

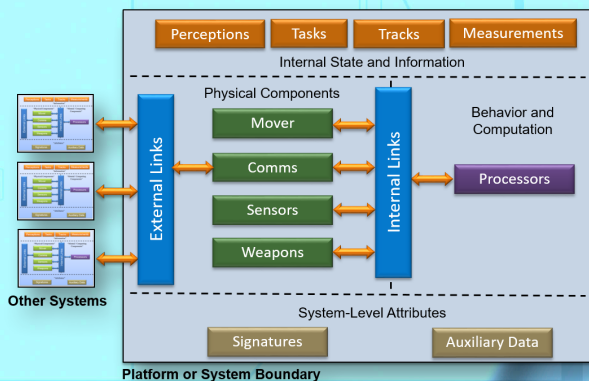
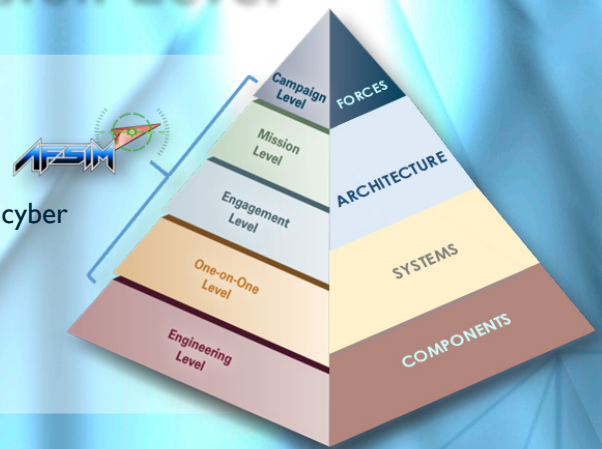
# Advanced Framework for Simulation Integration & Modeling

AFRL



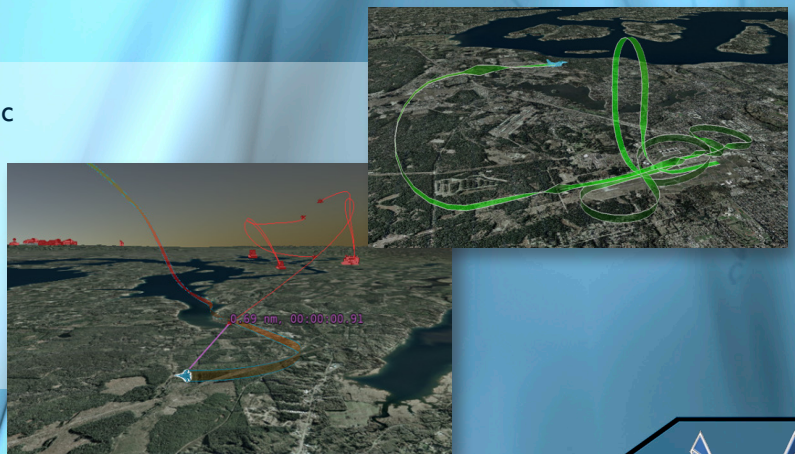
## AFSIM is a Modeling and Simulation Framework Designed for Rapid Scenario Composability Spanning Multiple Domains from the Engineering to Mission Level

- Government owned, DoD open source, community-informed, military simulation framework
- Part of a shared “digital commons” across DoD EMS&A
- Multi-domain capabilities from sub-surface to space including EW and cyber
- Multi-resolution modeling
  - From detailed physics-based to simple effects representations of platforms, sensors, communication systems, and weapons
- Built upon the needs of the analytic community

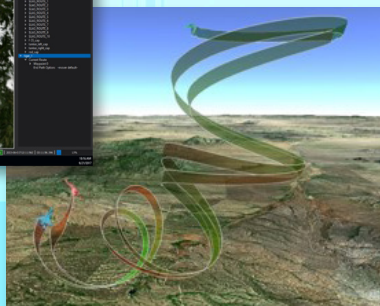
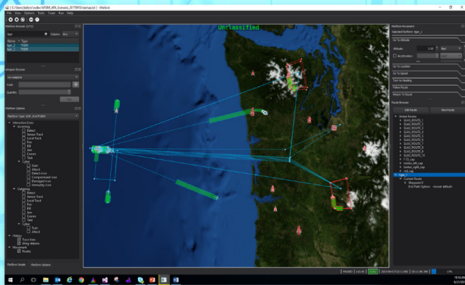


- Modern C++ framework of simulation “building blocks” utilizing Object-Oriented (OO) design and offers a flexible plug-in API
- Scripting language (javascript like) for constructing scenarios and providing customized control without modifying C++ code
- Script-based definition of behaviors, tactics, and command structures
  - Transitions creation of tactics and behaviors from software developers to the analyst

- Flexible agent modeling architecture permitting realistic representation of tactics and behaviors
- Component based architecture offers modularity for platform components (sensors, movers, weapons)
- Realistic perception-based representations of systems
  - Includes tracking, correlation, and fusion algorithms
  - Allows fog of war representation

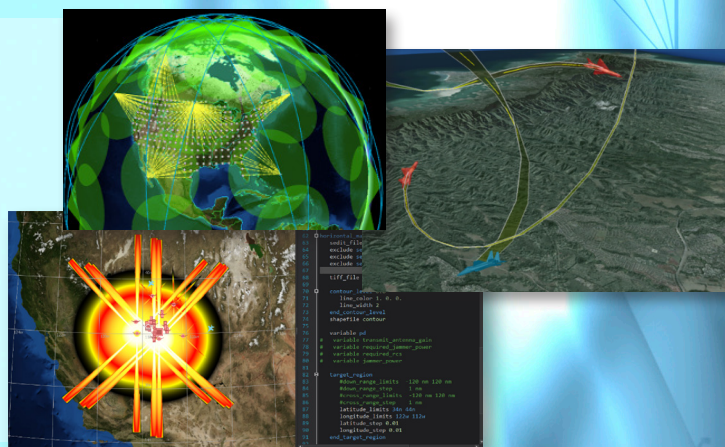




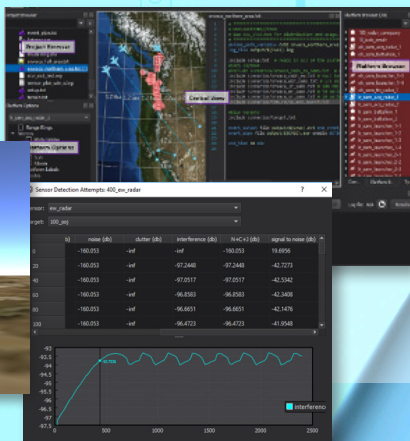
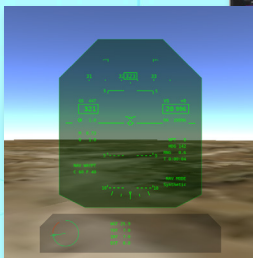


- “Box-set” Models and Scenarios
  - Domain-specific examples and laydowns
- Basic ground warfare modeling
- Basic surface and undersea warfare modeling
- Map overlay banner displays scenario’s classification level, caveats, and trigraphs

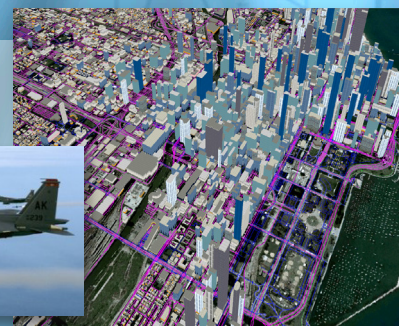
- Advanced air-to-air combat capability
- Mover creator is a GUI-based tool that simplifies the development of AFSIM mover models
- Robust space operations modeling capability
- Cislunar modeling
- GUI-based orbital mission sequence design
- GUI and script based constellation creation
- Framework for effects-driven cyber modeling
- Electronic warfare effect modeling architecture



- AFSIM includes a suite of supporting tools
  - Wizard (Integrated Development Environment) provides an end-to-end analyst toolchain, used for scenario development and simulation execution
  - Mystic is an extensible framework for recording, playback, visualization, with capability to dive into performance statistics
  - Warlock is an operator-in-the-loop tool supporting experimentation and wargaming



- Ability to run both constructively and real-time while utilizing the same scenarios
  - Links to other simulations via DIS or HLA
- Able to convert open street map files to AFSIM route networks
- Combines timeliness in development and fidelity of operations at a level not previously experienced



## Government Management

- AFSIM is available to U.S. Gov’t and DoD industry at no cost, includes source code, documentation, and access to training material
- Information Transfer Agreement (ITA) allows for direct distribution to industry, including classified version allowing use of AFSIM for IRAD projects