



REALIZING VALUES ON DATA HOSTING PLATFORM FOR GIS SOLUTIONS - AN APPROACH

Abstract

It requires a vast investment to integrate the geographical information system (GIS) into any business. However, the investment can easily go in vain if the chosen platform and custom application do not meet the business needs. The current GIS market is moving towards the trend where target business leveraging the benefits of relying on the data hosting partners to manage their services. This enables the business to optimally utilize assets, and ability to service their needs so that client focuses only on their core business. There are both small and large players who face regular challenges in asset management and yet are not keen to invest in-house in map data and applications. In order to cater to this, the data hosting platform for GIS hosts online mapping services.

Read on to know more about this concept and how this can be best illustrated by a platform hosting up-to-date online mapping services to cater to location based services (LBS) and fleet management services (FMS).



Introduction

Data center hosting - geospatial intelligence data center platform

Data center hosting is the process of deploying and hosting a data center at its own infrastructure or at an external service provider's infrastructure. It provides similar services, features, and capabilities of a data center but from an externally hosted platform.

This service delivers some traditional functions with the combination of application service provider (ASP) and Internet service provider (ISP):

The benefits include:

- Enabling customers to consolidate and

outsource much of their IT needs in a cost effective manner

- Providing repeatable business services among several clients
- Generating revenue on a subscription or transaction basis

Fleet management service

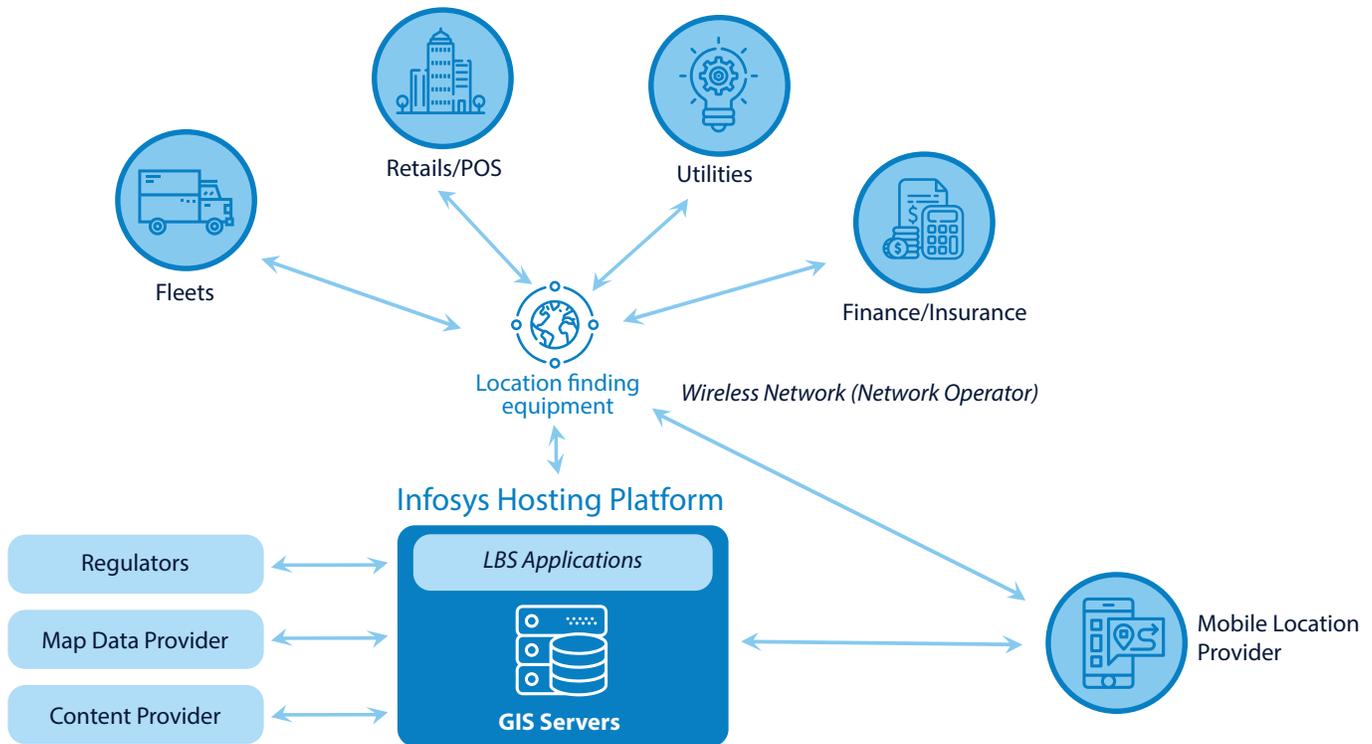
One of the fastest growing markets for GPS technology today is vehicle tracking and location technology, also known as fleet management. This technology allows real time as well as passive vehicle tracking for fleet owners and dispatchers. The data from the server can be used to display the location of the vehicle on a map using GIS technology.

Location based service

LBS provides geospatial information and geo processing services based on the location of the mobile phone users. It is a combination of Internet GIS, mobile phone positioning, and wireless communication. Suites of applications that uses the information of mobile device locations can be developed.

These platforms work on the concept that combines accurate land base information with a robust address matching logic to provide a unique solution for easier and more efficient LBS. These include services such as fleet tracking, friend finder, phone tracking, point of interest (POI) finders, and courier services.

The following graphic conceptually describes these services:



Digital data hosting enables services firm to host the map content to enable consumers and enterprises to identify the real-time information of valuable business assets that improve the customer services. This solution architecture involves feeding the map data from the data vendor, availing network services from the service providers and service firms, and producing the applications that benefits the business value chain.

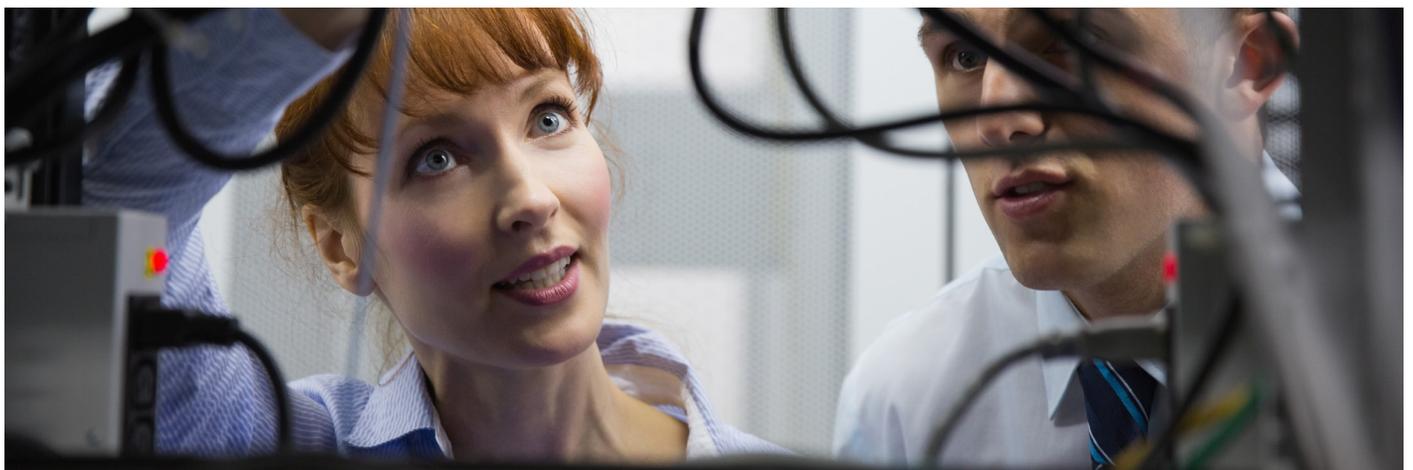
For example, the solution facilitates fleet transport or logistics to track their services by obtaining real-time information, or a pharmaceutical firm to locate the assets (shops or warehouse) on the map as

it relies on the hosting center. The key differentiator is that the business centers are not required to invest on the maps to enhance their regular services.

Other advantages include, but are not limited to:

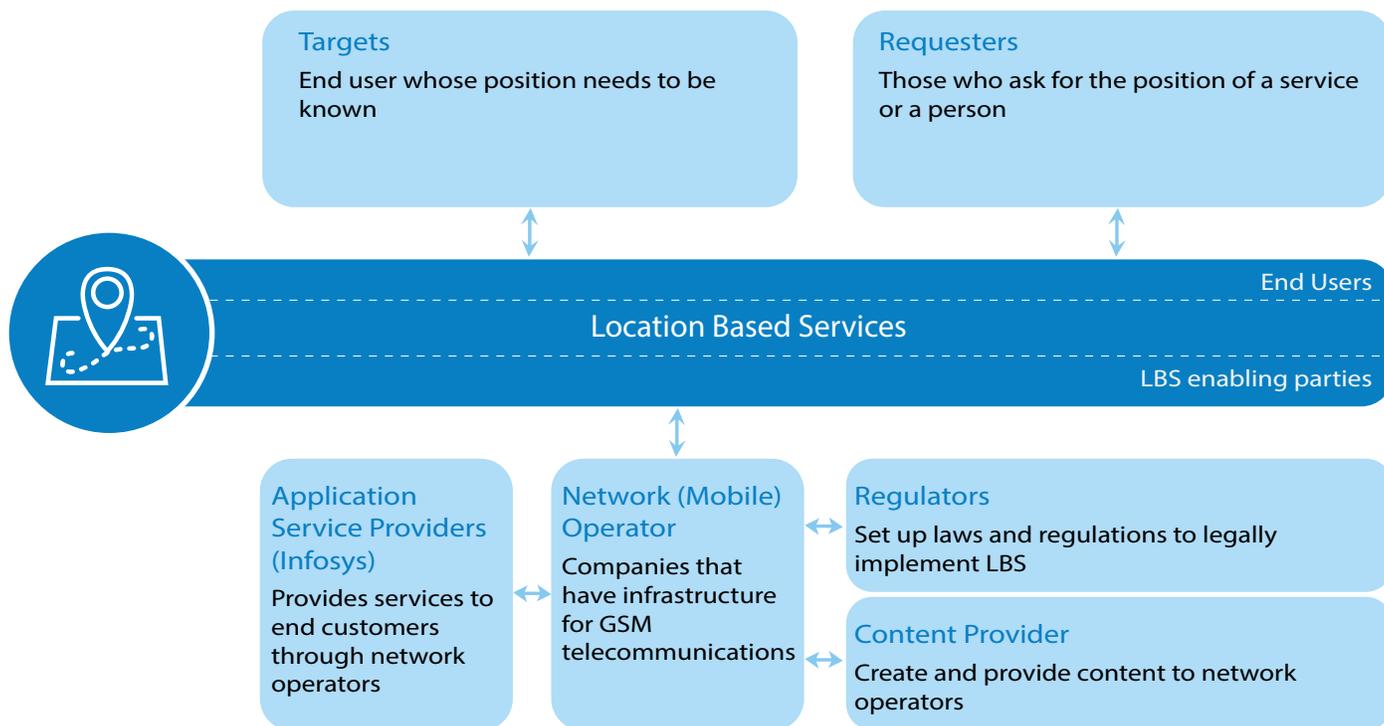
- Improved operations and reduced cost by allowing managed service to practice from business house by outsourcing certain processes and functions
- Full control on the server and limits sharing of its resources with other parties

- Higher reliability, increased performance, greater security and exclusive use of the server, system and network resources to the client
- Powerful and quick solution to client's business problems
- Increased business opportunities and revenues that provide growth potential ability to generate larger profits, expand the workforce and ramp up the production



Components and role players in the platform hosting

The entire platform architecture involves more than one component that includes network operators, GPS location agencies, map and content providers, and application providers.



Target and Requestors

Target can be assets, mobile workforce, or mobile users, which business wants to track or enable their business assets in their horizon.

Requestor can be anyone who ask for the real-time position of a service or an individual. They are the business entities who want their value business assets to be tracked and delivered that make their customer satisfied and bring more growth.

Application service provider or Technology partner

Application service provider offers individuals or enterprises access over the Internet to the applications and related services. As a Technology partner they are specialized in developing the LBS services, OGC/Restful compliant web services to host these services for the business community.

Network (mobile) operator

Mobile network operator is a firm that

has an infrastructure for GSM/CDMA telecommunications.

Mobile network operators continuously seek new and innovative ways to offer new services and increase the profit.

Regulator

Regulator is a government regulatory body that requires all service providers to share location details of their consumers with certain degree of accuracy. These data should include part of call detail records in the form of longitude and latitude, and coordinates of cellular sites, which can be made available to security agencies.

Content provider

Content is key in the geospatial space. Content provider creates and provides content to network operators and technology firms. Several map data providers like, Google maps, Openstreetmaps, Bing maps and others made a significant investment to get the most accurate data on the streets and

roads. This data was offered free and these firms made most of their money by selling routing (directions) through in-car navigation systems, advertising and related travel services.

Most of the map services complies open standards (OGC). It provides maximum interoperability with purchaser's and data sharing partner's systems who provide either web services or application programming interface (API) based on which ASP can develop the desired applications. These applications include fleet management, point of sale applications, advertisements, and underground asset management.





Hosted service platform - Business benefits

The data hosting and hosted services have several benefits to every individual in the complete eco-system.

The data hosting service enables technology providers to leverage the benefit of the application service provider hosting the application. It is not only limited to revenue generation but also generates greater benefits.

The cost effectiveness and ease of use can help many businesses better streamline and coordinate operations.

- Businesses can seamlessly use the applications hosted on the data center, it does not require any extensive infrastructure or intensive code adjustments. The existing clients managing their own infrastructure to host the spatial data can also leverage the hosted application. For example, fleet operators can expand their horizon without major investments and still track the additional fleets on the maps hosted by their hosted partners.
- All users can access data that is available as web services with a secured hosted platform.

- Due to interoperable solutions due to handshake mechanism between data and technology partners, key challenges of data refresh frequency can be easily addressed in order to meet the precision and real time decision making.
- Data security and privacy are well managed. Issues can be resolved quickly, and with minimal impact on operations as the data is hosted on the secured Intranet infrastructure.

Additionally, GIS services that provide the application services and other players have enormous benefits

- Application provider or technology partner are promoted in the market resulting in enhanced revenue generation
- Content providers have significant revenues based on user transaction and usage level. Business transaction happens on the map features, so revenue can have classified as asset based or transaction based or business unit based.
- Network (mobile) operators have increased ARPU and a higher customer base.

Beyond the manifold benefits due to hosted platform, there are many other benefits from the applications LBS and FMS hosted on the data platforms

- Provides improved analysis and enhanced presentation of data displayed in the form of maps
- Provides solution to location specific real-time problems and allows accessibility of the service in remote areas
- Helps display real-time positioning information using maps
- Integration with other services like trouble ticket systems, asset management, ERP, etc., to provide interoperability, to maintain low cost on various operations, and to make solution robust, stable, and scalable.

While describing the design for the technology solution design, there are plenty of applications that can be developed and hosted on the servers.

Following are few examples:

Location services/Geocoding services

- Fleet Management Services/ Turn by turn navigation to invitations, or any other address, Yellow pages
- Mobile Yellow Pages - Requesting the nearest business or service, such as an ATM or restaurant
- Emergency Alert services & Public Safety Services

Retailing / Marketing

- Who are my “best” customers?
- How do my customer reaches or access my assets?
- Where do I add the new outlets to launch the products?

Communications (telecommunications)

- How do I avoid damage to the utilities during Evacuation? (Underground Asset Management)

- How do I receive the last mile connectivity Telecom Network Inventory Management?

Financial services

- Where does the branches and ATMs to deploy in each market?
- Where should I expand my ATM or branch network?
- Were my products or assets closer to competition?



Data security on Geospatial database management

The collection, consolidation, and processing of GIS data comprises of highly skilled resources and involves high cost, to maintain the sensitive and critical data at times, involving data related to privacy and national security. Therefore, it is important to consider securing and safety of GIS data, as most clients have limitations in sharing the proprietary data or move to any cloud services.

Geospatial data resources are characterized by diverse formats and feature classes, including survey maps to thematic to imageries, location address, GPS data and more. So, there should be holistic approach

to deliver geospatial data hosting model with unique and dynamic security framework, addressing security at all layers and outside the Enterprise boundary. Any new infrastructure should include building the security infrastructures for relational data vs geospatial structure and defining access control models delivered as service to GIS repositories.

Revenue model for hosted services – Tangible benefits

There can be multiple directions based on which revenue model can be defined. However, these are not limited to the following models:

- **Application based charges - One time**
Technology provider deploys the

service, and network (mobile) operator gets charged for the same as one-time revenue model.

- **Subscription based charges (fixed) on monthly basis - Customers are associated to the services on per term basis**
 - Fixed revenue is achieved irrespective to the usage
 - Continuous flow of revenue till the subscription continues
- **Usage charges (variable) on monthly basis - Customers are charged on the basis of region from where the client operates**

Takeaways

The concepts apply to any firm that has expertise in providing services to large players in the operations industry and providing spatial technology expertise to the different verticals. The concepts identify a need to have a common platform from where various GIS services can be provisioned to the business to manage the assets for whom the focus can be only on their core assets. These firms can leverage the hosting platform and dedicated GIS data practices that offers several robust tools that enable companies to utilize technology as a business enabler.

This offering provides end-to-end hosting capabilities, and development/ support of the custom solutions/applications. It enables businesses to quickly adopt the technology changes for their growth and expansion, seamless application provisioning for an increasing customer base, and less investment in IT.

Author



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He has close to 20 years of experience in the field of GIS, telecom OSS/BSS, mobility and telematics domain, and is involved in the consulting, solution architecture, program/project management, portfolio management for Indian and overseas clients (US/Middle-East).

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