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OCTOBER 11-14, 2005 • WASHINGTON, D.C.

OrbView Tasking System

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The Planning Problem

- Thousands of image collection requests
- Thousands of geometric, electromagnetic, and visibility constraints must be computed for each spacecraft collection orbit
- Planning must be accomplished within tight operational time constraints ~ several minutes
- Collection plan solution must be optimized within spacecraft capabilities and defined constraints

OrbView Tasking System

- High fidelity collection planning software
- Used for all OrbView-3 image collection planning
 - ORBIMAGE
 - International Partners
- Incorporates high fidelity spacecraft models
- Provides algorithms for automated planning
- User-friendly GUI supports manual planning
- GUI provides order database management

Optimizing Algorithms

- Automated planning algorithms optimize collection planning solutions
- Multiple optimizing algorithms compete
- Configurable Figure-of-Merit scores algorithm solution outputs and selects “best” solution
- Timeout/interrupt feature guarantees a valid solution is returned within any specified time limit
- Software architecture supports easy implementation of custom FOM and new algorithms

STK Map Display



- STK map provides visual cues to aid manual planning
- Solution animation supports integrated analysis
- Interactive map “request” feature allows operators to influence algorithm solutions
- STK area targets, point targets, and facilities can be used as the basis for defining new orders

Applicability & Scalability



- Server/workstation architecture allows for unlimited scalability
 - Clustered computing for performance
 - Multi-satellite planning support
- Workstation software architecture may be applied to any agile imaging satellite
 - Plug in new satellite slew/scan models
 - Configure model parameters and constraint rules
- Satellite-specific solutions can be turned around in less than 2 months

Demonstration



- Typical OrbView-3 planning scenario