Analysis and Presentation of Signal Jamming Effectiveness

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Purpose

The purpose of this project is to allow a user to evaluate the effectiveness of signal jamming devices placed in a particular region. Given the locations and characteristics of a set of signal jammers in addition to data about the surrounding region, a user should be able to easily identify areas protected by the jamming devices and non-protected areas.

Project Components

NASA World Wind

NASA World Wind is an open source virtual globe on which various imagery and datasets can be displayed. As part of the World Wind project, NASA has released a Java SDK under an open source license, allowing the power and intuitiveness of World Wind's 3D interface to be integrated into custom applications. As signal jamming effectiveness is linked heavily with the surrounding environment, World Wind is an effective tool to display the signal jamming data in an intuitive manner. By integrating the capabilities of World Wind into a custom Java application, it is possible to plot the signal jamming characteristics directly on World Wind's 3D globe, in addition to all of the other data that is accessible via the World Wind APIs.

Eclipse Rich Client Platform

The Eclipse Rich Client Platform (Eclipse RCP) is a development platform that consists of a core platform, the standard widget toolkit (SWT), JFace, the Eclipse workbench, and the Equinox OSGi standard bundling framework. Together, these components form a platform off of which custom applications, consisting of one or more plugins, can be developed. By using the Eclipse RCP, developers are able to use the existing codebase in order to speed development time. This platform has already been extended internally by Northrop Grumman in the foprm of SWB, a platform hat provides functionality common to intelligence projects. NASA World Wind has already been largely integrated into the Eclipse RCP as a par of SWB in a way that it is easy to integrate World Wind into the signal jamming analysis application, which itself will be an Eclipse RCP plugin.

Testing and Analysis

Testing is primarily conducted by randomly selecting regions on the Earth's surface and creating sample scenarios within each region. After running the signal, jamming analysis for the selected region, the computed results are compared with results that would be expected for the region being tested.

Expected Results

At the conclusion of this project, one or more Eclipse RCP plugins will have been created that use NASA World Wind to effectively plot the effects of signal jamming in various locations as a result of different kinds of jammers. The plugin's architecture will itself be extensible so future jamming devices can be added to the program, in addition to current, classified jamming devices.