WEB GIS Portal

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Abstract

As telecommunications are inherently spatial, spatial information and spatial assisted decision making becomes more and more important in everyday operation and maintenance activities. Bringing and presenting aggregated information to corporate users via WEB technology has been well documented and implemented in Croatian Telecom. There are several Portals presenting organizational and technological information’s, but an integration of GIS and WEB Portal technologies is strategic task in building corporate Spatial Decision Support System.

Introduction

In today's global community, the more information you have at your fingertips, the easier it is to make an informed decision. Information comes in many different ways, from company reports and statistics from down the hall to digital photos and multimedia from across the world.

Information can be overwhelming and the need for timely decisions calls not only for innovative ways to access accurate, up-to-the minute information, but also tools to help present the information in useful ways.

A geographic information system or GIS allows you to bring all types of data together based on the geographic and location component of the data.

But unlike a static paper map, GIS can display many layers of information that is useful to you. You will be able to integrate, visualize, manage, solve, and present the information in a new way. Relationships between the data will become more apparent and your data will become more valuable.

GIS will give you the power to create maps, integrate information, visualize scenarios, solve complicated problems, present powerful ideas, and develop effective solutions like never before. GIS is a tool used by individuals and organizations, schools, governments, and businesses seeking innovative ways to solve their problems. A GIS makes it possible to link, or integrate, information that is difficult to associate through any other means. Thus, a GIS can use combinations of mapped variables to build and analyse new variables.

If what you do involves managing information, and that information can be linked to geographic locations, then GIS can help you organize that information in new ways so that you can make new discoveries and get more out of the information you have. The possibilities are endless.

GIS represents the real world on a computer similar to the way maps represent the world on paper. But desktop GIS has power and flexibility that paper maps lack.

Basic GIS terms

The objects represented on maps, whether natural or man-made, are called features. Each map feature has a location, a representative shape, and a symbol that represents one or more of its characteristics.

The locations of map features reflect more or less accurately their locations on the earth's surface. Because features on maps are organized according to relative position or location, maps are particularly good for showing the relationships (spatial relationships) between feature locations.

Shapes alone do not give you enough information. So, maps use graphic symbols to help identify features and provide information about them. There are symbols for points, symbols for lines, and symbols for areas. Symbols for points often look like the features they identify.

Most features can be represented as more than one shape. The scale of a map tells you how large the features appear on the map compared to their actual size. The larger the map scale, the bigger the map features will appear. You are not limited to the amount of information you can get about what you see on the map. GIS stores all the information about map features in a GIS database and links the features on the map to the information about them (attribute). This means that you can access all the information about a feature by simply clicking on it. The attributes of a customer, for example, might include its name, address, phone number. This means that you can access all the information about a feature by simply clicking on it.

Another important variable to consider is the type of traffic you'll encounter. Using the same features, you've produced a different map. The GIS can locate the features you want based on any number of attributes and display them on a map. Because the link between features and attributes is a two-way relationship, changing an attribute in the table automatically results in a change on the map.

This simple link between features and attributes makes desktop GIS a truly dynamic system.

Desktop GIS links sets of features and their attributes and manages them together in themes. A theme contains a set of related features, such as roads, streams, or parcels, along with the attributes for those features. Themes are made up of features with a set of common attributes. Sometimes features that share common attributes are placed in separate themes for convenience.

All the themes for a geographic area taken together make up a GIS database. You can use the themes in a GIS database to analyse multiple situations and solve multiple problems. The design of a GIS database is strong because it's flexible. You can add new themes to a GIS database or delete old ones; you can separate themes to create more themes, or combine themes if they have common characteristics. What you want to do with a GIS database, and what information you need, will determine the best design for you.

You can also select features indirectly by selecting their attributes. By pointing at a row in an attribute table, you can select it, along with the feature it's linked to.

Features linked to the row you select are highlighted on the map display.
You can select one row or as many rows as you like. This can be a powerful way to find features while looking over a table of their attributes.

Looking for a feature on a paper map can be challenging if the feature is small. With GIS map displays, finding a feature is easy no matter how small it is, because you can find it by requesting any of its attributes. You enter the address as a request and GIS locates the feature linked to the address you enter and shows it to you by highlighting it on the map. You can also find one or more features by requesting them based on an attribute they share. For example, you can ask for buildings of a certain type, or buildings built in a certain year, all the buildings that match your request are selected and highlighted in both the attribute table and on the map display.

**Performing operations on selected features and their attributes**

Once you've selected a group of features, you can perform any operation on them as a separate group, apart from all the other features. For example, you can have the GIS zoom in to see selected features fill the centre of your screen, or perform statistical operations on any numeric attribute, or use statistics to summarize the information in a table, or even create a chart comparing attributes of the selected features.

You an easy measure distance on a GIS map in any units you choose (e.g., feet, meters, miles, kilometres), area or find where features share space.

**Making information presentable – introducing WEB Portal**

To make information presentable, you need to know your audience. When trying to access the information they need to do their jobs, users can easily become confused by the multitude of Web pages they see. Many don't know where to start and don't understand the relationship between the myriad sites and applications distributed across the corporate Intranet and even the Web at large. To make matters worse, many sites employ vastly different navigation methods and organization that can result in conflicting views of the same information. With Portal, access to both internal and external data is brought together under a common interface, thus providing a single point of interaction.

Then you need to decide which information to include in your portal.

A portal is simply a common, integrated starting point for accessing all your data: files, images, applications, Web sites both internal and external to your company, and so on. The term portal implies many other capabilities as well, but central to the definition is the ability to support personalized views, so that each user or user group can tailor both the content and the appearance of the portal to suit individual preferences and requirements. Portal makes it easy to secure, manage, and customize your data through a set of robust administrative tools.

If your portal includes maps, how much information should be included on each map, and how should the information be organized and displayed? Should you use charts or tables instead of maps or in addition to maps? What other graphics could enhance your portal? Before you sit down to create a graphic presentation that other people will see, ask yourself who they are and how much they already know. Are they a general audience or a group with specific knowledge of the topic you're presenting?

Say your portal includes a map. Knowing who is going to see the map will determine the colours and symbols you choose, the amount of detail you show, and how you organize the information. Only when you know whom your audience is can you create the portal that best conveys your message.

GIS Portal of Croatian Telekom fixed network department

If you have a GIS database full of information how much of this information should you present on a map? Too much information will confound and overwhelm the users, and won't get your message across. With GIS you can control what appears on a map.

For example, there are tools for controlling how big or small features appear and for reducing the number of features, so that just the ones you need are displayed. Other tools let you turn entire map themes on or off, or create more than one view of the information.

**How much detail do you need?**

The scale of the map determines how big or how small features appear and how much detail you can show.

One way to control the amount of detail is by *zooming in* and *zooming out*.

Zooming in enlarges the scale so you can see more detail.
How many features do you need?

No matter how much you zoom in or out, there may still be more features in a theme than you want to show. You don't want to eliminate features, just hide some of them for a while until you need them again. You can also choose which themes you need to convey your message and you can combine a series of maps in one presentation. This way, you can show separate themes or different portions of the same geographic area, or changes in a geographic area over time.

Now, when you figured out whose and what, you still have to decide how to organize the information on a portal and the best way to present it. To present information as accurately as possible, you need to choose the most appropriate symbols. Some colours are commonly accepted as appropriate for certain things, green for plants and blue for water, for instance. On road and topographic maps, a small triangle almost always means a mountain peak.

Labelling objects enables clear visual identification

GIS is more than mapping. Using GIS tools, you can create such traditional presentation graphics as pie charts, bar charts, and tables. Like maps, charts alone are a powerful way of presenting information to others. Used in combination with maps, charts give the users a different view of the information.

A GIS creates different types of charts from the same data
Tables can be an effective format for presenting detailed information about a map.

You may want to enhance your final portal by adding text and graphics. Placing graphics such as images, scanned pictures, or documents in your portal adds another dimension.

The GIS-based cartographic database can be both continuous and scale free. Map products can then be created centered on any location, at any scale, and showing selected information symbolized effectively to highlight specific characteristics. A map can be created anytime to any scale for anyone, as long as you have the data.

This is important because often we say, “I see” to mean, “I understand.” Pattern recognition is something human beings excel at. There is a vast difference between seeing data in a table of rows and columns and seeing it presented in the form of a map. The difference is not simply aesthetic, it is conceptual: it turns out that the way you see your data has a profound effect on the connections you make and the conclusions you draw from it. GIS gives you the layout and drawing tools that help present facts with clear, compelling documents.

Combining all that powerful features of GIS with an simple and unique presentation given by WEB Portal technologies enables us to present crucial corporate data to our users and build Spatial Decision Support System. Spatial decision support systems (SDSS) represent an effort to address complex spatial problem solving and assist spatial decision-making.

Realisation of presented GIS WEB portal is first significant step towards implementation of such a system on corporate level, and great help on identifying strategic information necessary for future development of telecommunication networks.

The old adage “better information leads to better decisions” is true for GIS. A GIS is not just an automated decision making system but a tool to query, analyse, and map data in support of the decision making process. The information can be presented succinctly and clearly in the form of a map and accompanying report, allowing decision makers to focus on the real issues rather than trying to understand the data. Because GIS products can be produced quickly, multiple scenarios can be evaluated efficiently and effectively.

Users control

The creator of a page or folder decides how much control users have over the content and appearance of the object. Subject to the proper approval, portlets can be added or hidden from pages, and different page and folder styles may be selected to control the text and colour settings for the page or folder. If the portal administrator wants to maintain a standardized corporate look and feel, individual privilege levels can be reduced or even eliminated.

Security

Having access to the applications you use the most can certainly speed things up, but having to log on to each one individually can slow things down considerably. Portal’s security mechanism is constantly in place, making sure that only the data you’re allowed to see is displayed, and supplying the necessary user IDs and passwords so even your external applications come up quickly, without you ever having to fill in a log on screen.

Conclusion

One of the main benefits of GIS is improved management of your organization and resources. A GIS can link data sets together by common location data, such as addresses, which helps departments share their data. By creating a shared database, one department can benefit from the work of another; data can be collected once and used many times.

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Including an aero photo image along with a map of the same area makes a more informative presentation than the map alone.

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