Defence Research and Development Canada Runs Satellite Imagery Acquisition Planning in STK

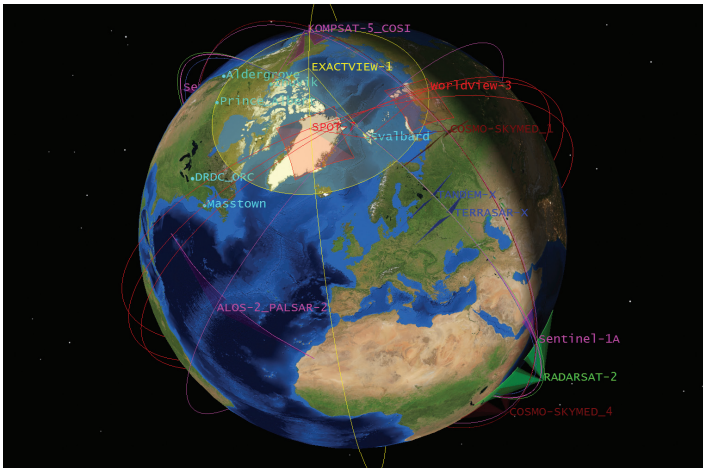
Managing Eyes in the Sky with STK

CURRENT USE: The Commercial Satellite Imagery Acquisition Planning System (CSIAPS) is a multi-sensor acquisition-planning tool first developed by DRDC in 2003 in order to determine what available satellite-imaging opportunities best suited their purposes. It allows for the collection of image data by calculating and comparing opportunities for one or more satellite and sensor combinations. CSIAPS uses Systems Tool Kit (STK) from AGI for coverage analysis because of its ability to model and analyze such complexities as orbits and sensor coverage. STK also helps demonstrate new algorithms.

STK IN ACTION: Using access calculation and coverage analysis algorithms available in STK, CSIAPS allows analysts to plan collection of imagery from a single sensor, compare opportunities from multiple sensors, identify concurrent opportunities, and assess viability. CSIAPS updates Two-Line Element (TLE) data through AGI's version of the NORAD TLE database. CSIAPS provides custom models for current and near-future Synthetic Aperture Radar (SAR), Electro-Optical/Infrared (EO/IR), and Automatic Identification System (AIS) sensors, and it uses in-house custom algorithms for its Concurrence Planning, Stereo Planning, and Large Area Build-Up tools.

"DRDC is continually looking to build and expand partnerships with industry partners. This project is a good example of how these partnerships can provide advantages for all parties involved, including industry, the Department of National Defence and the Canadian Armed Forces."

— DR. JEFF SECKER, DRDC OTTAWA RESEARCH CENTER



DRDC RDDC

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FUTURE PLANS FOR STK: While CSIAPS models over 50 satellites, new vehicles may cause that number to triple over 10 years. Plans include the development of advanced collection planning, and ordering/tasking capabilities with scenario-based user guidance for satellite/sensor selection using rule-based reasoning. The resulting Guidance Expert System will use a database of satellite technical parameters, of cost and license information, and rules for sensor selection to accomplish specified requirements, to produce a ranked list of satellites and sensors. Other capabilities will address the time-sensitive issues such as cross cueing for applications such as maritime and arctic surveillance.

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Phone: 1.800.220.4785 | 1.610.981.8000
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