Harris Corporation Demonstrates First Large Reflector Uplink Array with Help from AGI

ArrayLab Integrates STK for Real-Time Atmospheric Compensation

FOCUSED ON STRENGTHS: Harris debated developing its own orbit propagator to model planetary and platform motion, range and range-rate between targets, line-of-sight angles between targets, and target availability with respect to obscuration. The organization needed 3D visualization and manipulation of both sides of communications links for analysis and troubleshooting. Incorporating STK into ArrayLab, Harris focused on its own expertise: advanced adaptive array algorithms, innovative signal processing techniques, and self-calibration methods.

SUCCESSFUL INTEGRATION: ArrayLab provides performance analysis of complex communication systems in a realistic environment and simplifies design trades for quick turnaround. It was successfully used on NASA's large reflector uplink arraying to demonstrate model-based transmit uplink. Demonstrated algorithms included model-based adaptive arraying on a transmitter, blind signal sorting adaptive aperture combining on a receiver, continuous self-calibration of all circuitry and fiber optic lines, and real-time atmospheric compensation. With AGI software, Harris Corporation completed its Transmit Aperture Combining Demonstration—a multi-million dollar effort to array three widely separated large (12m) reflector antennas.

> "We were able to efficiently achieve a Technical Readiness Level (TRL) 6 while reducing risk by using STK's orbit propagation and integration modules together with Harris' ArrayLab communications system."
>
> — KATHY MINEAR, SENIOR MATHEMATICIAN,
>   HARRIS CORPORATION
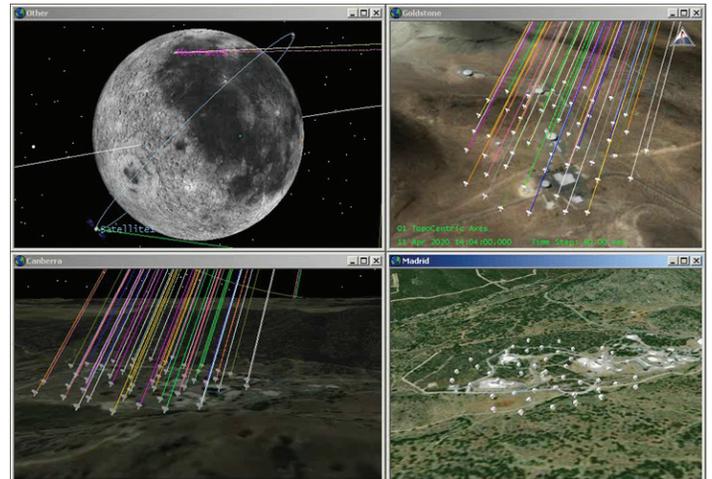
Using AGI's proven technology enabled Harris Corporation to develop dynamic simulations of proposed communication systems and capture new business.

To demonstrate communications algorithms, technology innovation, and expertise in uplink arraying and signal processing within dynamic scenarios; ArrayLab Suite integrated STK. This allowed Harris to simulate widely spaced large reflector uplink arraying with atmospheric compensation and win a NASA study culminating in a successful demonstration of this technology.

A STRONG PAYOFF: Integrating STK saved Harris time and added functionality to internal research and development, proposals, and program-deliverable analysis tools. It mitigates risk as technology progresses from simulation to prototype, demonstrated on the ORION crew exploration vehicle's uplink and large reflector uplink arraying programs. STK lets Harris promote their expertise to customers, leading to new business and successful demonstrations.

GENERAL INFO & SALES

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