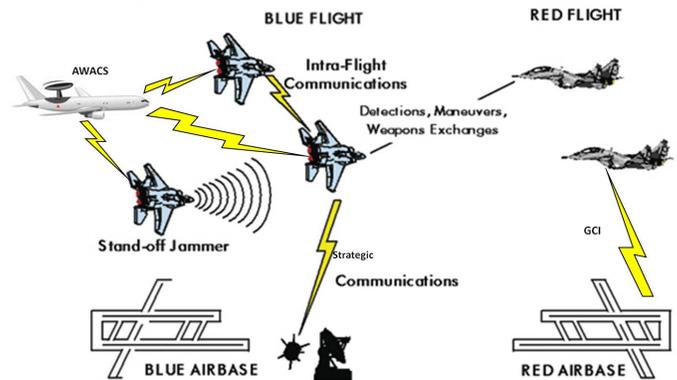


BRAWLER Tactical Air Combat Simulation

BRAWLER simulates air-to-air combat between multiple flights of aircraft in both the visual and beyond-visual-range (BVR) arenas. This simulation of flight-vs.-flight air combat is considered to render realistic behaviors for military trained fighter pilots. BRAWLER incorporates value-driven and information-oriented principles in its structure to provide a Monte Carlo, event-driven simulation of air combat between multiple flights of aircraft with real-world stochastic features. The user decides the pilot's decision process, including doctrine, mission-specific objectives, and tactics; level or training and experience; and perceived capability of the enemy.



BRAWLER Physical System

BRAWLER models the aircraft's aerodynamics and signature, fuel, missiles, directed energy weapons, radar, communications, IRST, IFF, NCID, RWR, ESM, HUD, HMS, EW Systems (including DRFM Jamming), data link devices, sensor fusion systems, missile warning, and laser warning devices. Components can be modeled natively within BRAWLER, or a federate (such as TMAP missile modules from the Intel Community (IC)), running in parallel. Ground Controlled Intercept (GCI), Airborne Warning and Control Systems (AWACS), Surface-to-Air Missile (SAM) sites, Surface-to-Surface Missiles (SSM), and stand-off jammers (SOF) are also modeled. BRAWLER is structured as an event-store simulation with a heavy use of stochastic models for most real-world systems. BRAWLER provides for effects-based ECM models and expendables.

Input

BRAWLER inputs consist of component-level system capabilities, which include aircraft performance, weapons performance, and sensor systems performance. The simulated scenario consists of number and types of aircraft, their command and control hierarchy, their disposition and bases, as well as GCI, AWACS, SAM Sites, SSMs, and SOJ support. Also, the set of rules representing doctrine and mission-specific tactics for both sides and all missions represented in the scenario, must be specified. BRAWLER's current default configuration is capable of handling a total of 20 different aircraft in as many as 10 independent flights with up to 8 aircraft per flight, but can be run with well over 20 aircraft. Not surprisingly, setting up a study takes considerable time to simulate realistic combat, especially if matching known tactics, techniques, and procedures (TTP).

Output

BRAWLER output consists of several files. The first is a log of the scenario, which includes major events, such as detections, weapons firings, and kills. The second file is an output file that reflects the input data read and provides more detailed information about the activities that took place. User-controlled switches control the detail and kind of information. The third file is a binary history file, which is processed by BRAWLER support programs to provide graphics output (to include output files allowing BRAWLER engagements to be visualized in SIMDIS) and detailed track information. Another file provides BRAWLER with a checkpoint/restart capability, which can be used to salvage catastrophic failures to fine tune a flight as well as assist in debugging. Detailed aircraft and missile trajectory files for each aircraft and missile in the simulation may also be output.

HOST SYSTEMS: LINUX, IRIX

PROGRAM LANGUAGE: Fortran 2003/2008, ANSI C