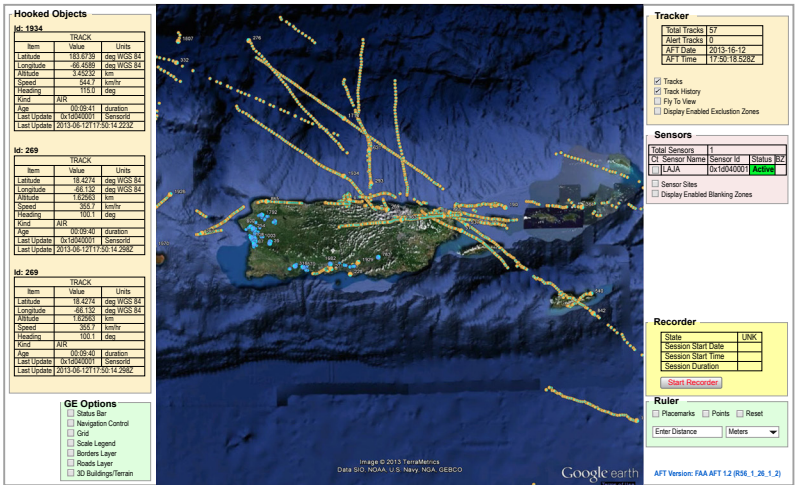
Adaptive Fusion Tracker

Multi-Sensor Composite Tracking Software

Leidos' Adaptive Fusion Tracker (AFT) system is a real-time multi-sensor correlation system, designed to perform data fusion and composite tracking across air, ground and maritime domains.

The AFT is equally adept at supporting single-sensor target tracking as well as multi-sensor correlation and track. Each track is uniquely identified even though multiple sensors may be providing radar measurement updates to that track. Track data integrity is maintained as objects maneuver and pass between the contributing sensors' surveillance volumes. AFT's multi-sensor composite tracking capability provides greater track accuracy and track continuity in situations where no single sensor could have maintained a coherent track picture. These fused tracks provide the operator a single integrated picture (SIP) over the entire multi-sensor network. The SIP can be viewed locally via the AFT's web browser interface or remotely via the customer's command and control (C2) visualization tools.

AFT's open architecture design is developed using a model-driven development (MDD) approach, generating the software from model. The design allows for significant software reuse and enables Leidos to rapidly develop sensor interfaces and solutions for changing air, ground, and maritime surveillance needs.



Adaptive Fusion Tracker (AFT) Live Display

CAPABILITIES

- Multi-sensor correlation and track
- Single integrated picture of air, ground and maritime domains
- Improved track accuracy via composite tracking
- Clutter suppression
- Auto alert features
- Supports high track loads
- Data recording with pruning
- Web-based graphical user interface (GUI)
- Slew-to-cue camera control
- Interfaces with client display or C2 system

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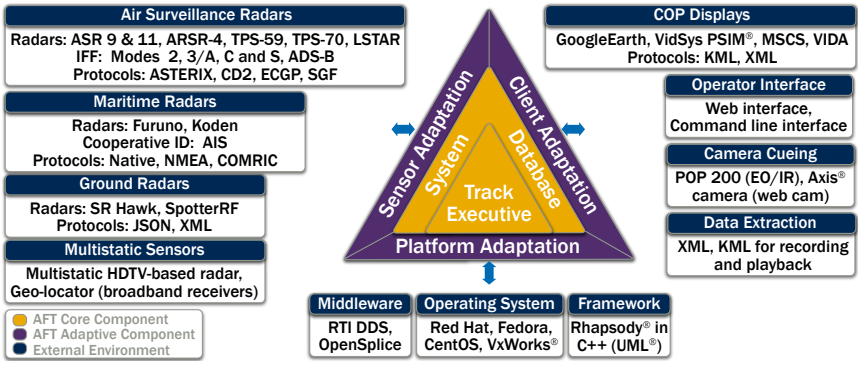
AFT FEATURES

- Multi-sensor correlation and track in air, ground and maritime domains
- Open architecture (OA) design
  - Model-driven development approach
  - Developed using Object Management Group's Unified Modeling Language (UML) specification
  - Extensible design, enabling reuse
  - Platform-independent – operates on a variety of commercial off-the-shelf (COTS) computing platforms and operating systems
- Playback of recorded live sensor data
- Web browser user interface
  - Track picture can be viewed locally via Google Earth™ interface or via remote visualization tools
  - Provides status and control functions (track hooking, recording control, playback, exclusion zones, etc.)
  - Slew-to-cue camera control
- Data extraction points for runtime system analysis
- XML track reporting via defined schema
- TRL 8 system



AFT ARCHITECTURE

The AFT architecture is comprised of core and adaptive components that collectively achieve a reusable and flexible software design to fuse sensor data in a given host platform environment.

Client adaptation — Provides access to external clients such as C2 systems for situational awareness, data analysis and video cueing.

Sensor adaption — Provides standardized interface between air, ground and maritime sensors and the tracker.

Track executive — Performs track-to-track correlation and filtering, smoothes composite track state and removes sensor bias to improve positional accuracy.

System database — Provides common mechanisms, track filters, databases, and communication pathways within the AFT architecture.

Platform adaptation — Supports multiple computing environments, operating systems, transport layers and host platforms via COTS communication framework.

SENSORS

- ASR 9 & 11
- ARSR -4
- TPS-59
- TPS -70
- LSTAR®
- IFF Modes 2, 3/A, C and S
- ADS-B
- SR Hawk®
- SpotterRF®
- Furuno®, Koden® (Maritime)

OPERATING SYSTEMS

- Red Hat®
- Fedora®
- CentOS

TRANSPORT LAYERS

- UDP
- TCP/IP
- URL/JSON
- RTI® DDS
- OpenSplice

 ASR = airport surveillance radar; ARSR = air route surveillance radar; IFF = identification friend or foe; CentOS = Community ENterprise Operating System; UDP = User Datagram; TCP/IP = Transmission Control Protocol/Internet Protocol; DDS = data distribution service; ASTERIX =All Purpose Structured Eurocontrol Surveillance Information Exchange; AIS = Automatic Identification System; CD2 = Common Digitizer Protocol; ECGP = En Route Communications Gateway Protocol; NMEA = National Marine Electronics Association; COMRIC = Command Display and Control Radar Information Communication; KML = Keyhole Markup Language;EO/IR = electro-optic/infrared; ADS-B = automatic dependent surveillance-broadcast; HDTV = high definition television; SGF = Sensis Generic Format ; MSCS = Multi-Sensor Control System (a product of Trident Systems Corp.); VIDA = Virtual Integrated Domain Awareness (developed by SRI International). In the U.S. and/or other countries Google Earth is a trademark of Google Inc.; LSTAR and SR Hawk are registered trademarks of SRC, Inc.; SpottterRF is a registered trademark of SpotterRF LLC; Furuno is a registered trademark of Furuno Electric, Co., Ltd.; Koden is a registered trademark of Koden Electrics Co., Ltd.; Red Hat and Fedora are registered trademarks of Red Hat, Inc.; RTI is a registered trademark of Real-Time Innovations, Inc.; Axis is a registered trademark of Axis Communications AB; VidSys is a registered trademark of VidSys; VxWorks is a registered trademark of Wind River Systems, Inc.; Rhapsody is a registered trademark of International Business Machines Corporation; UML (Unified Modeling Language) is a registered trademark of Object Management Group.

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