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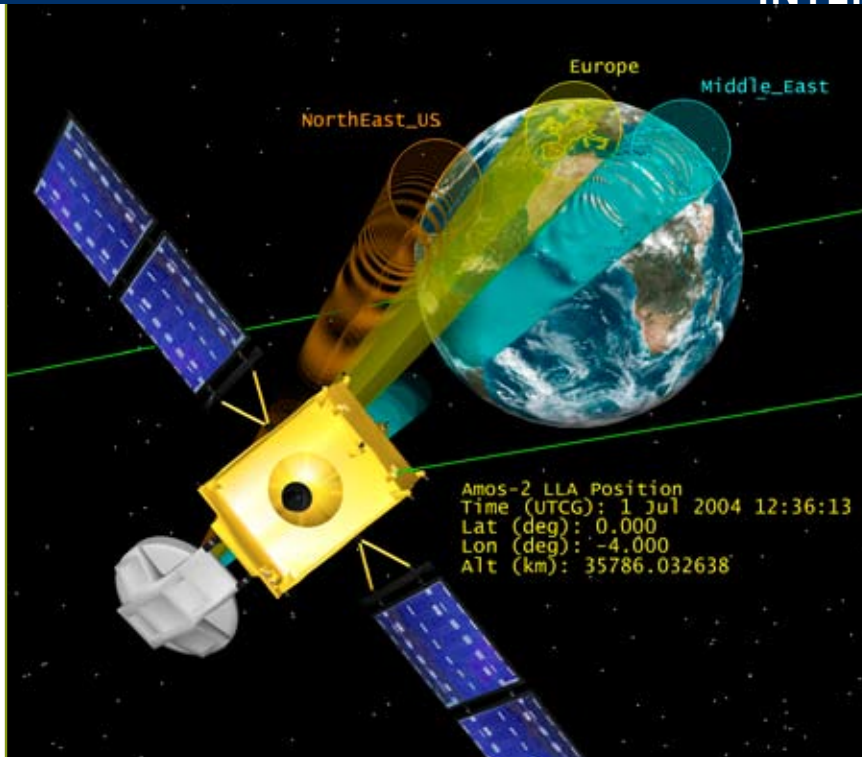
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STK was used in mission planning and design of the Amos 2 satellite, which acts as a communications hub between Europe, the Middle East, and the Eastern U.S.

STK Analyzes International Comm Bridge

WITH THE RECENT SUCCESSFUL LAUNCH OF THE Amos 2 communications satellite, systems engineers at the MBT Space Division of Israel Aircraft Industries (IAI) Ltd. joined a growing list of users who incorporate STK software into their mission planning. In 1996, Amos 2's sister spacecraft, Amos 1, became Israel's first telecommunications satellite when it was placed into a geostationary orbit of 4° West longitude. Last December, Amos 2 joined its predecessor to form a communications hub for the Middle East and Europe, establishing a bridge to the Eastern United States' satellite services market. The co-located satellites transmit signals for cable television companies, Internet providers, and digital broadcast services.

Engineers for IAI, the company that designed and fabricated the Amos 2 satellite, decided early in the planning process to use STK as an independent comparison tool for their own orbit and command software packages. They made this choice to mitigate risk and ensure that the satellite design would correctly meet mission requirements and numerous contingency responses.

"We used STK to compare simulations and tests done by the ground station system as well as to improve the accuracy of our own testing and analytical procedures for the mission," says Jay Harwood, space systems engineer for the MBT Space Division, in Yehud, Israel. "STK's numerical accuracy is highly respected in our department. It is very important when we have to consider details such as pointing angles, fields of view, and communication

times. STK also makes me more productive by helping me visualize each mission stage. I can focus on the big picture and let STK worry about the specifics of codes and mathematical models needed to define the satellite and its spaceflight dynamics."

STK proved especially useful to IAI in a standard pre-launch test. During a maneuver simulation of the perigee passage shortly after launch-vehicle separation, the simulated satellite unexpectedly went into emergency mode. Using STK, engineers discovered that the moon 'blinded' the satellite's onboard horizon sensors—instruments that provide attitude determination for Earth-pointing spacecraft. "Many unexpected events can take place during a mission," says Harwood. "The trusted accuracy of the technical models, along with the ease and flexibility for analysis, helped us to predict and plan for some of these unforeseen details in our mission preparations."

STK served as an efficient means of altering mission parameters when mission planners opted to launch Amos 2 on a Soviet Soyuz rocket rather than the initially planned Ariane launcher. The launch vehicle change brought variations in orbital characteristics, parameters, and constraints that had to be implemented into the mission design. "STK helped us successfully transition between the two, especially in light of the short time constraint," says Harwood. To learn more about how STK can be used in all phases of mission planning—from design and analysis to graveyarding, please visit www.agi.com ▲