

# APPLYING YOUR RESEARCH TO THE NATIONAL INTEREST

## IN-FoRM TECHNICAL WORKSHOPS

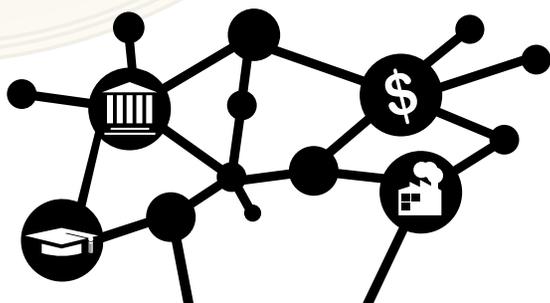
Although many of the resources to meet IC S&T needs come from within the National Intelligence Program, additional resources exist within the U.S. Government—such as the Department of Energy's National Laboratories, the Department of Defense's Laboratories, and the Defense Advanced Research Projects Agency—that can provide research synergies. With participation from academia and industry, the In-FoRM program will seek improved cooperation in research planning activities with these organizations and less traditional partners, such as the National Science Foundation, the National Aeronautics and Space Administration, and the Department of Health and Human Services.

### How can I participate in ODNI In-FoRM activities?

- *In-FoRM will work with partners in academia, industry, and U.S. Government research laboratories and funding agencies to explore select research challenge areas throughout FY2016 and FY2017.*

### In-FoRM Technical Symposia

- *Unclassified workshops jointly sponsored by the IC and its partners to address In-SteP-identified basic research gaps and educational needs required to advance IC capabilities and objectives.*



**The In-FoRM program provides the IC and its partners with use-inspired, basic research approaches for advancing and transforming IC capabilities to resolve In-SteP-identified challenges. Furthering this mission are the DS&T's In-SteP, 1-on-1 Meetings, and Intelligence Ventures in Exploratory Science and Technology (In-VEST) activities:**

- **In-SteP:** Provides the rational, traceable, and defensible foundation for aligning IC S&T enterprise and partners' activities against National Intelligence Manager Needs.
- **1-on-1 Meetings:** Provides industry the opportunity to present proprietary R&D projects to IC stakeholders.
- **In-VEST:** Provides the DNI with substantiated research investment guidance to resolve In-SteP-identified challenges.

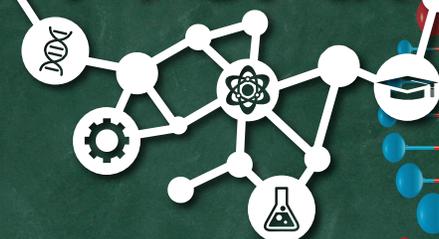
**Please contact the In-FoRM team to learn more about these emerging activities.**

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[S&TInvestment@dni.ic.gov](mailto:S&TInvestment@dni.ic.gov) (JWICS)

**Website:** <http://www.dni.gov/in-form>

**R-Space:** <https://rspace.dodis.ic.gov> (JWICS)

# In-FoRM



## INTELLIGENCE FORMULATION OF RISK MANAGEMENT

ENGAGING THE BASIC RESEARCH COMMUNITY TO ENSURE INTELLIGENCE ADVANTAGE

Office of the Director of National Intelligence  
Director of Science and Technology



To communicate and resolve basic research challenges identified through the Intelligence Science and Technology Partnership (In-STeP) and its ongoing efforts with industry to generate technical roadmaps, ODNI in 2016 launched the Intelligence Formulation of Risk Management (In-FoRM) program. With the goal of becoming the principal interface between the Intelligence Community (IC) and the basic research communities, In-FoRM seeks to leverage and catalyze U.S. Government-sponsored research efforts capable of fundamentally transforming future IC capabilities.

In this way, the In-FoRM program establishes an enduring mechanism for informing IC science and technology (S&T) and acquisition decisions and selectively integrating cutting-edge technical solutions that academia and other U.S. Government-sponsored researchers are pursuing.

### In-FoRM Vision:

*Ensure intelligence advantage by managing risk within the IC S&T enterprise's basic research investment portfolio.*

### In-FoRM Mission:

*Identify and apply the latest in basic research advances to quantifying and resolving risk within In-STeP-generated technical roadmaps.*

Implementation of In-FoRM will be critical for providing the Director of National Intelligence (DNI) with substantiated basic research investment guidance for advancing future In-STeP-identified capabilities.



In-FoRM identifies basic research opportunities for advancing capabilities to meet In-STeP-identified mission challenge areas while supplementing longer-term, strategic R&D planning efforts within the individual IC elements. In doing so, In-FoRM emphasizes the development of technical metrics and objectives for In-STeP-identified basic research challenges.

## Initial In-FoRM basic research directions address:

### Agile, Collaborative Workflow Shared by Near-Peer Human and Machine Analysts

- Auto Tradecraft Discovery
- Automated and Predictive Interest Discovery
- Optimized Management of Data, Tools, and Graphical User Interfaces

- Source-Agnostic Data Selection
- System-Level Information Requirement Fulfillment Strategies
- Tradecraft Sharing

- Wire-Speed Data Tagging
- Wire-Speed Language Recognition

### Observation Capture Instrumentation

- Auto-Graphics and Formats
- Automated Geolocation
- Machine Learning

- Machine Learning Schema and Methods
- Natural Language Generation
- Relationship Discovery via Markov Logic

- Trust and Influence Tags
- Vectorized GEOINT

### Human-Machine Teaming: Science of Human-Computer Interaction

- Automatic Analysis of Syntax, Semantics, Discourse
- Automatic Discovery of Related Data
- Dynamic Ontology Discovery without Source or Mission Knowledge
- Game Theory

- Human-Assisted Machine Learning
- Human Factors and Human Resistance Analysis
- Machine Learning Algorithms
- Machine Learning for Community Model

- Massively Multiplayer Online Approach to Real-Time Analysis
- Science of Human-Computer Interaction
- Tailorable User Views Based on Comfort or Role

### Analytic Model and Predictive Data Refinement

- Asymmetric Dynamic Behavior Model
- Auto-Generated Algorithms
- Automated 3D Scene Reconstruction
- Convolutional Neural Networks
- Determining Moderator Bias
- Dynamic "Normalcy" Model
- Dynamic Intel Refresh Based on Change Indication

- Forensics on Temporal Relationships
- Index Structure for Geospatial
- Interval Queries
- Machine Anticipatory Response
- Machine Learning for Models
- Neural Processing
- Predicting the Filtering of Information

- Recombinant Sensor Processing
- Traffic Pattern Analysis and Correlation
- Vectorized GEOINT
- Wire-Speed Data Tagging
- Wire-Speed Language Recognition
- Wire-Speed, Automated, Precision Camera Modeling

### Error Estimation and Propagation, Confidence and Risk Calculus

- Antagonistic Biometrics
- Determining Moderator Bias
- Dynamic Statistical Risk Analysis

- ID, Associations, and Geolocation in the Presence of Encryption
- Predicting the Filtering of Information

- Reduce False Alarm Rates
- Sentiment Analysis
- "Unpack" into Emotions, etc.

### On-Demand, Self-Service Report Access, Generation and Decision Support

- Alerting & Report Generation Using Objects, Relationships, and Models
- Audio Indexing
- Automatic Feature Extraction
- Automatic Inference
- Cognitive Computing
- Complex Chained Prepositional Phrases
- Immersive Virtual World User Experience
- Innovative Approaches to Visualization

- Machine Anticipatory Response
- Math Models for Visualization
- Multi-Resolution Visualization
- Natural Language Understanding
- Natural User Interface
- Navigation without GPS
- Neuromorphic Computing
- Queries to Dynamic, Disparate Data Sources
- Real-Time Translation

- Source-Agnostic Data Selection
- System-Level Information Requirement Fulfillment Strategies
- Text Detection and Sensemaking
- Translating Tradecraft to Immersive Environments
- Trust of Open-Source Software
- Web Index of Objects, Activities, and Events
- Wire-Speed Language Recognition

### Candidate Observation Exchange and Supervision

- Disconnected Credential Management
- Massively Multiplayer Online Approach to Real-Time Analysis

- Multi-Source Integration
- Multilingualism Geospatial Mapping
- Precision Geolocation without GPS

- Robust User-Friendly Tool
- Tailorable User Views Based on Comfort or Role