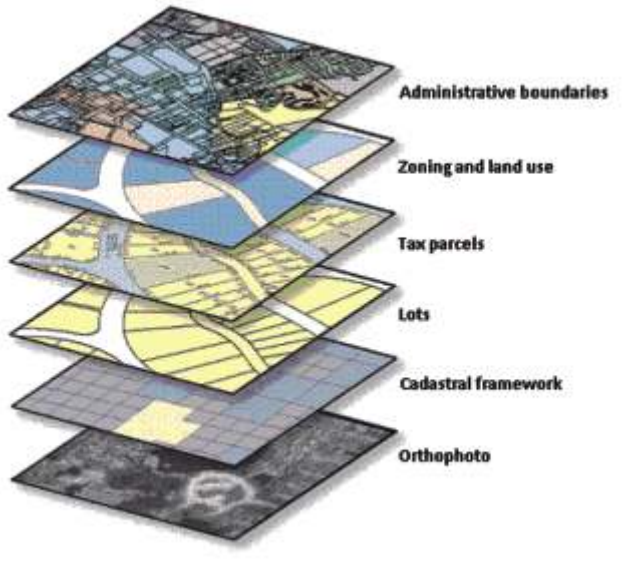
Many data themes are best represented by a single dataset such as for soil types or well locations. Other themes, such as a transportation framework or surface elevation, are often represented by multiple datasets. For example, transportation might be represented as multiple feature classes for streets, intersections, bridges, highway ramps, railroads, and so on. The table below illustrates how surface elevation might be represented using multiple datasets.

Raster datasets are used to represent georeferenced imagery as well as continuous surfaces such as elevation, slope, and aspect.

Thematic layers become datasets. This is the key organizing principle in a GIS database.

The collection of themes acts as a stack of layers. Each theme can be managed as an information set independently of other themes. Each has its own representation (as a collection of points, lines, polygons, surfaces, rasters, and so on). Because layers are spatially referenced, they overlay one another and can be combined in a common map display. In addition, GIS analysis tools, such as polygon overlay, can fuse information between data layers to discover and work with the derived spatial relationships.

Any effective GIS database will adhere to these common principles and concepts. Each GIS requires a mechanism for



describing geographic data in these terms, along with a comprehensive set of tools to use, manage, and share this information.

Common GIS representations

Theme	Geographic representation
Streams	Lines
Large water bodies	Polygons
Vegetation	Polygons
Urban areas	Polygons
Road centerlines	Lines
Administrative boundaries	Polygons
Well locations	Points
Orthophotography	Rasters
Satellite imagery	Rasters
Surface elevation	DEM rasters
	Contour lines
	Elevation points
	Shaded relief rasters
Land parcels	Polygons
Parcel tax records	Tables

How GIS users work with geographic information

Users work with geographic data in two fundamental ways:

- As datasets, which are homogeneous collections of features, rasters, or attributes, such as parcels, wells, buildings, orthophoto imagery, and raster-based digital elevation models

- As individual elements or subsets, such as the individual features, rasters, and attribute values contained within each dataset

Working with GIS data sets

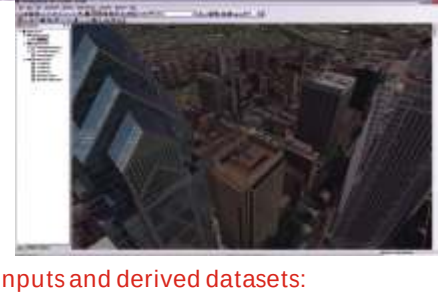
In ArcGIS, homogeneous collections of geographic objects are organized into datasets about common subjects, such as parcels, wells, roads, buildings, orthophoto imagery, and raster-based DEMs.

Many of the operations that users perform in ArcGIS work on datasets as inputs or create new datasets as results. Datasets also represent the most common method for data sharing among GIS users.

Datasets provide the primary data sources for each of the following:

Maps, globes, and 3D scenes:These views provide the principal display of geographic information as a series of map layers. Each map layer references a specific GIS dataset and is used to symbolize and label the dataset. In this way, map layers help bring your GIS datasets to life in your GIS.

Map layers in 2D maps and 3D scenes are used to symbolize and label GIS datasets. This map has layers for cities, highways, state and county boundaries, water bodies, and streams. Each of these layers is used to portray a GIS dataset.

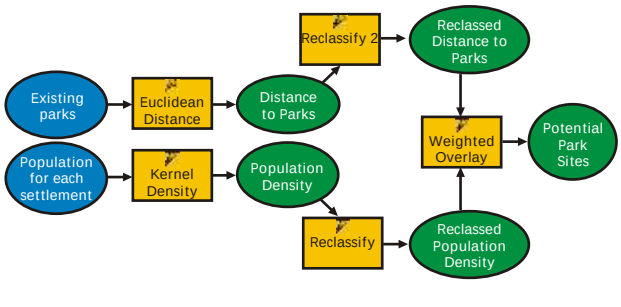


Geoprocessing inputs and derived datasets:

GIS datasets are common data sources used for geoprocessing and are useful for automated data processing and GIS analysis. Datasets are used as inputs, and new datasets are derived as results for various geoprocessing tools.

Geoprocessing helps you automate many tasks as a series of operations so they can be run as a single step. This helps create a repeatable, well-documented data processing workflow.

Users also work with ArcGIS datasets to perform spatial analysis.



This model illustrates how to identify and rank potential sites for new parks. Good candidate locations must have high population counts and not be too close to existing parks.

Working with individual features and elements in datasets

In addition to working with datasets, users also work with the individual elements contained in datasets. These elements include individual features, rows and columns in attribute tables, and individual cells in raster datasets. For example, when you identify a parcel by pointing at it, you're working with the individual data elements in a dataset:

You work with individual data elements when you edit features—as in this example for editing road centerlines:

When working with tables, users work with descriptive information contained in rows and columns, as illustrated here:

ArcGIS Online - FAQs (continued from Vol 6 Issue 2)

Can I open maps saved from ArcGIS Explorer Desktop, ArcMap, or other Esri software?

ArcGIS Explorer Online works with maps that use the Esri web map format. If you create a map with ArcGIS Explorer Online, you will be able to open it in many different ArcGIS clients, including ArcGIS Desktop applications, and ArcGIS Explorer Desktop, in a browser, or on a mobile device. ArcGIS Explorer Online cannot open maps saved to the default ArcMap format, the Map Document (*.mxd). However, there are several ways to share information between different clients, as well as sharing web maps as described above.

Can I share maps with individuals instead of groups?

Maps can be made publically available, so that any individual can find them; alternatively they can be shared with a specific group. If you want to share your map with a specific individual and you do not mind other users discovering it too, then you can make the map public and then send the user a link to the map. If you cannot make your map public, you must make a new group and invite the user you wish to share the map to join that group.

Can I customize ArcGIS Explorer Online, or embed it into my website?

ArcGIS Explorer Online is not customizable, and the application itself cannot be embedded into your own website. However, you can embed just the web map in your own website.

Alternatively, consider using the ArcGIS API for Silverlight and writing your own web mapping application to meet your requirements; ArcGIS Explorer Online is built using the ArcGIS API for Silverlight, which supports using web maps. Other web APIs for Flex and JavaScript are also available from Esri which may be suitable for your requirements.

Where is the Legend button? How can I hide and show the Legend panel?

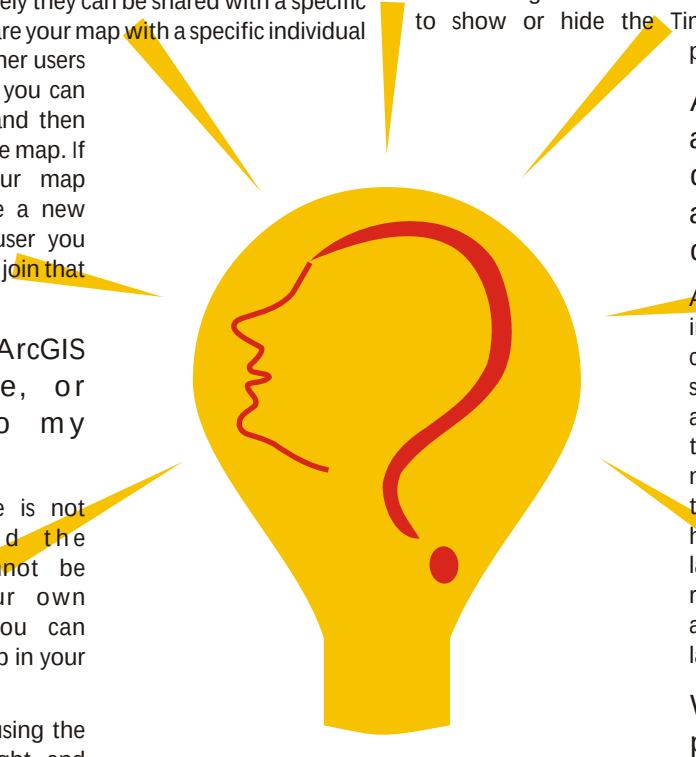
The Legend button has been removed from the toolbar, as the Map Legend panel is automatically added to the left side panel when one or more layers in the map have available legend information and are visible. You can hide the Map Legend by clicking a different tab in the left side panel, or by clicking the arrow to hide or show the left side panel entirely.

Where is the Identify tool?

The Identify tool has been removed, as the intent is that the user is better able to explore information about features in the map by using configured pop-up information windows. Information pop-up windows can be configured to show attribute information in a table layout, formatted descriptive text including attribute values at specified locations in the text, and also to include the display of images, feature attachments, and charts derived from feature attributes.

Where is the Time button? How can I hide the Time Navigator?

The Time button has been removed as the Time Navigator is now shown and hidden automatically. The Time Navigator will be shown if a time-enabled layer is visible in the map. To hide the Time Navigator, turn off time-enabled layers in the map by unchecking the checkbox next to the layer in the Map Contents panel. To see which layers in the map are time-enabled, open the Time Settings dialog box by clicking the Time Settings button in the Time Navigator. You can choose to show or hide the Time Navigator while running a presentation.



ArcGIS Explorer Online appears to be streaming data, but I did not add any data. What is it doing?

ArcGIS Explorer Online shows an indicator bar over the bottom center of the map when it is streaming data. This happens after you have added a layer to the map, but also when you are navigating around the map, or turning layers on or off. This can happen frequently if you have layers which are automatically refreshed at an interval, or if you are animating a time-aware layer.

When I run my presentation, why is the extent of the map shown in the slide is different to the extent of the map when I edited the slide?

When running a presentation in full screen mode, the center point and scale of the map in the slide is preserved, so that the appearance of any layers with scale-dependent display is preserved. This can sometimes mean that the extent of the map shown in the slide may be slightly different when running a presentation.

More specific details on supported browsers can be found at the Esri support website.

If you wish to view or edit a web map, but your system cannot support these requirements, you may wish to use the ArcGIS.com map viewer instead, which does not require any browser plug-ins.

Careers at esri India

Role: Architect

Experience
8+ years

Qualification
BE / B. Tech / MCA / M.Sc

Location
New Delhi/ Bangalore

Skill Set

- Expertise in Architecting large scale software systems
- Knowledge on Architecture and Integration Patterns.
- Expertise in OOAD
- Knowledge on Design Patterns
- Ability to read and generate UML documentation
- Expertise in Java EE (JSP I Servlets /EJB/JMS) and Java SE
- Demonstrated experience in SOA and Web Services
- Experience in working with XML
- Experience in working with an IDE similar to Eclipse, and Netbeans, etc.
- Knowledge of Spring framework or similar application development frameworks
- Java based portlet development
- Knowledge of ORM like Hibernate, JDBC, relational databases, and SQL
- Database- Experience with Oracle and Oracle spatial; experience in database design; Expertise in database optimization and performance tuning techniques, backup and restore strategies, Database security, Disaster recovery and high availability.

Desired Skill

- Knowledge and experience with CMMi environment preferred
- GIS technologies

Role: Designers

Experience
5+ years

Qualification
BE / B. Tech / MCA / M.Sc

Location
New Delhi/ Bangalore

Skill Set

- Expertise in Java EE(JSP/ Servlets/ EJB/JMS) and Java SE
- Expertise in OOAD
- Knowledge on Design Patterns.
- Ability to read and generate UML documentation
- Demonstrated experience in SOA and Web Services
- Experience in working with XML
- Experience in working with an IDE similar to Eclipse, Netbeans, etc.
- Knowledge of Spring framework or similar application development frameworks
- Knowledge of Hibernate, JDBC, relational databases, and SQL

Desired Skill

- Knowledge and experience with CMMi environment preferred
- GIS technologies
- Java based portal development

Role: Developer

Experience
3+years

Qualification
BE / B. Tech / MCA / M.Sc

Location
New Delhi/Bangalore

Skill Set

- Experience in Java EE (JSP/Servlets/EJB/JMS) and Java SE
- Experience in OOAP
- Experience in working with XML
- Experience in working with an IDE similar to Eclipse, Netbeans, etc.
- Knowledge of hibernate, JDBC, relational databases, and SQL
- GIS- Development experience in enterprise GIS programming in Java, Development knowledge in using OGC services in GIS.

Desired Skill

- Exposure to CMMI processes
- GIS technologies
- Java based portal development

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