

# Sextant Components Software Development Kit (SDK)

## Release the power of geo-spatially aware 3D urban objects through your application

Use Sextant Components to:

**Automatically** and rapidly create 3D databases from attributed GIS vector data.

**Create, detail & texture** complex building models.

**Write** your own geometry exporter

**Find** the useful information in a sea of geospatial data.

**Create a DEM** of the urban landscape including buildings at **LIDAR** resolutions to pass to your analysis algorithms.

**Ask** the urban environment to return line of sight coverage patterns from input vantage point as an x,y,z point set.

Let your application **conform** with MIL-STD-2525B for military symbols - pass in the window handle and the symbols are drawn!

**Connect** your application to a distributed simulation.

**Output urban terrain** detail, including meta-data and geometry to ESRI Shape, SEDRIS, or Openflight files.

The Sextant Components SDK is a collection of COM interfaces into the highly successful, mission-proven Sextant software suite.

The SDK provides the methods to create, visualize, query, and modify an underlying geospatial object repository, called a Mission.

The geo-spatial objects represent physical items in the environment and include buildings, roads, rivers, treelines/trees/forests, bodies of water as well as objects classified as linear (e.g., fences, powerlines), or point (e.g., utility poles, mailboxes, cars).

The underlying ground terrain is also represented and can be manipulated by adding areas of micro-terrain.

Component users can choose to use as many or as few of the functions provided by the SDK, enabling them to insert this powerful mechanism into their own applications and thus leveraging investments in existing visualization technology.

Once a model of the synthetic environment is created and saved in the object repository, individual or groups of objects can be operated on by the calling application.

Sextant components allow you to use the objects in the environment model for analysis or visualization tasks.

- Sextant Components for:**
- Rapid Automatic Terrain mesh creation from DEM or DTED
  - Terrain texture using aerial, satellite imagery or geo-typical texture maps
  - Line-of-Sight Analysis and Weapon Range Fan display
  - Track Unit positions in 2D and 3D space via xml
  - Complex building model creation with detailed interiors, working doors and windows, complex roofs
  - Easy to follow Wizards for Automatic 3D Urban modeling
  - Database Query interface and display modes
  - Micro-Terrain tools for hills, depressions or holes



Query wizard for end-users or programmatic use

Create Query

Query Name Base: Search for Admin/Govt Buildings

All Objects of Kind: RakuBuilding

With Attribute: buildingFunction

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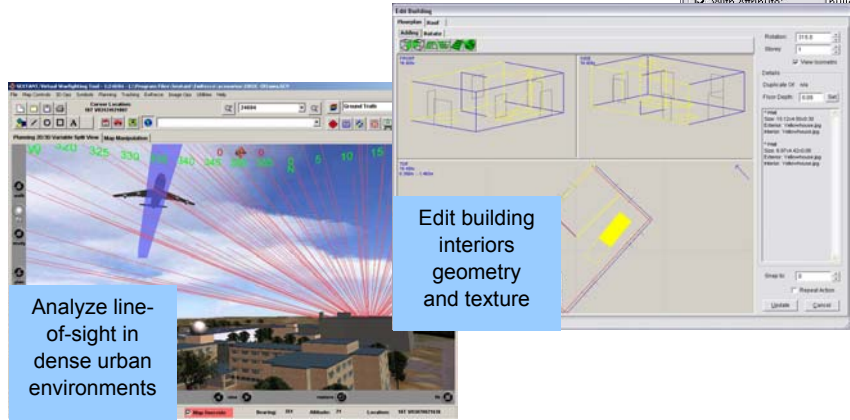
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Analyze line-of-sight in dense urban environments

## Rapid generation of geo-specific urban 3D environments

The **SEXTANT Developer Tool kits** are function based groupings of the individual components that make up the **SEXTANT Components SDK**. The **Sextant Components SDK** is a collection of COM interfaces into the highly successful, mission-proven **Sextant** software suite.

The main component on which all other components depend is the **Mission Interface Component**. A Mission is the core logical environment model of a place - each of the objects in the environment model describes a 'thing' in the environment. 2D and/or 3D representations can be created from geo-specific source data and then the objects can be visualized and queried from the environment model. The underlying environment model is persistent, and objects can be updated from dynamic data as parameters change.

**Core Creation Tool kit:** The Core Creation Tool kit includes interfaces that let you create geo-specific or geo-typical Missions with detailed and attributed urban environment models. Components in this kit provide interactive geometry to enable your application to update 3D models on the fly.

**Building Construction Tool kit:** The Building Construction Tool kit enables your application to precisely create and edit interior and exterior building details. With access to the building object models in a mission, the user can modify and retrieve the attributes, visual attributes and geometry of individual buildings.

**Automatic Geo 3D and Terrain Tool kit:** Slash the time it takes to create 3D databases. Use a wizard interface to rapidly create a logical model of the environment from vector data files (point, line or area) of various formats (ESRI shape, VPF, MapInfo, autoCAD). Generate a 3D terrain model from various DEM formats including DTED. Easily manipulate a wide variety of commercial and military GIS data formats including CDRG, CIB, GeoTiff, VPF, and shape files. Output composite products to geo-referenced images that can be used to texture terrain surfaces.

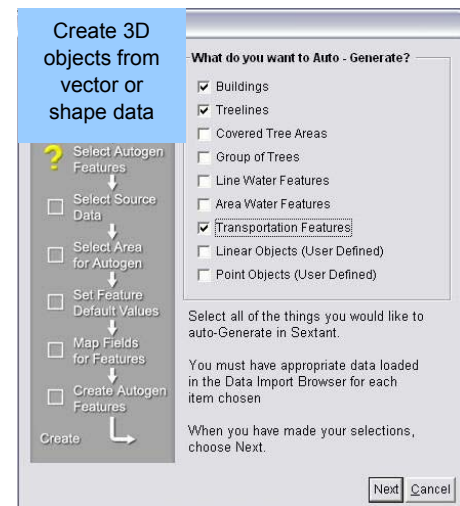
**Analysis Tool kit:** Mine your geo-spatial data for information your application needs including objects within spatial areas or with particular attributes. Fuse and organize all data types by hot-linking your documents, videos and images to geo-referenced objects.

**LIDAR Component :** Process LIDAR elevation data to create shape files of buildings and obstacles as well as filtered geo-referenced images (shadowed, contours, slope analysis).

**C4I and Military Symbology Tool kit:** Dynamically generate comprehensive military symbology and unit objects to improve the fidelity of your C4I and simulation applications. Symbols are created on demand from unit attributes, not from a bitmap library. This means the symbols are crisp and clear at all scales.

**Export Tool kit:** Export the logical database to a wide range of formats including; VRML, SEDRIS, CTDB, Open Flight and Shape files.

**DIS Component:** Track and broadcast entity states for command and control, simulation, gaming and asset management using DIS.



"When the Tactical Electronic Warfare Systems Group at Defence R&D Canada - Ottawa was interested in demonstrating a new concept for Network Centric Warfare, they turned to Object Raku and their Sextant product to implement a 3-Dimensional synthetic environment for modeling of EW sensors on land-based reconnaissance vehicles. The robustness of the Sextant product and the creativity of the Object Raku staff enabled DRDC Ottawa to investigate these new EW concepts for the Canadian Forces."

Derek Elsaesser  
Tactical EW Systems  
DRDC - Ottawa

"The Raku Symbol Server allowed us to go to market quickly with a high-quality, out-of-the box solution for 2525b symbology. Object Raku's support has been excellent."

Kevin Flood  
Director,  
Product Management  
Analytical Graphics,  
Inc.