

At a Glance

Persistent Intelligence, Surveillance and Reconnaissance (PISR)

- Near term:
 - ◆ Develop a multiple intelligence sensor suite for tactical unmanned aircraft systems (UAS)
 - ◆ Demonstrate a 236 megapixel camera in a tactical UAS size, weight and power envelope
- Mid term:
 - ◆ Develop long-life (10 years), smart unattended ground sensors for site protection
 - ◆ Develop large-area surveillance from tactical sensors across the radio frequency spectrum
- Far term:
 - ◆ Smart PISR systems that can perform complex on-board processing
 - ◆ A PISR system with interchangeable sensors that functions as one

Knowledge Generation

- Near term:
 - ◆ Automated network discovery using all source intelligence
 - ◆ Services capable of conditioning structured and unstructured data prior to storage in a geospatial data repository to expose information about entities
- Mid term:
 - ◆ Ability to store and run data analyses against terabytes per hour data streams in constrained environments
 - ◆ Predictive capability that uses both cultural and conventional intelligence data to infer intent and actions
- Far term:
 - ◆ Visualization technologies that support ad hoc information requirements and human-machine interaction
 - ◆ Ability to automate complex analytic workflows, including data and service discovery

ISR to Command and Control

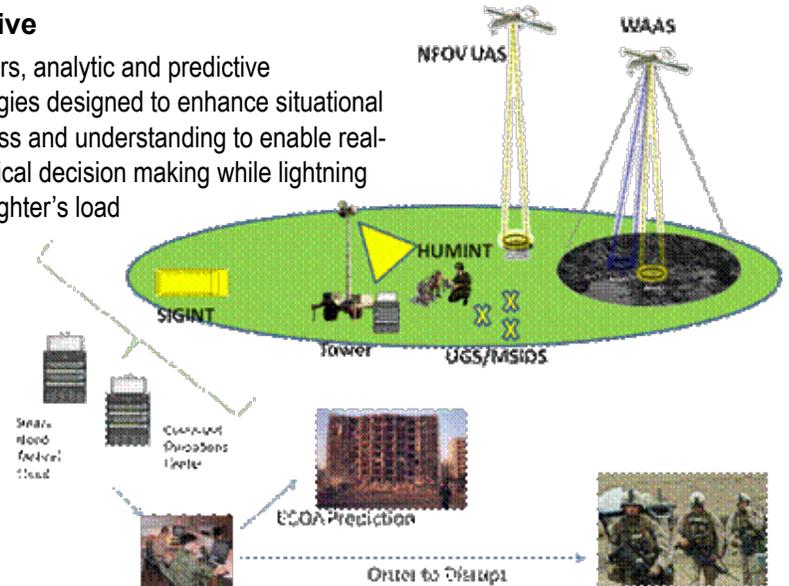
- Near term:
 - ◆ Sensors that automatically produce metadata to characterize discovered information
 - ◆ Personal digital assistant applications to translate conditions and entities of interests into data subscriptions
- Mid term:
 - ◆ Ability to aggregate the output of multiple sensors to enable situational understanding
 - ◆ Wiki-based visualization of all relevant information to a situation
- Far term:
 - ◆ Cloud-enabled environment that anticipates, discovers and delivers needed information to a warfighter
 - ◆ Information delivery supports simple show me/tell me statements

Point of Contact

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Objective

Sensors, analytic and predictive technologies designed to enhance situational awareness and understanding to enable real-time tactical decision making while lightning the warfighter's load



Imperatives

- PISR
 - ◆ Plan and synchronize intelligence, surveillance and reconnaissance (ISR) assets and intelligence products to optimize surveillance and information collection and stay ahead of adversaries
 - ◆ Enable threads from PISR to analysis to intelligence, dissemination, utilization
- Knowledge Generation
 - ◆ Build an application toolbox that enables data ingestion, fusion of information, semantic enrichment, useful visualizations, sensor panning and management
 - ◆ Enable application orchestration in support of standard work flows
- ISR to Command and Control
 - ◆ ISR must synchronize with operations
 - ◆ Applications must live in both cloud and non-cloud architectures

Research Investment Areas—Challenges and Opportunities

- Automate sensor planning based on commander's information requirements
- Enable wide area and collaborative tactical surveillance sensor suites
- Perform entity recognition from sparse data
- Enable sensor onboard processing to move from object detection to situational understanding by increasing exploitation tasks per watt
- Develop state-of-the-art, power-efficient sensors and algorithms
- Automate entity and context recognition from unstructured data to enable meaning extraction
- Orchestrate workflows of advanced mission applications working against a cloud of data
- Automate advanced analytics across distributed cloud workflows to produce finished intelligence products
- Automate enemy course-of-action prediction
- Enable automated search against concepts such as mission information needs
- Enable the recognition and delivery of mission-essential data without prior examples