Web & Mobile GIS Projects
from idea to reality in 3 easy steps

execute

design
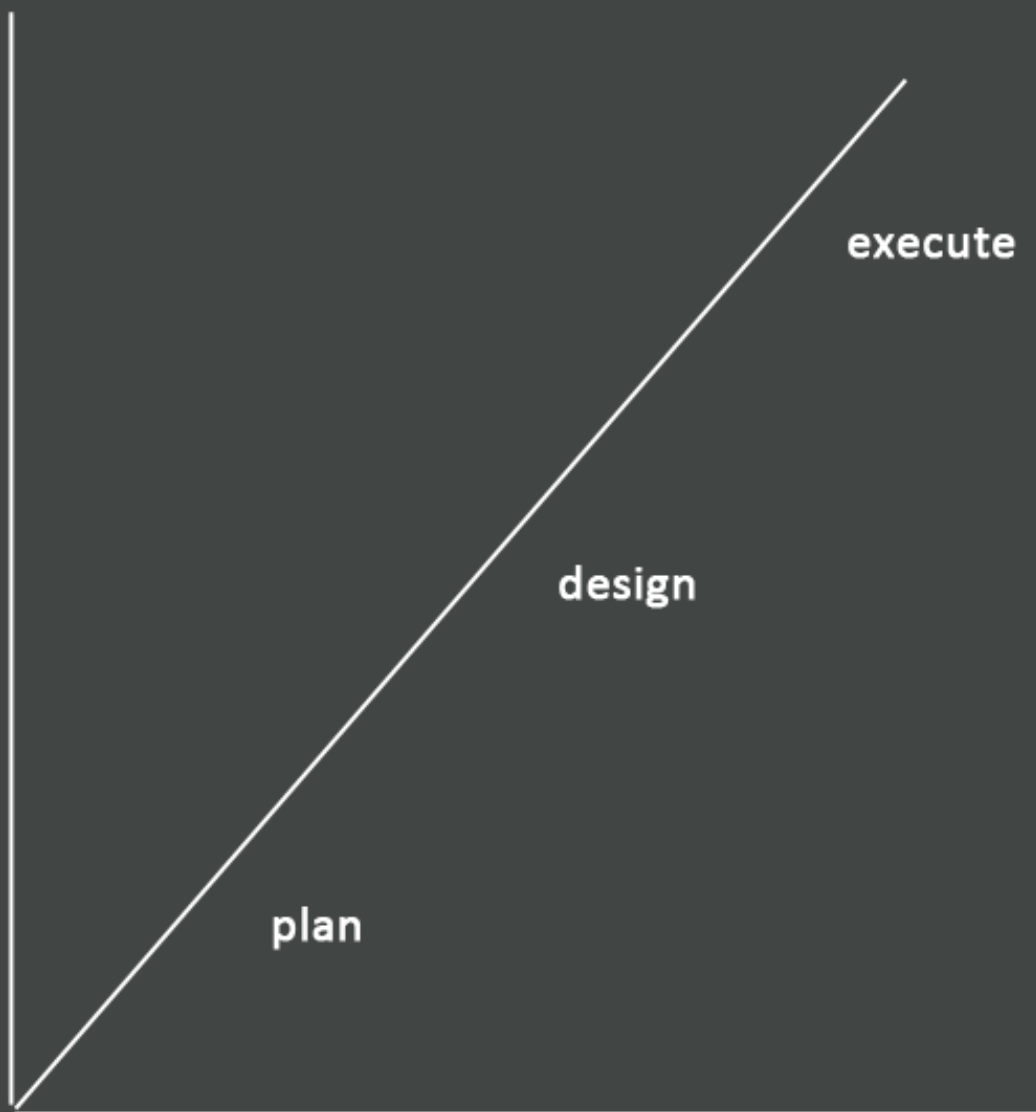
plan

Its daunting starting any GIS Web or Mobile project. Where does one begin? This 3 step guide should help you get past your project inertia and start things moving rapidly forward.

Step 1 – Preparation and Planning

a) Understand and Define the Project Requirement

Do you have a clear idea of what the app should do? If you are still in the ideas phase, flesh out the details. Be able to describe the purpose of the application, and define the requirements.

Questions you may want to ask yourself include:

– Can I provide an 'elevator statement' or, the shortest possible explanation of the applications purpose?

Example: Application High Level Summary

We require a mobile application which provides oil well (point) data capture and editing functionality for use by non GIS trained field crews.

– Do you have a clear understanding of all the functional elements of the application and can you list them?

Example: Core Requirements

1) Basic intuitive map viewer with pan and zoom.
2) Base map switcher
3) Geolocate button
4) Routing widget
5) Search functionality against the parcels layer

6) Point attribute query tool

b) Who is the Target Audience?

Any GIS Web or mobile app is targeted at a specific audience. Is your application for GIS power users, executives, analysts or consumers?

GIS is now serving a wider audience than was once the case. From interactive maps for citizens, to data collection apps, and those providing retail site analysis. The list is almost endless. Any GIS application need be carefully designed for the target audience.

Example: **Target Audience**

An application targeted at power GIS users will be quite different to one used by consumers. The TOC (table of contents) most GIS users know provides the ability to turn layers on and off. It can be a useful tool. But include a TOC in a citizens feedback application, and your users will quickly turn away.

Know your target audience well, and let that knowledge help drive the applications functional spec and design.

c) Focused GIS Apps

True desktop applications remain complex, with tools to serve every need. ArcMap and QGIS are good examples; most often used by skilled GIS analysts. The Web and mobile worlds are different. Today they are all about focused apps; simple, and intuitive, providing specific functionality.

Example: Focused Mobile Location Analytics Application

Our recently launched Mobile Location Analytics app provides users dynamic data on the socio-economics of the surrounding area. Select a point, line or polygon and buffer your selection for a demographic summary.
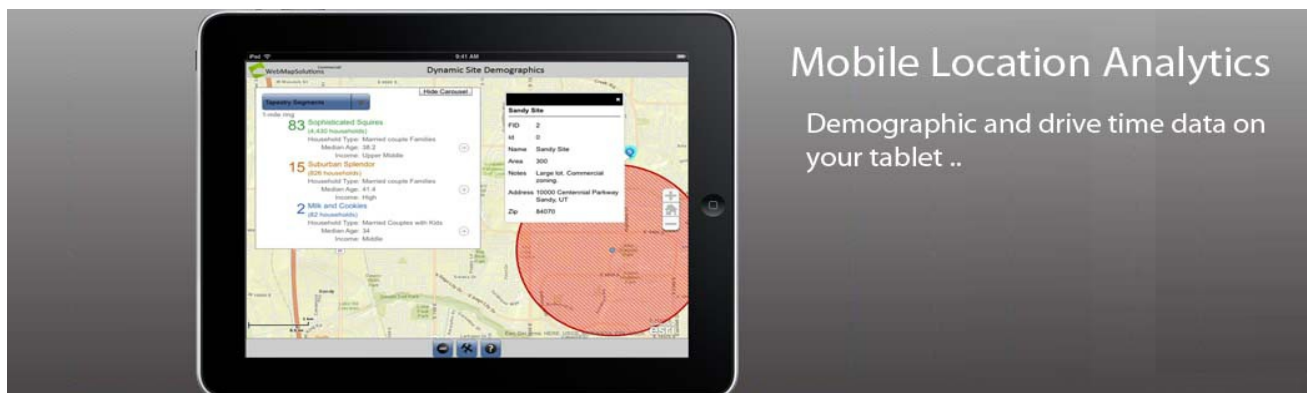
The app allows users to generate a PDF which provides a report, summarizing the results of each demographic analysis. Its easy to use, and has a focused purpose.

d) Web GIS Apps ..... Things to Consider

There are many ways to create Web GIS applications. Today they can be built to look good and be use-able on PC's, smartphones and tablets. So called responsive design is an increasingly popular approach to Web GIS development; providing a seamless home/office to mobile experience.

Example: Web GIS Commercial Real Estate Application

We have been working with a number of commercial real estate companies. Agents and brokers still rely on pen and paper (brochures, flyers etc) for much of their work when out of the office. We have been developing a series of Web GIS apps which are designed for use on all devices. Now agents can view property information in the same Web application on their office computer, iPad and iPhone. It is transforming the way they are doing business.

e) Mobile GIS Apps ... Exciting new Possibilities

There are many things to consider when developing a mobile application:

- Is this to be a Web application accessible from a mobile browser, or an installed application maybe sold in Apple's iStore or Google Play?
- If it is to be an installed mobile app, is this an application which is targeted for use on an iPhone, iPad, or Android device?
- Maybe targeting only one platform is too limiting and you want to the GIS app to be cross-platform, so available to both Apple and Android users?

There are many ways to build mobile apps. So called native apps are designed to be run on one platform only: iOS, Android or Windows. Whereas hybrid mobile apps run on all/most mobile platforms. There are advantage and disadvantages to each approach.

Example 1: Native Mobile Application

A client approached us in need of a retail focused mobile application used to communicate with users as they approached a store. The platform to be supported was Android only. The client was also an Esri user. We elected to build a native application using the new Geotriggers Service from Esri.

Example 2: Hybrid Mobile Application

A local ski resort was in need of a mobile application which provided visitors information about local resources and facilities. The mobile app needed to run on

both Apple and Android mobile devices, and budgets were limited. Our choice was to build a hybrid app against maps published in ArcGIS Online.

f) Design

Can you visualize how the app should look and feel? At the pre-development phase you certainly don't need detailed designs of each page of the application. But you do need to have a rough idea of how the application should look, and maybe more importantly the workflows. This is a term often used to describe the flow of the application; when I click this button where does it take me, and does this make sense to a user?

We often rely on skilled designers to create the look, feel and flow of the application we build. Often clients are asked a series of design questions. A final design requirements list might look like:

Example: Design Requirements List

- Map must take up most of the screen real estate
- Top header should run the full length on the screen.
- Logo, title must appear on the left side of the header
- Functional buttons should be on the left right of the header
- The header and button must fit with our corporate color scheme
- Functionality buttons must be intuitive, with text or easily understood icons
- Widgets should be visible in moveable pop ups

g) Data

Consider carefully your data. Do you have what you need for the application; this includes base maps and layers? Is it available over the Internet, maybe in ArcGIS Server, ArcGIS Online or GeoServer?

Quite often our initial work with clients is focused on data preparation. Cleaning, conversion, optimizing, schema design, and publishing. At the end of the day applications come and go, but your data is the life-blood of your organization.

Example: Data Preparation

We have a client whose work was all done using ArcMap. They generated and distributed shapefiles to other offices nightly. Recognising the inefficincy of this approach, they approached us to improve their workflows. Our solution was to publish their data to ArcGIS Online, and build complimentary apps for distributed office staff. This process started with data preparation; geodatabase design, domain generation and publishing.

h) GIS Platforms and Servers

There are many options for publishing and serving your geo-data to a Web or mobile application. Esri's ArcGIS Server and the new cloud based ArcGIS Online, provide both basic and advanced GIS functionality. In the open source world GeoServer is a very advanced geospatial server.

Your choice of server is determined both by your applications requirements, and your budget.

Example: ArcGIS Online

ArcGIS Online is a new, simple to use mapping platform. After purchasing a subscription little training is needed to publish data from many different formats (spreadsheet, shapefile, KML) and create maps. WebMapSolutions and other GIS development companies are building simple, focused applications which allow users to interact with their data. Administration of users and groups is also easy and provides a controllable level of data security. Costs are linked to credits used, site access and number of named users. The credit model used by Esri has created some confusion in the user community, but the platform itself is an excellent way to quickly publish and share your GIS data.

See Mobile, Web and Desktop GIS Demo

Step 2 – Development
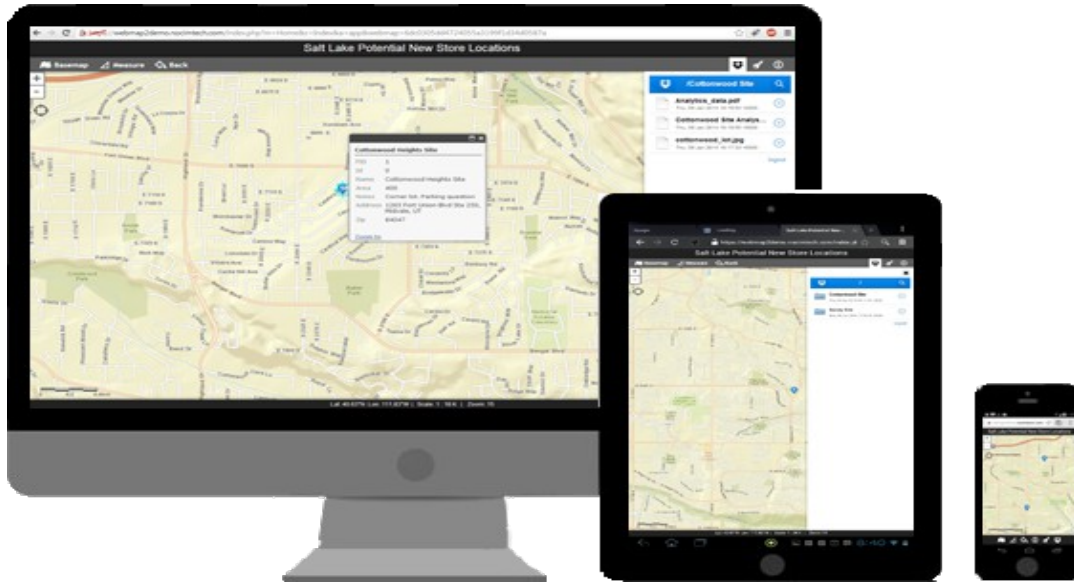
The planning phase is crucial to the success of any project. If you do not have internal expertise, use the in-house resources offered by companies such as ours to prepare thoroughly.

With your due diligence done it is time to move the project to the development phase. If your planning and preparation has been thorough, this next phase should be smooth. With a detailed spec and clear design those developing the project will have everything they need to make your vision a reality.

Step 3 – GIS Integration

At WebMapSolutions increasingly more of our GIS projects involve integration. GIS no longer lives in a world of isolation. Many of our clients use desktop GIS applications such as ArcMap and Web GIS apps. Cloud and mobile technology have meant we can now integrate desktop, Web and mobile providing an integrated, complementary GIS environment. Now field staff, analysts, Web users and executive all can have access to the same data.

Think about that for a moment.

No more working in isolation. A new sharing GIS environment, data accessible from anywhere using any device.

Sounds expensive?

GIS has never been more economically, nor provided such wide benefits. WebMapSolutions are integration experts, we design systems based on your specific requirements and workflows.

Any projects you have planned, keep integration at the forefront of your mind. The benefits will be felt across your organization.

Pulling it all Together

We have put together a video which shows how a staff member in the field using a mobile GIS app on an iPad can collect data and share it with others in an organization who are using Web and desktop GIS applications, in real time. True GIS integration.

Final Thoughts

These are exciting times. Incredible opportunities are ahead for applying GIS technology. Consumers, executives, maintenance staff, citizens. Everyone will benefit. Every vertical, every sector, every industry will leverage location based technology.

In this guide we have provided you the information you need to get your project started. If there is anything we can do to help let us know.

ABOUT THE AUTHOR

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