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White Paper

GIS Web Services

The Changing GIS Landscape

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GISFACTORY.COM WHITE PAPER

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The Changing GIS Landscape

Barriers are Falling with GIS Web Services

While Geographic Information Systems have been around for more than 20 years their uptake by business has been less than stellar. Their benefits to decision support, business intelligence, public information and operations are clear, but they have been plagued by high cost and a low rate of implementation success. However, several factors now mitigate these traditional issues, and now even small companies can benefit from GIS through the use of GIS Web Services.

What are GIS Web Services?

GIS Web Services are self-contained application components that can be published or accessed over the World Wide Web. Each performs a specific GIS function as part of a larger web site, portal or business application.

Using web protocols including HTTP and XML, you call these services as you need them for your internet site, intranet productivity portals, or work order management systems. End Users can be anywhere in the world and with a browser or business application can make requests and receive results of spatial functions.

The Emergence of Web Services

ANCIENT HISTORY

Web Services emerged in the technology game in the mid 1990's with much fanfare and a flurry of new acronyms including XML, WSDL, and SOAP. The notion of implementing a standard way for computers to share programs and data everywhere in the world was embraced strongly by geeks. However, several problems were quickly raised by business people: most importantly, ***security*** and ***reliability***.

The security issue results from using the internet as an extended corporate network. Internet messages can of course be copied, redirected, manipulated. And the self-describing, self-publishing nature of the original Web Services concept exacerbated that problem.

Reliability was not so much concerned about the reliability of the World Wide Web, but in receiving service guarantees from the web services. If I'm going to tie my high availability SAP system and processes to something external then it better be there. The self-publishing feature of Web Services was supposed to address this – an application needs a function, the function is suddenly not there, so the application will go and find another source of the function. Technically interesting -- but any business person would need some serious convincing that the function found would not be the version they dumped six months ago because it was dead wrong, or the data behind it was not obsolete.

So the geeks returned to their desks and pondered these things, searching for technical solutions. They had great success in some areas: Security has come a long way. Encryption can now keep your messages private; certificates can ensure that you're talking to the right web service provider. However, reliability has required more work on the web services standards, and it's not clear that a purely technical solution is the answer.

RECENT HISTORY

The good news is that all the benefits of distributed computing, component design, application re-use have been widely accepted, and web services have begun to be implemented broadly, at least ***inside*** corporate networks. And the experience has been good.

Once companies got experience using web services for some simple integration tasks, and realized the benefits of lower cost and quicker implementation, they started thinking bigger. The result has been amazing growth in the development of both internal and external portals and dashboards and robust Business to Business (B2B) applications featuring web services architecture.

TODAY

The development of standards continues with potential support for more and more complex business transaction services. Internet security is strong enough for most applications, but the inherent dangers demand deep and current knowledge.

In our view, the time has come for small organizations to take advantage of web services. The low cost and quick success of implementing application components on the internet, intranets and business applications can be realized ***right now*** despite known limitations -- just by avoiding the thin ice.

For example, you can wait around for years for complex technical standards to emerge to ensure your transactions are performed with high availability, or you can strike a less cool but more rigorous paper-based Service Level Agreement with a web services provider. At GISfactory.com, we don't make applications find each other – we tell them where to go and under what circumstances. We provide all the benefits of pre-built, integration-ready application components as *web services with a human hand.*

As for reliability, we do not recommend using web services for complex transactions requiring messaging queues or multi-phase database commits. There is enough benefit to be derived from web services without using them everywhere.

Why GIS Projects Fail

We mentioned in our opening remarks that GIS has been somewhat slow in uptake., despite the fact that more than 80 percent of businesses make extensive use of location information. For several reasons, a vast majority of GIS projects have been disasters, often enduing up far over budget and delivering far less than promised. Our experience suggests at least three reasons:

POOR PROJECT MANAGEMENT

GIS implementation requires an unusual combination of geography knowledge and information technology discipline. The task requires teamwork because it is extremely technical from the geography perspective, with complex data manipulations and transformations, yet also requires the best practices of project management and change management to get the thing done.

Oddly enough, because geographers are technical they're not afraid to take these projects on. They defend their silo from IT on the basis of its high degree of specialization. IT executives are often quick to agree, often because they don't want to associate themselves with unsuccessful money pits.

The result is that many projects suffer from poor project management. They often get part way, then get caught up in something new – new data or new technology or a changed data structure --- that diverts them from completing a development cycle. Often because of poor project management, it was not clear what they were trying to achieve in the first place.

CONFLICTING PRIORITIES

There is a big conflict between the domains of GIS Data Maintenance and GIS Information Production. Currency of the data is very important for some applications, so a great deal of resources go into adding new streets and addresses etc. Of course it is a task that is never complete, and the old technologies made it more difficult by supporting only a batch, whole file or tile area replacement approach. Unfortunately, if companies are wealthy enough to have GIS specialists at all, they are likely to be split between the duties of maintenance and development, and protecting the value of the data asset through maintenance is often pitched as the top priority. By the time the team gets back to development, no one can remember what they were trying to achieve or a new software version has come along demanding a project restart.

REALLY EXPENSIVE SOFTWARE

The GIS software market has traditionally been dominated by two or three big players, each trying to squeeze large profit margins out of a few big buyers. Small organizations

didn't matter. Fortunately, Open GIS standards have cleared the way for the cost of software to come down through competition, although the big players continue to demand monopoly prices from loyal customers who have invested heavily in their proprietary implementations. Today you're lucky to be a newbie.

Why GIS Web Services

GIS Web Services are an ideal outsourcing solution for organizations that want and need to deliver spatial information. If outsourcing ever made sense, this is the kind of specialized domain where the benefits really stack up!

Cost

GISfactory.com can host your application services for a fraction of the cost of building, deploying and operating these systems yourself. Our application components are ready to use and the cost is far less than a GIS server license.

Risk

We've taken the risk out of GIS by designing, building, testing and deploying ready-to-use applications. Avoid the pitfalls of GIS project failure. Consider it more like subscribing to cable TV – hook it up and go.

Timing

Want your application up and running quickly? Don't waste time acquiring, installing, configuring, testing software, data and servers? We've got it already setup. Just send us your business data, or shapefiles or license them from our partners and you can be on-line within days.

Resources

Don't have staff who can do both Geography and the Internet? No problem! Leverage our team of experienced GIS-Web developers and administrators to get started right now!

About GISfactory.com

Based in Toronto, Canada GISfactory.com is a leading provider of GIS Web Services enabling companies to use the power of GIS in their internets, intranets, portals, dashboards and business applications.

You can learn more about **GISfactory.com** by visiting www.gisfactory.com or by sending an email to info@gisfactory.com.