NATO STANAG 4586 VSM Toolkit

Technical Overview

Why an SDK?

The STANAG 4586 VSM C++ Software Development Kit (SDK) provides your organization with the ability to integrate your existing unmanned vehicles into a STANAG 4586 compliant network.

By using the Application Programming Interface (API) included with the SDK, software developers can write custom code to send and receive DLI (Data Link Interface) messages to and from one or multiple connected ground control stations.

This SDK will dramatically speed up your STANAG 4586 integration process and also make it easier to keep up to date with the latest edition of STANAG 4586.

What is Included?

The STANAG 4586 VSM C++ SDK installation package includes the following components.

DLI API

The API consists of header files and precompiled libraries that implement the DLI communication protocol and their methods. The entire public interface of the API is contained in a single multi threaded static library called VSMLibrary.lib (or VSMLibrary.a depending on OS environment). When you write applications for use with the DLI API, this is the library you build with.

SDK Programmer's Reference

This reference, in the form of a help file named STANAG 4586 VSM C++ SDK.chm, provides a complete listing of the classes provided by the API as well as their attributes and methods. It also includes coding examples to demonstrate how to implement a simple VSM (Vehicle Specific Module). You can access the reference from the Windows Start menu after you install the STANAG 4586 VSM C++ SDK.

Sample Code

Located in the Samples folder under the installation root, the sample applications demonstrate how to build VSM applications using the DLI API. The examples are written in platform independent C++. You need the appropriate development environment to load, compile, and run these applications. For Windows use Visual Studio 2005 or Visual Studio 2008 and for Linux use GCC 4.2.1.

Runtime Components

The DLI API is implemented using the platform independent C++ programming language. It can be used from within a VSM application. The SDK includes a simple VSM sample project that demonstrate how to use the SDK. The diagram below depicts a typical runtime environment that uses the DLI API.
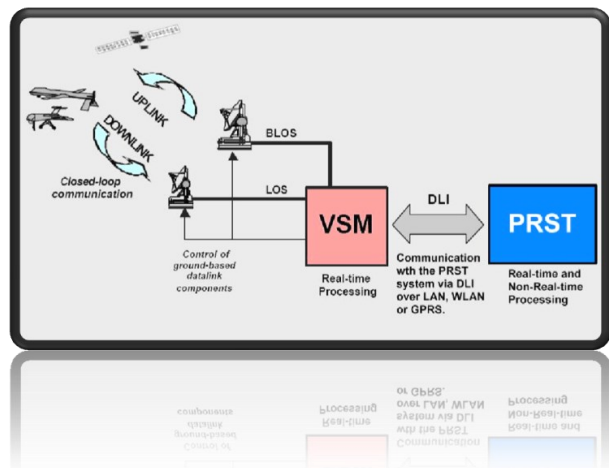
The custom VSM application communicates with the underlying data structures by interfacing directly with the API. The API in turn communicates with the CUCS. The API is using the UDP protocol for communication according to the STANAG 4586 specifications. As a result, you can develop an VSM application where all of the details regarding the underlying interactions have been abstracted away.

The DLI API header files and precompiled libraries provide the necessary communication functionality for your VSM application. However, all public classes used by your application are contained within a single static library: VSMLibrary.lib (or VSMLibrary.a depending on OS environment). The API is exposed to your application as a set of classes that represents the major objects included in the STANAG 4586 VSM C++ SDK.

The SDK Programmer's Reference provides a complete list of the available classes along with their individual attributes and methods.

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Installations

The STANAG 4586 VSM C++ SDK is packaged as a separate installation.

It can be installed independently of the other ICS applications, meaning that there is no requirements for the computer to have the full SkyView GCS software suite installed to use the SDK/API.

The DLI API can connect to a remote CUCS as well as to a local CUCS. The STANAG 4586 VSM C++ SDK can currently be installed and deployed to any system running Windows 7, Windows Vista, Windows XP, 2000, 2003, Windows 98, or Linux.

The DLI SDK/API is not a freely redistributable product. Every machine on which the SDK/API is to be used, either for development purposes or when deployed, must have a valid license provided by ICS. Copying the API's core files from one machine to another is not permitted.

Supported Operations

The DLI API facilitates and supports a wide variety of tasks. These operations include:

- Handle communications with multiple CUCS connections

- Multi threaded message buffering schema per individually connected CUCS

- Define new user specific DLI messages using only a XML file specification i.e. does not require recompile.

- Send and receive standard DLI messages

- Send and receive user specific DLI messages

- Sending DLI messages to one or multiple CUCS

- Handle authorization requests

- Automatically checks DLI message consistency

- Setting and retrieving individual fields within DLI messages

- Enumerating the list of connected CUCS

- Record DLI communication in raw binary format

- Record DLI communication in ASCII comma separated format

- SDK is provided with a precompiled CUCS example.

Architectural Overview