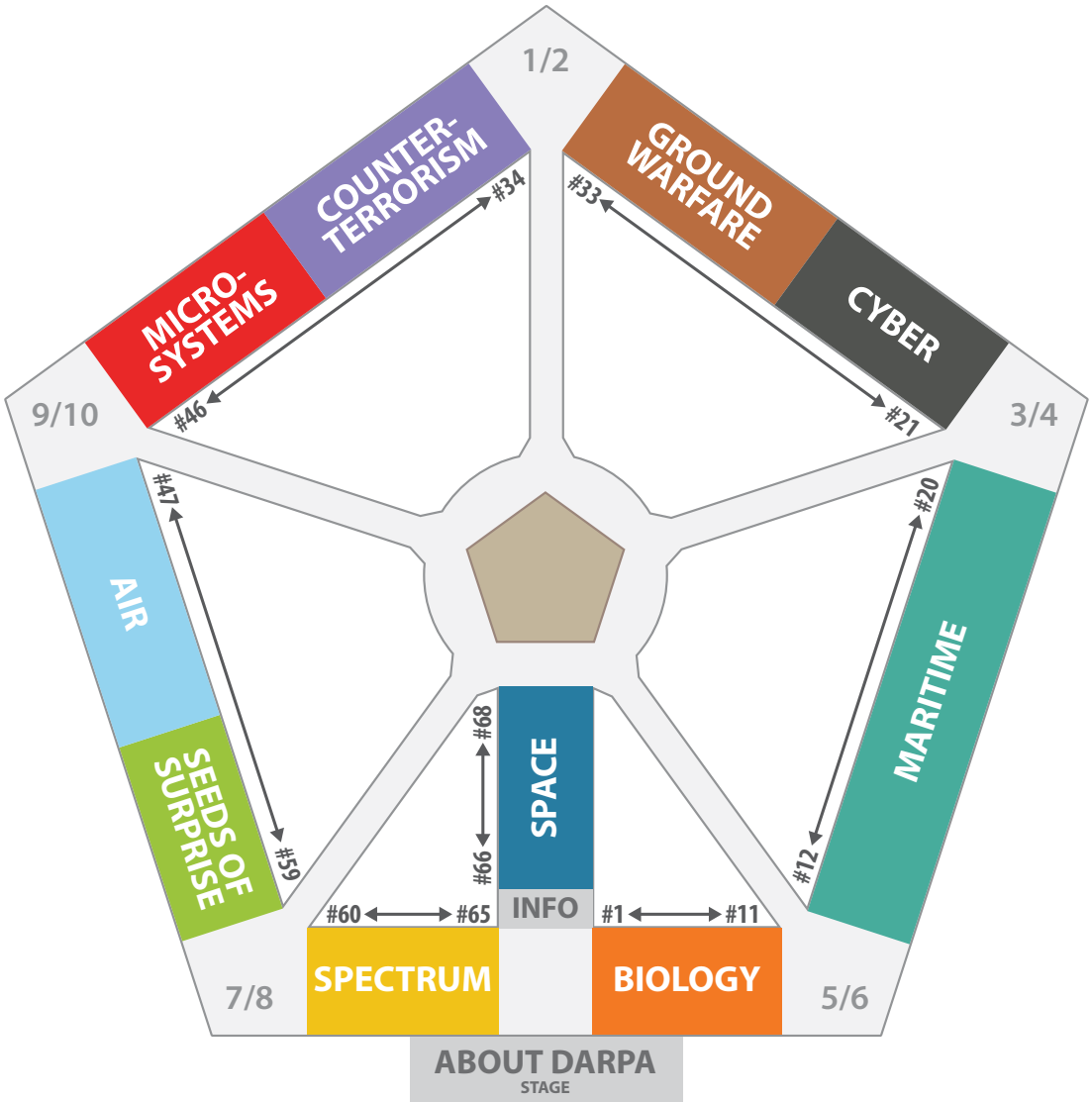
DARPA DEMO DAY

BREAKTHROUGH TECHNOLOGIES FOR NATIONAL SECURITY

May 2016

Pentagon Center Courtyard



DARPA

DEMO #	PROGRAM NAME	PROGRAM MANAGER	PARTICIPATING EXHIBITOR(S)	OFFICE
	BIOLOGY: Developing breakthrough technologies to outpace infectious diseases, accelerate progress in synthetic biology, and explore new neurotechnologies			
1	Systems-Based Neurotechnology for Emerging Therapies (SUBNETS)	Justin Sanchez	DARPA	BTO
2	Restoring Active Memory (RAM)	Justin Sanchez	DARPA	BTO
3	Revolutionizing Prosthetics: Modular Prosthetic Limb (MPL)	Justin Sanchez	Johns Hopkins University Applied Physics Lab (APL), Johnny Matheny	BTO
4	Revolutionizing Prosthetics: DEKA Arm	Justin Sanchez	Fred Downs	BTO
5	Hand Proprioception and Touch Interfaces (HAPTIX)	Douglas Weber	DARPA	BTO
6	Electrical Prescriptions (ElectRx)	Douglas Weber	DARPA	BTO
7	Prophecy (Pathogen Defeat): Mobile Analysis Platform (MAP)	Matthew Hepburn	DARPA	BTO
8	Dialysis-Like Therapeutics (DLT)	Matthew Hepburn	DARPA	BTO
9	Living Foundries	Barry Pallotta	DARPA	BTO
10	Microphysiological Systems (MPS)	Barry Pallotta	Massachusetts Institute of Technology	BTO
11	Pathogen Predators	Barry Pallotta	Rutgers University	BTO
	MARITIME: Enhancing maritime agility in all conditions through unmanned surface and undersea systems, novel communications and positioning technologies, and distributed capabilities			
12	Cross Domain Maritime Surveillance and Targeting (CDMaST)	Jim Galambos	DARPA	STO
13	Spatial, Temporal, and Orientation Information in Contested Environments (STOIC)	Lin Haas	DARPA	STO
14	Adaptable Navigation Systems (ANS)	Lin Haas	DARPA	STO
15	Anti-Submarine Warfare (ASW) Continuous Trail Unmanned Vessel (ACTUV)	Scott Littlefield	Leidos	TTO
16	Hydra	Scott Littlefield	Hydroid	TTO
17	Multi-Azimuth Defense Fast Intercept Round Engagement System (MAD-FIRES)	Jerome Dunn	DARPA	TTO
18	Tactically Exploited Reconnaissance Node (Tern)	Daniel Patt	DARPA	TTO
19	Distributed Agile Submarine Hunting (DASH)	Shelby Sullivan	Applied Physical Sciences, Leidos, BlueFin	STO
20	Upward Falling Payloads (UFP)	Jeffrey Krolik	DARPA	STO
	CYBER: Protecting the data behind critical decisions through automated cyber-defense systems, hack-resistant software and networks, and real-time visualization of cyberspace			
21	Cyber Grand Challenge (CGC)	Michael Walker	Kudu Dynamics, Level 0x90 Labs	I2O
22	High-Assurance Cyber Military Systems (HACMS)	Raymond Richards	Rockwell Collins, Galois	I2O
23	Network Defense	Jennifer Roberts	Caerus Associates, DZYNE Technologies	I2O
24	Plan X	Frank Pound	Frog Design, Loki Labs, Gemedy	I2O
	GROUND WARFARE: Exerting control on the ground through manned and unmanned systems that bolster squad-level capabilities such as reach, situational awareness, and maneuverability			
25	Vertical Takeoff and Landing Experimental Plane (VTOL X-Plane)	Ashish Bagai	Aurora Flight Sciences, Boeing	TTO
26	Aircrew Labor In-Cockpit Automation System (ALIAS)	Daniel Patt	DARPA	TTO
27	Squad X	Christopher Orlowski	Intific, Inc.	TTO
28	Multifunction RF (MFRF)	Bruce Wallace	Northrop Grumman, Honeywell	STO
29	Mobile Hotspots	Joseph Evans	First RF Corporation, L-3	STO
30	Soldier Protection Systems (SPS)	John Main	DARPA	DSO
31	Insight	Stephen Jameson	BAE Systems, Lockheed Martin	I2O
32	Warrior Web	Christopher Orlowski	Harvard University Wyss Institute	BTO
33	Open Manufacturing: Rapid Manufacturing of Custom Orthoses	Michael Maher	University of Delaware	DSO
	COUNTERTERRORISM: Mitigating terrorists' capabilities through inventive reconnaissance, big data analysis, and technologies that advance understanding of social behavior			
34	Z-Man	John Main	DARPA	DSO
35	Agnostic Compact Demilitarization of Chemical Agents (ACDC)	Tyler McQuade	DARPA	DSO
36	Intense and Compact Neutron Sources (ICONS)	Vincent Tang	DARPA	DSO

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37	SIGMA	Vincent Tang	DARPA	DSO
38	Memex	Wade Shen	University of Southern California, Uncharted Software	I2O
39	XDATA	Wade Shen	Phronesis, Kitware	I2O
40	Robust Automatic Transcription of Speech (RATS)	David Doermann	SRI	I2O
41	Broad Operational Language Translation (BOLT)	Boyan Onyshkevych	SRI	I2O
	MICROSYSTEMS: Advancing communications, imaging, information processing, and physical security through revolutionary microelectronic, microelectromechanical, and photonic devices			
42	Supply Chain Hardware Integrity for Electronics Defense (SHIELD)	Kerry Bernstein	Northrop Grumman, RFID Global Solution	MTO
	Circuit Realization At Faster Timescales (CRAFT)	Linton Salmon	DARPA	MTO
	Vanishing Programmable Resources (VAPR)	Roy (Troy) Olsson	Palo Alto Research Center (PARC)	MTO
43	Unconventional Processing of Signals for Intelligent Data Exploitation (UPSIDE)	Kerry Bernstein	BAE Systems	MTO
44	Photonically Optimized Embedded Microprocessors (POEM)	Trung Tran	University of California Berkeley	MTO
	Power Efficiency Revolution for Embedded Computing Technologies (PERFECT)	Trung Tran	University of California Berkeley	MTO
45	Power Efficiency Revolution for Embedded Computing Technologies (PERFECT)	Trung Tran	NVIDIA	MTO
46	Pixel Network for Dynamic Visualization (PIXNET)	Jay Lewis	United Technologies Corporation	MTO
	Low Cost Thermal Imager- Manufacturing (LCTI-M)	Jay Lewis	Raytheon	MTO
	AIR: Maintaining air superiority in contested environments through unmanned aerial systems, advanced hypersonics, improved human-machine collaboration, and supervised autonomy			
47	System of Systems Integration Technology and Experimentation (SoSITE)	John Shaw	DARPA	STO
48	Target Recognition and Adaption in Contested Environments (TRACE)	John Gorman	Lockheed Martin, Deep Learning Analytics	STO
49	Communications under Extreme RF Spectrum Conditions (CommEx)	Wayne Phoel	BAE Systems	STO
	Communications in Contested Environments (C2E)	Wayne Phoel	DARPA	STO
	Dynamic Network Adaptation for Mission Optimization (DyNAMO)	Wayne Phoel	DARPA	STO
50	Collaborative Operations in Denied Environment (CODE)	Jean-Charles Ledé	Lockheed Martin, Raytheon	TTO
51	Distributed Battle Management (DBM)	Craig Lawrence	Lockheed Martin, BAE Systems, Charles River Analytics	STO
52	Hypersonic Air-Breathing Weapon Concept (HAWC)	Mark Gustafson	DARPA	TTO
53	Tactical Boost Glide (TBG)	Peter Erbland	DARPA	TTO
	SEEDS OF SURPRISE: Expanding the technological frontier by applying deep mathematics, inventing new chemistries, processes, and materials, and harnessing quantum physics			
54	Folded Non-Natural Polymers with Biological Function (Fold F(x))	Tyler McQuade	DARPA	DSO
55	Quantum-Assisted Sensing and Readout (QuASAR)	Jim Gimlett	DARPA	DSO
	Program in Ultrafast Laser Science and Engineering (PULSE)	Prem Kumar	National Institute of Standards and Technology (NIST)	DSO
56	Open Manufacturing	Michael Maher	DARPA	DSO
	Materials Development for Platforms (MDP)	Michael Maher	DARPA	DSO
57	Complex Adaptive System Composition And Design Environment (CASCADE)	John Paschkewitz	DARPA	DSO
	Enabling Quantification of Uncertainty in Physical Systems (EQUiPS)	Fariba Fahroo	Massachusetts Institute of Technology	DSO
	Simplifying Complexity in Scientific Discovery (SIMPLEX)	Reza Ghanadan	Stanford University	DSO
58	Atoms to Product (A2P)	John Main	DARPA	DSO
	Open Manufacturing: MicroFactory	Michael Maher	DARPA	DSO
	Materials with Controlled Microstructural Architecture (MCMA)	John Paschkewitz	DARPA	DSO
59	Fast Lightweight Autonomy (FLA)	Jean-Charles Ledé	DARPA	DSO

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	SPECTRUM: Assuring dominance of the electromagnetic spectrum in congested and contested environments through new materials and tools, faster chips, and smarter, more agile mobile networks			
60	Cognitive Radio Low-Energy Signal Analysis Sensor ICs (CLASIC)	Roy (Troy) Olsson	BAE Systems	MTO
	Radio Frequency Field Programmable Gate Arrays (RF-FPGA)	Roy (Troy) Olsson	BAE Systems	MTO
	Arrays at Commercial Timescales (ACT)	Roy (Troy) Olsson	Northrup Grumman	MTO
61	Intrachip/Interchip Enhanced Cooling (ICECool)	Ken Plaks	Lockheed Martin	MTO
62	Diverse Accessible Heterogeneous Integration (DAHI)	Daniel Green	Northrop Grumman, University of California San Diego	MTO
63	Terahertz Electronics	Dev Palmer	Northrop Grumman	MTO
64	Electronic-Photonic Heterogeneous Integration (E-PHI): Wideband Receiver	Josh Conway	University of California San Diego	MTO
65	Electronic-Photonic Heterogeneous Integration (E-PHI): LIDAR on a Chip	Josh Conway	Massachusetts Institute of Technology	MTO
	SPACE: Asserting robust capabilities in space through robotics, new launch systems, and satellite architectures, and groundbreaking technologies for space situational awareness			
66	Hallmark	Brad Tousley	DARPA	TTO
67	Phoenix	Jeremy Palmer	NovaWurks	TTO
68	Robotic Servicing of Geosynchronous Satellites (RSGS)	Gordon Roesler	United States Naval Research Laboratory	TTO

ABOUT DARPA OFFICES

BTO: Biological Technologies Office	Outpacing Infectious Diseases, Synthetic Biology, Neurotechnologies
DSO: Defense Sciences Office	Mathematical, Physical, Human-Machine and Social Systems
I2O: Information Innovation Office	Cybersecurity, Data Analytics, Human-Machine Symbiosis
MTO: Microsystems Technology Office	EM Spectrum, Tactical Information Extraction, Electronics with Built-In Trust
STO: Strategic Technology Office	System-of-Systems Architectures and Mission Systems (BMC2, EW, ISR, PNT)
TTO: Tactical Technology Office	Ground, Maritime, Air & Space Platforms and Cooperative Autonomy

ABOUT DEMO DAY

Demo Day provides the Defense Department (DoD) community with an up-close look at DARPA's diverse portfolio of innovative technologies and military systems at various stages of development and readiness, spanning every military domain from undersea to space and across all of DARPA's strategic focus areas, from sensors and microsystems to cyber and spectrum to biological technologies and counterterrorism.

ABOUT DARPA

For more than 50 years, the Defense Advanced Research Projects Agency has held to a singular and enduring mission: to make pivotal investments in breakthrough technologies for national security. In close collaboration with our Defense R&D partner agencies, DARPA engages top-tier public and private innovators—including academics, companies large and small, and colleagues across the DoD and government—to deliver on that mission, transforming revolutionary concepts and even seeming impossibilities into practical capabilities.

For additional information, please visit **www.darpa.mil/demoday**

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