



Components

STK Components is a collection of development libraries available in both native Java and .NET and built on industry-proven, fundamental and validated STK algorithms. Using STK Components, you can deploy technology across the enterprise or deliver it to your operational programs rapidly and affordably. Use the key architectural elements of STK Components to build applications that are:

- Platform independent (pure .NET or Java libraries)
- Thread safe and multithreaded
- Highly scalable
- Developed for internationalization
- Built in native 64-bit architecture
- Suitable for thick-client, thin-client or server deployment
- Integrated with service-oriented architectures (SOA)

Software developers can incorporate constrained dynamic spatial analysis into any desktop or multi-user Web application, or piece of a service-oriented architecture.

Dynamic Geometry Library

AGI's core component, Dynamic Geometry Library (DGL), provides time, position and orientation modeling for accurate vehicle propagation and sensor modeling, as well as:

- Dynamic analysis based on high-precision time
- High-fidelity, time-based intervisibility algorithm
- Precise platform positioning and orientation
- Complex numerical and geometry algorithms
- Manipulation of points, axes, vectors and reference frames

Communications Library

Extends the intervisibility algorithm in DGL to model signal links between dynamic platforms, and:

- Antenna gain pattern modeling
- Signal processing modeling hardware behavior
- Wireless link propagation
- Link budget and constraints
- Loss prediction over irregular terrain and seawater

Spatial Analysis Library

Computes asset coverage over lines, regions and dynamic platforms. Measures asset effectiveness using:

- Geometry primitives for lines and regions
- Gridding algorithms
- Coverage definitions
- Extensible figures of merit

Terrain Analysis Library

Provides terrain analysis within computations, along with:

- Terrain readers and interpolators
- Ability to constrain intervisibility with terrain



Navigation Accuracy Library

Propagates the GPS constellation using various data formats and configurable receivers to compute the navigational accuracy of terrestrial and spatial points with:

- Dilution of Precision (DOP)
- Navigational accuracy
- Receiver Autonomous Integrity Monitoring (RAIM)

Tracking Library

Aids development of decision support, situational awareness and distributed simulation applications through integrated, configurable and customizable functions:

- Optimized one-point analysis
- Data filtering and event processing
- Software transactional memory system
- Archiving and playback

Route Design Library

Generates routes by using vehicle-specific characteristics to connect geometric procedures defined at waypoints.

Supports aircraft, ground and ship vehicles via:

- Pre-defined procedures
- Vehicle attitude modeling
- Terrain constrained procedures

Orbit Propagation Library

Numerically propagates satellite orbit state and covariance using validated force model algorithms and:

- Industry-recognized models for drag, gravity and SRP
- User-defined custom force models
- Any orbit regime, including GEO, MEO, HEO and LEO

[Learn more at agi.com/components](http://agi.com/components)



Insight3D

What is Insight3D?

The Insight3D Visualization Library is a set of .NET or Java interfaces around AGI's 3D engine. Developers can use C#, VB.NET or Java (Windows only) to construct lightweight yet powerful 3D applications built for performance and visualization accuracy. By coupling STK's time-tested rendering engine with the Dynamic Geometry Library and other libraries within the STK Components development kit, developers can extend their current visualization capabilities.

Why use Insight3D?

With the Insight3D Visualization Library, users can control:

- Smooth animation
- Camera manipulation
- Static and dynamic primitives
- Object picking
- Globe inlays
- And more

In addition to building new applications with Insight3D, developers can add the Insight3D control to an existing application—enhancing the application by rendering data in an interactive 3D environment.

This concept isn't new. Google Earth, Virtual Earth, World Wind ... these globes already exist to illustrate spatial data. How Insight3D differs is best attributed to four different categories: Time, Camera, Object and API.

Time

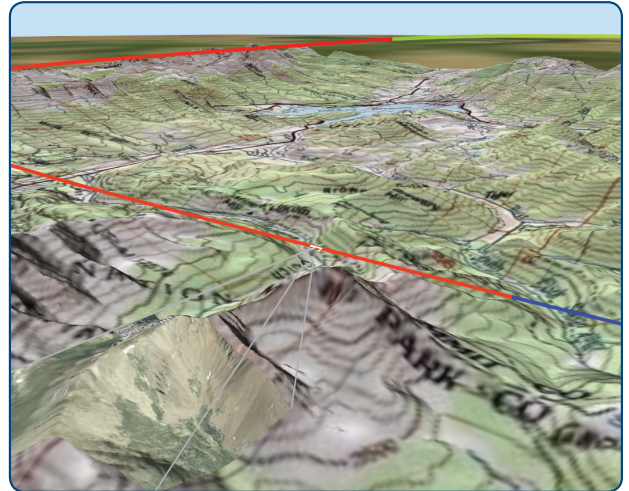
The management of time-dependent data, such as vehicle motion, is at the foundation of Insight3D. Using the Scene Manager, Insight3D renders objects (primitives) fluidly over time rather than as a series of discretized points by managing those objects and updating the scene as objects change.

Camera

The camera object fully controls the viewer's position and orientation. When the camera is initialized with point or vector objects, it automatically moves when the point or vector change. Camera settings include view parameters such as field of view, near plane distance and far plane distance.

How do you get Insight3D?

Visit the AGI Developer Network (ADN) at adn.agi.com to download the latest version of the free STK Components development kit, add the Insight3D reference to your project and list of controls and start developing. Be sure to check out the rest of ADN for code snippets and sample applications.



Object

One reason why Insight3D is excellent at managing time and the camera view is because it treats items rendered to the 3D scene as objects. Illustrating data over time is not about rendering different data at each time step, but rather rendering the same objects' new geometry as a function of time.

API

The Insight3D API is a set of managed .NET interfaces designed for building and deploying powerful 3D applications. Insight3D provides access to the rendering engine and camera providing developers full control over what and how primitives, images and overlays are rendered and viewed.