SLIDES ONLY

NO SCRIPT PROVIDED

C4I COI Annual Update

NDIA 18th Annual Science & Engineering Technology Conference

19 April 2017

17-S-1444

C4I COI Leadership

Steering Committee

Dr. Stephen Russell (Navy) – Chair *[New]*
Dr. Don Wagner (Navy) - Co-Chair *[New]*
Dr. Barbara Broome (Army)
Mr. John Willison (Army) *[Previous Chair]*
Dr. Mark Linderman (Air Force) *[New]*
Dr. Rich Linderman (ASD(R&E))

Working Groups and Leads

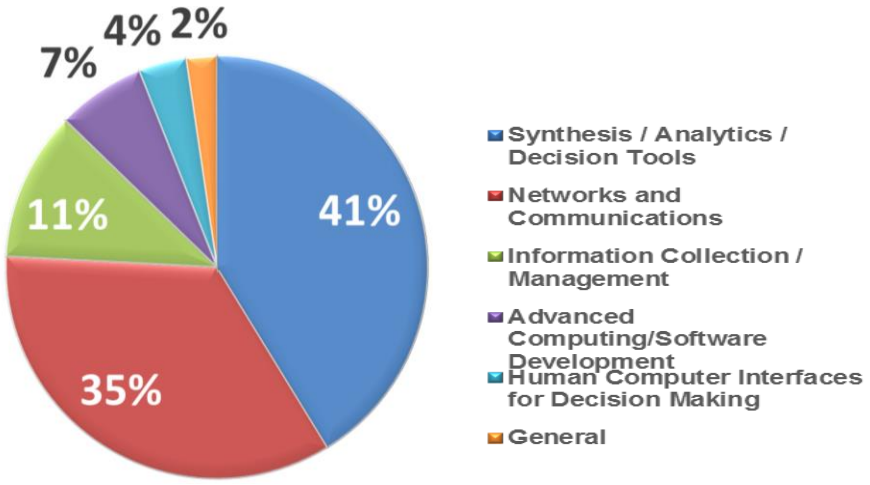
HCI for Decision Making	Synthesis/Analytics/ Decision Tools	Information Collection/ Management	Computing and Software Technologies	Networks and Communications
Dr. Jeff Morrison, ONR	Ms. Jackie Toussaint, AFRL	Dr. Barbara Broome, ARL/CISD	Dr. Raju Namburu, ARL	Dr. Albert Legaspi, SPAWAR

Working Group representatives from: ARL, CERDEC, NRL, AFRL, ONR, OUSD ATL, AMRDEC, DTRA, NSWC, SPAWAR, NAVAIR, TRMC

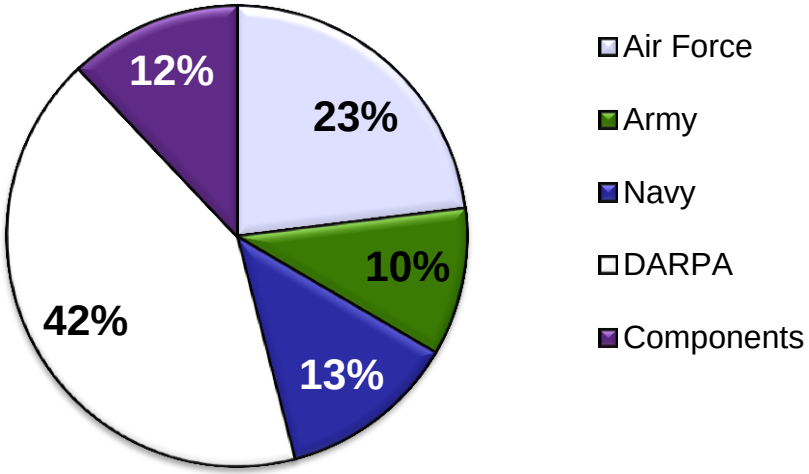
DoD PB17 FY 2017
C4I COI

COI Sub-Areas ($M)

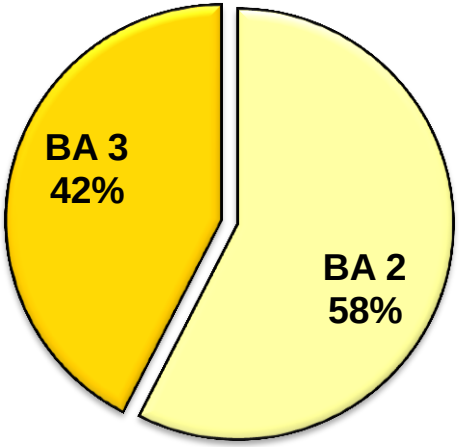
Total = $932M



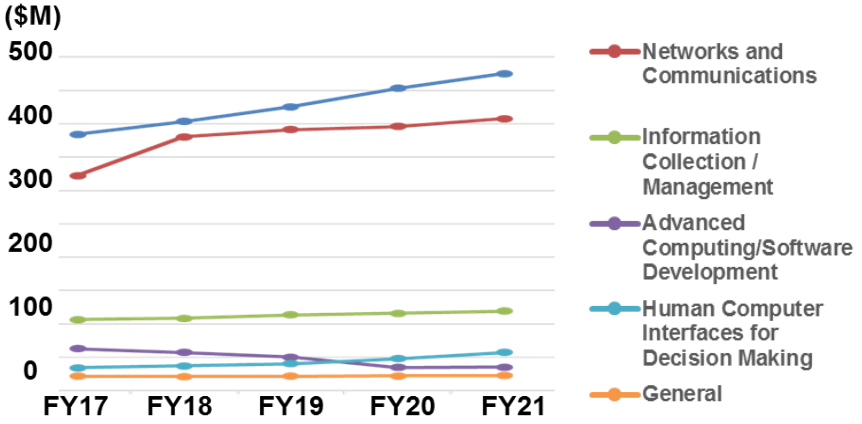
Service, Agency and Component Investment



Budget Activity



Funding by Taxonomy Area



COI Activity In-Year

- **Major accomplishments/technology transfers**
  - Demonstrated new capabilities under FY14 C4I COI Seedling Proposal ““Foundations for Context-Aware Information Retrieval for Proactive Decision Support” at NPS Joint Interagency Field Experiment (JIFX)
    - Incorporated external sources of context into imagery normalcy modeling and anomaly detection
    - Automated discovery/monitoring of targeted user classes from social media text
    - Concept of Kinematic and Text Motifs used to detect novel and anomalous patterns
  - Tactical Cloud – Reference Implementation (TCRI) transitioned to CANES/ACS providing end-to-end ecosystem – in a package tailorable for the tactical edge.
  - Secure Cross-domain Orchestration Engine (SCORE) to enable existing Cross Domain Solutions (CDS)
  - Transitioned parallel C4ISR data reduction software for WIN-T tests. Shrinks data reduction times from 60 hours/terabyte to 5 hours/terabyte
  - Future Advanced SATCOM Technologies (FAST) Program Open Standard Digital Interface (OSDI) was adopted and published as a national standard
- **Cross-Service collaboration and Engagements with organizations, individuals, entities outside DoD**
  - DOE Technical Exchange Meeting in April FY16, is generating follow on engagement on specific topics including AI and Advanced computing architectures

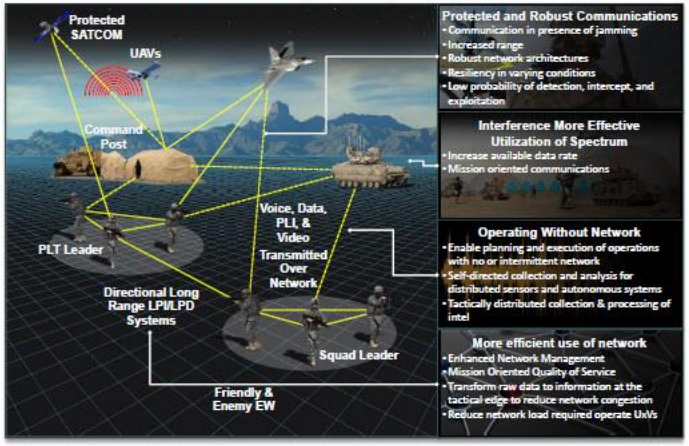
Way Ahead:

- **Develop Roadmap Update for July 2018**
  - Incorporate intelligence S&T into the Roadmap
- **Establish cross-COI engagements with Cyber & Autonomy COIs**
- **Set up an Internal working level TEM within C4I, bringing industry in to present IR&D**

Command, Control, Communications, Computers & Intelligence (C4I) Community of Interest (COI)

Uninterrupted Command Capability Challenge

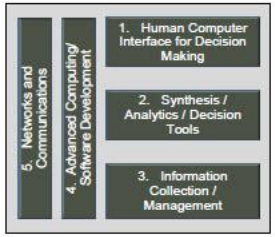
Enable mission execution at all echelons anywhere, at anytime, regardless of network/system status



COI Description

The C4I COI will coordinate the DoD C4I Science & Technology (S&T) portfolio investment and review DoD organizations' strategic plans to support C4I related S&T investments in the context of overall DoD strategic priorities and goals. The C4I COI will establish priorities and guidance, monitor current and planned investments in S&T including but not limited to Networks, Command & Control, and Data to Decision efforts. The COI will identify gaps, establish and maintain a set of S&T roadmaps to guide DoD research program investments, perform portfolio assessments, and provide future resource recommendations to leadership. The C4I COI will also establish mechanisms to encourage coordination between researchers to facilitate information exchange, and promote collaboration.

Technology Working Groups



Priority Capability Challenges

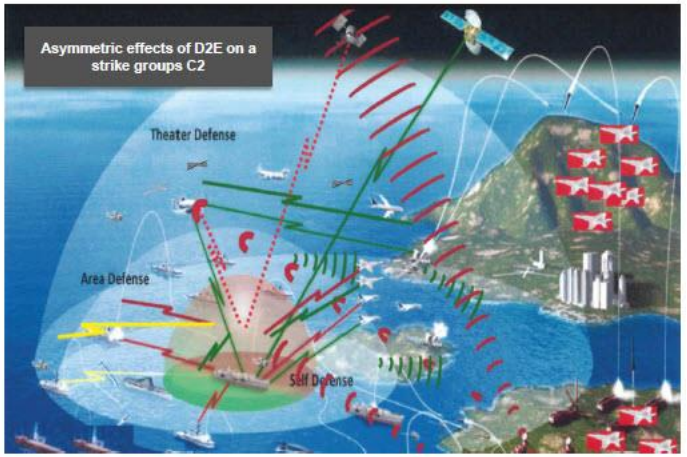
Collaboration	Enable human interaction and collaborative decision making to achieve unity of effort
Automation / Autonomy	Unburden warfighters through Automation/Autonomy
Uninterrupted Command	Enable mission execution at all echelons anywhere, at anytime, regardless of network/system status
Interoperability / Coordination	Seamless and secure movement and integration of mixed format data/information between service, joint and coalition networks/systems

COI Impact and Success Stories

* C4I COI Technology Roadmaps Developed and Priority Capability Challenges Identified
* Tactical Cloud – Reference Implementation (TCRI) transitioned to CANES/ACS.
* Transitioned parallel C4ISR data reduction software for WIN-T tests. Shrinks data reduction times from 60 hours/terabyte to 5 hours/terabyte.
* Future Advanced SATCOM Technologies (FAST) Program Open Standard Digital Interface (OSDI) was adopted and published as a national standard.

Automation/ Autonomy Capability Challenge

Integration of autonomy/automation into the way we fight and using automation and intelligent agents in the execution of C2 & Intel Analysis.



Industry Engagement Opportunities

Research area	Sampling of Research Opportunities	
Human Computer Interaction for Decision Making	• Valuing & sharing information based on task Proactive Planning Decision Support • Machine Facilitated Collaboration for managing Autonomous & Complex Systems	• Information Management for limited connectivity • Information Provenance Pedigree
Synthesis/ Analytics/ Decision Tools	• Determine impact of conditions and events on force capabilities and commander's intent	• Tools for developing, evaluating, and selecting courses of action
Information Collection/ Management	• Tactically distributed collection and processing • Task-centric, federated, extensible data models • Dynamic context (mission/user) aware information retrieval	• Context enhanced information fusion and integration • Scalable semantic interoperability
Advanced Computing/ Software Development	• Future computing architectures and associated algorithms and software • Distributed Computing	• Cost of Tech Refresh: Improve Reconfigurability, Modularity, Interoperability, Extensibility
Networks and Communications	• Autonomous Network Management • Increased Loss Tolerance & Recovery • Spectral Efficiency and Diversity	• Mobile Ad Hoc Networking • Electronic Protection

For more information, visit us on the Innovation Marketplace at: http://www.defenseinnovationmarketplace.mil/