

AGI USER EXCHANGE

EAST • WEST 2006

Using STK's Connect Interface to Create a Radar Search Planning Tool

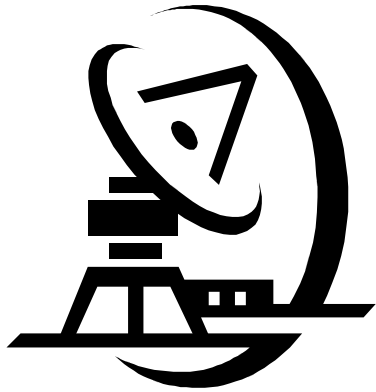


Company Overview

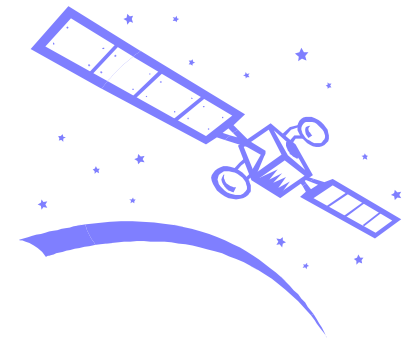
- Raytheon is an industry leader in defense and government electronics, space, information technology, technical services, and business aviation and special mission aircraft.
- Chairman and CEO: William H. Swanson
- Headquarters: 870 Winter Street Waltham, MA 02451-1449
The Waltham main switchboard number is 781.522.3000.
- 80,000 employees worldwide
- \$21.9 billion in 2005 sales

Aspiring to be the most admired defense and aerospace systems supplier through world-class people and technology

Project Overview

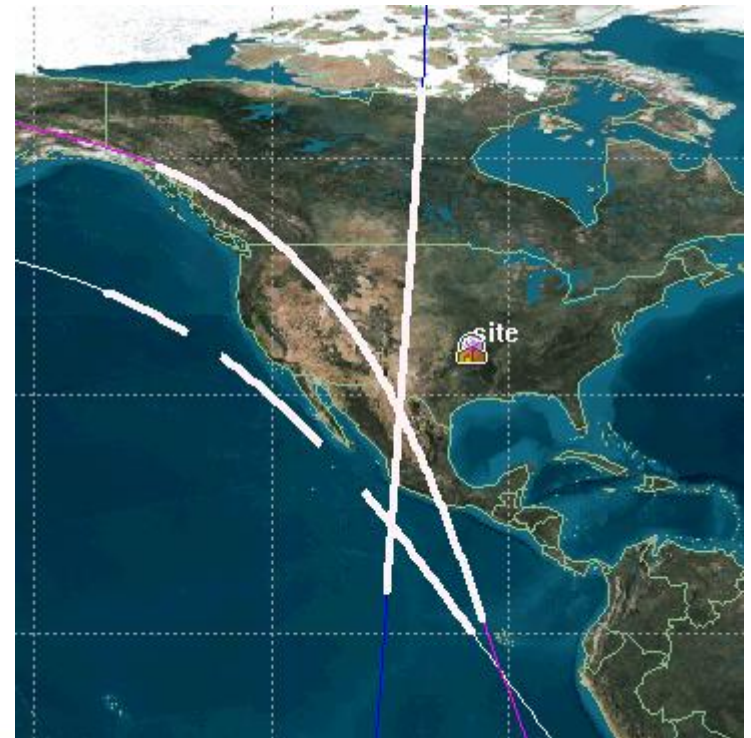


- Radar calibration and mission prep require data collection on numerous satellites
- Operators need an efficient and reliable method for generating searches



Challenge

- Acquire and track satellites for calibration and mission prep
- Improve process for planning and creating searches
- Manage restrictions imposed by outside agencies (e.g. FAA)
- Provide a simple interface for radar operator



Solution Criteria

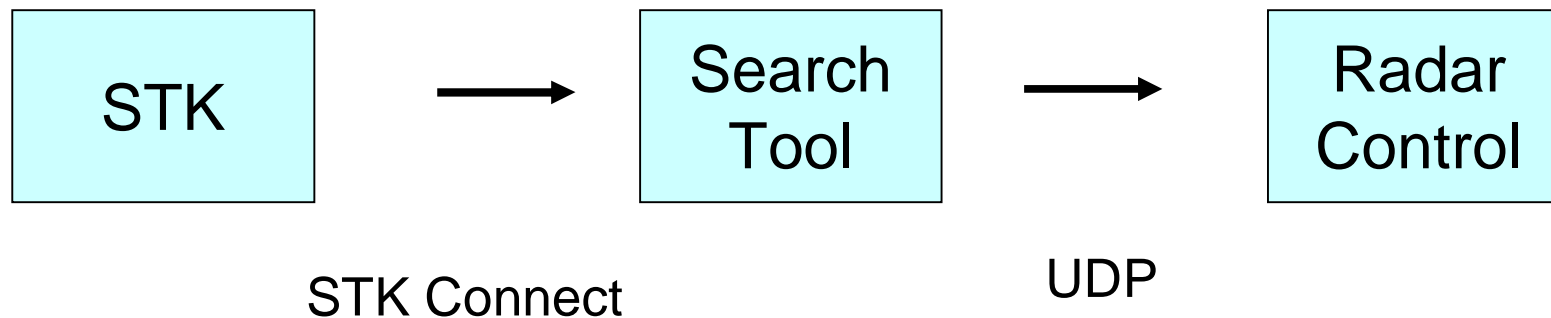
- Maintain planning capability as provided by STK
- Minimize operator actions
- Ensure reliable operation
- Support immediate generation of backup searches
- Use existing software licenses
- Allow multiple platform operation

Alternative Solutions

- Architecture
 - Build capability into delivered radar control software
 - STK and Excel file creation and transfer
 - Create an interface to STK
- Software Development
 - Ada
 - C/C++
 - Excel and VBA
 - MATLAB
 - Perl

Solution

- Graphical user interface in Perl/TK
- STK Connect Library
- UDP connection to radar control system

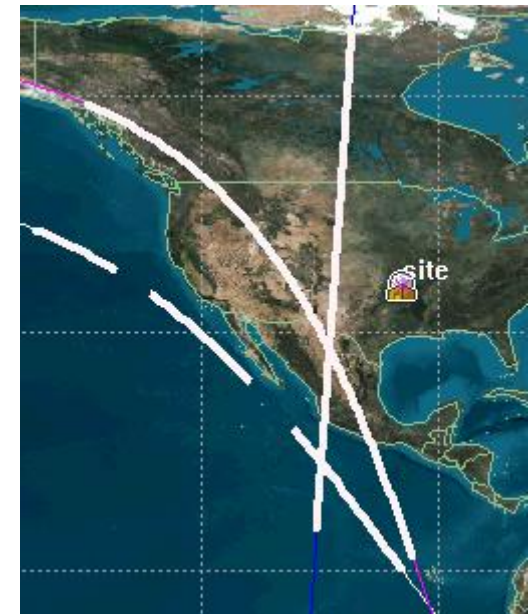


Results

- What did AGI products provide?
 - Full STK planning capability
 - STK Connect access to all STK functions
- What did we achieve?
 - Easy to use interface
 - Improved operator efficiency
 - Simplified planning process
 - Full compliance with operating restrictions
 - Ability to dynamically plan satellite searches
 - 100% success in acquiring satellites

Lessons

- If something doesn't work, AGI works hard to fix it—
Ask!
- You can build a powerful application with just a few Connect commands
- It is easy to build multi-platform applications



Contact

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Backup Slides

Sample STK Connect Commands

Open Connection (note: this returns "Not Set" but it still works).

```
if (! Connect_to_STK($stk_port,$stk_ip,STKSocket)){
    print "\n You need to start STK on the PC\n";
    exit;
}
```

Create the command for an STK report (AER must be in Connect.dat as returning data).

```
$command = 'getReport Scenario/' . $scenarioName .
'/Facility/' . $siteName . ' "AERSpecialReport" ' .
'Scenario/' . $scenarioName . '/Satellite/' . $satelliteName .
' "' . $startTime . " " . $stopTime . $reportInterval";
```

The report data are returned in the array @returnedData.

```
$result = ProcessConnectCommand(STKSocket,$command,
 \@returnedData);
```