



U.S. Special Operations Command



Operating at Speed in Technology Influenced Environments

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Donovan Group Innovation Officer

The overall classification of this briefing is:

UNCLASSIFIED



Overview

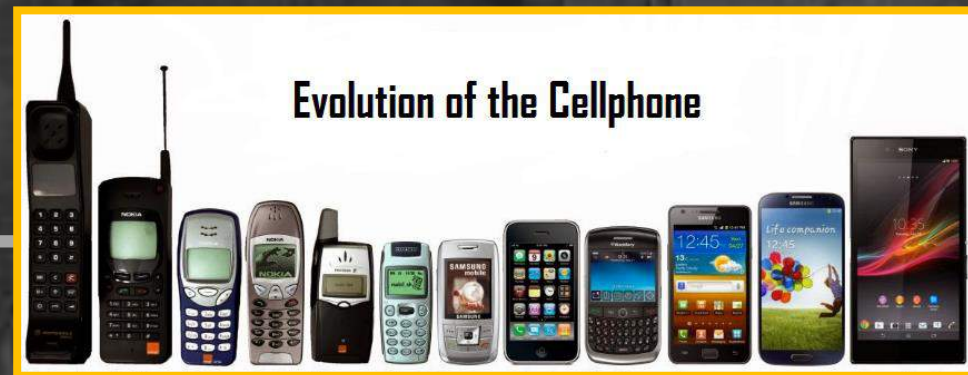


- From Linear to Exponential
- Challenges on the Horizon
- Solution Space
 - SOFWERX: Fostering Collaborative Innovation
 - Donovan Group: Future Thinking
- Questions?



Radical Leveling Technologies: Moving from Linear to Exponential

- Linear vs Exponential vs Exponential Plus
 - Cellphone vs 3D Printing vs 4D Printing
- Why We Care:
 - Down skilling, accessible, 24/7 free expertise, affordable, small foot print, signature reduction
- Case Studies:
 - Stranger Visions: DIY Genetic Facial Recognition
 - 3D Printed Proliferation: A Revolution in Nuclear Parts
 - Disarming Corruptor: Hiding Illicit 3D Designs in the Open
 - 3D Printed Weapons: A Rapidly Growing Challenge



Evolution of the Cellphone



4D Printing



Stranger Visions



3D Printed Sub-Machine Gun



3D Printed Grenade Launcher



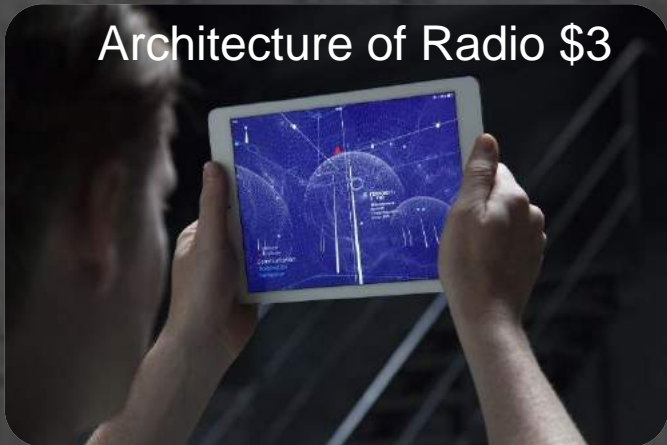
Disarming Corruptor



PRC 3D Printed Nuclear Fuel Assembly



Chaos in a Box: Welcome to the Era of DIY Everything



Architecture of Radio \$3



SpyMeSat \$2



DremelFuge \$40 vs \$12k Supercentrifuge



Glow-in-the-Dark and Biohacked Animals and Plants – DIY Gene Splicing Kit \$149



Real Time View of Infosphere

zenpub FOR MEDIA (in development)

zenhide FOR WEB TRAFFIC (in development)

zencash FOR MONEY

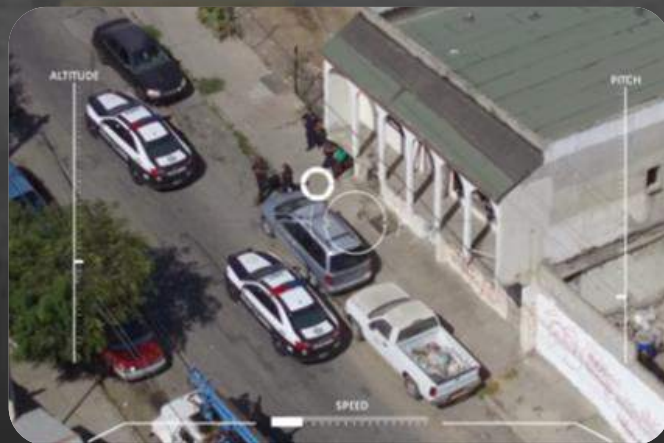
zenchat FOR MESSAGING



ZENCASH

OVERVIEW

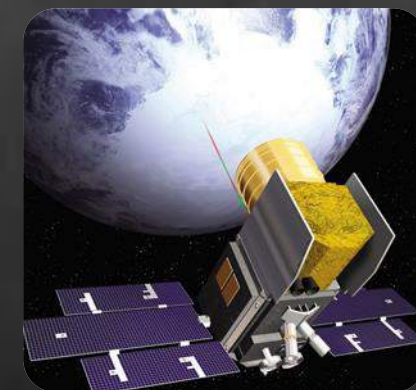
Blockchain Comms and Pubs that hide you & your metadata



Cape Aerial Telepresence Fly a Drone Anywhere from Home



11yr olds hack FL Voting System in under 10 Min



\$8k DIY Satellite Kit Includes Launch



Challenges On the Horizon



Virtual Nations vs Westphalian Nations

WELCOME TO THE INTERNET OF SOVEREIGNTY

CYBER ARMY

information data searching analyzing

SOCIAL MEDIA

Weaponized LIES

MISINFORMATION 1 + 1 = 3 Fake news & Disinformation Online

WEAPONIZED INTERNET OF THINGS

Biohacking

HACKING-AS-A-SERVICE

Artificial Intelligence
Quantum
Synthetic Biological Organisms
Fracturing of the Internet
Space Warfare....

How do we prepare?



Fostering Collaborative Innovation



“One of the most common barriers to innovation is internal politics; the second most common barrier to innovation is cultural issues” ~ Harvard Business Review

- SOFWERX was designed to overcome barriers and promote interagency collaboration
 - 501c3 private non-profit partnership intermediary (23xstaff, 2xMIL LNOs, 5xCleared)
- Provides a physical and virtual platform agnostic to user or tech
 - Non-government architecture allows for novel experimentation and testing
- Offers a safe space for messy discussions
- Force multiplier for special operations solutions
 - 25k industry, academia, technology, government expert network
 - Unique accesses and expertise in areas the government cannot reach
 - Low dollar investment, high collision space, high returns (budget \$5M annually)
- 100% open source environment includes all nations (except PRC, Russia, IR, Nk)
 - Opportunity to gather unique global insights and crowdsourced technologies

Metrics Matter: Proving the Model (3 yrs/\$15M)

Nominations

Activity

Impact

34 x Component

10 x J-Code

77 x SOF AT&L

64 x SOFWERX Initiated

77 x Warfighter

23 x Collab.
Project Orders

6 x Rapid
Prototyping
Events

7 x Hackathons

10 x Capability
Assessment
Events

5 x Tech Expos

78 x RAPS
Projects

35 x Capability
Collaboration
Events

3 x Feasibility
Studies

21 x Prize
Challenges

18 x Tech Talks

114 x Agreements

247 x Knowledge Transfers

106 x Validations

28 x Consignments

10 x Transitions to PoR



Facilitating Responsible Disclosure: SOFWERX Digital Citizen Network

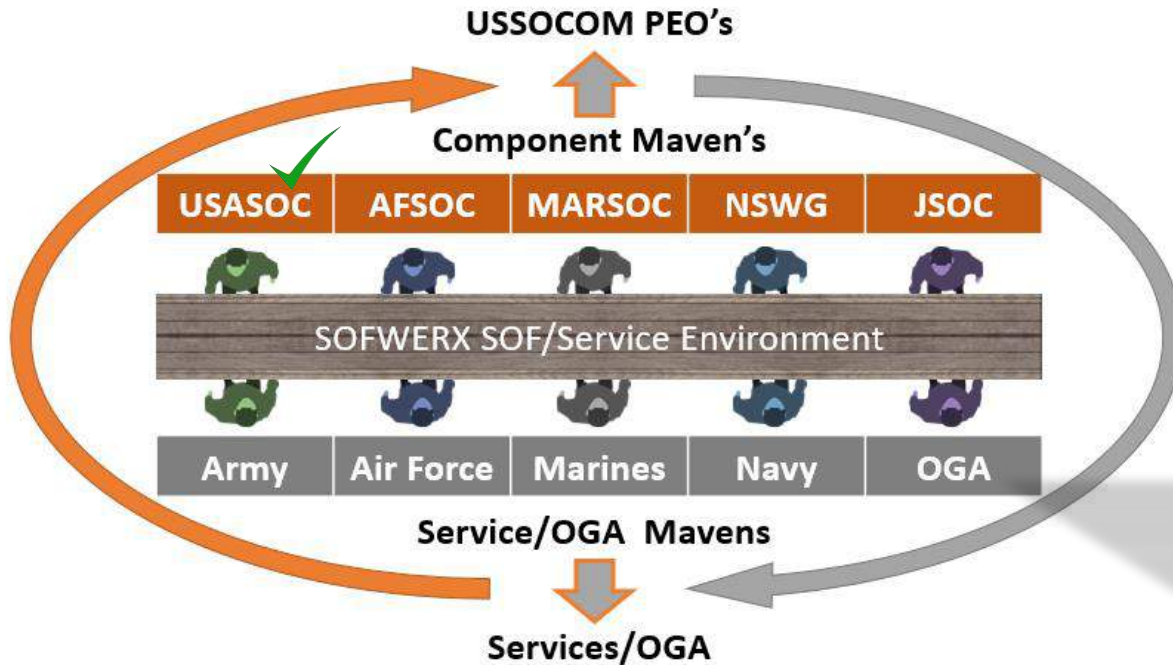
- 700+ Hacker, Maker, BioHacker, Tech and Transhumanist Partner Network
- Results:
 - NASA and Contract Govt Hadoop Hack reported
 - Classified hard drive returned to Government control
 - NPS Remote Advise and Assist (RAA) System evaluated by seven hackers - in 48 hours all vuls ID'd and Hardened – for free
 - Drone Hackers shared multiple threat tech evolutions of concern to SOF
 - ARL IoT Project with NotreDame cyber/CI/Infosec vuls disclosed to Army G2
 - SecureDrop Project – 1st US anonymous responsible disclosure mechanism
- 0xDude: The Impact of One Digital Citizen
 - 0xDude aka Victor Gevers, White Hat Hacker & Innovation Mgr for Dutch Govt
 - ID'd & reported 690 serious security vulnerabilities to 590 organizations, across 71 countries in 2016
 - Since 1998 Victor's responsible disclosure work has led to more than 5000 cyber security fixes globally





SOFWERX SOF/Service/OGA Innovation Council

Mutually beneficial networks, ideation, prototyping, and evaluations to harden enduring SOF/Service/OGA relationships. Designed to mitigate redundancy and increase the velocity of high yield capabilities across the enterprise.



SOCOM Opportunities	Service Opportunities
Reduce Redundancy	Rapid Cross Service Look
Improved X-Coordination	Pivot Speed
SOF/Service Transitions	PhD Warfighter Evaluation
Greater Service Tech Insights	Access to Early Adopters
Deeper Tech/Innovation Vis	Non-Traditional Networks
Increased Funding Leverage	Flexible Business Models

Service/OGA Buy-In: \$1M O&M, \$1M RDT&E (\$2M total)

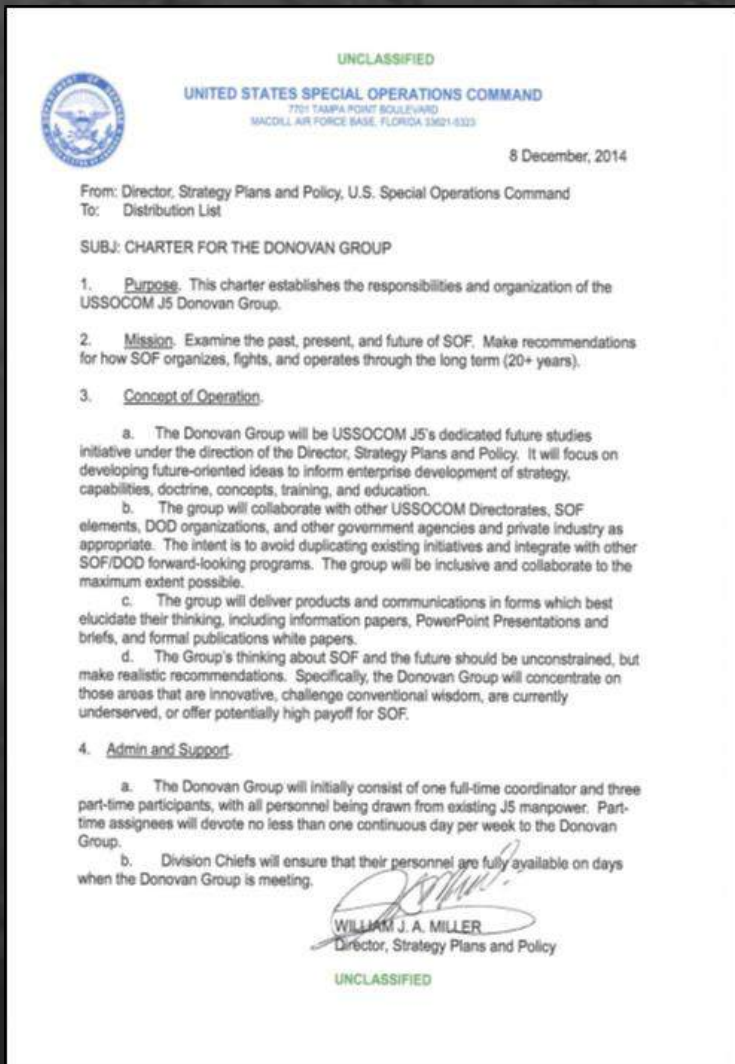
- \$1M O&M: TPOC, Facility, Process, Event & Network Off-sets
- \$1M RDT&E for SOF/Service Mutually Beneficial Projects

SOF Component Buy-In: TPOC Position

- SOF Component TPOC stationed at SOFWERX
- Prioritized GAPS/Desirements
- Willingness to Evaluate, Test and Provide Feedback



J5 Strategy, Plans, and Policy



- **Who:** The Donovan Group is USSOCOM J5's dedicated future studies initiative under the direction of the Director, Strategy Plans and Policy
- **What:** Focus on developing future-oriented ideas to inform enterprise development of strategy, capabilities, doctrine, concepts, training, education and other government agencies and private industry as appropriate
- **When:** Weekly BR (J5, J7, AT&L, S&T)
- **Where:** USSOCOM HQ & SOFWerX - M/W/F - SWX, T/Th – HQ
- **How:** increase and accelerate access to networks across the Inter Agency and the private sector for the purpose of illuminating innovative ideas and solutions. The Group's thinking about SOF and the future should be unconstrained, but make realistic recommendations

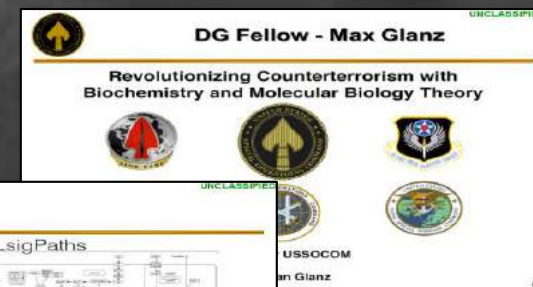
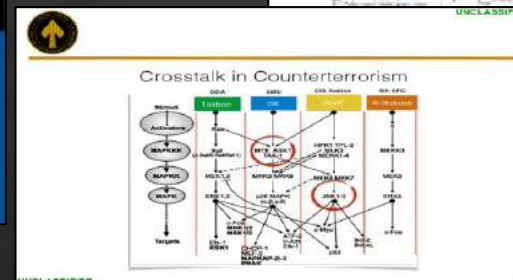
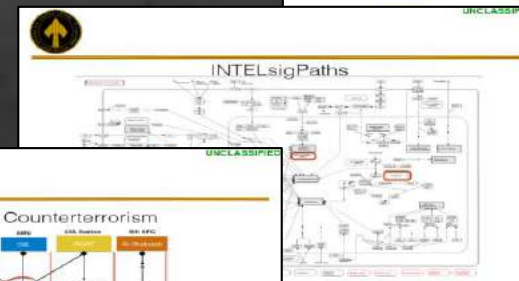
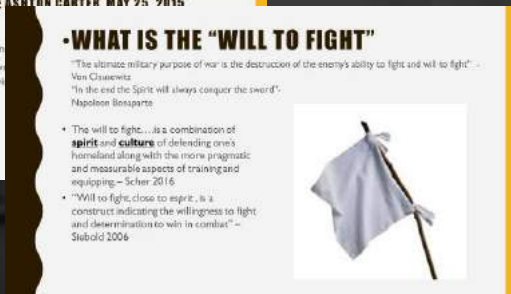
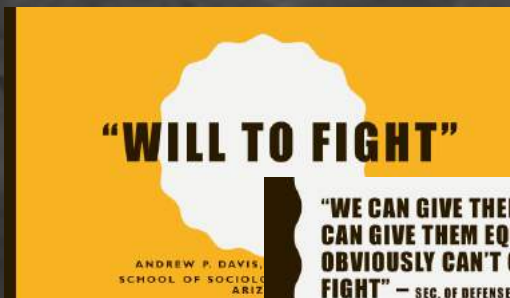


DG Fellows Program



DG Fellows program – 30 day assignments across range of experts studying and reporting on items of interest to SOF

- Max Glanz – Revolutionizing CT Using Biochemistry and Molecular Biology Theory
- Andrew Davis – Methodology to quantitatively measure “Will to Fight”
- Najibullah Gulabzoi – TAMU Bush School, Fulbright Scholar – LREC Shortcomings in Afghanistan
- Natalie Twine – Population targeted bio agents based on genetic targeting from human genomic databases
- Dr. David Lary and Dr. Marge Zielke – UT Dallas, Mesh Sensors for Chemical Detection and Modeling and Simulations
- Dr. Girish Nandakumar – Old Dominion University, Alternative financial structures/decentralized cryptocurrencies leveraged by adversaries
- Dr. James Giordano and Joe Defranco – Georgetown University, Neuro S/T, biosecurity, cognitive performance





Donovan Group Projects



- **2018-2019 Radical Speakers Series**
 - Neuroweapons (AUG 2018)
 - Countering Weaponized Information (OCT 2018)
- Strategic Latency Group Report “Latency Unleashed: The Role of Technology in a Revisionist Global Order – Implications for Special Operations” USSOCOM J5, Dr. Zack Davis LLNL CSGR
- Georgetown University Visiting Scholar, Neuro S/T, Biosecurity and Emerging Threat Technologies, Dr. Jim Giordano and Lt Col Snow
- Emerging Threat Tech PMO proposal, USSOCOM J5 and Georgetown University, Dr. Giordano, CAPT (ret) USN SEAL Rick Bremseth, Joe Defranco, Lt Col Snow
- “The Creeping Dragon: China Soft Power 2.0” and Quantum Corps Innovation and Influence Center Industry/Academia/DoD, Marshall Monroe, WDW, Magic Canyon Ranch, John Philips, Lt Col Snow
- Deep Fake Detection Project, Dr. Irene Amerini, University of Florence
- Military Application of Cyber Effects (MACE) CDR Pablo Breuer, cyber effects to model and guide SOF teams operating in megacity areas (concept only ATT)





TechWatch



- Collaborative effort between SOF AT&L, Donovan Group, and SOFWERX
- Produced and distributed weekly
- Purpose of the TechWatch:
 - Prevent technology surprise from negatively affecting U.S. national security
 - Create technology surprise for U.S. adversaries by maintaining the technological superiority of the SOF Enterprise and the U.S. military
 - Expose current state of technology and advances

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TechWatch
Volume III, 2 August 2017

Welcome to the Donovan Group TechWatch. The DG TechWatch is [UNCLASSIFIED](#) and compiled using only unclassified Open Source Information. The purpose of the DG TechWatch is to capture the most up to date tech information as it relates to BAHMCE (Big Data, Artificial Intelligence, Human-Machine Interface, Machine Learning, and Human-Machine Co-Evolution). It will also capture other technology advancements that may be of interest to the SOF Enterprise.

Legend

Tech Quote	Big Data	Artificial Intelligence
Human Machine Interface	Machine Learning	Human Machine Co-Evolution
Additive Manufacturing	Drones	Directed Energy Weapons
Robotics	Quantum Computing	Nanotechnology
Biomodification	Augmented Reality	Cyber Attacks
Cryptocurrency	About This Publication	

Tech Quote

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Foreword for the “Defense Innovation and the UK Responding to the Risks Identified by the US Third Offset Strategy”



“As both a former defence minister and chairman of the House of Commons Defence Select Committee, I have spent much of my public life focused on the strategic issues of defence. How much should we spend on our national security and where should we focus our investment? Who are the potential adversaries who could challenge our future wellbeing and safety, and which states are our strategic partners? Are the supposed certainties associated with defence, deterrence, operations and wider geopolitical considerations constant or subject to profound disruption and change?”

Lord Arbutnot of Edrom *In seeking a response to these questions, we need to stretch our thinking beyond the confines of our military instrument, important though it is, and consider the security of our critical national infrastructure, the internet of things that frames our lives and the transformative technologies that appear increasingly indispensable to society and individual citizens. This dependency brings with it acute vulnerabilities.”*

Former Chairman of the House of Commons Defence Select Committee

UNCLASSIFIED Source: <https://rusi.org/sites/default/files/defence-innovation-july2017.pdf>

Lord Arbutnot of Edrom’s foreword was extracted from the Royal United Services Institute for Defence and Security Studies, Occasional Paper: “*Defence Innovation and the UK Responding to the Risks Identified by the US Third Offset Strategy*” Authors are John Louth, Trevor Taylor and Andrew Tyler.

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Questions?



For more information on upcoming events, SOF Council or to visit SOFWERX:

www.sofwerx.org

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