NATIONAL SECURITY COMMISSION ON ARTIFICIAL INTELLIGENCE

Working Group on Maintaining Global Leadership in AI Research
Meeting Agenda
Wednesday, May 8, 2019, 1500-1700
Location: Google, Washington, DC and
Schmidt Futures, 155 West 23rd Street, 11th Floor, New York

Meeting Objective: Gain a baseline for current state and key trends in AI research across global academic and commercial sectors and the US defense sector to develop a foundation for subsequent investigation, and begin to consider possible approaches to maintaining US leadership.

1500 – 1505 **Welcome Remarks and Agenda Setting**
Speakers: Yll Bajraktari, NSCAI Executive Director and Chris Kirchhoff, Senior Director, Schmidt Futures

1505 – 1520 **Session One: Global Landscape of Artificial Intelligence Research**
Speaker: Dr. Ray Perrault, SRI, AI Index
Guiding Questions:
- (b) (5)
- (b) (5)
- (b) (5)

1520 – 1540 **Session Two: Developing a 20 Year Research Road Map for the United States**
Speaker: Dr. Yolanda Gil, USC, AAAI President
- (b) (5)
- (b) (5)

1540 – 1600 **Discussion**

1600 – 1630 **Session Three: US Department of Defense Investment in AI Research and Development**
Speakers: Chris Taylor, CEO; Tara Murphy Dougherty, President, National Security Practice; and Jim Mitre, Senior Vice President for Strategy and Analysis, Govini
Guiding Questions:
- (b) (5)
- (b) (5)

1630 – 1700 **Executive Time**

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Objective: Identify issues to brief to the plenary meeting on 20 May and the hard questions to take forward for assessment. Define the objectives and framework for the working group's investigation going forward.

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NATIONAL SECURITY COMMISSION ON ARTIFICIAL INTELLIGENCE

Session One: Global Landscape of Artificial Intelligence Research

Speaker: Dr. Ray Perrault, AI Index

Guiding Questions:

(b) (5)

[redacted]

Biographies

C. Ray Perrault

Senior Technical Advisor, Information and Computing Sciences Division, SRI International

Ray Perrault supports business development and special projects in SRI International's Information and Computing Sciences Division. From 1988 to 2017, he led SRI's Artificial Intelligence Center, which creates new technology in computer vision, natural language processing, machine learning, logic-based and probabilistic reasoning, advanced analytics, interactive planning, scheduling and task management, knowledge acquisition and user interaction design, with applications to bioinformatics, persistence surveillance, virtual personal assistants, and robotics. The AIC has a long history of licensing technology and spinoffs.

From 2002 to 2009, he was co-Principal Investigator of the CALO project, a large, multi-institutional, DARPA-funded project whose objective was to build an intelligent office assistant that learns through interaction with its user and the world. The CALO project management team won the DARPA Award for Excellence by a Performer in 2007. Several technologies developed on that project are being transitioned to commercial and military applications.

Before coming to SRI in 1983, Perrault was a professor in the Department of Computer Science at the University of Toronto. With his students there, he created the first applications of planning, plan recognition, and speech act theory to problems in natural language discourse. He was a founding principal of the Center for the Study of Language and Information at Stanford University.

Perrault has been President of the Association for Computational Linguistics and of the International Joint Conferences in Artificial Intelligence. He was co-editor in chief of the journal *Artificial Intelligence* from 2001 – 2010. He is a Fellow of AAAI and of AAAS and the recipient of the IJCAI Donald E. Walker Distinguished Service Award for 2011.

He holds a B.Sc. with honors in Mathematics from McGill University and a Ph. D. in computer and communication sciences from the University of Michigan

Session Two: Developing a 20 Year Research Road Map for the United States

Speaker: Dr. Yolanda Gil, AAAI President

Guiding Questions:

(b) (5) [redacted]

Biographies

Yolanda Gil

Director of Knowledge Technologies and Associate Division Director, Information Sciences Institute of the University of Southern California

Dr. Yolanda Gil is Director of Knowledge Technologies and Associate Division Director at the Information Sciences Institute of the University of Southern California, and Research Professor in Computer Science and in Spatial Sciences. She is also Associate Director of Interdisciplinary Programs in Informatics.

She received her M.S. and Ph. D. degrees in Computer Science from Carnegie Mellon University, with a focus on artificial intelligence. Dr. Gil has served in the Advisory Committee of the Computer Science and Engineering Directorate of the National Science Foundation. She initiated and chaired the W3C Provenance Group that led to a community standard in this area.

Dr. Gil is a Fellow of the Association for Computing Machinery (ACM), and Past Chair of its Special Interest Group in Artificial Intelligence. She is also Fellow of the Association for the Advancement of Artificial Intelligence (AAAI), and was elected as its 24th President in 2016.

NATIONAL SECURITY COMMISSION ON ARTIFICIAL INTELLIGENCE

Session Three: US Department of Defense Investment in AI Research and Development

Speakers: Chris Taylor, CEO, Govini
Tara Murphy Dougherty, President, National Security Practice, Govini
Jim Mitre, Senior Vice President for Strategy & Analysis, Govini

Guiding Questions:

(b) (5)
[redacted]

Biographies

Chris Taylor
Chief Executive Officer, Govini

Chris Taylor is the CEO of Govini. Prior to Govini he founded Novitas Group, a tech startup that used a unique talent-opportunity matching platform to aid veterans in their search for meaningful employment. As the CEO of Mission Essential, Chris led growth from $185 million to $750 million in three years. Chris is also an adjunct associate professor of national security studies at Georgetown University's School of Foreign Service Security Studies Program. Chris spent 14 years in the U.S. Marine Corps as an enlisted infantryman and Force Recon Marine. Chris holds an MBA from the College of William & Mary, and an MPA from the Harvard Kennedy School. Chris is a member of the Board of Trustees of the American University of Afghanistan, and a member of the Council on Foreign Relations and the Atlantic Council.

Tara Murphy Dougherty
President, National Security Practice, Govini

Tara Murphy Dougherty is President of the National Security Practice at Govini, where she leads strategy and growth in the federal government marketplace. She has held leadership positions relating to technology and defense issues across industry, government, and the non-profit sectors. Prior to joining Govini, Tara led government business accounts at Palantir Technologies and served as Chief of Staff for Global Strategic Affairs in the Office of the Secretary of Defense. Tara holds a BS from the Georgia Institute of Technology and an MA in Security Studies from Georgetown University. She is a Term Member of the Council on Foreign Relations.

Jim Mitre
Senior Vice President for Strategy & Analysis, Govini

Jim Mitre is the Senior Vice President for Strategy & Analysis. He oversees a team of data scientists and analysts focused on solving national security challenges. Prior to joining Govini, Jim was the Principal Director for Strategy & Force Development in the Office of the Secretary of Defense where he worked on defense strategy, strategic analysis, and force development. He also served as the Executive Director of the *2018 National Defense Strategy*, the Department's preeminent strategic guidance document. While with the Defense Department, Jim served in Kabul, Afghanistan and Nairobi, Kenya. He previously co-founded a private counterterrorism research organization, the SITE Institute. Jim holds a J.D. from the University of Virginia School of Law and a B.B.A. from the University of Michigan Business School. He is a Term Member of the Council on Foreign Relations.

Working Group 3: Public Private Partnerships for Prosperity and Security
Participant Biographies
May 7, 2019

Moderator: Brendan McCord, Tulco Labs

Brendan McCord is the President of Tulco Labs and a leader in public and private sector AI application.

Previously, Mr. McCord served as Head of Machine Learning at Defense Innovation Unit Experimental (DIUx), where he led multiple artificial intelligence prototype projects in the Department of Defense, oversaw an elite team of engineers in Silicon Valley, and supported the Algorithmic Warfare Cross Functional Team (AWCFT), known as Project Maven.

Prior to DIUx, Mr. McCord led a team of deep learning research scientists and software engineers at a startup backed by investors Bill Gates, In-Q-Tel, and leading venture capital firms. He was advisor to the successful spinout and fundraising of DARPA-backed deep learning research from Draper Laboratory and was an early stage technology venture investor in machine learning and other areas at Lux Capital.

Mr. McCord served in the US Navy as a fast attack submarine officer and completed two Chief of Naval Operations Priority One deployments to the European Command Theater, spending over 600 days underwater.

Mr. McCord holds an MBA degree from Harvard Business School and an SB degree from the Massachusetts Institute of Technology.

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Morning Session Speakers:

Trae Stephens, Anduril

Trae Stephens is a Partner of Founders Fund. Mr. Stephens joined the firm in 2014 and focuses on startups operating in the government space at Founders Fund. He was the Principal at the firm. Mr. Stephens was an early employee at Palantir Technologies, where he led teams focused on growth in the intelligence/defense space as well as international expansion, helped large organizations solve their hardest data analysis problems. He was also an integral part of the product team, leading the design and strategy for new product offerings. While at Palantir, also served as an adjunct faculty member at Georgetown University. Prior to Palantir, Mr. Stephens served as a computational linguist building enterprise solutions to Arabic/Persian name matching and data enrichment within the United States Intelligence community. He began his career working in the office of then Congressman Rob Portman and in the Political Affairs Office at the Embassy of Afghanistan immediately following the installation of Hamid Karzai's transitional government. He serves as a Director of Flexport and Chairman of Anduril Industries. Mr. Stephens graduated from the School of Foreign Service at Georgetown University.

(b) (6) **, Centre for Effective Altruism**

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Dr. Stuart Russell, Berkeley

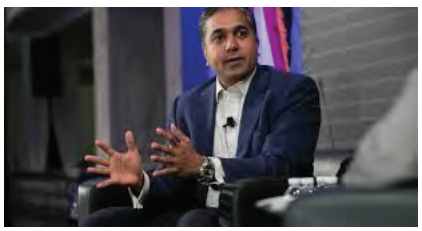
Stuart Russell received his B.A. with first-class honours in physics from Oxford University in 1982 and his Ph.D. in computer science from Stanford in 1986. He then joined the faculty of the University of California at Berkeley, where he is Professor (and formerly Chair) of Electrical Engineering and Computer Sciences and holder of the Smith-Zadeh Chair in Engineering. He is also an Adjunct Professor of Neurological Surgery at UC San Francisco and Vice-Chair of the World Economic Forum's Council on AI and Robotics.

Russell is a recipient of the Presidential Young Investigator Award of the National Science Foundation, the IJCAI Computers and Thought Award, the World Technology Award (Policy category), the Mitchell Prize of the American Statistical Association and the International Society for Bayesian Analysis, the ACM Karlstrom Outstanding Educator Award, and the AAAI/EAAI Outstanding Educator Award. In 1998, he gave the Forsythe Memorial Lectures at Stanford University and from 2012 to 2014 he held the Chaire Blaise Pascal in Paris. He is a Fellow of the American Association for Artificial Intelligence, the Association for Computing Machinery, and the American Association for the Advancement of Science.

His research covers a wide range of topics in artificial intelligence including machine learning, probabilistic reasoning, knowledge representation, planning, real-time decision making, multitarget tracking, computer vision, computational physiology, global seismic monitoring, and philosophical foundations. His books include "The Use of Knowledge in Analogy and Induction", "Do the Right Thing: Studies in Limited Rationality" (with Eric Wefald), and "Artificial Intelligence: A Modern Approach" (with Peter Norvig). His current concerns include the threat of autonomous weapons and the long-term future of artificial intelligence and its relation to humanity.

Lunch Speaker:

Raj Shah, ARCEO.AI



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Raj Shah is the co-founder of ARCEO.AI and former Managing Partner, Defense Innovation Unit Experimental (DIUx)

Prior to joining DIUx, Raj was the senior director of strategy at Palo Alto Networks, which acquired Morta Security, where he was CEO and Co-Founder of Morta Security. Prior to this, he was a special assistant in the Office of the Secretary of Defense and began his business career as aconsultant with McKinsey & Co. Raj served as an F-16 pilot in the United States Air Force where he completed multiple combat tours. He holds an AB from Princeton University and an MBA from The Wharton School. He is a member of the Council of Foreign Relations and an affiliate at Stanford University's Center for International Security and Cooperation.

Afternoon Session Speakers:

Ed Abbo, C3 IoT

Ed Abbo is President and Chief Technology Officer at C3 IoT, which provides an enterprise data analytics platform and application development environment for the rapid design and deployment of large-scale IoT applications that exploit the promise of big data, elastic cloud computing, analytics, machine learning, and mobile computing.

Mr. Abbo leads C3 IoT's strategy and execution, including technology direction, innovation, and customer success.

Prior to C3 IoT, Mr. Abbo was Senior Vice President at Oracle Corporation, where he was responsible for its application products. Prior to joining Oracle in 2006, he was Senior Vice President of Engineering and Chief Technology Officer for Siebel Systems. Mr. Abbo earned a Master of Science in Mechanical Engineering from the Massachusetts Institute of Technology and a Bachelor of Science in Mechanical & Aerospace Engineering from Princeton University.

Steve Bowsher, In-Q-Tel

Steve Bowsher serves as Managing General Partner and Executive Vice President at In-Q-Tel, leading the company's technology investment strategy. Bowsher joined IQT from InterWest Partners, where he served as General Partner. He specialized in the enterprise software and Internet sectors, and led and managed 13 investments in those areas.
Previously, Bowsher worked at E*TRADE, managing its value-added products and services. During his tenure there, he helped launch Destination E*TRADE, the company's award-winning website. Bowsher was also an early stage employee at two startup companies, where he was responsible for revenue and distribution targets.

Bowsher is a frequent speaker at industry-leading conferences such as the Wharton Technology Conference, IBF's Early Stage Investing Conference, Internet World Annual Conference, and Dow Jones Private Equity Summit, and has been quoted as a subject matter expert in national publications including the Wall Street Journal, Newsweek, and Fortune magazine.

Bowsher graduated magna cum laude from Harvard and received his MBA from Stanford.

James Cross, Franklin-Templeton

James Cross is a vice president, research analyst and portfolio manager with Franklin Equity Group. He currently covers the aerospace and defense industries while leading the Industrials sector team. He also is a portfolio manager on the Franklin Technology Fund. Mr. Cross also coordinates the Franklin Equity Group's venture investment activities where he is a director on the Franklin Blackhorse and Talos venture funds. Before assuming industry coverage in 2000, Mr. Cross focused on quantitative research, risk analysis and performance attribution. Prior to joining Franklin Templeton in 1998, he worked as an economic planner for the State of Texas. Mr. Cross earned a B.B.A. with a major in economics from Baylor University. He is a Chartered Financial Analyst (CFA) charterholder.

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Neil Jacobstein, Singularity U

Neil Jacobstein chairs the Artificial Intelligence and Robotics Track at Singularity University on the NASA Research Park campus in Mountain View, California. Neil is a former President of Singularity University. Jacobstein is a Distinguished Visiting Scholar in the Stanford University Media X Program, where his research focuses on augmented decision systems. He Chaired AAAI's 17th Innovative Applications of Artificial Intelligence Conference, and continues to review technical papers for IAAI. In 2016, he became a founding member of the editorial board of AAAS Science Robotics.

Neil has served as a technical consultant on AI research and development projects for DARPA, NSF, NASA, NIH, EPA, DOE, the U.S. Army and Air Force, GM, Ford, Boeing, Applied Materials, NIST, and other agencies. He was CEO of Teknowledge Corporation, a pioneering AI company, where he worked on AI applications systems for industry and government. He worked as a graduate research intern in Alan Kay's Learning Research Group at Xerox's Palo Alto Research Center (PARC), and was a consultant in PARC's Software Concepts Group.

Jacobstein is a Henry Crown Fellow at the Aspen Institute. He has moderated Aspen Institute Socrates Programs on the technical and ethical implications of advanced technologies, and he coaches Socrates moderators. Neil is deeply interdisciplinary, and has a keen sense of how the arts and sciences can integrate. Since 1992, he has served as Chairman of the Institute for Molecular Manufacturing, a 501c3 nanotechnology R&D organization.

Jacobstein contributed to the 2005 National Academy of Sciences workshop on the feasibility of molecular manufacturing, and the 2007 Foresight Roadmap for Productive Nanosystems. He is the primary author of the Foresight Guidelines for the responsible development of nanotechnology. Neil is in demand as an engaging speaker who can make complex topics clear to diverse audiences. He has given invited talks worldwide on the technical, business, and ethical implications of exponential technologies such as AI, robotics, and atomically precise manufacturing. He is a member of AAAS, AAAI, IEEE, and ACM. Neil has served in a variety of executive and technical advisory roles for industry, nonprofit, and government organizations.

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Anthony Robbins, NVIDIA

Anthony Robbins is Vice President for the North America Public Sector at NVIDIA. In this role, he works with the US Federal Government, ushering in the era of Artificial Intelligence. Robbins has more than 30 years of industry experience providing IT solutions for our nation's warfighters and citizens, which includes delivering more than $20B in revenue.

Prior to NVIDIA, he was Vice President, Global Defense, AT&T Business Solutions – Global Public Sector where he was responsible for delivering integrated solutions that drive innovation, modernize networks, provide advanced cyber capabilities and mobilize the warfighter. Before joining AT&T, Robbins was Vice President of Federal at Brocade where he led sales, engineering and the partner ecosystem that support defense, civilian and intelligence agencies as well as systems integrators. Previously, Robbins held numerous leadership positions including Senior Vice President of North America Public Sector at Oracle; Vice President, Federal at Sun Microsystems, Inc.; and Senior Vice President of Worldwide Sales and President of SGI Federal at Silicon Graphics, Inc. (SGI).

Robbins was recently named by WashExec as one of the Top 25 Innovative Leaders to watch. AFCEA International presented him with the 2018 Leadership Award. Executive Mosaic recognized Robbins for his work in Artificial Intelligence & Network Modernization vision by inducting him into the 2019 and 2016 Wash 100, their annual selection of influential leaders. In 2018 and 2015, he was selected as a FedScoop 50 Industry Leadership Award Winner. Robbins was also recognized as a Federal 100 Award Winner in 2013. Currently, he sits on both the AFCEA-DC and USO Metropolitan Washington-Baltimore Board of Directors. He's the Executive Vice President of the AFCEA-DC Chapter and has been the Chairperson of their annual signature event – the Winter Gala – which has generated more than $500,000 to local communities for STEM under his leadership.

Robbins has a B.S. from Jacksonville State University in Alabama. In 1998, he was awarded the JSU Alumnus of the Year.

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Tom Siebel, C3 IOT

Tom Siebel is the Chairman and Chief Executive Officer of C3.ai. He was the Chairman and Chief Executive Officer of Siebel Systems, which merged with Oracle Corporation in January 2006. Founded in 1993, Siebel Systems became a leader in application software with more than 8,000 employees in 32 countries, over 4,500 corporate customers, and annual revenue in excess of $2 billion. Mr. Siebel is also Chairman of the Siebel Energy Institute, a global consortium for innovative and collaborative energy research for the public domain.

Mr. Siebel serves on the boards of advisors for the University of Illinois College of Engineering and the University of California at Berkeley College of Engineering.

Mr. Siebel is a graduate of the University of Illinois at Urbana-Champaign, where he received a B.A. in history, an M.B.A, and an M.S. in computer science.

WORKING GROUP 1:

Maintaining Global Leadership In AI Research

WORKING GROUP 1 MEETING

Friday, June 28, 1430-1830
Pentagon
Conference Room 3D947

PURPOSE

- Gain an understanding of current levels of US government investment in AI/ML research looking at policies, processes, funding levels and research priorities
- Discuss open source analysis of US vs China in AI research
- Consider current entities and possible new formulations to facilitate AI research at the federal level

DESIRED OUTCOMES

- Identify issues to move to plenary meeting in July and hard questions for further investigation
- Begin discussion around federal research funding options and approaches

ATTENDEES

COMMISSIONERS

- Andrew Moore, Google Cloud AI - Chair of Working Group
- Eric Schmidt, Schmidt Futures
- Eric Horvitz , Microsoft Research Labs (remote)

STAFF

- Yll Bajraktari, NSCAI Staff Members, (b)(6)

AGENDA

1430-1440	**WELCOME REMARKS & AGENDA SETTING**
	Speakers: **Yll Bajraktari**, NSCAI Executive Director; NSCAI Staff Members, (b)(6) [redacted]
1440-1510	**SESSION ONE: FEDERAL INVESTMENT AND PRIORITIES IN AI R&D**
	Speaker: **Dr. Lynne Parker**, Assistant Director for AI, Office of Science and Technology Policy
1510-1600	**SESSION TWO: NATIONAL SECURITY INVESTMENT IN AI RESEARCH**
	Speakers: (b) (6) [redacted] Office of Cost Assessment and Program Evaluation, Office of the Secretary of Defense **Dr. Matt Daniels**, Technical Director for Machine Learning and Artificial Intelligence, Office of the Undersecretary of Defense for Research & Engineering (b) (6) [redacted] Science & Technology, Office of the Director of National Intelligence **Dr. Dimitri Kusnezov**, Deputy Under Secretary for Artificial Intelligence and Technology, Department of Energy
1600-1630	**SESSION THREE: NSF INVESTMENT IN AI**
	Speaker: **Dr. James Karuse**, Assistant Director, Computer and Information Science and Engineering, National Science Foundation
1630-1645	**BREAK**
1645-1830	**EXECUTIVE SESSION**

Topics for discussion:

1. Baseline understanding of global AI research environment
2. Priority research areas and tech readiness levels
3. Options for federal funding of AI research
4. Other issues to bring to plenary on 11 July
5. Engagement planning and September working group meeting

Working Group on Public-Private Partnerships for Prosperity and Security

Summary of Conclusions
Working Group Meeting
Tuesday, May 7, 2019, 0900-1630
Santa Clara, CA

Working Group Objective: Assess the relationship between the National Security Innovation Base (NSIB) and the Department of Defense (DoD). Identify options for improving cooperation between NSIB and DoD to increase the well-being of our citizens, strengthen the nation's entrepreneurial ecosystems, and protect the nation's security.

Working Group Approach: Through a comprehensive analysis of the U.S. National Security Innovation Base's AI efforts, develop recommendations to:

- Identify a focal point for AI cooperation between DoD, private sector, NGOs, and academia
- Design incentives and regulatory regimes to promote bold, purpose-driven, and democratic applications of AI to national security
- Develop an end-to-end vision for DoD's AI transformation and enable companies to scale AI solutions across the Department
- Strengthen entrepreneurial ecosystems nationwide for AI development and application

Meeting Objective:
Assess DoD's relationship with National Security Innovation Base (NSIB) in Silicon Valley by asking the following questions:

- How should DoD work on AI with the private sector and NGOs to improve citizens' well-being?
- What are the biggest obstacles to cooperating with DoD on AI? How can they be overcome?
- How can DoD strengthen the nation's entrepreneurial ecosystems?
- Why do tech companies choose to work with or avoid DoD?

Commissioners in attendance:

- Mignon Clyburn
- Steven Chien
- (b) (6) (rep for Andy Jassy)

Commissioners participated in the following sessions:

I. Briefing on DoD Relations with Silicon Valley by Brendan McCord

- Key developments in AI over the last three years
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II. Panel Discussion: How should DoD improve cooperation on AI?

Participants: Stuart Russell (Berkeley), (b) (6) (Centre for Effective Altruism), and Trae Stephens (Anduril)

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III. Working Lunch: Raj Shah

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- (b) (5)
- (b) (5)

IV. Panel Discussion: Expanding DoD cooperation with Silicon Valley on AI

Participants: Ed Abbo (C3 IoT), Steve Bowsher (In-Q-Tel), James Cross (Franklin Templeton), Neil Jacobstein (Singularity U), Anthony Robbins (NVIDIA), and Tom Siebel (C3 IoT)

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- (b) (5) .

Commissioners agreed:

- To continue WG 3's efforts as a special project on public-private partnerships for prosperity and security. (ACTION: Staff).
- (b) (5) (ACTION: Staff)

Commissioners noted several additional themes to incorporate into the Commission's work:

- (b) (5) .
- (b) (5) .
- (b) (5) .
- (b) (5) .

The Commission Staff will:

- Finalize a framework outlining the special project's approach for Commissioners to present at the Plenary Session on May 20. (Action: NSCAI Staff Member, (b)(6) by May 14, 2019)
- Identify future topics and briefers for the next special project session in June. (Action: NSCAI Staff Member, (b)(6 by May 24th, 2019)

Quotes:

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NATIONAL SECURITY COMMISSION ON ARTIFICIAL INTELLIGENCE

Working Group on Ensuring International Cooperation and Competitiveness in AI

Summary of Conclusions
Working Group Meeting
Tuesday, May 7, 2019, 0830-1600

Working Group Objective: Identify non-military steps the United States must take to ensure it does not cede a competitive advantage to adversaries in AI, and identify common interests and opportunities for U.S.-led international cooperation.

Working Group Approach: Analyze the threat international actors pose to U.S. competitiveness, identify steps needed to ensure a level playing field for the United States and its allies, and diagnose areas that could benefit from global U.S. leadership on of AI cooperation. This includes an analysis of:

1. Entanglement vs competition with adversaries
2. Engagement with allies and partners
3. AI norms, benchmarks, and standards
4. Immigration and talent policy
5. Regulatory impact and tech transfer

Meeting Objective: Understand how China is achieving its AI objectives through diplomacy, economic statecraft, and espionage; how China seeks to utilize AI to erode U.S. strategic advantages; and ways the U.S. government can adapt to maintain competitiveness.

Commissioners in attendance:

- Jason Matheny, Chair
- Chris Darby
- Gilman Louie

Commissioners received briefs on:

- (b) (5) - National Security Council
- (b) (5) – Intelligence Community
- (b) (5) – FBI
- (b) (5) – DoD Office of Commercial and Economic Analysis
- (b) (5) – CNAS
- (b) (5) – OSD R&E, NIST, CNAS

Key Themes from the Briefings to Incorporate into the Commission's Work:

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Commissioners agreed:

- To focus the June 20 working group meeting on (b) (5)
- To focus the September 16 working group meeting on (b) (5)
- (b) (5)
- (b) (5)
- To continue to hold full-day working group meetings moving forward.

The Commission Staff will:

- Prepare a framework outlining the working group's approach for Commissioners to present at the Plenary Session on May 20th. (**Action:** NSCAI Staff Member, (b)(6) **by May 10**)
- Identify future briefers and organize the next working group meeting on June 20 focused (b) (5) . (**Action:** NSCAI Staff Member, (b)(6) **by May 31**)
- Establish a library of current U.S. government policy documents on AI, to include classified documents. (**Action: Commission Staff by May 31**)

WORKING GROUP 3:

Public-Private Partnerships for Prosperity and Security

WORKING GROUP 3 MEETING

Tuesday, May 7, 2019, 0900-1700
Embassy Suites by Hilton Santa Clara Silicon Valley
Ambassador Room (2nd Floor)
2885 Lakeside Drive, Santa Clara, CA, 95054

PURPOSE

- Assess the relationship between DoD and Silicon Valley.
- Identify options for improving cooperation between DoD and Silicon Valley to increase citizens' well-being, strengthen the nation's entrepreneurial ecosystems, and protect national security.

ATTENDEES

COMMISSIONERS

- Mignon Clyburn, Working Group Chair
- Steve Chien
- (b) (6) (on behalf of Andy Jassy)

MODERATOR

- Brendan McCord

STAFF

- Michael Gable (b) (6)

OUTCOMES

- Identify issues to raise at the Plenary in May.
- Identify follow-on issues to focus on through a special project on public-private partnerships.

AGENDA

0900-0915	**WELCOME REMARKS**
	Speakers: Michael Gable, NSCAI Chief of Staff, and (b) (6), NSCAI Director for Research and Analysis
0915-1000	**BACKGROUND BRIEFING ON DOD RELATIONS WITH SILICON VALLEY**
	Speaker: Brendan McCord, Moderator and President of Tulco Labs
1000-1030	**EXECUTIVE TIME**
1030-1200	**SESSION ONE: HOW SHOULD DOD IMPROVE COOPERATION ON AI?**
	Participants: Stuart Russell (Berkeley), (b) (6) (Centre for Effective Altruism), Trae Stephens (Anduril) Questions: • How should DoD work on AI with the private sector and NGOs to improve citizens' well-being? • What are the biggest obstacles to cooperating with DoD on AI? How can they be overcome?
1200-1315	**WORKING LUNCH**
	Speaker: Raj Shah, Co-Founder of ARCEO.AI and former Managing Partner of the Defense Innovation Unit (DIU)
1315-1330	**EXECUTIVE TIME**
1330-1500	**SESSION TWO: EXPANDING DOD COOPERATION WITH SILICON VALLEY ON AI**
	Participants: Ed Abbo (C3 IoT), Steve Bowsher (In-Q-Tel), James Cross (Franklin Templeton), Neil Jacobstein (Singularity U), Anthony Robbins (NVIDIA), Tom Siebel (C3 IoT) Questions: • How can DoD strengthen the nation's entrepreneurial ecosystems? • Why do tech companies choose to work with or avoid DoD?
1500-1700	**EXECUTIVE TIME – NEXT STEPS**

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NATIONAL SECURITY COMMISSION ON ARTIFICIAL INTELLIGENCE

Working Group on Preparing Our Citizens for an AI Future

Summary of Conclusions

NSCAI Offices In-Person Meeting #1 | May 17, 2019 | 0830 - 1700

Working Group Objective: Determine the current status of the AI workforce and recommend concrete steps the United States should take to build and maintain an AI workforce that can address national security and defense needs of the United States.

Working Group Approach: Through a comprehensive analysis and assessment of the U.S. national security AI workforce, develop recommendations to maintain U.S. leadership through AI in the national security apparatus, to include:

- Assessment of the current AI workforce
- Defining the role of the AI workforce
- Developing and recruiting an AI workforce
- AI talent management
- Mechanisms for implementation

Meeting Objective:

Discuss the prominence of artificial intelligence (AI) in military education, training, promotion, and career paths, identify what needs to change, and make recommendations.

Commissioners in Attendance:

- Dr. Jose-Marie Griffiths
- Dr. Bill Mark
- Mr. Bob Work
- Ms. Mignon Clyburn

Commissioners Discussed:

- The overall landscape of AI education and talent management in the military
- The state of AI education at the U.S. military academies
- The state of AI education at U.S. senior service colleges
- AI prominence in defense talent management, particularly regarding the Joint Artificial Intelligence Center and Air Force Intelligence, Surveillance, and Reconnaissance force
- The level of AI and digital education within the DOD, and what a digital workforce requires
- The landscape of defense talent management, particularly regarding technically skilled military personnel

The Commissioners Agreed:

- (b) (5) [redacted]
- (b) (5) [redacted]
- (b) (5) [redacted]
- (b) (5) [redacted]
- The next working group's objective will be to assess and identify talent management and education policies within the broad national security community. The questions will include:
  - (b) (5) [redacted]
  - (b) (5) [redacted]
  - (b) (5) [redacted]
  - (b) (5) [redacted]

The Commissioners Next Steps include:

- Assess (b) (5) [redacted]
- Assess (b) (5) [redacted]
- Identify (b) (5) [redacted]

The Commission Staff will:

- Create a read ahead for the June working group meeting to frame the discussion.
- Contact Professor Rob Grossman at the University of Chicago for a briefing on his diamond strategy. Staff will provide a read out of the briefing with the recommendation as to whether or not his briefing should be offered to the Commissioners.
- Follow up with Dean Wingfield of National Defense University to obtain copies of the reading materials assigned to their students. The 11 short books are produced by Oxford and aim to provide students with a baseline understanding of the issue.
- Reach out to AF Colonel Sovada to obtain the report she managed to clear in 60 days.
- Invite and confirm government and non-government entities to provide briefings on the agreed topics for our next working group meeting on June 7th.
- Follow up and engage with subject matter experts to continue staff education and identify potential future speakers.

NATIONAL SECURITY COMMISSION ON ARTIFICIAL INTELLIGENCE

Session 1: The Landscape of Education in the Military

Suggested Questions

- (b) (5) [redacted]
- (b) (5) [redacted]

Biographies

Lisa Bembenick

MITRE Corporation, Director of Strategy, Center for National Security

Lisa is the Director of Strategy at the Center for National Security at the MITRE Corporation. She previously served at IBM as the global director, a management consultant, and project executive. Lisa received her M.S. in health care policy and management from Carnegie Mellon University and B.S. in marketing from Penn State University.

Session 2: The State of AI Education at the U.S. Military Academies

Suggested Questions

- (b) (5) [redacted]
- (b) (5) [redacted]
- (b) (5) [redacted]
- (b) (5) [redacted]

Biographies

Colonel David Caswell

Chair of the Engineering Department at the Air Force Academy

COL David J. Caswell is the Head of the Department of Computer and Cyber Sciences at the United States Air Force Academy in Colorado Springs, Colorado. His department is home to the Academy Center for Cyberspace Research which conducts long-term research in four research focus areas: Autonomy and Artificial Intelligence, Immersive Environments, Cyber System Security, and Business Process Automation.

Previously, COL Caswell served as an Assistant Professor, where he helped design the Academy's cyber focused degree and directed several cyber operations focused courses. During this time he designed and led planning for the Air Force Cyber Innovation Center which applies design thinking principles to solve Air Force cyber requirements.

COL Caswell attended Stanford University to earn a doctorate in Management Science and Engineering for Decision and Risk Analysis. His dissertation used artificial intelligence techniques to analyze national strategies for combating nuclear weapons proliferation.

Colonel Christa Chewar
Deputy Department Head of Electrical Engineering and Computer Science at the United States Military Academy

COL Chewar is a Signal Corps officer teaching in the Computer Science Program. She has served in tactical and strategic signal units, a basic training company, and on a DoD-level software acquisition program. Her military assignments include platoon leader, logistics officer, plans officer, and company commander in Germany, as well as in Iraq during Operation Enduring Freedom. COL Chewar is a graduate of the Command and General Staff College. Her academic interests include human-computer

interaction, object oriented programming, and software testing.

Session 3: Educating Our Military Leaders on AI

Suggested Questions

- (b) (5) [redacted]
- (b) (5) [redacted]
- (b) (5) [redacted]
- (b) (5) [redacted]

Biographies

Thomas WIngfield

Dean of the National Defense University

Thomas C. Wingfield is the acting Chancellor, Dean of Faculty and Academic Programs, and former Professor of Cyber Law at the College of Information and Cyberspace (CIC) at National Defense University (NDU) in Washington, DC. He holds a J.D. and an LL.M. from Georgetown University Law Center. He has taught at the UAE's National Defense College, the Marshall Center in Garmisch-Partenkirchen, Germany, and the US Army Command and General Staff College. A former Chair of the American Bar Association's Committee on International Criminal Law, he is the author of The Law of Information Conflict: National Security Law in Cyberspace and a member of the drafting committee for the Tallinn Manual on the International Law applicable to Cyber Warfare.

Dr. Richard Lacquement

Dean of the Army War College's School of Strategic Landpower

Dr. Lacquement is the leader of the U.S. Army's premier strategic leadership education program, which delivers a joint professional military education and master's degree-granting program to more than 380 resident students and 750 distance education students annually (to include more than 70 international fellows). He supervises an interdisciplinary program combining political science (especially international relations, security studies, and American politics), leadership, management, sociology, psychology, resource analysis, history, military operational art, and military professionalism. He supervises the effective sustainment of program accreditation by Army, Joint Staff, and civilian agencies. In addition to academic leadership and administration, Dr. Lacquement maintains an active teaching role.

Dr. Lacquement received his PhD from the Woodrow Wilson School of Public and International Affairs, graduate degress from the Army and Naval war colleges, an M.A. and M.P.A. from the Woodrow Wilson School of Public and International Affairs, and a M.S. in International Relations from the United States Military Academy.

Dr. Thomas Creely
Director of the Naval War College's Ethics & Emerging Military Technology Program

Dr. Creely, Associate Professor of Ethics, is the Director of Ethics & Emerging Military Technology Graduate Program. He serves on the NATO Science and Technology Organization Technical Team. At Brown University;s Executive Master of Cybersecurity, he is the lead for leadership and ethics. He also serves on the Conference Board Global Business Conduct Council, Association for Practical & Professional Ethics Business Ethics Chair, and Robert S. Hartmann Institute Board.

Session 4: AI Prominence in Defense Talent Management

Suggested Questions

Air Force

- (b) (5) [redacted]
- (b) (5) [redacted]
- (b) (5) [redacted]

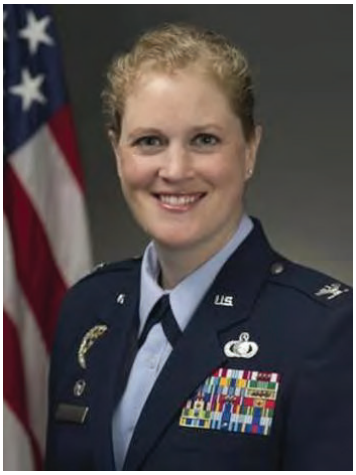
JAIC

- (b) (5) [redacted]
- (b) (5) [redacted]
- (b) (5) [redacted]

Biographies

Colonel Jennifer Sovada

Head of Talent Management for Air Force ISR



Colonel Sovada is responsible for the development and retention of 31,000 plus personnel in the Air Force ISR Enterprise. She has taken a prominent role in transforming Air Force ISR talent management into a digital age framework. Previously, she served as the Deputy Chief of Staff for ISR, where she conducted outreach to the private sector. Colonel Sovada has commanded the Air Force Technical Applications Center and the 22nd Intelligence Squadron.

Colonel Sovada received graduate degrees from the Army War College, Naval War College, and Joint Military Intelligence College, an M.A. from the University of Northern Colorado, and a B.S. from the United States Air Force Academy.

Colonel Jeff Kojac
Navy and Marine Corps Liaison for the Joint Artificial Intelligence Center

Colonel Kojac is the chief conduit for advocacy, collaboration, and alignment of artificial intelligence initiative vision, resources, and manpower between the JAIC and the Department of the Navy, the Navy, and the Marine Corps. COL Kojac has also served as the HQMC DC Information Warfare chief of staff, on the National Defense Strategy writing team, in OSD Cost Assessment and Program Evaluation, and in a variety of tactical roles.

COL Kojac received an M.A. from the University of Pennsylvania, a B.A. from St. John's College, and numerous certificates from civilian and military institutions. He was a member of the Council on Foreign Relations for 13 years.

Session 5: The Level of AI Education and its Effects

Suggested Questions

- (b) (5) [redacted]
- (b) (5) [redacted]
- (b) (5) [redacted]
- (b) (5) [redacted]

Biography
Chris Lynch
Former Director of the Defense Digital Service

Chris served as the director of the Defense Digital Service, a DOD program that brought Silicon Valley talent into the Department of Defense and attempted to help bridge the cultural gap between public and private sectors. Prior to serving in the Department of Defense, Chris worked in the digital startup world, was the director of development at Dataloom, and a development manager at Microsoft.

Session 6: The Concept for a Digitally Ready Force

Suggested Questions

- (b) (5) [redacted]
- (b) (5) [redacted]
- (b) (5) [redacted]

Biography

Josh Marcuse

Executive Director of the Defense Innovation Board

Josh serves as the executive director of the Defense Innovation Board. Previously, he served as senior adviser for policy innovation in the Office of the Under Secretary of Defense for Policy, as an adjunct fellow at the Center for Strategic and International Studies, associate at Booz Allen Hamilton, and a research associate at the Council on Foreign Relations. He is chairman of Young Professionals in Foreign Policy, Co-chair of

the Federal Innovation Council, and on the Board of Directors for the Defense Entrepreneurs Forum. Josh received a B.A. in government from Dartmouth College.

NATIONAL SECURITY COMMISSION ON ARTIFICIAL INTELLIGENCE

COMMISSION MANDATE

Consider the methods and means necessary to advance the development of artificial intelligence, machine learning, and associated technologies by the United States to comprehensively address the **national security and defense** needs of the US.

WORKING GROUP OBJECTIVE

Determine the current status of the AI workforce and recommend concrete steps the United States should take to build and maintain an AI workforce that can address **national security and defense** needs of the United States.

APPROACH

Through a comprehensive analysis and assessment of the U.S. national security AI workforce, develop recommendations to maintain U.S. leadership through AI in the national security apparatus, to include:

- Assessment of the Current AI Workforce
- Defining the Role of the AI Workforce
- Developing and Recruiting an AI Workforce
- AI Talent Management
- Mechanisms for Implementation

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PRE-DECISIONAL // DRAFT WORKING PAPER

WORKING GROUP 3: Notional Timeline

Preparing Our National Security Workforce For An AI Future

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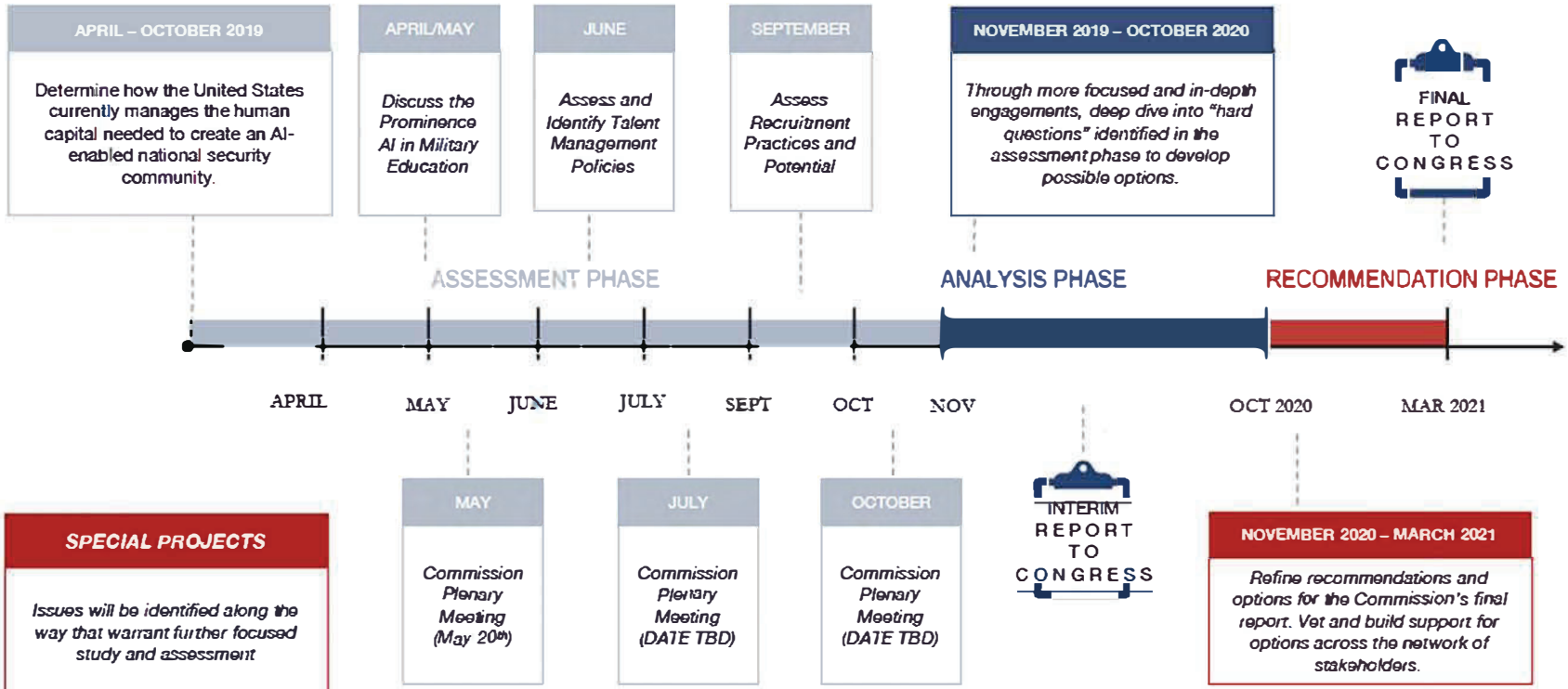
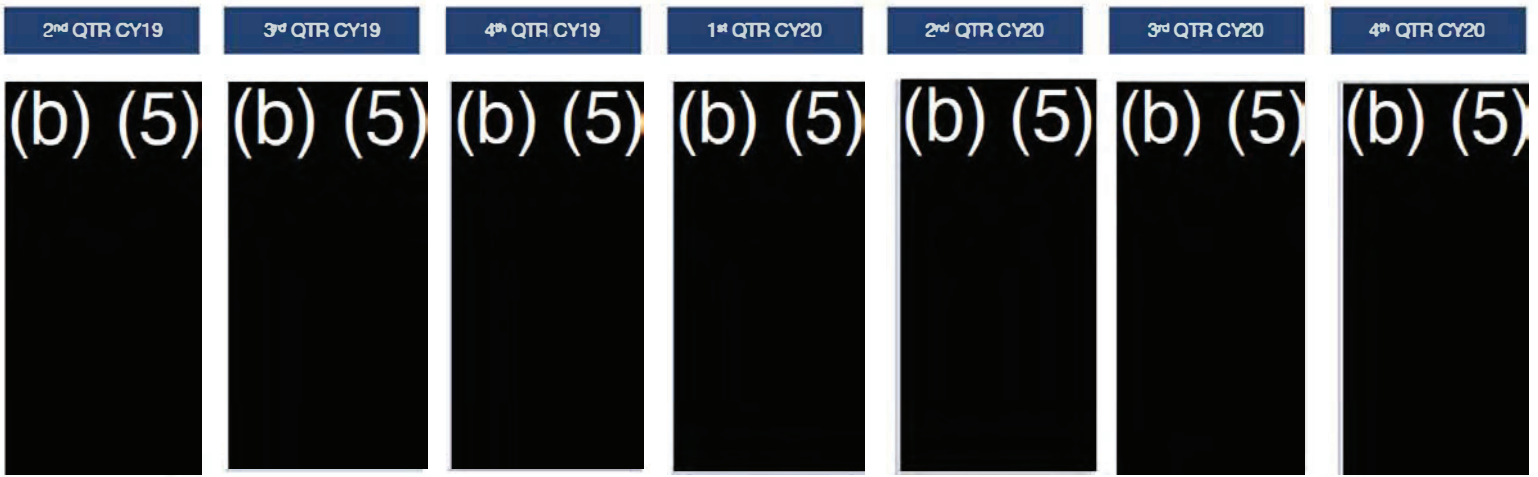


PRE-DECISIONAL // DRAFT WORKING PAPER

CAMPAIGN PLAN



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NATIONAL SECURITY COMMISSION ON ARTIFICIAL INTELLIGENCE
ARLINGTON, VA 22202

Working Group on Preparing Our Citizens For An AI Future

Date: May 17, 2019, 0830-1730
Location: NSCAI Offices, Conference Room

Meeting Objective: Discuss the prominence of artificial intelligence (AI) in military education, training, promotion, and career paths, identify what needs to change, and make recommendations.

0830 – 0900 Light Breakfast and Coffee
Please arrive by 0845 at the latest to allow time to check in at the front desk and be ready to start by 0900.

0900 – 0915 Welcome Remarks
Google Hangout: (b) (6)
Phone Call: (b) (6) PIN: (b) (6)
Speakers: Yll Bajraktari, NSCAI Executive Director, and NSCAI National Security Working Group Lead Experts

0915 – 1015 Session One: [Unclassified] The Landscape of AI Education in the Military
Google Hangout: (b) (6)
Phone Call: (b) (6) PIN: (b) (6)
Speakers: MITRE Corporation, Dr. Mikel Rodriguez & Lisa Bembenick;
Unconfirmed: (b) (5)

1015 – 1030 Break

1030 – 1115 Session Two: [Unclassified] The State of AI Education at the U.S. Military Academies
Google Hangout: (b) (6)
Phone Call: (b) (6) PIN: (b) (6)
Speakers:
U.S. Air Force Academy, Chair, Engineering Department, Colonel David Caswell;
U.S. Military Academy at West Point, Department Head of Electrical Engineering and Computer Science, Colonel James Raftery
Unconfirmed: (b) (5)

1115 - 1215 **Session Three: [Unclassified] Educating Our Military Leaders on AI**
Google Hangout: (b) (6)
Phone Call: (b) (6) PIN: (b) (6)
Speakers:
National Defense University, Dean, Thomas Wingfield;
U.S. Army War College, Dean of the School of Strategic Landpower, Dr. Richard Lacquement;
U.S. Naval War College, Director of Ethics & Emerging Military Technology Program, Dr. Thomas Creely

1215 - 1230 **Break**

1230 – 1330 **Working Lunch: Session Four: [Unclassified] AI Prominence in Defense Talent Management**
Google Hangout: (b) (6)
Phone Call: (b) (6) PIN: (b) (6)
Speakers: USAF, Chief of ISR Talent Management, Deputy Chief of Staff for Intelligence, Surveillance, and Reconnaissance HAF/A2F, Colonel Jennifer Sovada; Joint Artificial Intelligence Center, Colonel Jeff Kojac
Unconfirmed: (b) (5)

1330 - 1415 **Session Five: [Unclassified] The Level of AI Education and its Effects**
Google Hangout: (b) (6)
Phone Call: (b) (6) PIN: (b) (6)
Speaker: Chris Lynch, DDS

1415 – 1500 **Session Six: [Unclassified] The Concept for a Digitally Ready Force**
Google Hangout: (b) (6)
Phone Call: (b) (6) PIN: (b) (6)
Speaker: Josh Marcuse, Executive Director, Defense Innovation Board

1500 – 1515 **Break**

1515 – 1700 **Executive Time**
Google Hangout: (b) (6)
Phone Call: (b) (6) PIN: (b) (6)
Objective: Identify issues to move to the plenary in May and hard questions that the working group should focus on going forward.

(U/ /FOUO) DISCUSSION PAPER FOR NSCAI WORKING GROUP FOUR: PREPARING OUR CITIZENS FOR AN AI FUTURE

(U/ /FOUO) **Purpose:** The Working Group's first topic is the prominence of artificial intelligence (AI) in military education, training, promotion, and career paths. The Working Group will identify what needs to change, and make recommendations. This discussion paper will explore the question topic further and establish a foundation from which the Commissioners can receive appropriate briefings from experts during the first in-person meeting scheduled for early May 2019.

(U) Background

(U/ /FOUO) (b) (5)
(b) (5)

(U) Discussion

(U) Agenda Item I

(U/ /FOUO) **Issue for Discussion:** The Current State of DoD's Education on AI

(U/ /FOUO) (b) (5)
(b) (5)

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(b) (5)
[redacted]

(U) **Agenda Item II**

(U/ /FOUO) **Issue for Discussion:** The Purpose of AI Education in DoD

(U/ /FOUO) (b) (5)
(b) (5)
[redacted]

(U) **Agenda Item III**

(U/ /FOUO) **Issue for Discussion:** The Role of Education for Improving AI in DoD

(U/ /FOUO) (b) (5)
(b) (5)
[redacted]

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(U) **Agenda Item IV**

(U/ /FOUO) **Issue for Discussion:** Additional Opportunities for Discussion

(U/ /FOUO) There are several other areas pertinent to the question topic that include: (b) (5)

(b) (5) [redacted]

(U) **Actions**

1. (U/ /FOUO) **Purpose:** NSCAI staff will identify, invite, and confirm experts to brief Commissioners on the current topic. All experts will be pre-approved by the Working Group Chair, Dr. Griffiths. These briefings will comprise the majority of the in-person working group meeting agenda. **(Action: All by April 29, 2019)**

2. (U/ /FOUO) **Purpose:** NSCAI staff will identify an appropriate location in the Washington, DC metro area and coordinate the date and time available for Commissioners to attend the meeting. The meeting is tentatively scheduled to take place the week of May 6, 2019. **(Action: All by April 29, 2019)**

NATIONAL SECURITY COMMISSION ON ARTIFICIAL INTELLIGENCE

Working Group on Maintaining US Global Leadership in AI Research

Proposed Framework

Commission Mandate: *Consider the methods and means necessary to advance the development of artificial intelligence, machine learning, and associated technologies by the United States to comprehensively address the* ***national security and defense*** *needs of the United States.*

Working Group Objective: Identify concrete steps the US can take to maintain global leadership in Artificial Intelligence (AI)/Machine Learning (ML) research and development, with a focus on research that strengthens US national security and defense.

Working Group Approach: Through a comprehensive assessment and analysis of the US and the global AI research landscape and its associated funding and policy mechanisms, develop recommendations to maintain US leadership in the field, to include:

1. prioritization of research areas
2. infrastructure investments
3. funding mechanisms
4. policy and governance changes
5. application accelerants

Guiding Questions:

1. (b) (5)
2. (b) (5)
3. (b) (5)
4. (b) (5)
   a. (b) (5)
   b. (b) (5)
   c. (b) (5)
   d. (b) (5)
   e. (b) (5)
   f. (b) (5)
5. (b) (5)

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6. (b) (5) [redacted]
7. (b) (5) [redacted]
8. (b) (5) [redacted]

Notional Timeline

Assessment Phase (April-October 2019)
Objective: Build a common understanding around the opportunities and challenges for the United States to maintain global leadership and competitiveness in AI/ML research and development, particularly as related to defense and national security issues, and identify the "hard questions" to be taken up in the analysis phase to build viable options.

April/May

Topic: Global AI research landscape and US defense investments
Objective: Gain a baseline for current state and key trends in AI research across global academic and commercial sectors and US defense sector to develop a foundation for subsequent investigation, and begin to consider possible approaches to maintaining U.S. leadership.
Note: Executive time to include consideration of framework for working group's approach.

Special Projects
Issues will be identified along the way that warrant further focused study and assessment, i.e. data sharing solutions. Research in support of these projects will be conducted by the staff and presented to the working group for consideration.

May: Commission plenary meeting

June

Topic: US Government-supported AI research: leading actors, policies and funding mechanisms
Objective: Gain an understanding of the current investment levels and areas of US government focus in AI/ML research, looking at the policies, processes, prioritization, funding levers, approach to data sharing and gaps in the current US government approach, particularly as related to defense and security-related AI research.
Possible briefers: (b) (5) [redacted]

July: Commission plenary meeting

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September

Topic: US private sector and academic AI/ML research and development
Objective: Look at primary drivers, funding levels, and priority issue areas in the private sector and academic research spaces. Gain an understanding around challenge and opportunity areas, to include issues related to data sharing, privacy, regulation, models of public-private partnership and information exchange, etc.
Possible briefers: (b) (5) [redacted]

October: Commission plenary meeting

Analysis Phase (November 2019-October 2020)
Objective: Through more focused and in-depth engagements, deep dive into specific "hard questions" identified in the assessment phase to develop possible options.

Recommendation Phase (November 2020 – March 2021)
Objective: Refine recommendations and options for the Commission's final report. Vet and build support for solutions across the network of stakeholders.

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