

Edge-Enabled Tactical Systems

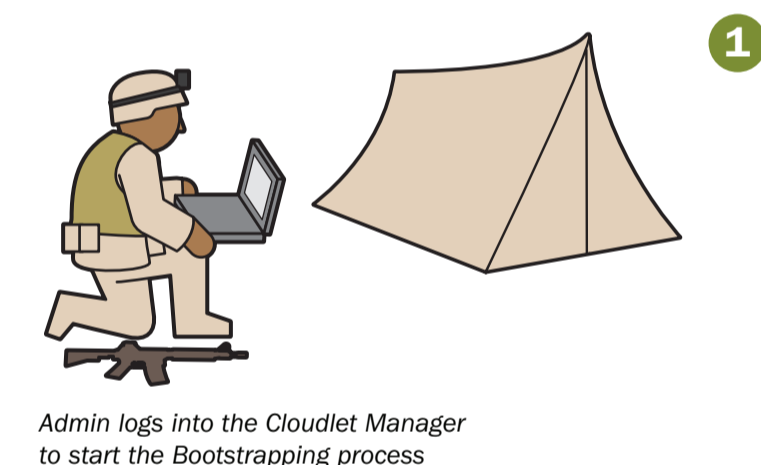
Edge environments are characterized by dynamic context, limited computing resources, high levels of stress, and poor network connectivity.

Edge-Enabled Tactical Systems (EETS) adapts, extends, and innovatively investigates architectures and technologies that provide efficient and easily deployable mobile solutions for teams operating in edge environments.

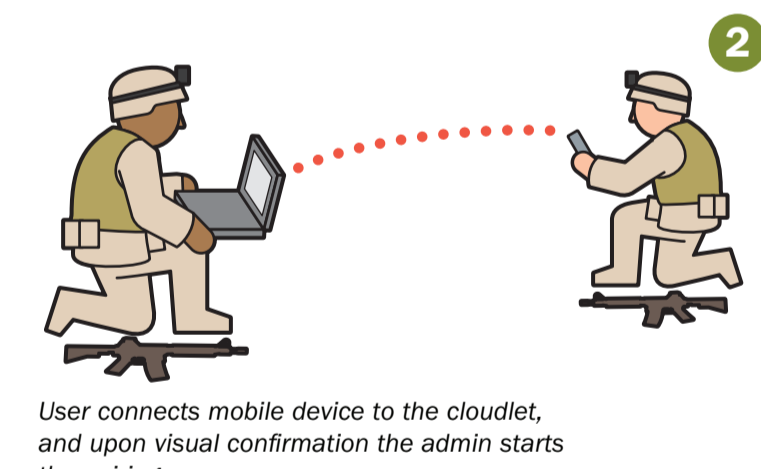
Goal for FY15: Efficient and trusted integration between the edge and the enterprise

Trusted Nodes: Establishing Trusted Identities in Disconnected Tactical Environments

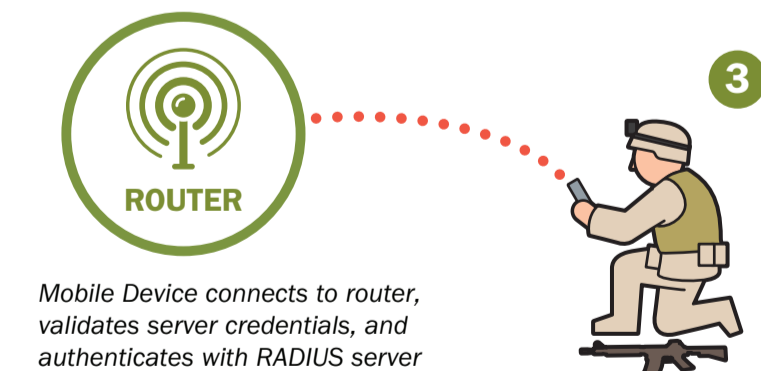
Method and prototype to establish trust between mobile devices and cloudlets in disconnected tactical environments



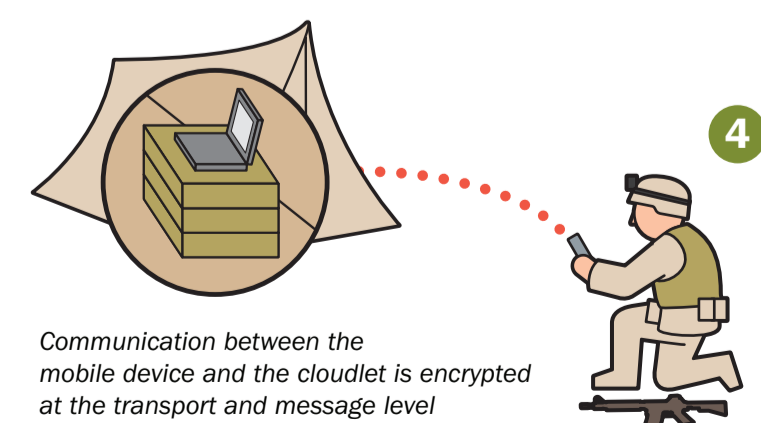
- Step 1: Bootstrapping**
- Generation of *Server Credentials* using IBE (Identity-Based Encryption)
 - Setup of *RADIUS Server* with *Server Credentials*



- Step 2: Pairing**
- Generation of *Device Credentials* using IBE
 - Transfer to device using Bluetooth or USB, plus visual confirmation
 - Transfer to *RADIUS Server*



- Step 3: WiFi Authentication**
- RADIUS Server implements Wi-Fi WPA2-Enterprise 802.1X EAP-TTLS with PAP
- Device receives server credentials and validates
 - Device sends its credentials for validation

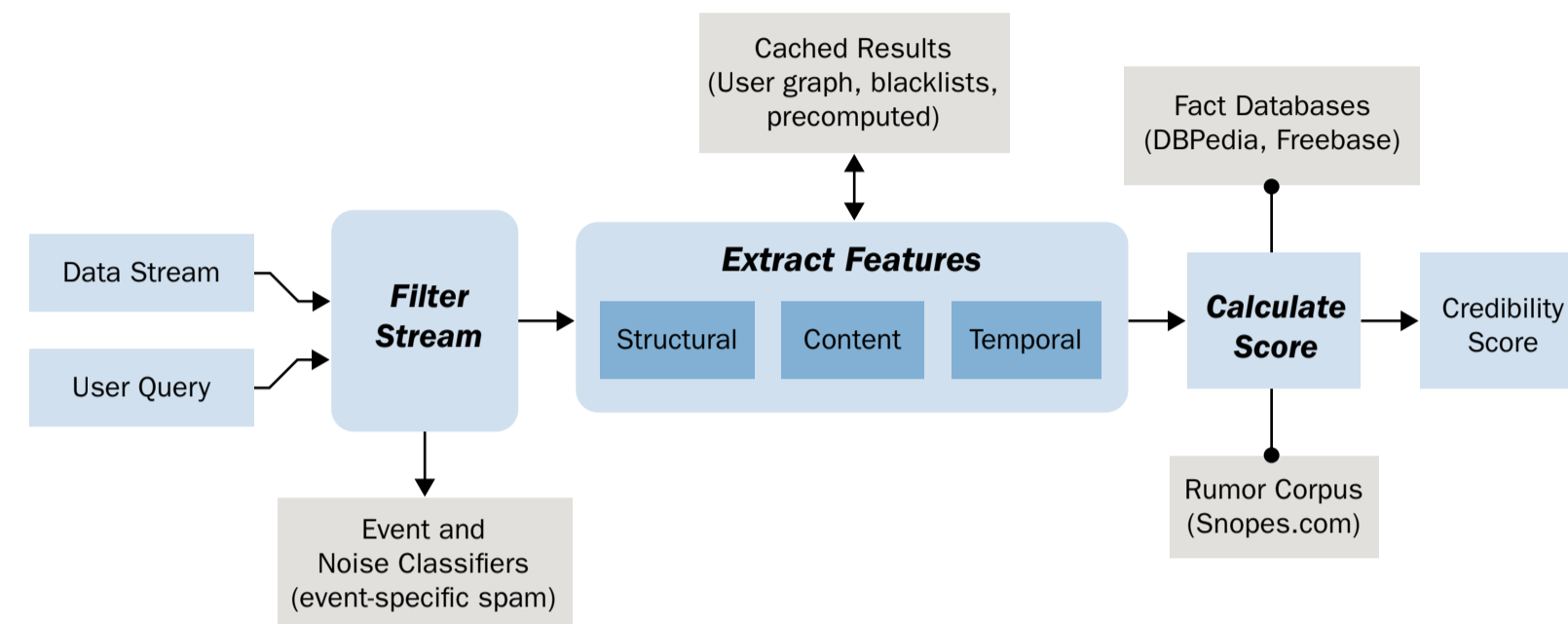


- Step 4: API Requests**
- Device exchanges encrypted messages with the server
 - Each exchange is validated against authorized device list

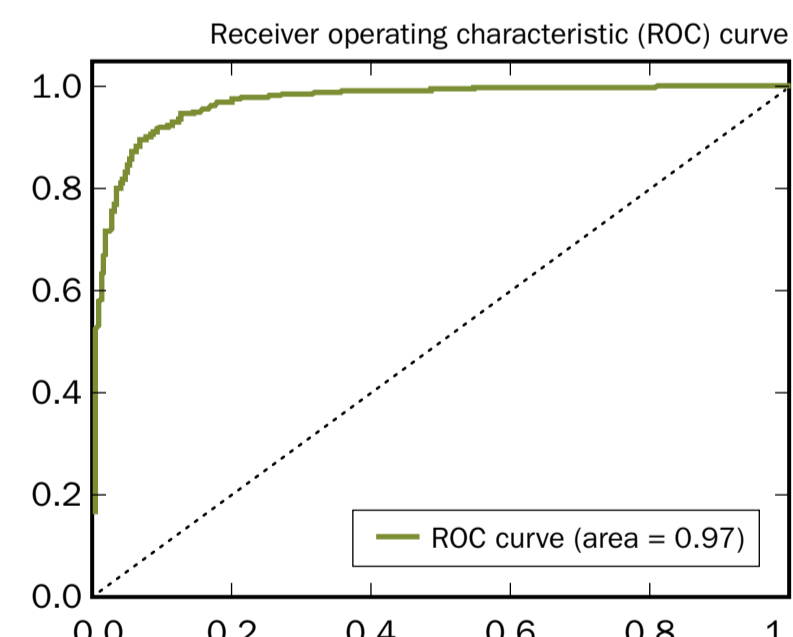
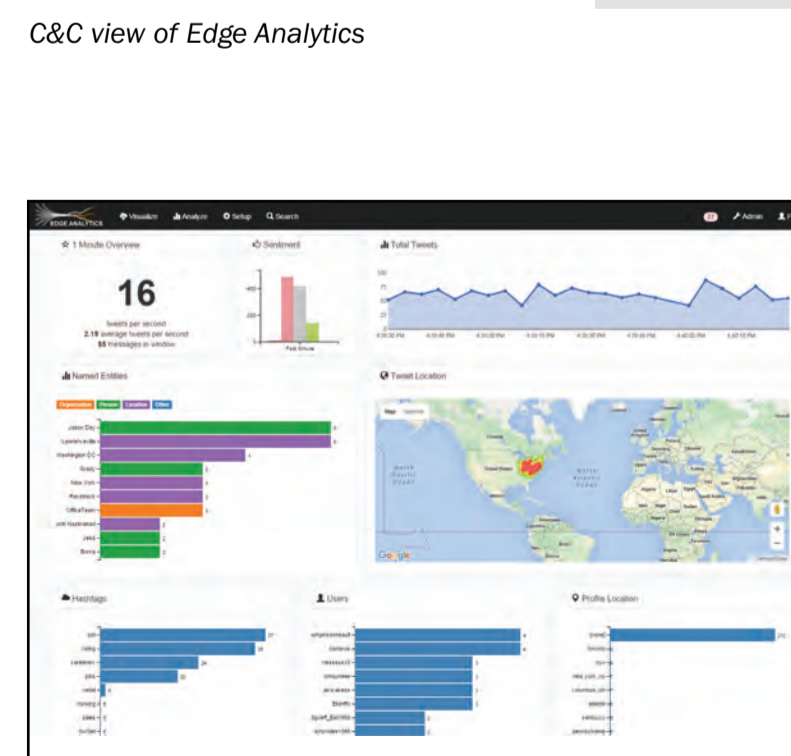
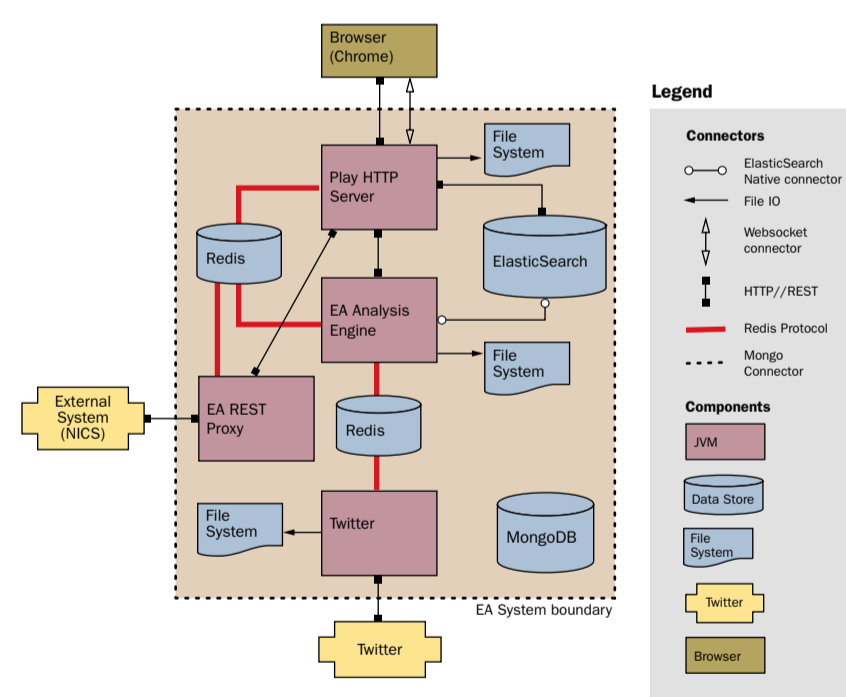
- Termination**
- Automatic due to timeout: Bootstrapping requires setting up mission length
 - Manual due to known loss or compromise: Server Management component has revocation option

Confidence in Information: Assigning Credibility Scores to Social Media Streams in Real-Time

Prototype and algorithm to determine the reliability of information derived from social media.



The implementation pipeline for credibility calculation.



Confidence in Information: Fusion of Social and Physical Sensor Data

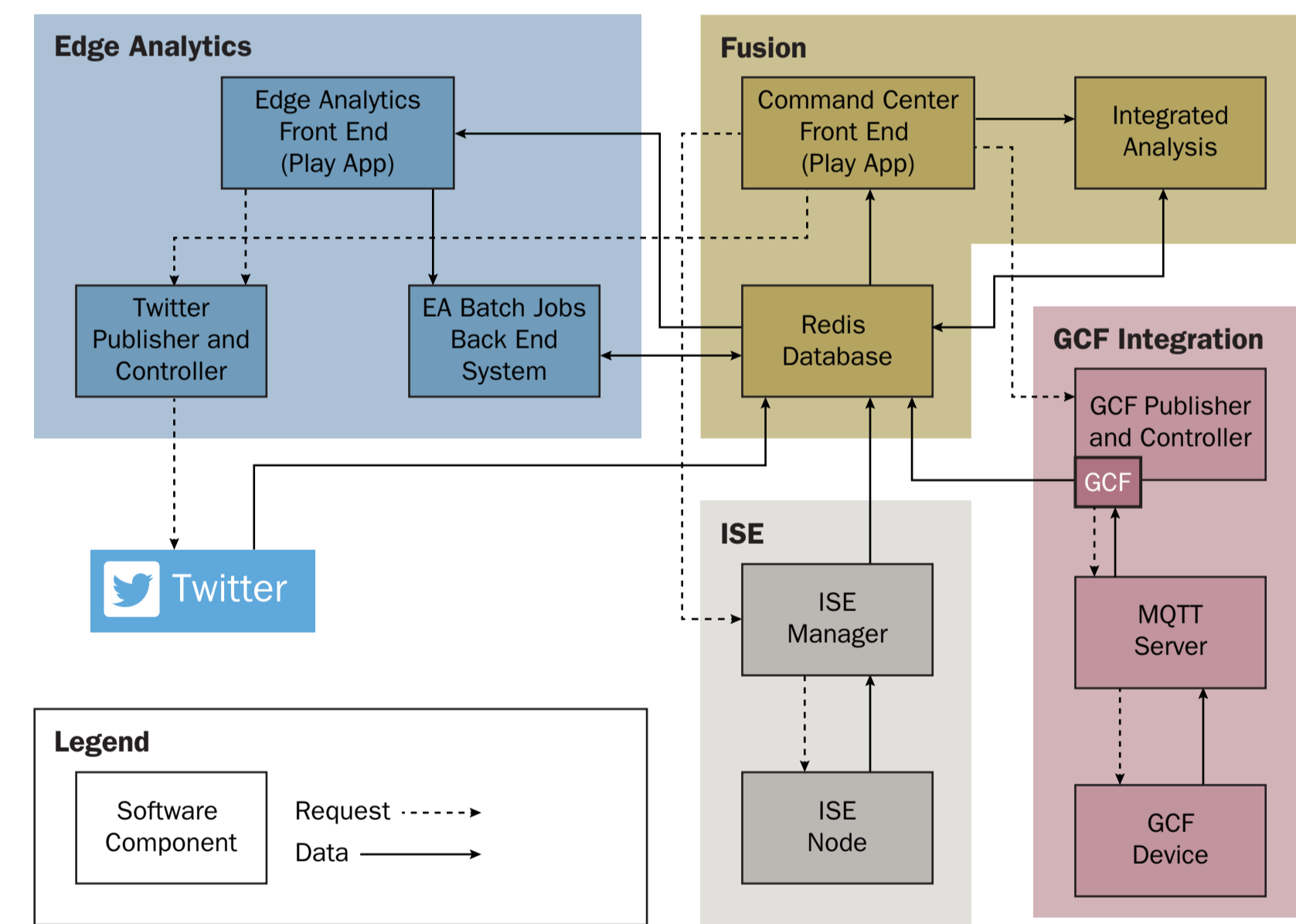
Fusion of local sensor information, gathered cooperatively and opportunistically, with streaming social media and Open Source Intelligence (OSINT) to inform strategic support and improve tactical response.

Possible Relationships

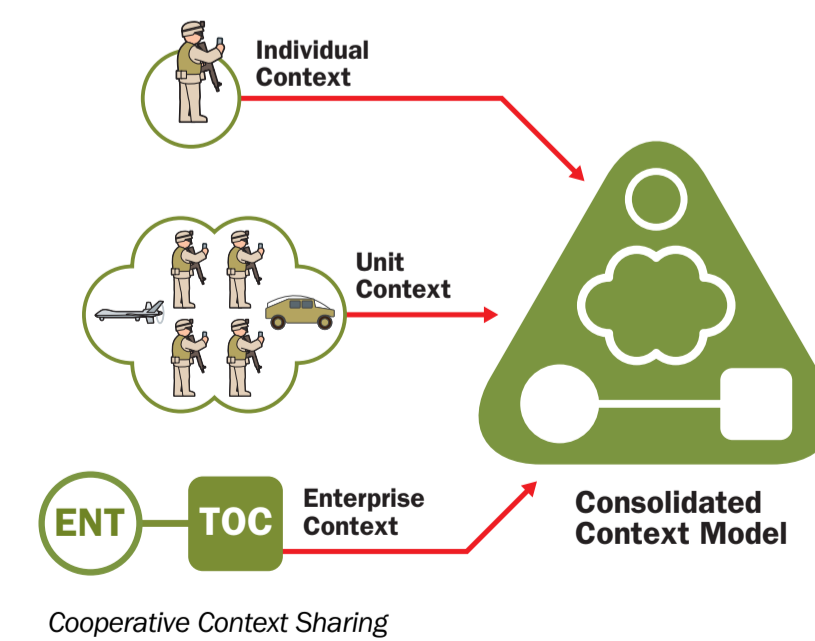
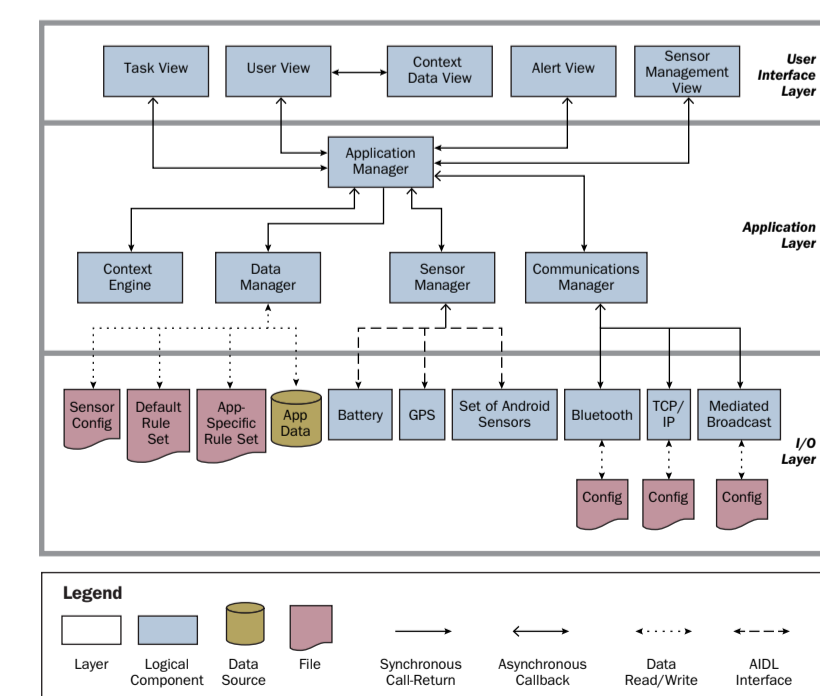
- Tweet + location (actual or inferred) cues GCF sensors
- Trending topic + similar mission keywords cues ISE sensor (events)
- ISE sensor/event + location cues GCF sensors

Scenarios (objective)

- Geo-tagged tweet triggers GCF sensors for collection
- Trending keyword matches with ISE event description
- Use ISE to task GCF for additional sensor data
- ISE event triggers GCF sensor collection



Fusion Architecture



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