2.2.1 STEPS IN BUILDING A GIS pdf

1: GISInternals Support Site

Proper GIS planning is the most important investment any organization can make in building a GIS. Understanding your GIS needs, selecting the right technology at the right time, and establishing documented implementation milestones to measure your progress can ensure your success.

Geodatabase design steps Design starts with thematic layers. What are the data themes that make up your key landscapes? Then, you define each thematic layer in more detail. The characterization of each thematic layer will result in a specification of standard geodatabase data elements such as feature classes, tables, relationship classes, raster datasets, subtypes, topologies, domains, and so on. When identifying thematic layers in your design, try to characterize each theme in terms of its visual representations, expected uses in the GIS, likely data sources, and levels of resolution. For example, at what scales and extents will you need to use this information, and how will its elements be represented at each scale? These characteristics help describe the high-level contents expected from each theme. Here is an example description of a data theme for ownership parcels in a cadastral application. Once you have identified the key thematic layers in your design, the next step is to develop specifications for representing the contents of each thematic layer in the physical database. For each, describe how the geographic features are to be represented for example, as points, lines, polygons, rasters, surfaces, or tabular attributes. How should the data be organized into feature classes, tables, and relationships? How will spatial and database integrity rules be used to implement GIS behavior? The 11 steps presented below outline a general GIS database design process. The initial design steps 1 through 3 help you identify and characterize each thematic layer. In steps 4 through 7, you begin to develop representation specifications, relationships, and ultimately, geodatabase elements and their properties. In steps 8 and 9, you will define the data capture procedures and assign data collection responsibilities. In the final stage steps 10 and 11 , you will test and refine your design through a series of initial implementations. In this final phase, you will also document your design. Eleven steps to geodatabase design 1. Identify the information products that you will create and manage with your GIS. Your GIS database design should reflect the work of your organization. Consider compiling and maintaining an inventory of map products, analytic models, Web mapping applications, data flows, database reports, key responsibilities, 3D views, and other mission-based requirements for your organization. List the data sources you currently use in this work. Use these to drive your data design needs. Define the essential 2D and 3D digital basemaps for your applications. Identify the set of map scales that will appear in each basemap as you pan, zoom, and explore its contents. Identify the key data themes based on your information requirements. Define more completely some of the key aspects of each data theme. Determine how each dataset will be usedâ€”for editing, GIS modeling and analysis, representing your business workflows, and mapping and 3D display. Specify the map use, data sources, and spatial representations for each specified map scale; data accuracy and collection guidelines for each map view and 3D view; and how the theme is displayedâ€”its symbology, text labels, and annotation. Consider how each map layer will be displayed in an integrated fashion with other key layers. For modeling and analysis, consider how information will be used with other datasets for example, how they are combined and integrated. This will help you identify some key spatial relationships and data integrity rules. Ensure that these 2D and 3D map display and analysis properties are considered part of your database design. Specify the scale ranges and the spatial representations of each data theme at each scale. Data is compiled for use at a specific range of map scales. Associate your geographic representation for each map scale. Geographic representation will often change between map scales for example, from polygon to line or point. In many cases, you may need to generalize the feature representations for use at smaller scales. Rasters can be resampled using image pyramids. In other situations, you may need to collect alternative representations for different map scales. Decompose each representation into one or more geographic datasets. Discrete features are modeled as feature classes of points, lines, and polygons. You can consider advanced data types such as topologies, networks, and terrains to model the relationships between elements in a layer as well as across datasets. For raster datasets, mosaics and catalog collections are options for managing very large collections. Surfaces can be modeled using features, such as contours, as well as using rasters and terrains. Define the tabular database structure and behavior for descriptive attributes. Identify attribute fields and column types. Tables also might include attribute domains, relationships, and subtypes. Define any valid values, attribute ranges, and classifications for use as domains. Use subtypes to control behaviors. Identify tabular relationships and associations for relationship classes. Define the spatial behavior, spatial relationships, and integrity rules for your datasets. For features, you can add spatial behavior and capabilities and also characterize the spatial relationships inherent in your related features for a number of purposes using topologies, address locators, networks, terrains, and so on. For example, use topologies to model the spatial relationships of shared geometry and enforce integrity rules. Use address locators to support geocoding. Use networks for tracing and pathfinding. For rasters, you can decide if you need a raster dataset or raster catalog. Propose a geodatabase design. Define the set of geodatabase elements you want in your design for each data theme. Study existing designs for ideas and approaches that work. Copy patterns and best practices from the ArcGIS data models. Define the editing procedures and integrity rules for example, all streets are split where they intersect other streets, and street segments connect at endpoints. Design editing workflows that help you meet these integrity rules for your data. Define display properties for maps and 3D views. Determine the map display properties for each map scale. These will be used to define map layers. Assign responsibilities for building and maintaining each data layer. Determine who will be assigned the data maintenance work within your organization or assigned to other organizations. Understanding these roles is important. You will need to design how data conversion and transformation is used to import and export data across various partner organizations. Build a working prototype. Review and refine your design Test your prototype design. Build a sample geodatabase copy of your proposed design using a file, personal, or enterprise geodatabase. Based on your prototype test results, revise and refine your design. Once you have a working schema, load a larger set of data such as loading it into an enterprise geodatabase to check out production, performance, scalability, and data management workflows. This is an important step. Settle on your design before you begin to populate your geodatabase. Document your geodatabase design. Various methods can be used to describe your database design and decisions. Use drawings, map layer examples, schema diagrams, simple reports, and metadata documents. Some users like working with UML. However, UML is not sufficient on its own. UML cannot represent all the geographic properties and decisions to be made. Also, UML does not convey the key GIS design concepts such as thematic organization, topology rules, and network connectivity. UML provides no spatial insight into your design. Many users create a graphic representation of their geodatabase schema with Visio, such as those published with the ArcGIS data models. Esri provides a tool that can help you capture these kinds of graphics of your data model elements using Visio. Refer to the topic Documenting your geodatabase design. The steps in geodatabase design Related topics.

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2: ArcGIS Desktop Help - Steps for implementing GIS map applications

GIS Modeling Procedures an architect's blueprint of a building. Characteristics include scaled, 2 or 3- Functional Model â€" Input/Output-based which.

This is the fifth post in our new series about Managing GIS. System architecture design is a process developed by Esri to promote successful GIS enterprise operations. This process builds on your existing information technology IT infrastructure and provides specific recommendations for hardware and network solutions based on existing and projected business user needs. There are several critical deployment stages that support a successful implementation. Understanding the importance of each stage and the key objectives for success leads to more effective enterprise implementations. The figure below shows a series of typical system deployment stages for building and maintaining successful enterprise GIS operations. System design implementation strategy moves through several steps that require planning and implementation management. Requirements Phase User needs establish a foundation for completing the design. User location and peak business loads establish a foundation for system architecture design. Design Phase Infrastructure upgrade requirements must be identified to determine deployment costs. Network communication capacity is an important consideration for GIS deployments. Hardware and software procurement requirements must be identified. Software development requirements and data acquisition needs must be identified. Business decisions for project funding and procurement authorization are often required for project effort to proceed beyond this phase. Construction Phase System procurement authorization, based on the design budget and deployment timeline. Data acquisition and database design efforts begin. Procurement authorization for application design and development. Prototype testing plans completed and scheduled to validate product delivery within design performance targets. Implementation Phase Initial deployment and operational testing. Final system delivery, user training, and workflow migration complete. Deployment process is repeated incrementally on a periodic schedule to leverage technology change. CPT functions contribute throughout the implementation cycle. The CPT tasks include reviewing business needs, establishing performance targets, identifying user locations, reviewing network suitability, selecting product architecture, and completing the system architecture design analysis. Additional tools are provided to validate system performance during the design, construction, and implementation phases. CPT models can be easily updated to reflect changes in business requirements and review alternative system deployment strategies, providing an adaptive model for addressing a variety of incremental planning activities. Build and maintain a simple system performance model that links user requirements with system design. Understanding your GIS needs, selecting the right technology at the right time, and establishing documented implementation milestones to measure your progress can ensure your success. This document is focused on sharing how to build and maintain successful GIS operations. The Capacity Planning Tools provide a framework for collecting what you know about your business needs and your system environment. The Capacity Planning Tool models connect what you understand about GIS user requirements with the network and platform loads your IT support teams can measure in the data center. System Architecture Design Strategies for Managers. Extensive information about successful system design can also be found on the System Design Strategies wiki and in the System Architecture Design Strategies training class. Under his direction, he has established a solid foundation for Esri system architecture design consulting services. He is also content manager and principal instructor for Esri System Architecture Design Strategies educational services, and travels the world teaching system architecture design to a variety of GIS audiences.

2.2.1 STEPS IN BUILDING A GIS pdf

3: Project Design â€“ Geographic Information Centre

Building a Fire/Public Safety GIS The last step in building a GIS is to put a plan in place for ongoing maintenance.

GIS FAQ Project Design In any kind of research project, one of the first steps that is often overlooked is to plan the various steps that will be involved. We present here five steps that you can follow to be better prepared to face your own research challenges. The realization of a GIS project can be conceptualized in 5 main steps: Define your research question. This will be the basis of all the subsequent steps of your project. This question should lead you to define goals and objectives specific to your own project. The more interesting you find the question, the more exciting you will find your project. Inspiration for research questions can come from very different, and sometimes unusual sources. Take the time to browse on-line, find scientific articles related to a topic you like, explore datasets that you find intriguing. Sometimes inspiration for your research questions can come from your day to day life, sometimes it can comes from a question raised in a class. Take the time to seek out different options if you are having doubts about your interest or the feasibility of the project. If you think your research question and objectives are clear and concise, and that they fit under the umbrella of your class project or the timeline you need to meet, you are ready for step 2. Design an appropriate methodology Once you are settled on one research question and the subsequent objectives, the design of the methodology is your next step. One way to work on your methodology is to create a flowchart or a model of the various steps required to answer your question. You can think of this as the logical flowchart of the operations required to solve the problem. You will need to identify the type of operations you will need to perform spatial statistics, creation of new shapefile, raster analysis, etc. At this moment of your project, you should be able to identify what data you will need in your project. Find the right data Finding data is a crucial part of your project. Depending on the data available you may or not have to modify your research objectives or your methodology. When looking for data, starts by identifying the 3Ws: What are the different layers you will need: Are you looking specifically for vector or raster data? What spatial extent are you looking for? A city, a country, a continent? Do you want to do an analysis about past, current, or future conditions Data is available both freely on-line and, for the McGill community, through the McGill Library. This is a time consuming step of the project, prepare in advance. Perform the analysis Now that you have the objectives ready, the methodology defined and refined based on data , and data in your possession, it is time to use you skills as a GIS analyst and apply your methodology. When facing problems, there are many resources available online via blogs, university websites, and software help documents. Do not hesitate to consult them. Remember that this process can be filled with hick-ups and that you might have to start over many times! Remember too, that it is not the number of mistakes that matters, but what you accomplish at the end. Present your results At the end of your project, you will need to present your final results. Depending on the nature of the research project, different options will be more effective: Any GIS project will most likely present a map of the final or intermediate results. An effective map should be able to be read independently from the wider presentation of the project. Dec 20th to 21st Monday to Friday: Dec 22nd to Jan 6th closed Upcoming workshops Please note that our registration procedure does not work at the moment exception for the Zotero workshop. In the meantime, you do NOT need to register and may show up for the scheduled date and time of the workshops but please register for the Zotero one. Thank you for your understanding, Your GIC team.

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4: Geospatial Analysis 6th Edition,

A new eBook has been released by American Sentinel University entitled, "Five Steps to Build Your GIS Career." The short booklet outlines five pathways to consider for those seeking to build a GIS career.

A Successful GIS Project Model Building a successful geographic information system means harnessing effective management techniques and organizational structures. In many cases, these projects were doomed almost from their start by management techniques and organizational structures ill suited to achieving a successful GIS. After all, local governments typically are vertical organizations with largely autonomous departments. By contrast, GIS and related technologies are horizontal in nature, typically spanning more than one department and counting as users everyone from engineers to planners and anyone else who relies on maps and records to do their daily work. These factors, among others, can contribute to delays, lowered expectations and outright project failure. The structure does this by drawing on the active participation of every department having a tangible interest in seeing the project succeed. While variations can be and have been adopted, this highly effective project structure has the following general characteristics: This team meets regularly to determine funding sources, review budget issues, set project priorities, resolve conflicts, establish policies and determine project timetables. The team chooses its own leaders and is responsible to the mayor, city or county manager or council. The team also shares responsibility for hiring and firing the project manager. This team joins with the policy team to direct a project manager. The project manager does this with the help of technology experts drawn from each of the participating departments. In this way, the project moves ahead through a process of consensus building, regular and ongoing communication and mutual cooperation reached with the active participation of each department having a stake in the project. Typically, the project manager chairs neither the policy group nor the project group. Instead, these groups are responsible for setting agendas, fixing timetables and determining other critical project milestones. Multiple city departments worked together to develop an extensive, sophisticated system that will help the city efficiently and cost-effectively deliver its services well into the future. With city management support, team members have the authority and responsibility to achieve project objectives with only limited management involvement. This working environment has led to a sense of teamwork and sparked innovation, both of which have resulted in a highly successful project. The team not only has consistently met its objectives on time and on budget, but the project is achieving even more than was initially expected. Project policy issues and approval for major investments were the responsibility of an executive committee, which represented the participating communities and helped foster cooperation among no fewer than elected officials. The LRC created an environment conducive to ongoing, open communication that helped build cooperation and lasting commitment to the project. The LRC also facilitated consensus building on technical project issues such as database design, hardware and software selection, and data conversion and maintenance. The structure is not that of a committee but of a team or a task force. The structure emphasizes consensus building, provides a means for education, relies on constant and open communication, helps promote and maintain enthusiasm, and establishes an effective and fair mechanism to resolve conflicts and set priorities. As a result, so long as its participants agree to this format and believe in the project, the GIS will have an excellent chance of succeeding. The stakes are high when any major technology project is undertaken. The difference between success and failure frequently hinges on having an effective and workable project management structure.

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5: About creating web GIS applicationsâ€”Documentation (and) | ArcGIS Enterprise

Manage featuresÂ¶. Installer will offer you the menu to manage features you need. Don't forget to add Programming Languages â€£ Visual C++. If you already have Visual Studio installed you can go to System â€£ Apps & features â€£ Modify.

System architecture design is a process developed by Esri to promote successful GIS enterprise operations. This process builds on your existing information technology IT infrastructure and provides specific recommendations for hardware and network solutions based on existing and projected business user needs. The system architecture design process aligns identified business requirements user needs derived from business strategy, goals, and drivers business processes with identified business information systems infrastructure technology network and platform recommendations. The computer display transaction is the work unit used to translate business requirements to associated server and network loads. Display service times software processing generates platform loads and display traffic generates network loads. Peak throughput loads business needs are used to generate platform capacity and network bandwidth requirements. System design starts with identifying business needs. This includes identifying user locations and required information products, identifying required data resources, and developing appropriate software applications to do the work. Business needs are represented by project workflows that identify the traffic and processing associated with each display transaction. System architecture design translates business needs to identified IT requirements. Hardware requirements are generated based on peak software processing loads. Network connectivity requirements are generated based on peak data flow. Capacity Planning tools are provided to automate the design analysis. Capacity Planning Tools make the process of aligning Business workflows with selected IT resources agile and iterative in nature, rapidly identifying system performance impacts in response to changing business and technology architecture patterns. Trying to build a GIS without completing a proper system architecture design can lead to system deployment failure. Overall system performance is limited by the weakest link in the performance chain. System performance is limited by the weakest link in the system design. System architecture design identifies the weak links during the planning process and promotes investment in a balanced system design. A distributed computer environment must be designed properly to support user performance productivity requirements. The weakest "link" in the system will limit performance. The system architecture design process identifies specifications for a balanced hardware solution. Investment in hardware and network components based on a balanced system load model provides the highest possible system performance at the lowest overall cost as represented by the chain in Figure 1. Building a high-performance GIS requires more than getting the hardware right. User workflows must be designed to optimize client productivity simple maps and efficiently manage heavier geoprocessing loads service request queue. The geodatabase design and data source selection should be optimized to address system performance and scalability requirements. The selected production platform components servers, workstations, storage must have the capacity to handle peak user workflow processing loads within an acceptable service response time. The system architecture design must address performance needs and bandwidth constraints over distributed communication networksâ€”technology and solution architecture must be selected to conserve shared infrastructure resources. System architecture design can provide a solid foundation for building a productive operational environment. Workflow complexity determines processing and data flow loads that must be handled by the computing infrastructure. The computing architecture must be selected with the appropriate capacity to service the required business loads. Workflow complexity is a measure of the amount of processing loads and network traffic required to refresh the user display. Complexity is imposed on the computing architecture by the following design attributes: Database design and data format: Application development The computing infrastructure must provide sufficient capacity to handle peak operational loads. Server platform processor core and deployment architecture must handle peak processing loads. Network bandwidth and remote site connectivity must be adequate to avoid traffic contention. Storage access performance and capacity must be adequate to provide required data access. Server performance, network capacity, and efficient storage strategies can improve user productivity and reduce system cost. The system architecture design process can be used to identify specifications for a balanced hardware solution. Investment in hardware and network components based on a balanced system load model provides the highest possible system performance at the lowest overall cost. Why we do planning Figure 1. The primary reasons for planning include identifying business needs, defining project requirements, and reducing implementation risk. In practical terms, we need a plan if we hope to get something done. The plan provides a foundation for successful implementation. Business requirements may include a variety of user workflows and Web services that would improve business operations â€” these workflows and services must be identified early during the planning process. The workflow and service definitions establish a foundation for the rest of the planning. The peak user workflow and service processing requirements must be identified and translated to appropriate system design loads â€” server processing times and network traffic. These processing loads provide a foundation for generating appropriate hardware specifications performance and capacity requirements and network infrastructure needs. A project must be defined to procure and implement the required technology. The project will include a budget and schedule along with a variety of project performance milestones. Project approval is based on identified or perceived benefits that will accrue to the business resulting from the proposed level of time schedule and financial budget investment. A good plan can be used to reduce system implementation risk. Delivering a system that will satisfy identified business requirements is fundamental to project success. Understanding key system performance parameters, identifying incremental system performance targets, and establishing a system performance validation plan can chart a solid framework for managing implementation risk. Planning is an incremental process driven by rapidly changing technology. The most effective plans are designed to adapt to changing business needs and evolving technology opportunities. The established change control process must be agile and effective to ensure project tasks are managed to deliver within established schedule and budget constraints. What questions are we trying to answer? There are many questions about system architecture design that we answer on a daily basis. The System Design Strategies documentation deployed on this wiki site is developed and maintained to answer most of these questions, and provide a reference to help customers better understand their design needs. Here is a short list of some of the more common questions: How many users can I support with my existing hardware? What hardware do I need to purchase? How many servers cores do I need? What are the software licensing requirements? What workflow loads should I use for my existing applications? What are my current workflow service times? What is the capacity of my current system? This documentation, along with the companion Capacity Planning Tools, was developed so you can answer these questions about your GIS, and many more. We have been supporting GIS customers for over 25 years, and much of what we have learned is shared so you can benefit and build a successful GIS. What demands does GIS place on the computing infrastructure? GIS applications place heavy demands on server processing and network bandwidth resources. Several key infrastructure components work together to service business processing loads. Network traffic demands on available bandwidth Processing: Platform processor core processing demands Memory: Platform physical memory utilization Graphics: Storage disk access performance Different workflows place different loads on the system. Relative processing demands for the four use patterns above show how these loads are distributed differently, based on the workflow. Analysis and processing is compute processing intensive. Fly-through and 3D animation can be graphics intensive. For most standard mapping operations, these demands push the limits of platform processor and network bandwidth capacity. Additional critical design components include the following: Memory is critical if you do not have enough; memory requirements can normally be satisfied by following standard configuration guidelines. Platform memory guidelines are provided in Windows Memory Management appendix. Some GIS desktop applications are graphics intensive 3D animation ; video graphics are less critical for GIS than for the video gaming industry, so there is plenty of graphics technology available at reasonable cost to meet GIS needs. Any one of these components, if configured incorrectly, can become a bottleneck and limit system performance. System architecture design is about building a balanced solution that satisfies peak performance needs at the lowest possible cost. Each of these critical subsystems should be considered in establishing the right system design. Cost of a change Figure

2.2.1 STEPS IN BUILDING A GIS pdf

1. Getting it right from the start is best done by taking the time to understand the technology, quantify user requirements, select the right software technology, and deploy the right hardware. Not getting it right from the start will cost money to make it right later. The cost of change increases exponentially as implementation proceeds as shown in Figure 1. Your GIS plan should include performance validation early in the design process. ArcGIS for Desktop authors should have performance targets they verify when publishing a new map service. GIS programmers should have performance targets they build to when developing a new application. Performance should be a consideration for data administrators, network administrators, and selected storage subsystems. Getting the design right from the start can save money and improve overall business operations. What is the System Design Process? The system design process includes a GIS needs assessment and a system architecture design.

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6: Using MO 2 differnetly for two games - Mod Organizer 2 Support - S.T.E.P.

Build and test the GIS map application and GIS services. For more guidance, see Introduction to creating Web applications with Manager in the ArcGIS Server help. Determine a strategy for maintaining the GIS map content, services, and application logic.

Esri offers several resources that you can use to create applications. The resource that you choose depends on your experience and skill level, as well as the requirements of the application. Available applications include ready-to-use applications , configurable applications , and APIs. Ready-to-use apps Ready-to-use apps do not require any customization on your part to use themâ€"just connect to your services and take advantage of the functionality the apps provide. It includes advanced capabilities to author, share, edit, and analyze spatial data. For example, in ArcMap, you can drag a map service from the Catalog window into the map. These GIS servicesâ€"such as map, geoprocessing, locator, and imageryâ€"provide the foundation for much of the work performed using the ArcGIS platform. ArcGIS for Desktop can also act as an administrative interface for an ArcGIS Server site, allowing you to do things like adding folders, adding and deleting services, and registering databases. To get this functionality, you need to enter an administrator name and password when you make the server connection. It provides tools to visualize, analyze, compile, and share your data in both 2D and 3D environments. You can configure the portal with your own look and feel, feature maps and apps on the front page, and organize the maps and apps into galleries and groups. Portal for ArcGIS includes a web map viewer that authenticated users can use to create and use maps. For full instructions on how to create a web application using ArcGIS Online, see the topic Sharing your map in a web application. With Collector, you can use your ArcGIS Server services to create new or edit existing features using a GPS or by tapping on a map, route to work locations, track your current location, and measure distance between locations. Additionally, an add-in for PowerPoint allows you to embed these web maps into your presentations. You can download Esri Maps for Office from the Esri website. You can visualize data, search for places and features on your maps, sketch on the maps to highlight important features, share maps with other Explorer users, and tell stories with interactive map presentations. Operation views include maps, lists, charts, and other representations of real-time and static data. Configurable apps Configurable apps are templates or software developer kits SDKs you can use to help expand the use of your GIS services within or outside of your organization. Web AppBuilder comes with a variety of themes you can customize and widgets that allow you to deliver advanced functionality, such as high-quality printing, geoprocessing, editing, and search. Industry-specific applications You will find many industry-specific templates and applications on the ArcGIS Solutions website that work with your services. You can use this API to build a web application from scratch.

7: Visual Studio â€" CGold documentation

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8: Step 2: Provide Instant Run Specific Information - Android Studio Project Site

Step 2. Explore and Prepare Data This step can be the most time-consuming. If you don't have all the data needed for an analysis project, you must collect it. The ArcGIS Living Atlas of the World is an excellent source of high-quality spatial data.

9: Use the Five-Step GIS Analysis Process | GeoNet

under the building is invisible (Figure 11). ut users often like to only show the parcel's boundary and remain the image displayed. In this case, layer transparency and hollow symbology can help.

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