

Communities of Interest

Collaborating on Technology Challenges

Alan Shaffer

The technological superiority that we and our partners and allies have enjoyed for the past 50 years can no longer be assured, and recognition of this requires a new approach to research and engineering. We must open our science and technology aperture and employ much greater collaboration in making our technology investment decisions. Simply, the Department of Defense (DoD) Research and Engineering (R&E) Enterprise (Table 1) must deliver a more coordinated and coherent R&E program, across all components—reaching beyond the DoD to include our National Laboratories, colleges and universities, our national industrial base and our global partners and allies. Data may move at the speed of light, but decisions move at the speed of trust. Guiding DoD’s approach are three foundational documents designed to build the trust to enhance the speed and quality of our decisions, development and deployment, provide strategic direction to the DoD R&E Enterprise and outline the framework for achieving our objectives.

The DoD R&E Enterprise Strategic Guidance outlines “Three Enduring Principles” for the purpose and conduct of DoD R&E efforts: (1) to mitigate or eliminate existing and emerging technology-based threats to national security; (2) to affordably enable new or extended military capabilities; and (3) to create technology surprise through science and engineering. Our goal is to ensure that our R&E efforts align to these principles.

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Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE APR 2015		2. REPORT TYPE		3. DATES COVERED 00-00-2015 to 00-00-2015	
4. TITLE AND SUBTITLE Communities of Interest: Collaborating on Technology Challenges				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Defense Acquisition University, Defense AT&L, 9820 Belvoir Road, Fort Belvoir, VA, 22060				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 6	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			



"We want to tell industry more clearly what has value to us so they'll be able to bid more intelligently, so they'll be able to make their own technology investment decisions more intelligently."

—Frank Kendall, Under Secretary of Defense for Acquisition, Technology, and Logistics, *Defense News*, Sept. 22, 2014.

Table 1. DoD Research and Engineering Enterprise

- Military Departments
- Service Laboratories
- DoD Laboratories and Product Centers
- Defense Agencies:
 - Defense Advanced Research Projects Agency
 - Defense Threat Reduction Agency
 - Missile Defense Agency (MDA)
 - Other Federal Government Laboratories
- Federally Funded Research and Development Centers (FFRDCs)
- University Affiliated Research Centers
- United States and allied universities
- Allied and partner government laboratories
- Industrial Base
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The DoD R&E International Science and Technology (S&T) Engagement Strategy was a collaboration between the Offices of the Under Secretary of Defense for Acquisition, Technology, and Logistics Office of International Cooperation and the Assistant Secretary of Defense for Research and Evaluation (ASD[R&E]). With this as our guide for achieving global interoperability, we will strengthen and expand existing relationships and initiate new relationships with our international partners, allies and friends. Real collaboration, including real-time information and data exchanges between the members of our R&E Enterprise, will allow us to better leverage emerging global opportunities, accelerate the pace of change, create technological surprise and mitigate the global threats to our capabilities—and to those of our allies and partners.

The Reliance 21-Operating Principles constitute a portfolio management approach that provides the framework for executing both the DoD R&E and International Engagement Strategies. The outcome of this approach will impact the development of the DoD-wide Research, Development, Test

and Evaluation (RDT&E) budget and allows us to deliver an integrated, cohesive voice across the R&E Enterprise enabling:

- Information sharing
- Alignment of effort against capability gaps
- Coordination of priorities and investments
- Exploitation of synergies and development of new opportunities
- Support for scientists and engineers across the DoD R&E Enterprise

Done correctly, Reliance 21 will provide more focused output for every RDT&E dollar.

Communities of Interest

Under Reliance 21, the Science and Technology Executive Committee (S&T ExCom) has divided the DoD R&E Portfolio into 17 Communities of Interest (COIs) that reach across all components (Table 2). These technical communities are reviewing and assessing the alignment of current and planned R&E programs, identifying gaps, and helping to prioritize R&E funding efforts to meet the technical challenges of the DoD in their respective focus area, or portfolio (Figure 1). Each COI represents specific cross-domain technology areas where there is substantial investment across multiple components. The COIs do not replace service-specific technology areas—those will continue to be worked by the Services. Each COI has a rotating Steering Group Lead assigned (at the Senior Executive Service/GS-15 level) and supporting subject-matter experts (SMEs) participating from each of the military Services and component agencies. Each COI draws representation from across the echelons of DoD people working in a technology area.

The COIs are collecting, coordinating and aligning the technical capabilities, requirements, gaps, opportunities and priorities for their respective technology areas or portfolios. This information forms the basis for a detailed COI Technology Roadmap. The Technology Roadmaps include a desired end state, described in terms of technology-based military capabilities. The roadmaps then will incorporate all existing and planned investments in that focus area being funded by any or all of the Services, Office of the Secretary of Defense (OSD), agencies or laboratories. The Technology Roadmaps are presented to the DoD S&T ExCom during COI Portfolio Reviews, which are used to build the DoD Program Objective Memorandum (POM) and Budget Estimate Submission (BES).

Table 2. Communities of Interest

Advanced Electronics	Energy & Power Technologies
Air Platforms	Engineered Resilient Systems
Autonomy	Ground and Sea Platforms
BioMedical (Armed Services Research Evaluation and Management [ASBREM])	Human Systems
Command, Control, Communications, Computers and Intelligence	Materials and Manufacturing Processes
Counter Improvised Explosive Devices	Sensors and Processing
Counter Weapons of Mass Destruction	Space
Cyber	Weapons Technologies
Electronic Warfare / Electronic Protect	

The COI Technology Roadmaps are valuable tools that help leadership identify and understand areas of over- (or under-) investment, unproductive duplication and any technology gaps that need to be addressed.

Additionally, the COI Technology Roadmaps will highlight research efforts by industry, universities, allies or partner nations—whether or not funded by the DoD—to identify new technologies that could mitigate or eliminate existing and emerging threats, affordably enable new or extended capabilities or create technology surprise to give DoD a disruptive advantage.

Once completed with all existing and planned programs, and annotated with related projects drawn from the other R&E efforts such as Independent Research and Development (IR&D), Multidisciplinary University Research Initiatives (MURIs), Laboratories (Unified Research and Engineering Database), Small Business Innovation Research (SBIRs) and Rapid Innovation Fund (RIF), the Roadmaps will identify:

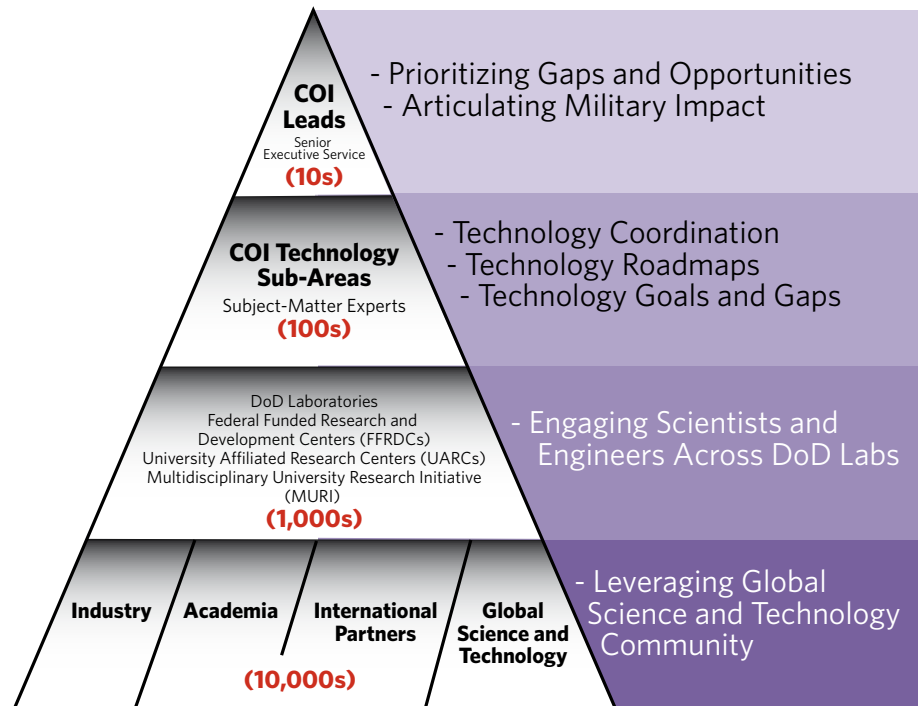
- Opportunities to either combine, limit or discontinue R&E efforts that demonstrate unnecessary, or unintentional, duplication of efforts or funding.
- Technology gaps or challenges still facing the DoD that are not being adequately addressed and the potential military impact of not addressing these gaps.
- Investments that are not on the critical or disruptive path.

We expect COIs to use any of these opportunities in their areas of interest to improve delivery of capability against strategic goals. The Technology Roadmaps will allow the breadth of the R&E Enterprise, and not just to leadership, to identify promising investments—constrained by limited resources and any R&E programmatic or funding inefficiencies, technical gaps or challenges—and their relative priorities. The strength of the COI Roadmaps will go a long way toward aligning R&E efforts and funding with risk and urgency to address technology gaps.

The Technology Roadmaps are updated every two years, and serve as the foundation for the annual COI Portfolio Reviews, which include the following:

- **Portfolio Overview:** Topics, scope and approximate investment by subtopics
- **Major Goals:** Technical challenges, opportunities and desired outcomes—aligned with operational capabilities and needs

Figure 1. Communities of Interest Roles



- **Investment Plans:** All current and planned programs/projects, transition opportunities, key performers, critical capabilities and gaps prioritized
- **Portfolio Health Assessment:** Strengths, weaknesses, risks and mitigation strategies

The COI Portfolio Reviews serve to inform DoD R&E/S&T leadership and will assist in the development of the DoD RDT&E POM, BES and the Program and Budget Review (PBR).

The DoD R&E/S&T Leadership is drawn from across the DoD R&E Enterprise. The COIs are led and guided by two groups with DoD R&E budgetary responsibilities:

The R&E Executive Committee (R&E ExCom), the most senior-level group, is comprised of the ASD(R&E), Service Acquisition Executives (SAEs) and the Deputy Director of the Defense Advanced Research Projects Agency (DARPA). This group convenes as required to address cross-service issues that cannot be resolved by the DoD Science and Technology Executive Committee (S&T ExCom).

The DoD S&T ExCom has membership from OSD, the military departments and other DoD agencies (Table 3). This group meets monthly and as required. The S&T ExCom has responsibility for the coordination and management of DoD R&E/S&T funding efforts. The S&T ExCom is assisted by the S&T deputies, who meet weekly. The S&T ExCom also meets annually in a two-day event to review the Roadmaps of multiple COIs. The Chairman's Risk Assessment, Joint Staff risks and requirements, and Service Initiatives and Priorities are also

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presented. The COIs have a direct impact on future DoD R&E funding decisions through their Technology Roadmaps and Portfolio Review by helping the S&T ExCom identify areas of investment and new technology efforts able to address the needs of the DoD.

Resources for the COIs

The COIs can draw from many new resources to inform and populate their respective Technology Roadmaps. The ASD(R&E) hosts a COI Collaboration workspace on TechSpace, (www.dtic.mil/dtic/) accessible to all DoD government and military personnel, and to support contractors (with the approval of their government sponsors). TechSpace is home to the ASD(R&E) COI Wiki, which contains a collaboration workspace for each of the COIs with copies of their presentations, unclassified versions of their Technology Roadmaps, Weekly Status Reports and other important documents. The COI Wiki also has links to the International Agreements Database, and the *S&T News Bulletin*. The Wiki is available at www.dodtechipedia.mil/dodc/x/1g00.

There is a communications resource (www.DefenseInnovationMarketplace.mil) containing DoD and Service investment strategies and priorities, documents and events intended to provide the DoD R&E Enterprise with information regarding technical chal-

lenges facing the DoD. All the DoD R&E Strategic Guidance documents are available on the Marketplace. The Marketplace also houses the Independent Research and Development (IR&D) Secure Portal, into which industry/academia submit project summaries of their IR&D efforts. Because the summaries contain company proprietary data, access to them is restricted to registered and approved DoD government civilians and military personnel with R&E, S&T or acquisition responsibilities. Members of the COI can request access and use this information for roadmap development activities.

To date, more than 18,000 IR&D Project Summaries have been submitted to the portal, and each is aligned to the most relevant COI and Sub-Area. All summaries include company and technical points of contact (POCs) enabling an interested DoD user to reach out and discuss the effort with the IR&D participant to determine if the effort might address a particular technical challenge of the COI. This resource helps COI members review and assess the type and maturity of industry and academia IR&D efforts in their challenge areas, bringing them to the attention of those working to address those challenges.



Above; Screen shot of the online Defense Innovation Marketplace. Left: Communities of Interest page at Techspace.

Table 3. Science and Technology Executive Committee Membership, OSD

- ASD(R&E)
- Deputy Assistant Secretary of Defense (DASD) Research
- DASD Emerging Capabilities & Prototyping
- DASD Force Health Protection and Readiness
- DASD Manufacturing and Industrial Base Policy
- DASD Chemical and Biological Defense
- Director International Cooperation

Military Departments

- Deputy Assistant Secretary of the Air Force for Science, Technology and Engineering
- Deputy Assistant Secretary of the Army for Research and Technology
- Chief of Naval Research
- Joint Chiefs of Staff, Deputy Director for Resources and Acquisition

Agencies

- Deputy Director, Defense Advanced Research Projects Agency
- Program Executive for Advanced Technology, Missile Defense Agency
- Joint Improvised Explosive Device Defeat Organization, Deputy Director for Rapid Capability Delivery
- Defense Threat Reduction Agency, Associate Director for R&D

Also, COIs can host Virtual Technology Interchanges to align DoD, industry and global partners and allies on very specific, high-priority or game-changing technology challenges. Technology needs and background details are posted on the Defense Innovation Marketplace, and organizations submit their potential solutions into the IR&D Secure Portal. Once reviewed by the COI SMEs, organizations then are invited to provide more detailed briefings on select efforts to the government host's (COI) representatives. Previous Virtual Technology Interchanges have resulted in new relationships, partnerships and Cooperative Research and Development Agreements (CRADAs) between IR&D participants and the DoD hosts.

Reliance 21 and the DoD Communities of Interest

Collaboration between and among the members of Global R&E Enterprise, through the COIs, helps the DoD more effectively identify and react to emerging opportunities. Information—formed through collaboration, collected by the COIs, embedded into the Technology Roadmaps, and shared among the R&E Enterprise—provides the insight needed to inform for the R&D investment decisions that will guide the scientists, engineers, researchers and acquisition professionals working across the Enterprise to meet the current and future technical needs of the DoD, its allies and partners.

Join us in meeting these challenges. Visit DoD Techspace and the [DefenseInnovationMarketplace.mil](https://www.defenseinnovationmarketplace.mil) to look for opportunities to learn more, share information and get engaged. 

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Where Can You Get the Latest on the Better Buying Power Initiatives?

- BBP Gateway (<https://dap.dau.mil/bbp>) is your source for the latest information, guidance, and directives on better buying power in defense acquisition
- BBP Public Site (<https://acc.dau.mil/bbp>) is your forum to share BBP knowledge and experience