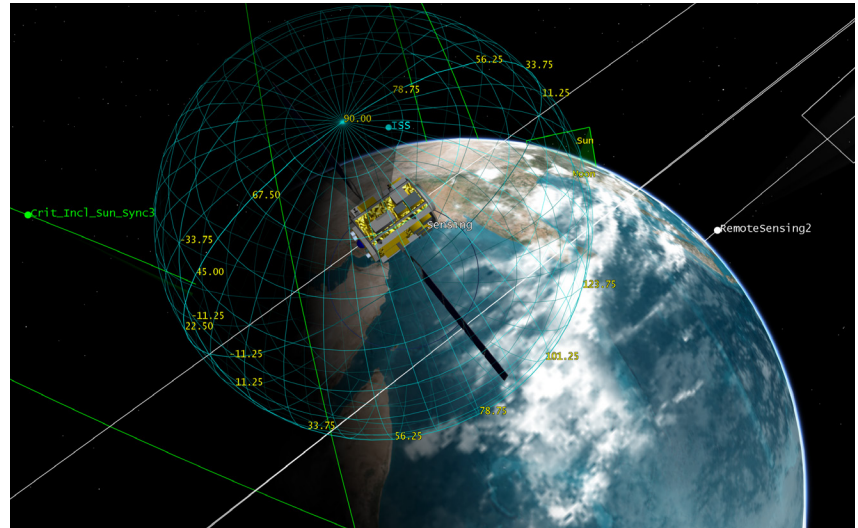# Systems Tool Kit (STK) Overview

Modeling and simulation software for digital mission engineering and systems analysis.
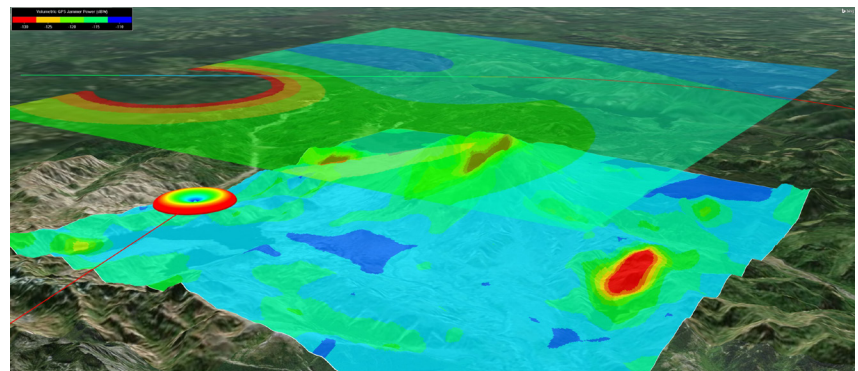
Systems Tool Kit (STK) is an indispensable digital mission engineering application for the aerospace, defense, telecommunications, and other industries. It features an accurate, physics-based modeling environment to analyze platforms and payloads in a realistic mission context.

With STK, you can analyze the performance of complex systems with a focus on their operational environments. Model systems inside a realistic and time-dynamic three-dimensional simulation that includes high-resolution terrain, imagery, RF environments, and much more. Select, build, or import precise models of ground, sea, air, and space assets and combine them to represent existing or proposed systems. Simulate the entire system-of-systems in action, at any location and at any time, to gain a clear understanding of its behavior and mission performance.

STK Pro

STK Pro provides a foundation for analyzing and visualizing complex systems in the context of their missions. Create multi-domain scenarios that extend simulation beyond systems to an interactive model of the operational environment. Simulate your intended missions and communicate your results with reports, graphs, and stunning 3D animations. Work directly with STK's graphical user interface or use STK Pro's robust, documented APIs to automate workflows, integrate with other applications, or create customized tools.

- Model facilities, aircraft, ships, missiles, and satellites
- Attach subsystems such as antennas and sensors
- Visualize your scenario in a time-dynamic 3D environment
- Analyze system performance across coverage grids
- Model vehicle and sensor fields of view
- Create custom analysis functions
- Analyze RF, optical, and radar system performance
- Parallel computing
- Integrate with third party tools via a robust API
- Develop custom apps with the *STK Engine* software development kit

/ STK Premium

STK Premium builds on the capabilities of STK Pro, enabling engineers to conduct higher fidelity modeling of platforms and subsystems. It also includes advanced analytical tools to enable analysts to further understand system performance and design capabilities.

• ModelCenter's advanced optimization algorithms and trade study tools
• Electro-optical infrared (EOIR) sensor performance and image prediction
• High resolution global terrain, imagery, and map data
• Parallel computing
• Ability to ingest and analyze live or simulated real-time data feeds, including interoperability with VR-Link Toolkit

/ STK Premium (Space)

STK Premium (Space) adds advanced modeling of space-based platform and payload systems to STK Pro, including advanced orbit design and maneuver planning for satellite and spacecraft missions. STK Premium also adds analytical tools to improve your understanding of system performance.

• High-fidelity orbit propagation
• Deep space trajectory design
• Rendezvous and proximity operations (RPO)
• Conjunction analysis
• Orbit maneuver planning
• Attitude modeling
• Power generation, storage, and consumption modeling
• Satellite constellation design
• Launch window analysis
• Space environment effects

/ STK Premium (Air)

STK Premium (Air) adds advanced modeling of aircraft platforms and payload systems to STK Pro. With these capabilities, you can enhance your understanding of aircraft performance, evaluate mission metrics, and conduct feasibility studies against proposed system designs within STK's multidomain system of systems mission modeling environment. STK Premium also adds analytical tools to improve your understanding of system performance.

• Advanced aircraft mission planning and route design
• Performance-based flight characteristics of aircraft platforms
• Aerodynamic analysis across full flight envelopes
• Pre-defined, common flight procedures
• Integration with aeronautical datasets (navaids, waypoints, airports, runways, etc.)
• 3D editing of mission routes
• Wind and atmosphere models
• Support for hypersonic systems
• Powerplant designs (turbofan, turbojet, etc.) .

/ STK Enterprise

STK Enterprise combines all of STK's digital mission engineering software to meet the demands of organizations with multidomain projects and distributed and fractioned teams. In addition to the advanced capabilities of STK's Pro and Premium license options, STK Enterprise includes data management solutions and analysis tools for test and evaluation activities and behavioral modeling.

• Ansys Behavior Execution Engine: execute SysML behavior models in the mission environment.
• STK Data Federate and Geospatial Content Server: enterprise content management systems for STK.
• Test and Evaluation Tool Kit: improve the efficiency and effectiveness of test and evaluation activities.

Learn more
agi.com