



Modeling & Simulation for
Aerospace Domain

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Our Expertise

- **Italian company founded in 2005**
- **Multidomain Modeling and Simulation (land, sea, air, space)**
- **Focus on SDA, SSA, SST**
- **Private sector, defense**
- **Ansys Channel Partner**



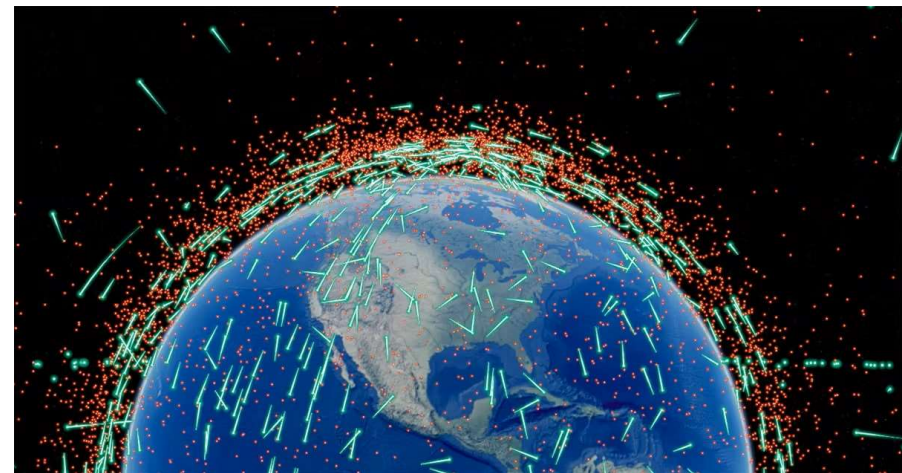
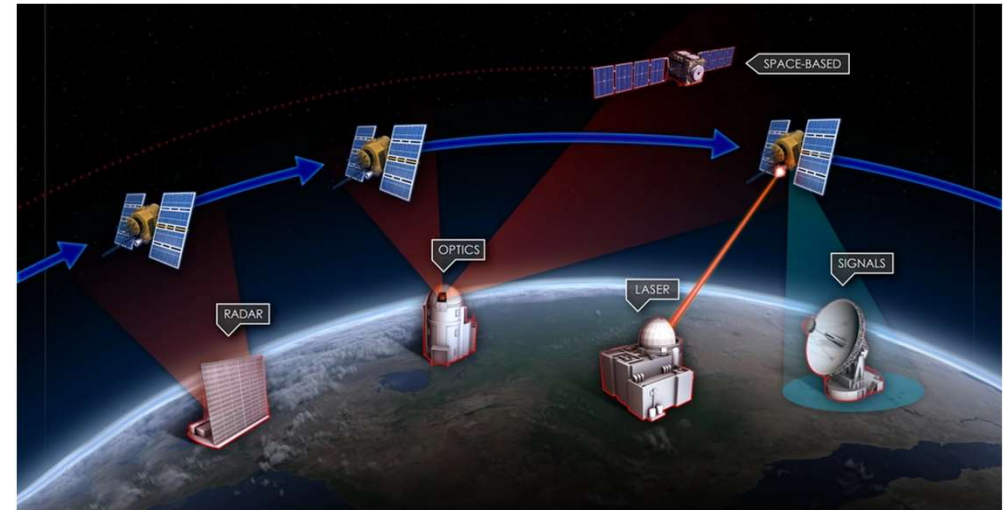
Modeling and simulation

- Designing and evaluating complex systems and processes
- Creating digital replicas of real-world systems to analyze and predict their behavior
- COTS and MOTS solutions
- M&S for SDA, SSA, SST...?

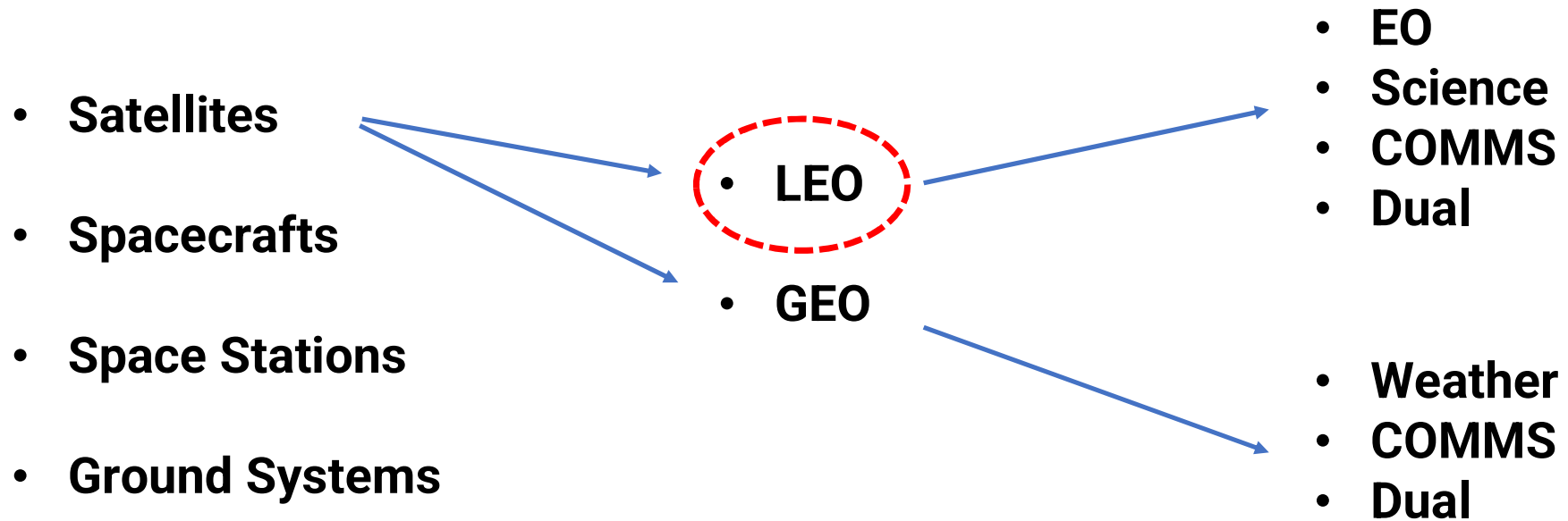


SSA, SST, SDA...?

- **Space Situational Awareness**
- **Space Surveillance and Tracking**
- **Space Domain Awareness**

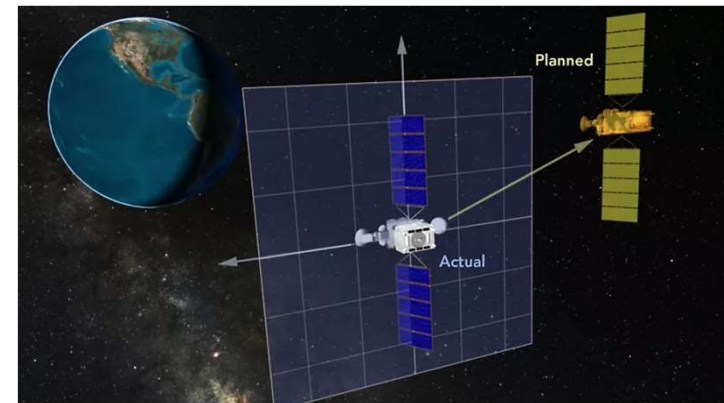
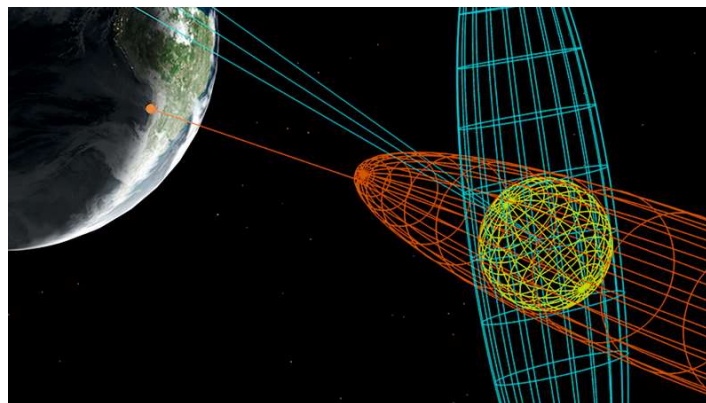
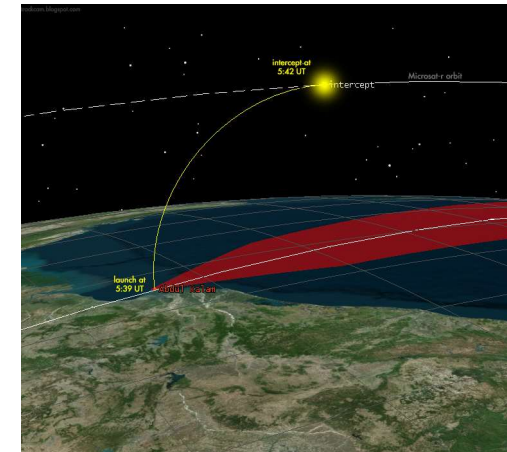
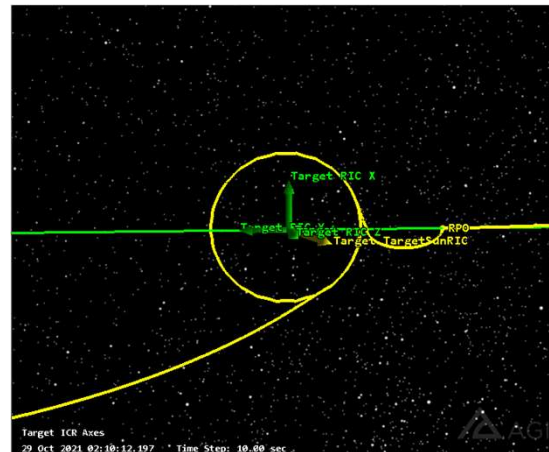


Space Assets

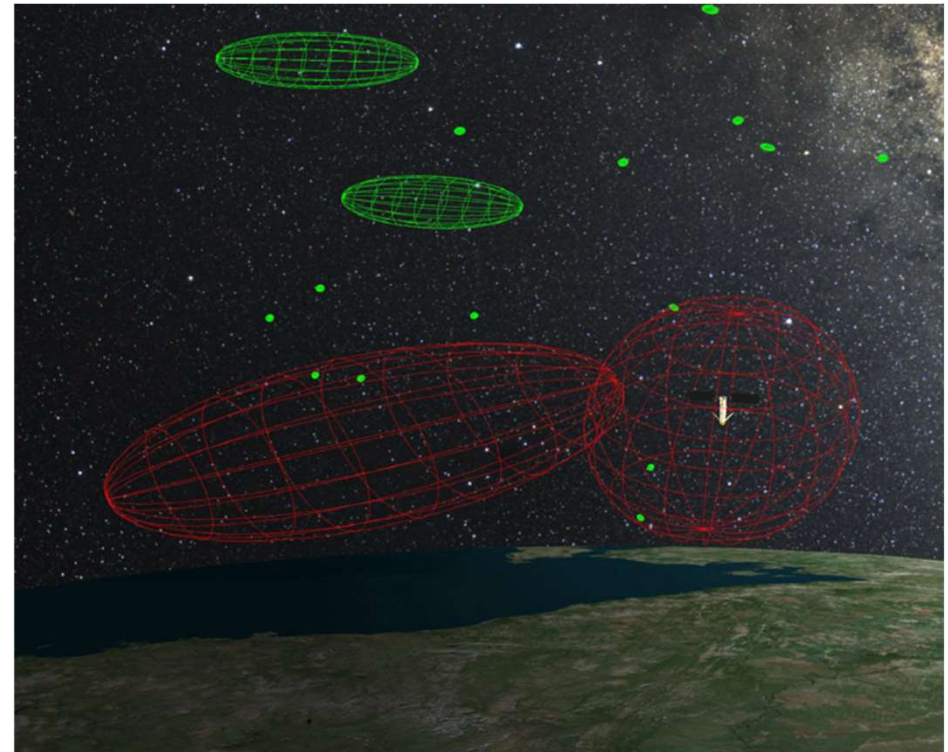
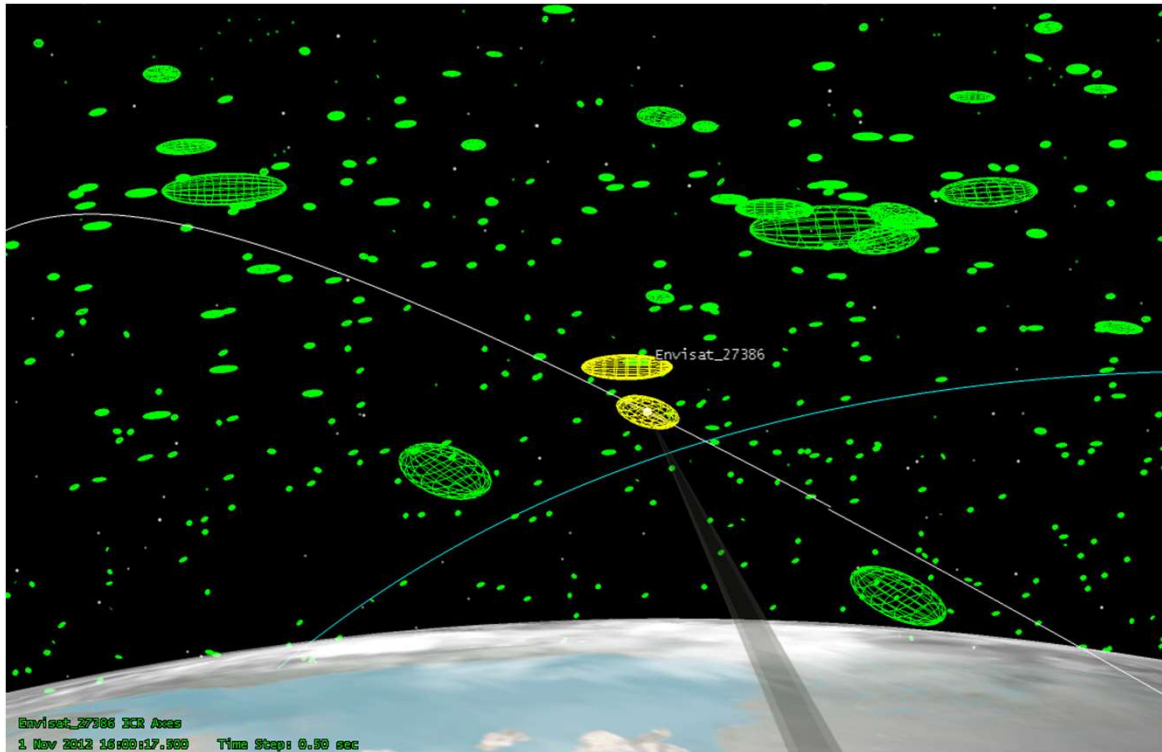


Space Events in SSA

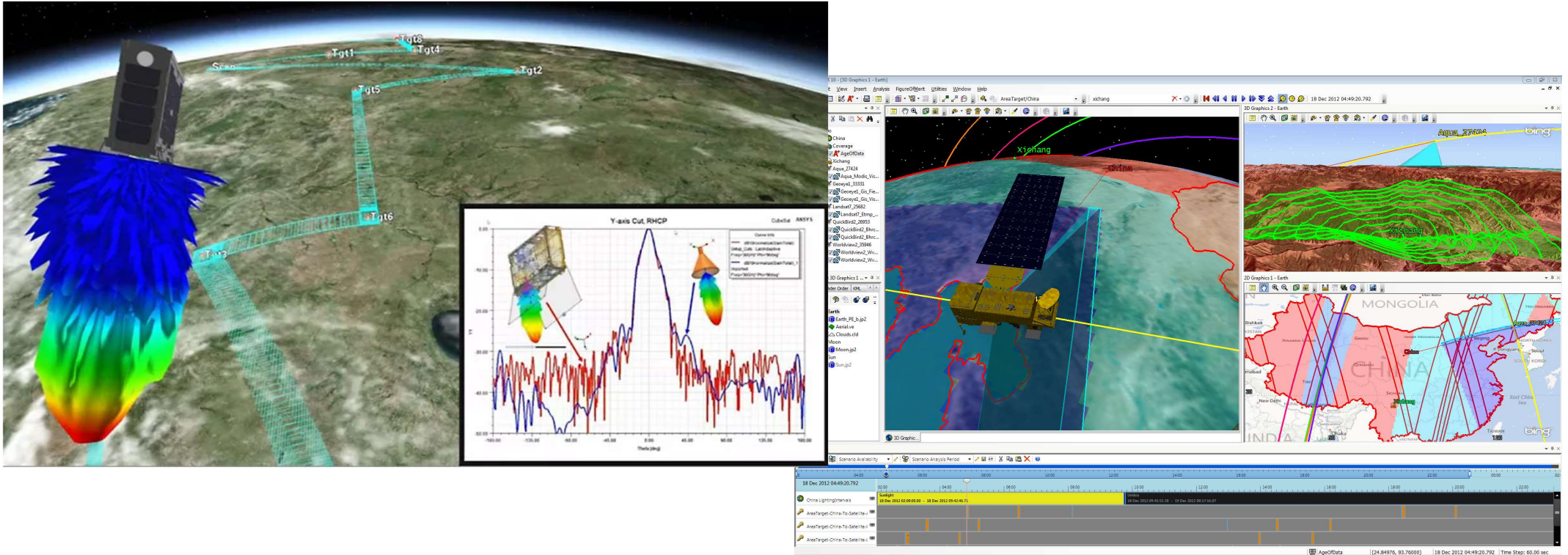
- Proximity Operations
- Conjunctions <
- Docking & Separation
- Orbital Intercept <
- Deployment
- Maneuvers <
- Rendezvous
- Deorbit
- Launch <
- ASAT <
- Reentry <
- Breakup



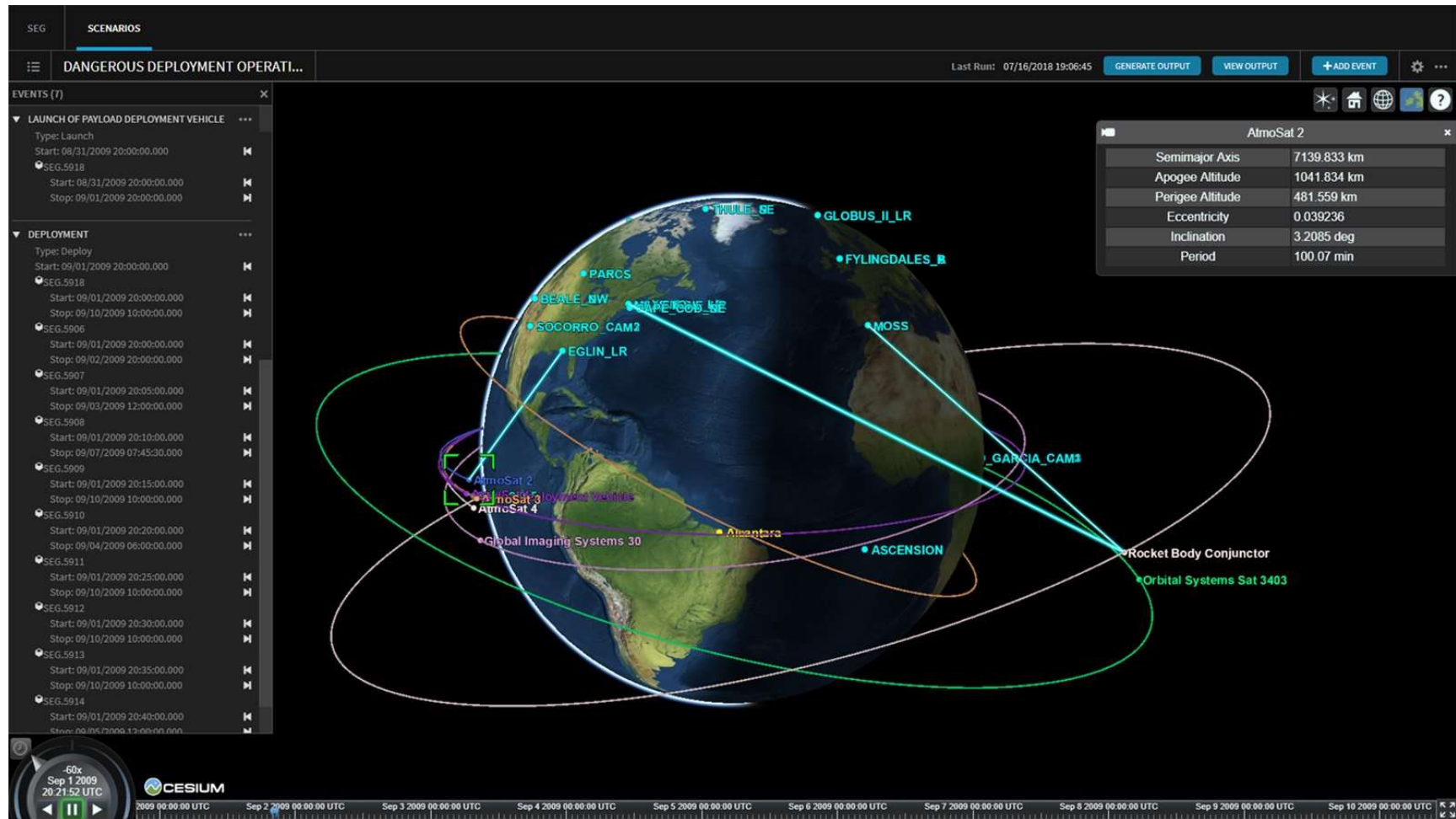
Example: Collision Avoidance



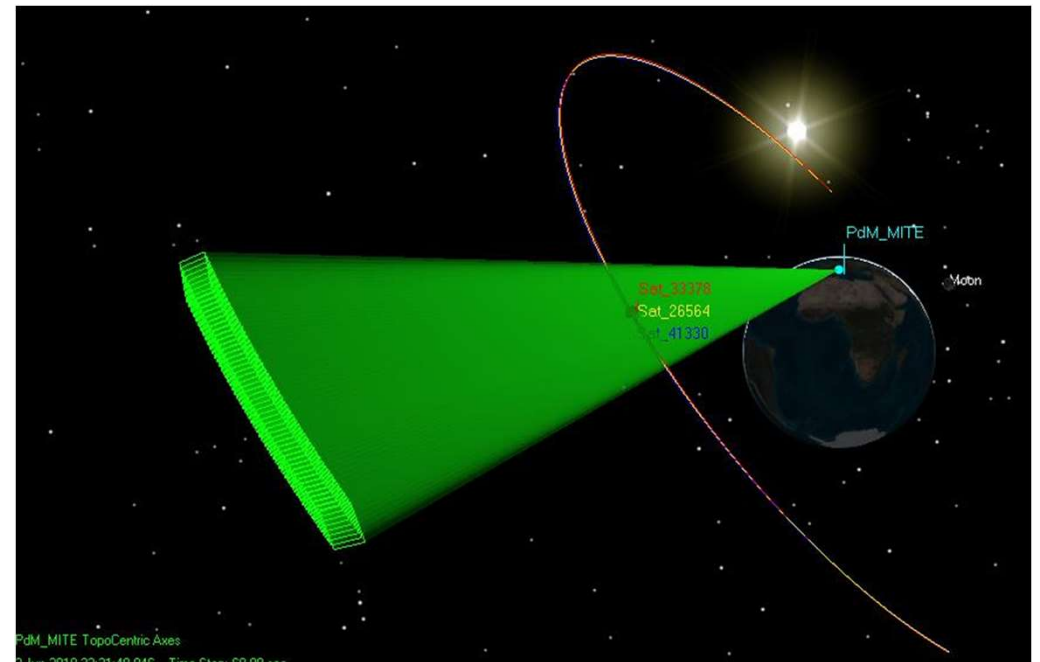
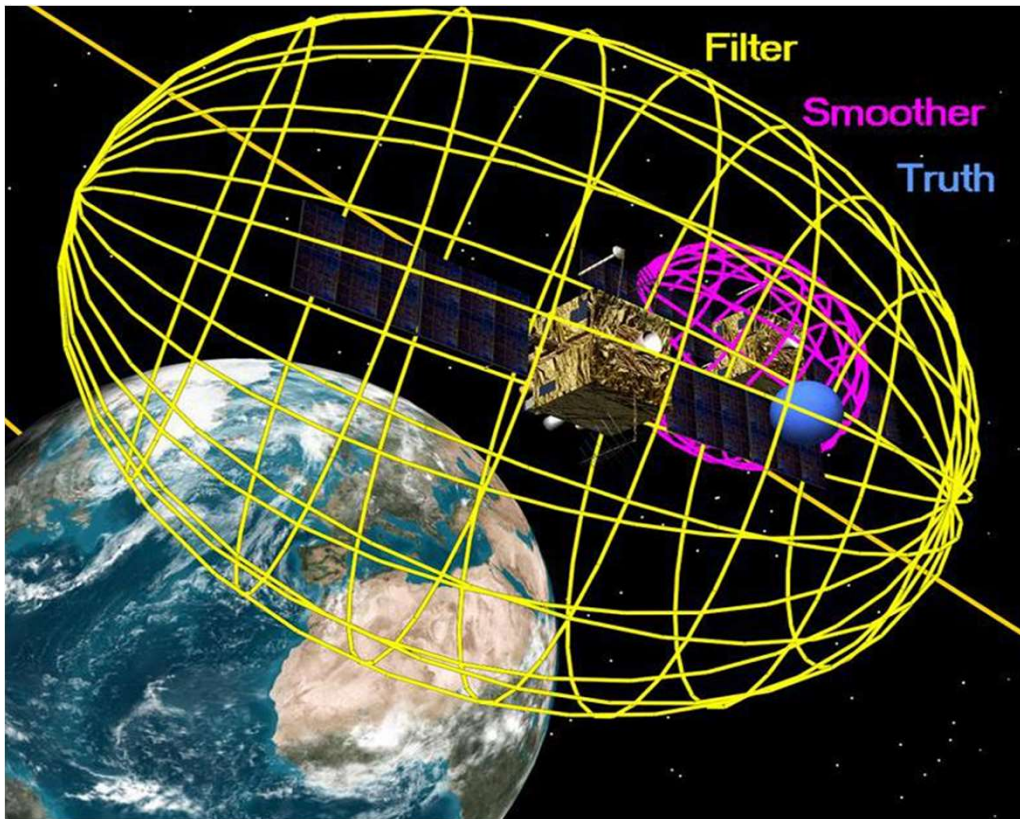
Modeling and simulation for SDA



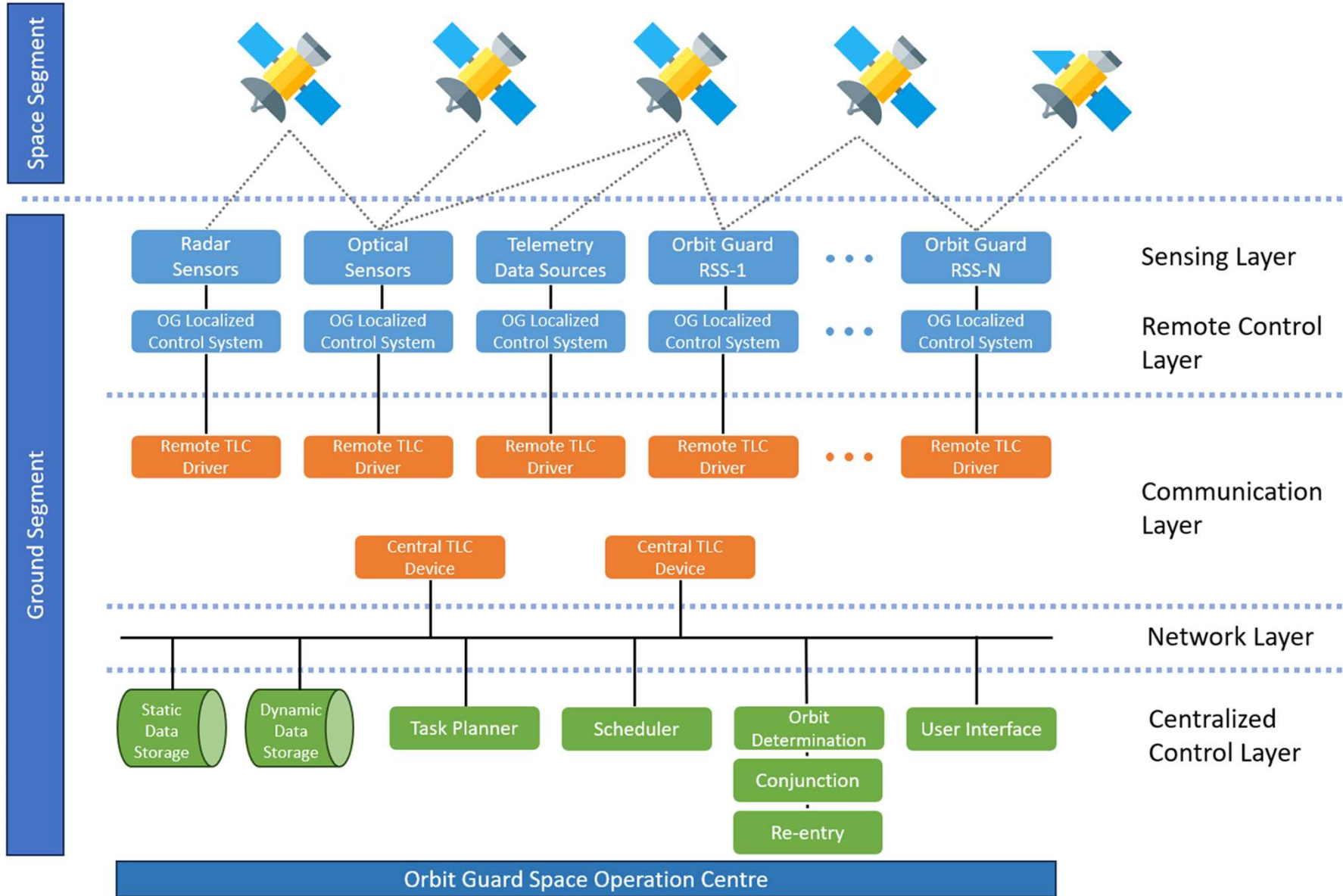
Modeling and simulation



Application for SST – Orbit Guard

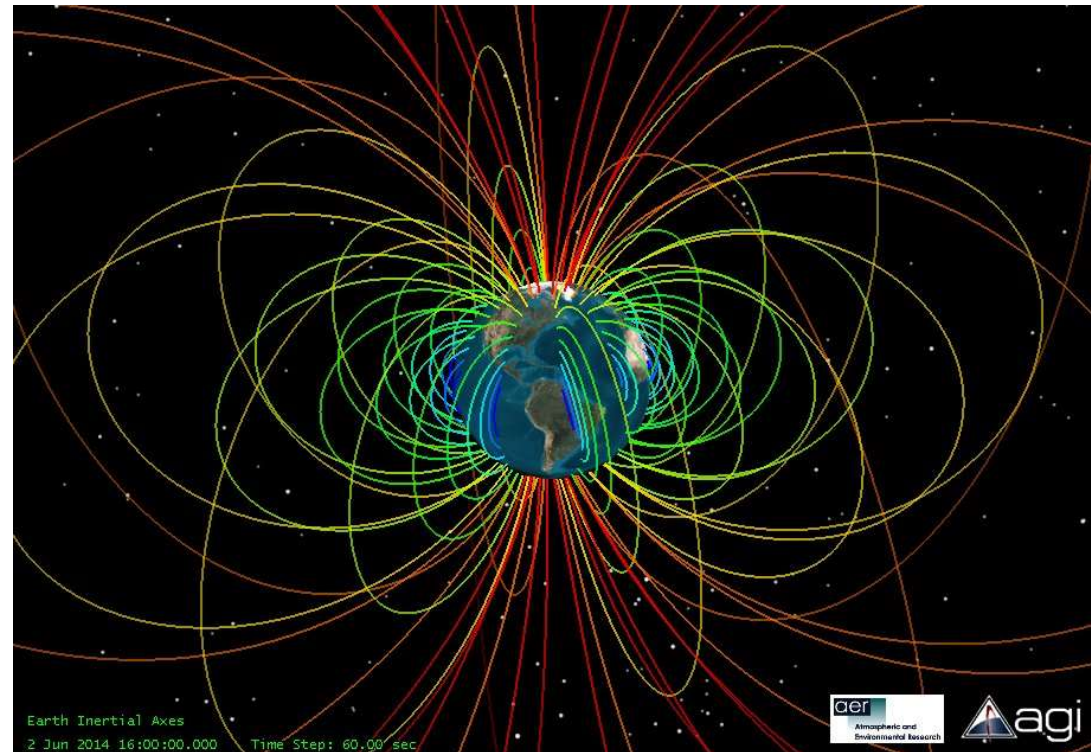


ORBIT GUARD – General Architecture

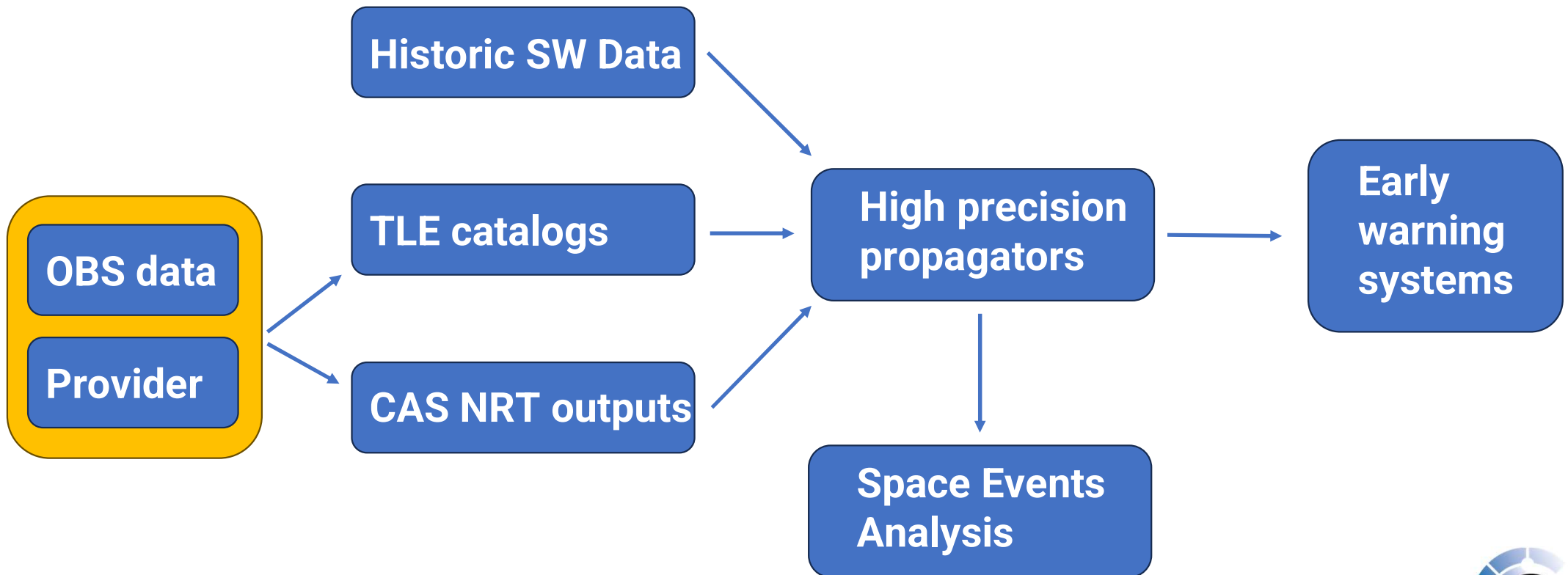


Space Weather Effects

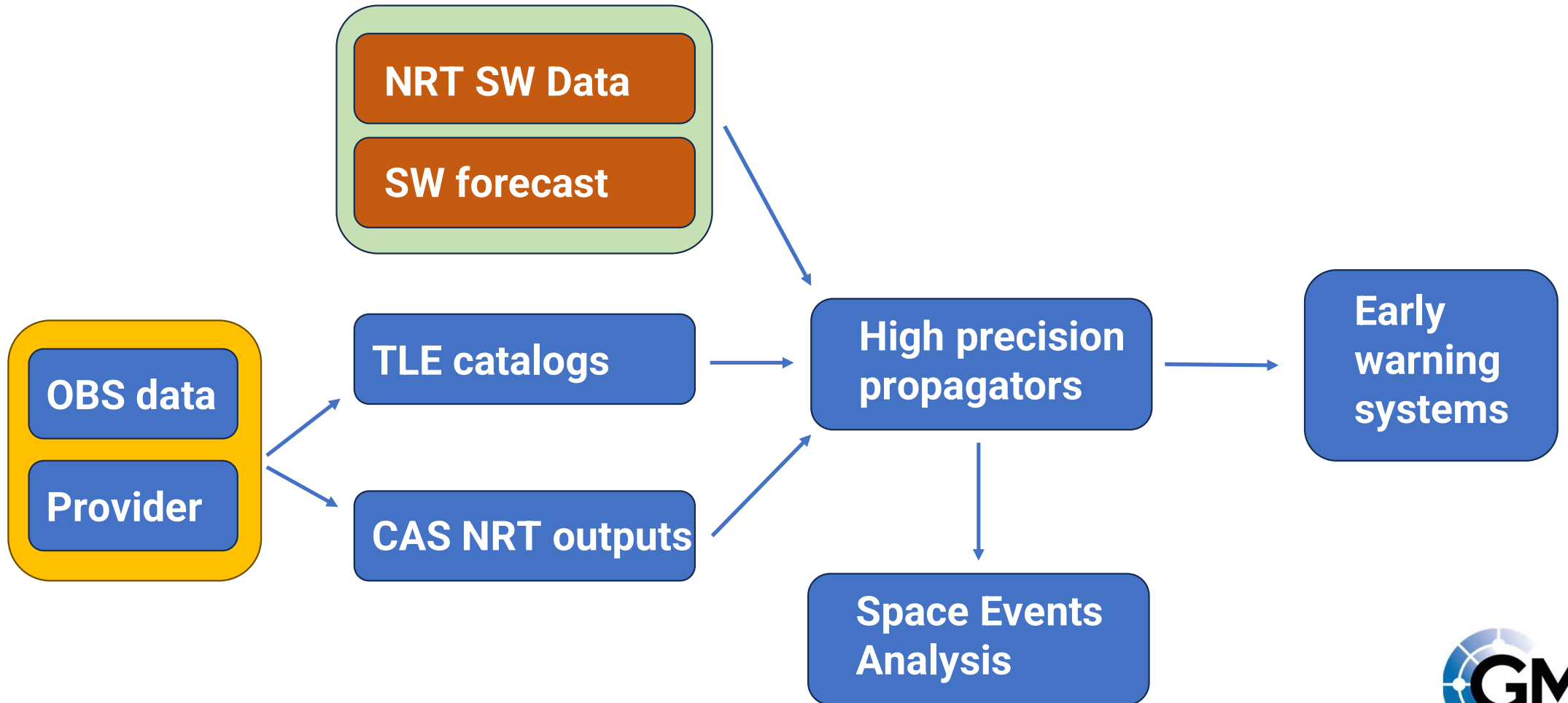
- Satellite Operations
- Orbital Maneuvers
- Electronic Issues



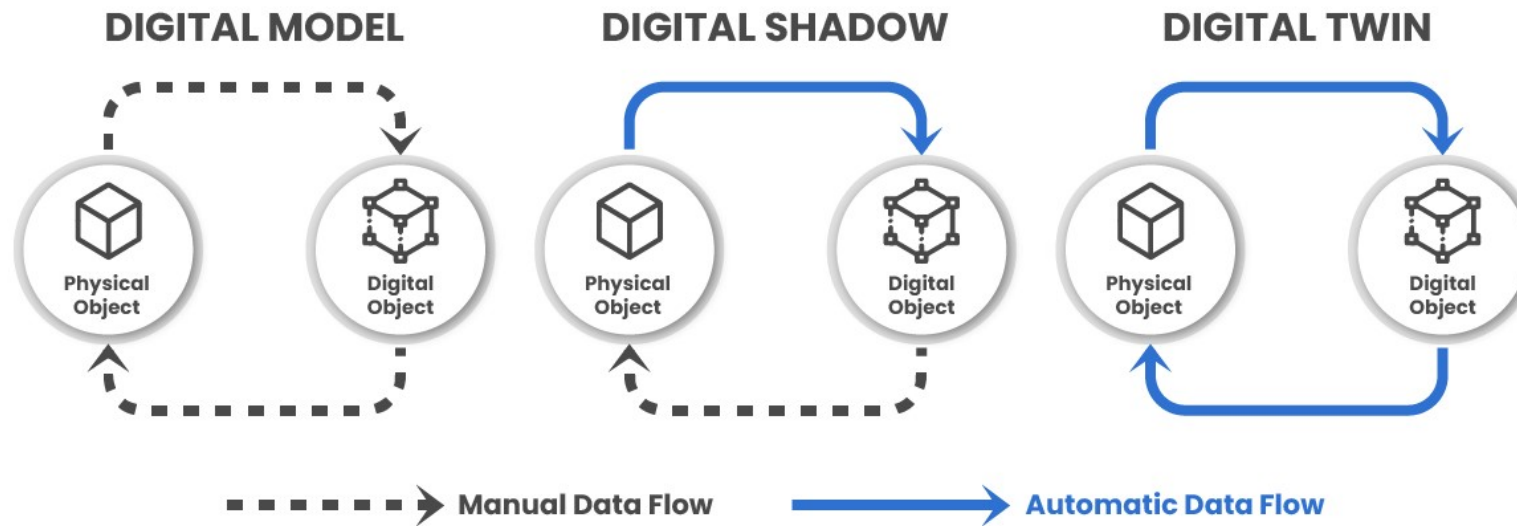
Today solution: mitigation



Tomorrow solution: DM and SW



Tomorrow solution: DM and SW



- **Digital Model:** simple model with no automatic connection with the real world
- **Digital Shadow:** the model uses real world data to update the simulation
- **Digital Twin:** bi-directional connection between virtual model and real asset

That's why we're here

We're new here, learning phase, lots of work to do

- Learn how to use PITHIA-NRF data collection and provide feedback
- Learn how to implement this source of information in our solutions
- Experiment
- Provide support to the community for the modeling and simulation part

M&S could give additional value to what this great community is doing





THANK YOU

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