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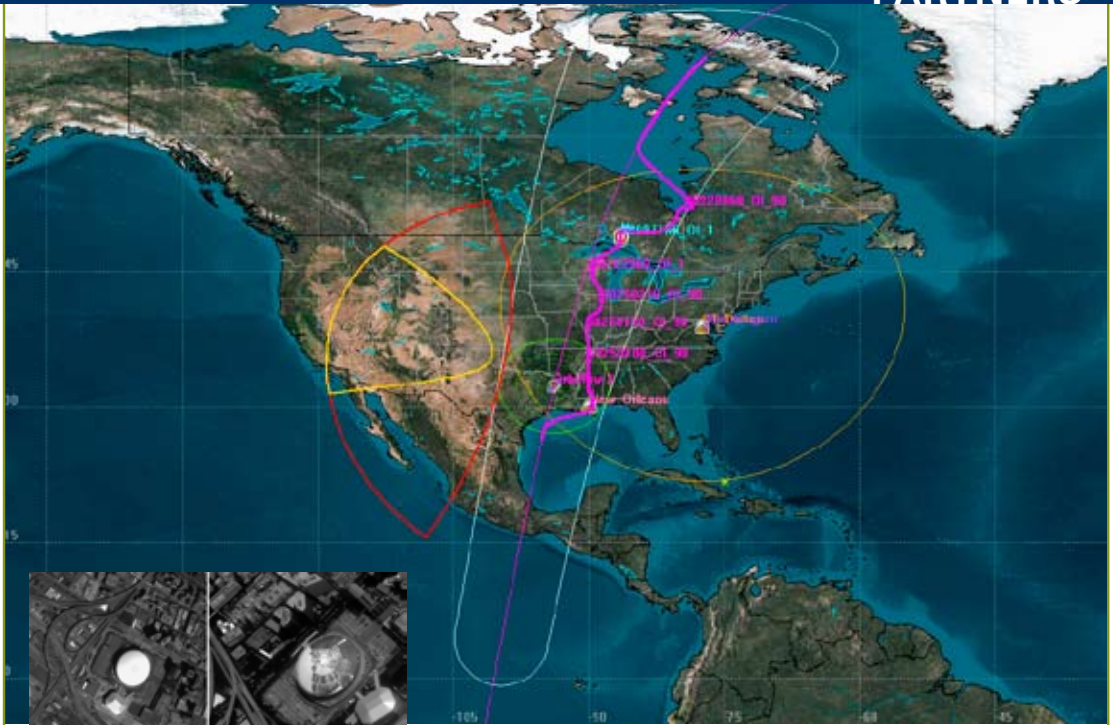
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Orbit Logic **OPTIMIZES** Imagery Collection

IN THE AFTERMATH OF HURRICANE KATRINA, THE world saw before and after pictures clearly portraying the dramatic changes wrought upon the New Orleans area as a result of this powerful storm. The images also demonstrated in all-too-real terms the value of high-resolution satellite imagery, such as that provided by GeoEye, Dullles, VA, and its OrbView and IKONOS satellites.

The sophisticated capabilities of OrbView-3, and the next generation of imaging satellites, require an equally sophisticated target planning system on the ground to ensure capture of the most valuable imagery possible. Orbit Logic, an AGI business partner and creator of STK/Scheduler, has developed such a planning system as part of its long-standing relationship with GeoEye, the world's largest commercial satellite company formed when ORBIT-AGE acquired Space Imaging of Thornton, CO.

The Collection Planning System (CPS), which utilizes STK, is used daily for OrbView-3 image planning operations and is being enhanced to support increased requirements for GeoEye1, a next-generation satellite formerly known as OrbView-5. Leveraging its GeoEye and STK/Scheduler heritage, CPS is now being incorporated into the ground systems of other imaging spacecraft. As a key component of CPS, STK provides collection-plan visualization and verification, as well as ad-hoc order planning.

At its core, CPS integrates a high-fidelity spacecraft simulator with extensive constraint computations and optimization algorithms. The system must reconcile thou-

sands of image orders and account for geodynamic, electromagnetic, cloud cover, and spacecraft constraints—all within a matter of minutes. The resulting collection plan, ready for uplink, contains the most valuable of the potentially viable imagery orders in any defined planning window. CPS accomplishes this by utilizing multiple optimization algorithms, each employing a different approach and resulting in a distinct collection plan. Each collection plan is given a score based on a common, user-configurable Figure-of-Merit (FOM) equation. The FOM evaluates the collection plan efficiency and quality through factors such as imaging time, area covered, order priority, and time-to-order end date. The collection plan with the highest FOM score is chosen.

AGI technology is integral to CPS. Notes Alex Herz, president of Orbit Logic, "STK not only lets operators easily verify their plan in 2D or 3D, and even add new targets, but it also concisely portrays a spacecraft's unique mission and capabilities for operators, managers, and customers."

For all its sophistication, CPS's goal is quite simple: maximize the quality and quantity of images captured despite limited imaging time and onboard spacecraft resources. Day in and day out, CPS ensures that this goal is realized and that important imagery, such as that of Katrina's impact, will always be available. ▲

Orbit Logic uses STK software as part of its Collection Planning System (above).