

ERDAS TITAN: CONNECT AND SHARE YOUR WORLD

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ABSTRACT:

Geospatial information users have the need to ingest data into a variety of desktop, Internet and 3D virtual globe applications they use in their daily work. Utilizing streaming data technology via geospatial web services, actual datasets remain in one place while specific bits of information varying in complexity are streamed directly to requesting individuals across vast networks. For consumers this means that data quality increases, as geospatial web services provide immediate access to the most current data stores. Moreover, data distributed via web services require no format translation on the receiving end, enabling hassle-free delivery into various applications on client machines. The general flow of information across networks is exponentially improved, and faster data delivery means work gets done faster. This presentation will demonstrate ERDAS TITAN, a dynamic online solution for real-time sharing of geospatial data, web services and location-based content in a single, secure environment. Ultimately, ERDAS TITAN is a geospatial data bridge, enabling consumption of data from multiple public and private sources into a variety of client applications, including desktop, Internet and 3D virtual globes.

1. MAIN BODY

Geospatial data users need to ingest data into a variety of desktop, Internet and 3D virtual globe applications they use in their daily work. More importantly, they want to consume this data without being impeded by the age-old hindrances of file format conflicts, long delivery times, or working with out-of-date content. On the other end of the pipe, organizations require the ability to rapidly distribute data to a consuming network of users. These organizations need to deliver the data in varying complexities, all the while ensuring that the data can be immediately absorbed into various applications potentially in use by the consumer.

To answer the demand for real-time, interoperable solutions for data sharing, the industry has responded with the development of geospatial web services. Geospatial web services enable web-based access to quality raster, vector and terrain data, available in varying formats and degrees of complexity. Also available are highly-specialized services that allow for such unique processes as transformation of geographic coordinates, catalog querying, editing vectors and much more.

In streaming data via geospatial web services, actual datasets remain in one place while specific bits of information varying in complexity are streamed directly to requesting individuals across vast networks. For consumers this means that data quality increases, as geospatial web services provide immediate access to the most current data stores. Moreover, data distributed via web services require no format translation on the receiving end, enabling hassle-free delivery into various applications on client machines (note: client applications must be enabled to consume web services). For organizations, dissemination via streaming eliminates a reliance on time-consuming and costly distribution methods, such as ftp and CD/DVD. Furthermore, data ownership is protected while data sharing is optimized. For all, the general flow of information across networks is exponentially improved, and faster data delivery means work gets done faster.

2. ERDAS TITAN

ERDAS TITAN is based on geospatial web services. ERDAS TITAN is a dynamic online solution for real-time sharing of geospatial data, web services and location-based content in a single, secure environment. ERDAS TITAN offers a solution in which data may reside locally—either with individuals or at organizations—and consumers are able to retrieve that data via streaming various and sophisticated geospatial web services. ERDAS TITAN also provides permission-based distribution within a network of users. Ultimately, ERDAS TITAN is a geospatial data bridge, enabling consumption of data into a variety of client applications, including desktop, Internet and 3D virtual globes.

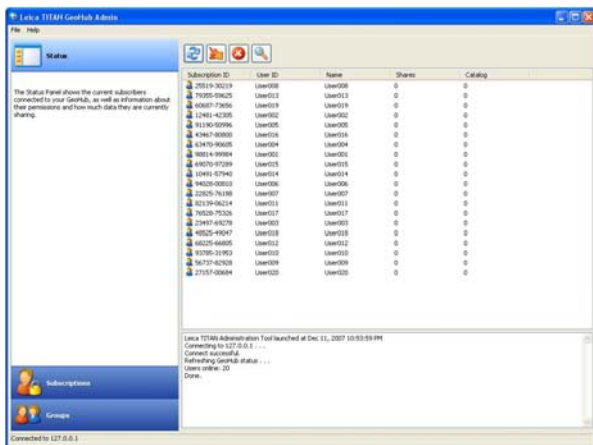
Organizations Sharing Data & the GeoHub

Organizations in the geospatial industry are responsible for authoring and sharing data across departments, to clients, to other organizations and, in many cases, to the general public. Amongst an organization's customers lay a myriad of different desktop, Internet and 3D virtual globe applications. The challenge is to quickly and efficiently deliver a vast array of data to numerous individuals working with these various client applications.

To deliver data to many without draining internal resources, an organization must implement an efficient solution for secure, permission-based data distribution to users both inside and outside the organization. For this requirement, ERDAS TITAN offers the GeoHub, providing organizations with the ability to create their own secure community within the ERDAS TITAN Network. By implementing a GeoHub, users within organizations may share data publicly or privately to other users or within workgroups.

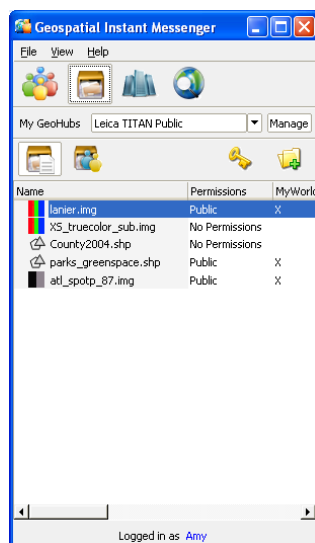
Within GeoHub communities, users become 'subscribers' to a GeoHub. The GeoHub Administrator assigns each user rights or permissions appropriate to that user's role. Some subscribers (such as someone from the general public accessing a governmental data store) may only have the right to access or "consume" data but not to publish; other more empowered users may be enabled to publish data privately to particular other

users (such as sharing between co-workers or within particular groups); and still others may be given permission to publish data to the entire ERDAS TITAN Network.



GeoHub Admin panel

In the ERDAS TITAN Network, all communication, data indexing, access and streaming is conducted through GeoHubs, which are caching proxy servers. Caching requests for datasets is useful as requests are repetitive and made in a uniform manor (meaning, all users make the same type of requests). GeoHubs maintain temporary local copies of frequently requested data, increasing the performance on re-fetching the data. This maximizes efficiency by reducing the need for an organization to continually upload data for distribution. Similarly, fetch time for consumers accessing cached data downstream is greatly reduced.



Local data shared in the Geospatial Instant Messenger

Publishing & Consuming Data via the Geospatial Instant Messenger (GeoIM)

The Geospatial Instant Messenger is a component of the ERDAS TITAN Client, a software application that supports data publishing and access, and also real-time communication among ERDAS TITAN Network participants. Participants sharing data within a GeoHub organization utilize the GeoIM to publish data either publicly or privately to individuals and groups. Users consuming data also use the GeoIM to discover, access and ultimately retrieve (stream) geospatial data and web services published by others. Furthermore, the GeoIM also supports consumption of web services, including OGC

compliant WMS, WCS and ECWP. The data and web services published and consumed via the GeoIM can be directly streamed into, or “consumed” by, a variety of desktop, Internet and 3-D virtual globe applications, including the ERDAS TITAN Viewer.

Consuming Data into Various Client Applications

For consumption of data into various desktop, Internet and 3D virtual globe applications, it is simply a matter of fulfilling HTTP requests to get data into applications such as Google Earth and Microsoft Virtual Earth 2D and 3D. Using the Geospatial Instant Messenger, a user simply clicks to load data into the following applications:

- i. **WMS Link:** Geospatial data published using the Geospatial Instant Messenger also automatically creates an OGC compliant Web Map Service (WMS). WMS server capability is embedded in the ERDAS TITAN Client and running on the local machine. The dataset(s) published may then be consumed directly by any desktop application with the ability to read (consume) a WMS (this includes OGC Web Client Applications, ERDAS Imagine®, ArcMap, uDig, Quantum GIS, Manifold, GeoMedia, Autodesk, etc).
- ii. **Google Earth:** Geospatial data published using the GeoIM may be consumed in Google Earth. When a request is made, a KML is created on the machine sharing the data. More specifically, super overlays are created for rasters and regionated KML's are created for vectors. The KML is then passed through a GeoHub, which subsequently serves it to the requesting user.
- iii. **Microsoft Virtual Earth 2D and 3D:** Geospatial data published using the GeoIM can be consumed in Microsoft Virtual Earth 2D and 3D. When a request is made for shared data, ERDAS TITAN facilitates that data to be streamed into either Microsoft Virtual Earth 2D or 3D.
- iv. **TITAN Viewer:** Geospatial data published using the GeoIM may be consumed in the TITAN Viewer. Geospatial data is streamed using a custom protocol based on WMS into the Viewer. Users may also create and share a MyWorld — a geographically enabled personal space — where they upload data, set permissions, and share content with other network users. With a MyWorld, a user customizes and shares a ‘geospatial profile’ in a 3D virtual globe, subsequently allowing other users the ability to enter, navigate and explore with permission-based access. This space may include both geospatial data and interesting content like photos and ancillary information. The Viewer also accepts KML and KMZ files via drag and drop from a user’s hard drive.

For all of the above streaming processes, data travels through the GeoHub and caches there as well as caching locally, enabling rapid access to requested datasets when re-fetched.

3. Future

Accessing and utilizing geographic information via the Internet continues to grow in sophistication. As this space rapidly evolves, specifications for existing geospatial web services continue to be refined, and innovative new web services will be implemented. ERDAS TITAN will continue to broaden support for data consumption into various desktop, Internet and 3D virtual globe applications. ERDAS TITAN will also continue increasing support for both publishing and consumption of a growing assortment of geospatial web services.