Air University Research Topics
Academic Year 2016

These research topics are submitted from across the Air Force, DOD and allied military Air Chief's on issues important to the Air Force, and national security. These topics will directly shape Air University's (AU) research agenda and become the research focus for many of our students in meeting their graduation requirements. For Air University, the research process hones our students' critical analysis, cross-cultural communications, and leadership skills. As the Intellectual and Leadership Center of the Air Force, our goal continues to be serving as the premier source of research excellence and innovation regarding our ability to operate and control the domains of air, space, and cyberspace.

If you have any questions about the topics or our research program please let us know. Send inquiries to research.support@us.af.mil.

Air University Research Topics - Academic Year 2016

Topic Title

Diversity: Does it really make us better?

Topic Description

Diversity has become the military's new mantra. Is a diverse force actually a better fighting force? If so, by what metric? What are the advantages and disadvantages of a culturally diverse force. Can a truly diverse force be created in a fair manner? What are the challenges in leading a diverse force. Is there a "sweet-spot" for how diverse an organization should be?

Sponsoring	Air War College
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Air University Research Topics - Academic Year 2016

Topic Title

Maintaining Trust with the American People

Topic Description

Has trust and confidence eroded between the American people and the Profession of Arms (POA)? If so, what is an appropriate strategy to reestablish and maintain trust between the POA and the people of America? Related research questions include: what are the elements of trust; what are the expectations held by the American people for their military services; the fragility trust. The impact of senior leader misconduct on trust.

Sponsoring Air War College

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Air University Research Topics - Academic Year 2016

Topic Title

Reducing costs by defining tailored environmental test programs for different

Topic Description

This study seeks to determine an analytic method to appropriately tailor the satellite environmental testing requirements outlined in TR-RS-2014-00016. Given that satellite test programs are shaped by the complexity of the satellite, the cost of any given test, and the perceptivity of that test, a relationship should be able to be devised that prescribes the appropriate satellite testing. Previous research suggests that mass may be an effective quantitative measure of complexity, and if true, the appropriately tailored test program could perhaps be defined as a function of satellite mass.

Sponsoring SAF/AQ

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Air University Research Topics - Academic Year 2016

Topic Title

How might the USAF accurately determine reliability of Nuclear Command,

Topic Description

Nuclear-capable bombers, weapons and Intercontinental Ballistic Missile weapon systems have documented, validated reliability metrics. These metrics are supported by data collection and integrated to provide Weapon System Reliability statistics of sufficient granularity to inform planning decisions. Although AFGSC has made significant recent progress in collecting Nuclear Command, Control and Communications system metrics through a variety of means and sources, documenting overall reliability for NC3 systems, and therefore the system of systems, remains difficult. AFGSC/A3 requests the Air University devote research into what metrics should be collected on individual systems to document their reliability, and how system reliability can be tied to system-of-systems reliability.

Sponsoring Air Force Global Strike Command

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Air University Research Topics - Academic Year 2016

Topic Title

What are the extents of effects of nuclear bursts on communications across the

Topic Description

There is little consolidated written information regarding the effects of electromagnetic pulse (EMP) and scintillation of the atmosphere following nuclear burst(s), especially when the nuclear events are expected to be separate, isolated events. AFGSC needs better understanding of how proximity, yield, and altitude of burst affect the EM spectrum, especially those portions used for communications. Research should answer how long communication recovery times will be based on a variety of nuclear burst attributes and scenarios. Documentation of the geographic extent of nuclear effects on communications is also desired. This information will be used by AFGSC to make planning and budgeting decisions for sustainment and acquisition activities for Nuclear Command, Control and Communication systems.

Sponsoring Air Force Global Strike Command

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Air University Research Topics - Academic Year 2016

Topic Title

Operational Contract Support (OCS)

Topic Description

OCS is a critical component of total force capability. Across Defense components and functional areas, we share responsibility for OCS readiness. A plan must be implemented to shape the work which must be done for the joint force to depend on OCS throughout the range of military operations. OCS spans numerous functional areas and all phases across operations. It can be a decisive factor in major combat operations; irregular warfare; and stabilization, reconstruction, and transition missions. Listed below are attributes which may assist in an effective implementation of OCS: - OCS comprises the planning, synchronization and integration of contracted support, contractor management, and contracting in a geographical combatant commander's theater, and when directed in a joint operations area (JOA). - The overall result will be more responsive, effective, and accountable contracted support to the Joint Force Commander (JFC). - Leaders must routinely consider the risks, benefits and implications of contracted support when planning, executing and assessing all phases of operations. - Commanders will operate in a future security environment characterized by constrained military budgets, reduced uniformed capability and capacity, economic uncertainty, and increased competition for resources. - This concept proposes OCS as an essential part of an affordable force mix where contracted support will be rapidly integrated into military operations and will be as accountable and responsive as military forces. - OCS JC solution framework will significantly provide benefits via a reduced military footprint; optimized capabilities with increased cost consciousness; more agile transitions between operational phases; improved operational risk assessments and mitigation measures associated with contractor support; improved requirements management; improved contract management planning; more responsive contracting; and greater accountability in managing contractors and the associated financial processes. Research Goals: 1. Develop and explore ideas for the need for OCS, while obtaining buy-in from USAF leadership and functional areas that this is a total force issue. 2. Advantages and disadvantages of OCS implementation. 3. Implementation of an affordable mixture of functional resources operated within a financially constrained environment. A fully supported recommendation on implementation amongst all functional areas of the USAF. 4. Develop recommended DOTMLP-F (doctrine, organization, training, materiel, leadership and education, personnel and facilities) changes to

Sponsoring SAF/AQ

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Air University Research Topics - Academic Year 2016

Topic Title

Capturing the investment of intellectual capital

Topic Description

Implement an accounting system to estimate the value of the intellectual capital invested to complete a tasker/project As resources decline, the refrain of “more with less” becomes more audible. How much more? How much less? It is uncommon in the military “can do” culture to attempt to quantify the investment of intellectual capital in a project, perhaps since such work is seen as requiring “whatever it takes.” Yet the time available in a given week or day, or available for an individual project is finite. With a measure of the value of intellectual capital invested, leaders can decide whether the result attained warranted the investment. Such a measure also gives a method for improving support efficiency when an organization desires a certain product/project but cannot "afford" the intellectual capital price. As an example, can the Spaatz Center do it less expensively? Professionals such as engineers, accountants, lawyers and consultants must accurately record the time invested each day on various projects so they can bill the correct client. While any such accounting system is a good start, this report recommends calculating a dollar value based on a simplified system which equates the hours invested by different ranks (GO, Col, FGO, CGO, enlisted and civilian equivalents) to a "billing dollar figure." Eschewing false precision (and the emotional distaste of attempting to assign a dollar value to an individual's work), the metric need only be an approximation sufficient to capture the relative value of an intellectual capital investment. Some will understandably argue against a system using dollar values as counter to a military ethos where, unlike the business world, the value of results are sometimes intangible or even incalculable (i.e. deterrence, operating safely, a successful wingman intervention, education(?)). But for the Spaatz Center and many other organizations in government, such a system could enable leaders to make better resource decisions. Using such a system, the estimate of intellectual capital expended in an hour-long ESS weekly staff meeting is $450. Hypothetically, the DS could discover through such data that Spaatz is investing $1000 in intellectual capital to approve a $300 expenditure. Such a result should drive a process change to make the $300 expenditure decision more efficiently. There are many other examples that the researcher could use to provide additional rationale for doing this research and they need further exploration in this current more with less culture.

Sponsoring Air University

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Air University Research Topics - Academic Year 2016

Topic Title

Increases in RPA CAPs with less manpower per CAP

Topic Description

How can the AF get more RPA CAPs with less manpower per CAP (automation, multi aircraft control or Monitored Transit Operations

Sponsoring AF/A3/5

POC Office: HAF/A3OI

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Air University Research Topics - Academic Year 2016

Topic Title

Automated systems for RPAs?

Topic Description

Should the AF go w/ auto takeoff and landing for MQ-1/9s?

Sponsoring AF/A3/5

POC Office:

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Air University Research Topics - Academic Year 2016

Topic Title

Flying schoolhouses

Topic Description

Should the AF continue down the path of heavily contracted out flying schoolhouses (C-17 for example) especially for RPAs (soon to be largest MWS in AF).

Sponsoring AF/A3/5

POC Office:

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Air University Research Topics - Academic Year 2016

Topic Title

How will airpower impacts on Operation INHERENT RESOLVE shape future

Topic Description

This is a two-part question; responses to either portion support AFCENT's objectives " Part 1: What has airpower impacted in Operation INHERENT RESOLVE? AFCENT seeks to identify the mechanisms through which USAF support to Operation INHERENT RESOLVE (OIR) has shaped: operations against the Islamic State of Iraq and the Levant within Iraq and Syria; operations supporting Iraqi Security Forces (ISF) in Iraq; and operations against ISIL in Syria by non-Syrian Regime forces. Potential questions include: How have US and/or Coalition air operations shaped; (1) ISIL ability to maneuver in Iraq? (2) ISIL basing and freedom of movement in Iraq and Syria? (3) ISF operations against ISIL in Iraq? (4) Coalition support to OIR? (5) Non-Syrian Regime forces combatting ISIL in Syria? The research goal is to identify how airpower has shaped OIR, both at the tactical and operational level, for the enemy (ISIL and associated organizations) as well as friendly forces (ISF, Coalition partners). Part 2: How will these impacts shape future US and partner nation air force operations? AFCENT seeks to identify implications OIR portends for future US and partner nation air operations. Potential questions include: How will air operations in OIR shape; (1) Future joint air operations, to include strategies and tactics? (2) Future combined air operations with partner nations, to include political sensitivities based on religion, sect and/or patronage? (3) Future use of airpower in counter-insurgency or irregular-type conflicts where the US is supporting a host nation without capable ground forces and/or political legitimacy?

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Air University Research Topics - Academic Year 2016

Topic Title

Enduring presence in AFG: do we need to keep BAF open for longer than

Topic Description

With the ever changing climate and uncertainty in AFG (and in all likelihood, GIROA will request continued US support beyond our current commitment), does it make sense to plan now for an enduring presence at BAF?

Sponsoring US Central Command

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Air University Research Topics - Academic Year 2016

Topic Title

Federated, rotationally manned operations: The impact of AFCENT C2

Topic Description

What impact, positive or negative, does USAFCENT's C2 and manpower structure have on the Component's operational effectiveness? This would inform USAFCENT decisions on whether to keep a split staff, to inform efforts to gain more permanent manpower (versus 179-day AEF) on the staff, and investigate the impact of the structure on roles & responsibilities between the AFFOR staff and CAOC staff. This research could be applied to other C-NAF's exploring a similar C2 and manpower structure as part of their theater operations.

Sponsoring US Central Command

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Air University Research Topics - Academic Year 2016

Topic Title

Precision dependency: The impact of demand for precise, low-CDE weapons

Topic Description

Current weapons and weapons delivery platform requirements are developed with Major Combat Operations scenarios in mind, and do not account for the type of warfare we've fought (to include the CIVCAS mitigation, CDE concerns, and elevated Target Engagement Authority). What impact does this have on the future inventory for the USAF? What do we risk and gain with an alternative approach? This would aid in ensuring the COCOMs and Air Components are properly resourced for a range of contingencies, and would inform decisions/reflections on our current way of war.

Sponsoring US Central Command

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Air University Research Topics - Academic Year 2016

Topic Title

Maximizing Diversity in USAF STEM Fields

Topic Description

Diversity is a major focus in the Air Force today. However, STEM career fields make up a large portion of the force, including rated as well as non-rated technical specialties. Women and some minorities have historically been underrepresented in university programs that lead to accessions in STEM fields, and this presents challenges to USAF diversity goals. Research could lead to possible solutions to recruiting challenges as well as leadership and institutional methods to ensure the underrepresented demographics make the maximum possible contributions and overcome barriers to professional success.

Sponsoring AF/A3/5

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Air University Research Topics - Academic Year 2016

Topic Title

Assessment of the Methodology for Determining Stressed Career Fields

Topic Description

An assessment of the methodology for determining stressed career fields and the associated manner in which the AF Corporate Structure is informed of the varying limitations and consequences of lead/lag time to support operational requirements. Given the disconnect between the A1 community "these are our stressed AFSs," the A4 community "we are short maintainers," and the A3 community "rated (particularly 11F) manning is a train-wreck," ... what are the processes, from accession to retention, by which, manpower is appropriately resourced, given the current and future force structure.

Sponsoring AF/A3/5

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Air University Research Topics - Academic Year 2016

Topic Title

Unity of Effort for National Security Space

Topic Description

There has been recent movement within the Department of Defense and Intelligence community to explore some level of space operational integration to better posture the United States to fight a war that could extend to space. Paper should explore such concepts as: - What is the implied requirement/benefit of integration? - What levels of integration should be on the table (ranging from information sharing, to a single, unified commander for all DOD/IC capabilities) - Is there benefit to including commercial, civil, allied participation in the concept? - What level of integration would be appropriate for commercial, civil, allied participation? - What authorities would be required to implement the concept? - What would be the downside to this type of integration? - What would be implications to PPBE? - What would be pros/cons from a terrestrial warfighting perspective--would air/land/maritime domains benefit or be harmed from this concept? - What are the greater geopolitical implications for operational integration? Would this notion drive an adverse reaction among other states? If commercial/civil/allied were included, would that change the geopolitical reaction? Would allied integration serve as a deterrent to aggression against the US or US space systems?

Sponsoring AF/A3/5

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Air University Research Topics - Academic Year 2016

Topic Title

Cyber Key Terrain for the Joint Force commander

Topic Description

what is it, how do you seize or defend it?

Sponsoring AF/A3/5

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Air University Research Topics - Academic Year 2016

Topic Title

Military Operations and National Policy for Cyberspace

Topic Description

identify gaps and challenges in our nation's approach to using cyberspace for military operations and policy recommendations to improve our ability to defend the nation

Sponsoring AF/A3/5

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Air University Research Topics - Academic Year 2016

Topic Title

Offensive Cyberspace Operations for the Air Force

Topic Description

should we have an "Airmindedness" to how we approach OCO; implications (force structure, equip, training, force presentation, service resourcing) and recommendations on how to do or not do it

Sponsoring AF/A3/5

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Air University Research Topics - Academic Year 2016

Topic Title

National and International policy overview concerning transit of potentially

Topic Description

Recent events related to the 2014 Ebola and 2011 Operation Tomodachi contingency response operations highlight the difficulty ensuring aircraft can transit international borders and return to the United States. There are many stakeholders in the public policy regarding transit of aircraft in these circumstances. With the advent of dispersed operations in A2/AD environments, the issue will become even more complex. The objective of this research topic is to identify the relevant public policies and regulatory framework for aircraft transiting international borders, and domestically within the United States, that may be CBRN contaminated or suspected of CBRN contamination. The author is encouraged to make recommendations for future tactics, techniques and procedures to facilitate the safe transit of aircraft while complying with applicable regulatory standards.

Sponsoring ACC/USAFWC

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Air University Research Topics - Academic Year 2016

Topic Title

Mapping the Value of AF Bioenvironmental Engineering: Comparison(s)

Topic Description

Â AF Bioenvironmental Engineering (i.e., AFSCs 43E and 4B) arose from the Army Sanitary Corps to eventually build capability and capacity spanning the following constituent OPM Occupational Series: 0690 (Industrial Hygiene), 0801 (General Engineering and Architecture), 0819 (Environmental Engineering), 1306 (Health Physics), and 1310 (Physics).Â Apparently no other element of the DoD, DOE, HHS, or any other department or agency of the USG consolidates so many occupations into one career field to execute Occupational and Environmental Health (OEH), Health Risk Management (HRM), and Radiation Safety/Protection Officer (RSO/RPO) roles. Does the value of the Bioenvironmental Engineering model create more efficiency for the warfighter (and taxpayer) than more specialized approaches? How can this value best be quantified, tracked, and analyzed?

Sponsoring AFMSA/SG3PB

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Air University Research Topics - Academic Year 2016

Topic Title

Linking an Exposure Science Data Analytics/Informatics IMS to AF Mission

Topic Description

Establishing an Individual Longitudinal Exposure Record (ILER) for members/veterans of the Armed Forces remains a major initiative for ASD Health Affairs. AF Bioenvironmental Engineering (i.e., AFSCs 43E and 4B) plays a key role in data collection, analysis, and entry for the ILER; and continues to shape and populate the Defense Occupational and Environmental Health Readiness System (DOEHRS).Â How does the AFMS transition from an exposure repository to an Information Management System useful in real-time analysis of mission sets and weapons systems against Bioenvironmental Engineering exposure science work?

Sponsoring AFMSA/SG3PB

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Air University Research Topics - Academic Year 2016

Topic Title

The Current State of Total Exposure Health: Tech, Science, and Policy

Topic Description

Total Exposure Health is a strategic initiative that integrates workplace, environment and lifestyle exposures into improving “Health Situation Awareness". A new healthcare infrastructure to be defined and built that integrates ALL exposure data (workplace, environment, and lifestyles) into the clinical record, advances delivery of healthcare, patient experience, health outcomes, medical surveillance, and military operations. The purpose of the AU research would be to identify the current state of TEH in both the public and private sectors as it relates to -- Precision Medicine â€“ Optimize preventive strategies with focus on the individual (unique & targeted) to better organize, train and equip a healthy force -- Advances Epidemiology & “Big Data” - The current use of individual exposure data from wearables/sensors using advanced informatics to improve global health/operations -- Research & technology - Sensor development, rapid ID of unknown threats and low-level exposure biomarkers in human genomics in real-time; enhancing the human weapon system; job placement; logistics; and command and control And current DoD or Military component policy associated to bio surveillance and population and personalized health with near and future projections. The research will be used

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Air University Research Topics - Academic Year 2016

Topic Title

Adversary Capabilities within Human Genome Research

Topic Description

China has developed the largest, best-funded private genome research program through the Beijing Genome Institute. These publicly disclosed research capabilities hint at greater capabilities. The goal of this project is to evaluate the battlespace capabilities of adversary nations with regards to offensive or defensive human genomic research.

Sponsoring Missing Organization

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Air University Research Topics - Academic Year 2016

Topic Title

Optimization of biomarker test as a weight loss tool for military members

Topic Description

DoD is developing a biomarker test that enables military members to determine if they are losing weight before weight change is detectable via scale; provides immediate feedback of effectiveness: reinforces good behavior or impetus to make changes in diet and exercise routine; Researcher may apply decision theory based analysis to optimize application of biomarker test. SBIR: https://sbirsource.com/sbir/topics/89224-rapid-indicator-of-potential-for-weight-gain-loss-amp-trending

Sponsoring AFMSA/SG5I

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Air University Research Topics - Academic Year 2016

Topic Title

The Effect of Federal Acquisition Regulation on Medical Innovation, does it

Topic Description

The FAR provides systematic risk mitigation practices in major systems development, but does this hamper the ability to develop emerging medical technologies? Is an alternative or abbreviated version of JCIDs appropriate for medical research and development? The objective should be to analyze industry standard research and development practices (cost, schedule and performance) relative to federal medical development practices and evaluate opportunity cost of applying line acquisition practices to medical development at levels below ACAT level 3 oversight. Is another ACAT designation appropriate for smaller funded medical efforts?

Sponsoring AFMSA/SG5I

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Air University Research Topics - Academic Year 2016

Topic Title

Health Leadership Development - Partnerships w/Academia and Department

Topic Description

Anything related to the development of future Military Health Leaders with a focus on National Health Strategies, Public and Global Health and strategic alignment to US foreign policy goals. What is the optimal method of developing medical military statesmen?

Sponsoring AFMSA/SG5I

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Air University Research Topics - Academic Year 2016

Topic Title

Training curriculum development for AFMS International Health Specialists

Topic Description

Evaluate and compare existing training paradigms for Global Health Specialists in Academia and DoD to MHS strategic objectives and current capabilities to determine the optimal training and occupational experience required for Regional International Health Specialists in a new Joint Environment

Sponsoring AFMSA/SG5I

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Air University Research Topics - Academic Year 2016

Topic Title

Acquisition Career Field for BSCs

Topic Description

Currently MSC has dominated the acquisition certified position space because of the Acquisition Career field. Medical Research and Acquisition Leadership roles are lacking the highly technical skillsets needed for innovation, the BSC should include Acquisition as a career path. Research the value and importance of technical and engineering career fields in Medical Research and Acquisition Leadership roles. Research an implantation strategy.

Sponsoring AFMSA/SG5I

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Air University Research Topics - Academic Year 2016

Topic Title

Strategic Medical Research Implications of the 'Pivot to the Pacific'

Topic Description

Research the potential medical gaps and capture opportunities for AFMS niche areas (e.g. Human Performance and En-Route Care) for medical research investment

Sponsoring AFMSA/SG5I

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Air University Research Topics - Academic Year 2016

Topic Title

Global Health Engagement - AFMS case study

Topic Description

Pick a country; Identify and examine DoD, non-DoD, non-government, and host nation initiatives (including studies, crisis events, international community presence, diplomacy etc.) that relate to both public health, security, and security cooperation; Analyze country 'landscape' to answer - is the international harmonious in its efforts? Is the international community able to identify what works? Is the international community able to measure it's progress? Refer to Policy Guidance for DoD Global Health Engagement (AMHS 3.1.3 12.14.0.1), HHS National Health Security Strategy and Implementation Plan 2015- 2018, AFTTP 3-42.9 GHE and IHS Teams, Global Health Security Agenda, and Global Health Initiatives

Sponsoring AFMSA/SG5I

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Air University Research Topics - Academic Year 2016

Topic Title

Non-traditional medicine (Return of Investment ROI) for AFMS

Topic Description

What is the return of investment on the use of non-traditional medical practices for treatment and or prevention (i.e. holistic, alternative/complimentary, acupuncture etc.)? How can this translate to improved care and readiness for the AFMS and MHS? Refer to industry achievements, international partnership nations' use.

Sponsoring AFMSA/SG5I

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Air University Research Topics - Academic Year 2016

Topic Title

Understanding the Global Health Landscape to identify "trigger" events to

Topic Description

Research the possible connection/correlation with the spread of infectious diseases (epidemic and pandemic) and the occurrence of mass atrocity events

Sponsoring AFMSA/SG5I

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Air University Research Topics - Academic Year 2016

Topic Title

Medical Research Horizon Scouting

Topic Description

Identify long-range S&T opportunities such Synthetic Biology, Biomarkers, Suspended Animation, Precision Medicine and others. Scope industry for current capabilities and analyze for future trends within respective areas

Sponsoring AFMSA/SG5I

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Air University Research Topics - Academic Year 2016

Topic Title

Any topic related to HHS Global Health Strategy Objective 4 - "Increase the

Topic Description

Identify AFMS role. Are there research gaps? Refer to globalhealth.gov

Sponsoring AFMSA/SG5I

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Air University Research Topics - Academic Year 2016

Topic Title

AFMS Foreign Military Sales/Transfer

Topic Description

Paper context should include Theater Security Cooperation and Global Health Engagement and International Health Specialist Teams role in the Foreign Military Sales/Transfer .

Sponsoring AFMSA/SG5I

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Air University Research Topics - Academic Year 2016

Topic Title

Global Security and National Security implications of the acceleration of life

Topic Description

Analyze the acceleration of life science and biomedical technologies and capabilities and the associated risks. Examine 'dual -use dilemmas' of current and future capabilities within AFMS/MHS research programs including exploitation of 'big data'. Apply a risk and benefit assessment framework for each individual scenario along with the mitigation strategies.

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Air University Research Topics - Academic Year 2016

Topic Title

Global Health Strategic Communication

Topic Description

Global Health Engagement (GHE) activities and Humanitarian/Disaster Assistance gives AFMS access to unique scenarios worldwide to support National Security Goals. Paper should include what is needed to promote GHE and ensure the program aligns with other military services and Defense Health Agency (DHA) GHE activities.

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Air University Research Topics - Academic Year 2016

Topic Title

Global Health Strategic Communication

Topic Description

Paper should include strategic communication strategies with DoD, non-government organizations, other government organizations within Global Health Engagement/Initiative Activities in foreign partner host nations

Sponsoring AFMSA/SG5I

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Air University Research Topics - Academic Year 2016

Topic Title

Can Operational Leadership reshape the Military Health System in todays

Topic Description

Discuss current MHS challenges from strategic and operational level and overarching political and strategic goals to evaluate the feasibility of effective Operational Leadership (reference Joint Forces Quart. iss. 77). Has the MHS appropriately or inappropriately applied relevant business models? Are the current models the optimal mix for future budgeting and manpower requirements, or would a different model enhance performance. Include Measures of Effectiveness and the appropriateness of those MOEs for the MHS vs.

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Air University Research Topics - Academic Year 2016

Topic Title

OPIR Industrial Base Strategy

Topic Description

Current material of choice for OPIR sensors is difficult to manufacture, resulting in low yields and increased costs.

Sponsoring Air Force Space Command

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Air University Research Topics - Academic Year 2016

Topic Title

Resiliency of Deployed Critical Care Nurses

Topic Description

Quantify the Mental Health effects of multiple deployments on Critical Care and Emergency Room nurses. Is their attrition, MEB, profile rates significantly higher than other AFSCs? Are there any proven support tools for this population that leaders should incorporate after deployments?

Sponsoring Air Force Materiel Command

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Air University Research Topics - Academic Year 2016

Topic Title

Effectiveness of AF CBT training

Topic Description

Medical personnel are expected to complete 60-80 hours of computer based training prior to deployment, this does not include annual medical group training (SWANK, ADLS, Med Learn, JKO, and Mosbys) Commanders are focused on ensuring everyone has assigned training completed, but the effectiveness of training does not seem to be a priority.

Sponsoring Air Force Materiel Command

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Air University Research Topics - Academic Year 2016

Topic Title

Development Cost and Schedule Growth vs Program Milestone Dates: Where

Topic Description

Where in a program's schedule does this typically occur? Although much has been written about the causes of acquisition cost growth, research does not exist in relation to how it behaves through time. Specifically, does it typically start to occur (or be declared by the program office) at some planned milestone date like the Critical Design Review (CDR) or First Flight (FF)? Does it typically follow a stair step pattern or is it more curvilinear? Data for this effort could be obtained from program Selected Acquisition Reports (SARs) and Rand studies. Assuming that some predictable pattern for cost and schedule growth is found, it could be used to determine the Fiscal Year (FY) spread for program risk dollars. This should help to alleviate potential FY funding shortfalls.

Sponsoring Air Force Research Lab

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Air University Research Topics - Academic Year 2016

Topic Title

Production Cut-Ins: near and Long Term Impacts

Topic Description

How do new cut-ins to production aircraft impact the learning in the near term and/or long term? The MQ-9 is a prime example where actuals on production existed but the configuration was in constant flux. The hours associated with the new cut-ins were added but the learning curve slope remained unchanged and the additional hours ran down the same curve based on the previous configuration. These new hours were applied to the learning curve and calculated off the current unit instead of starting that subset of hours off at unit 1, thus understanding and flattening the learning. The analysis should be broken out by areas of the aircraft affected (i.e. avionics bay vs landing gear).

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Air University Research Topics - Academic Year 2016

Topic Title

Production Cut-Ins: near and Long Term Impacts

Topic Description

How do new cut-ins to production aircraft impact the learning in the near term and/or long term? The MQ-9 is a prime example where actuals on production existed but the configuration was in constant flux. The hours associated with the new cut-ins were added but the learning curve slope remained unchanged and the additional hours ran down the same curve based on the previous configuration. These new hours were applied to the learning curve and calculated off the current unit instead of starting that subset of hours off at unit 1, thus understanding and flattening the learning. The analysis should be broken out by areas of the aircraft affected (i.e. avionics bay vs landing gear).

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Air University Research Topics - Academic Year 2016

Topic Title

Accuracy Comparison: Detailed Ground-Up/Engineering Costing

Topic Description

Cost estimating is approached with two methods: detailed ground-up/engineering and the analogy based methodology. Is it possible to improve estimating results, and do so with less work by using an analogous approach to the estimate instead of a detailed approach? For the most part, estimates follow one of two paths: the detailed ground-up engineering based estimate and the analogy based estimate. Research supports that the more detailed estimates accrue more error and therefore produce less satisfying outcomes. This study should compare the two approaches to analyze which method produces more accurate estimates over a given time frame with milestones at the 1 year point, 3 year point and 5 year point. Accuracy should be defined as how close the estimate comes to the program actuals. This effort should involve going back to the original cost estimate, characterizing it as a highly detailed or analogous estimate as well as follow the actuals over time; trends should develop after repeating multiple times.

Sponsoring Air Force Materiel Command

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Air University Research Topics - Academic Year 2016

Topic Title

Volatility Analysis of Earned Value Data

Topic Description

The purpose of this study is to apply Volatility Analysis to earned value reports and test the accuracy of the estimates at the completion of testing. Volatility Analysis is a subset of technical analysis which employs various methodologies in forecasting the direction of prices for financial securities. This type of analysis compares the historical standard deviation of a security's prices to its current or short run standard deviations; the greater the difference, the greater the volatility. Using this information, probabilities can be assigned to a range of potential outcomes.

Sponsoring Air Force Materiel Command

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Air University Research Topics - Academic Year 2016

Topic Title

Leveraging Commercial Space Assets for DoD Space Needs

Topic Description

In 1960, only the US and the Soviets flew spacecraft. Today, due to an explosion in the commercial marketplace, DoD is a minority player in space with 95% of all GEO spacecraft owned and operated by commercial entities. The commercial marketplace has also expanded from communications, to ISR and SSA with major new entrants such as Google, PayPal (SpaceX), PlanetLabs, Skybox and other poised to launch 1000's of new spacecraft. To maintain our military advantage, it is imperative for the USAF to tap into these data sources for through commercial leveraging. We have been using this approach effectively for wide-band communications in the last 10 years, but now must expand into space and ground SSA, ISR, and C2. This poses major new technical challenges such as trusting the commercial data, fusing it with legacy AF /NRO data, injecting the data and capability into historically closed AF systems, and developing acquisition approaches to quickly adapt to a rapidly changing commercial market to best take advantage of this opportunity.

Sponsoring	Air Force Materiel Command
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Air University Research Topics - Academic Year 2016

Topic Title

Benchmarking Government Technology Commercialization Strategies

Topic Description

Proposed project objectives: 1. Understand the Air Force's past, current and evolving technology transfer program. 2. Benchmark how other federal agencies approach technology transfer and commercialization. At a minimum, review the efforts at the CIA (from an approach to investing), NSF, and DHS. 3. Identify changes in policy and law (FAR) that are necessary for the Air Force to approach commercialization with the intent of capitalizing on the value of the intellectual property generated from its research investment. 4. Estimate the potential Return on Investment of an innovative commercialization strategy built on the recommended policy and legal changes. The US Government funds billions of dollars in research designed to spawn development of new technologies and capabilities each year. The research covers the spectrum of maturity from basic (exploratory) to applied and near-ready for transition, and the spectrum from information, aerospace, space, environmental, intelligence, medicine, etc. Some government agencies conduct research with a view towards transitioning capabilities to either enhance existing mission systems or develop new mission systems, and do so with varying degrees of success. Some agencies also attempt to transfer technology beyond government use to spawn innovation in the private commercial sector. With the success agencies have in transitioning technology for government use, transference of the technology for private commercial use pales in comparison. Yet, there are innovative approaches being explored; principally by the Central Intelligence Agency (In-Q-Tel), the National Science Foundation (I-Corps Program), and the Department of Homeland Security (Commercialization Office). AFRL executes an annual research budget approaching $5 Billion, half of which is organically funded by the Air Force; the other is research purchased by other federal agencies. Despite various attempts to capitalize on inventory of intellectual property through commercialization of technology for private sector use, efforts have met with minimal success. Why is it a

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Air University Research Topics - Academic Year 2016

Topic Title

Smoothing the Transition from CLS to Organic Support

Topic Description

Many weapon systems are purchased with CLS support contracts in place for reasons such as political expediency, inducing contractors to bid on production, program office reasons, etc. Eventually, though, many of these same systems go through a transition to organic support. Assuming we can't go directly to organic support after purchase, are there things that can be done upfront to smooth the eventual transition from CLS to organic support? Certainly obtaining extensive data rights is one area of value; are there others?

Sponsoring Air Force Research Lab

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Air University Research Topics - Academic Year 2016

Topic Title

Organic versus CLS Depot Maintenance Cost Comparison

Topic Description

Current insight into the relative costs of organic and CLS sustainment options is low due to due to a lack of controls (e.g., fleets either sustained one way or the other, but not both, CLS contracts fully funded while organic efforts are typically not, etc.). A study that would normalize effects of the lack of controls would be useful in the strategic decision-making process.

Sponsoring Air Force Research Lab

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Air University Research Topics - Academic Year 2016

Topic Title

Implications of Price Escalation in Projecting Lifecycle Costs

Topic Description

The current push to include price escalation (formerly cost growth above inflation) in lifecycle cost estimates is intended to better describe actual future system costs; however, the inability to fully appreciate the meaning of price escalated future dollars leads long-lived programs to appear unaffordable, without an increase in program requirements. This practice could lead to bias against programs with longer lifecycles. A study is needed to fully investigate the validity of using price escalation when reporting lifecycle (particularly the sustainment portion) costs.

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Air University Research Topics - Academic Year 2016

Topic Title

Properly Pricing Product Support Costs

Topic Description

The question is--how does the Corporate Air Force properly incentivize individual Program Offices to incorporate all costs into their product support decision-making processes? Of course, this begs other questions--what process(es) can Corporate Air Force put in place to correctly determine good product support strategies and how can it determine the cost(s) of not doing so? During the weapon system acquisition process, Program Offices typically make product support decisions based on what is best (and most affordable) for the program at a specific point in time. However, the Corporate Air Force might be better served with a decision contrary to that made by a Program Office acting individually. Consider new technology "X." Since the AF has no experience with sustaining "X," the Program Office chooses contractor support for "X" despite the expense. From the Corporate Air Force perspective, "X" will be a technology incorporated in nearly all future programs so developing organic sustainment capabilities for "X" is important. So, even though the Program Office is making a correct decision for its specific program, it is making a bad decision from the Corporate Air Force perspective. From an economic point of view, the individual Program Office is not incorporating all of the costs into its product

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Air University Research Topics - Academic Year 2016

Topic Title

Capability vs Threat-based Acquisition

Topic Description

DoD has been increasing the emphasis on providing threat information to acquisition programs, including via AT&L's Better Buying Power 3.0 initiative. This threat-based approach potentially conflicts with the capability-based approach of the past decade. An "either or" approach is not viable; however, it's not clear how to best balance both capability-based and threat-based acquisition (as well as the attendant requirements). The Study Organization should assess the merits of both approaches, and recommend processes for the Requirements, Acquisition, and Intelligence Communities to implement to achieve an optimal balance in consideration of the Better Buying Power 3.0 initiative.

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Air University Research Topics - Academic Year 2016

Topic Title

Cost Metric for Fleet Comparison

Topic Description

No current cost metric (e.g., operational or ownership cost per flying hour, sortie, TAI, available aircraft, etc.) stands alone in allowing fleets to be compared, even within a weapon system type. A new metric or combination of metrics could be developed that would allow such comparisons, such as CAPE element-specific normalizations as appropriate.

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Air University Research Topics - Academic Year 2016

Topic Title

Optimized Air Force S&T/T&E Infrastructure to Meet Current and Future

Topic Description

Numerous studies have been conducted over the past two decades assessing Air Force (and other agencies) capabilities supporting S&T and RDT&E needs. None of these have conducted any sort of detailed optimization analysis based on acquisition workload/content scenarios in order to assess where investments should be made in a resource-constrained environment to upgrade existing facilities, build new ones, AND divest of older infrastructure. Another shortfall of previous analyses is the failure to account for the differences in S&T experimentation/test versus that conducted in support of programs of record with facilities designed for these two phases assumed to be as available and cost effective as the other. Lastly, past analyses have failed to take account of the very different business models that are used in S&T as compared to RDT&E which has had the effect on many occasions of making the MRTFB largely unaffordable to S&T programs. With the above in mind, the purpose of this study would be to posit several future scenarios, assess the adequacy of the current S&T and RDT&E infrastructure going forward to meet the future requirements, create and assess alternative future infrastructure postures (existing +/- upgrades +/- new), and propose/assess alternative business models (and the necessary accompanying policy changes) to provide the optimal capabilities for the most likely future environment with hedging as appropriate.

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Air University Research Topics - Academic Year 2016

Topic Title

Improving Air Force Ability to Meet IMD Requirements

Topic Description

The weapon systems demand for intelligence mission data (IMD) far exceeds Intelligence Community (IC) production capacity. Further, adversaries are increasingly able to utilize software and hardware to dynamically alter their signatures thus rapidly rendering static IMD ineffective. Can saliency and sufficiency testing identify Air Force IMD characteristic priorities thus reducing cost and timelines? What strategies can Air Force acquisitions pursue leading to dynamically reactive or adaptive capabilities that reduce dependency on costly pre-positioned and technically detailed IMD while still establishing the means to maintain the decisive strategic advantage?

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Air University Research Topics - Academic Year 2016

Topic Title

Acquisition of Nuclear Systems in an Interagency Environment

Topic Description

The acquisition, modernization, and/or sustainment of nuclear weapon systems are an interagency endeavor. The delivery platform, of the weapon system, is developed/modernized/sustained by the DoD (specifically the Department of the Air Force and the Department of the Navy). The warhead, however, is developed/modernized/sustained through the DOE (specifically the National Nuclear Security Administration, NNSA). To bridge the current seams, interagency groups exist, called the Project Officer Groups (POGs) co-chaired by a DoD representative and an NNSA representative. The study should review the strengths/weakness of the existing process and recommend a range of improvements, up to and including a wholesale change in the construct outlined in DoDI 5030.55.

Sponsoring Air Force Materiel Command

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Air University Research Topics - Academic Year 2016

Topic Title

Do We Need a New Sustainment Paradigm for UAVs?

Topic Description

The current paradigm of Air Force sustainment generally adheres to the following theses: aircraft are expensive, aircraft are not expendable, and aircraft are highly complex. From these paradigmatic theses, the current Air Force sustainment model was developed. Mainly, aircraft frequently undergo costly preventative maintenance, aircraft maintainers are highly trained specialists, and large quantities of spare parts are kept on hand to mitigate performance risks. While these practices serve the AF well for conventional aircraft, they are likely suboptimal with sustaining the growing fleet of Unmanned Aerial Vehicles (UAVs) because UAVs are not expensive, are expendable, and are not highly complex. A UAV's characteristics represent a significant and fundamentally different way to view aircraft. It is therefore worthwhile to examine the effectiveness of current sustainment activities for this new aircraft paradigm and explore future sustainment strategies as they relate to the growing UAV fleets.

Sponsoring Air Force Research Lab

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Air University Research Topics - Academic Year 2016

Topic Title

AF Hiring Process

Topic Description

Industry and other agencies can hire much faster than the Air Force. The Air Force needs an independent body to investigate what is needed to streamline the AF hiring processes. In particular, in the hiring of scientists and engineers (S&E), we can not compete with industry, who can hire in days/weeks in comparison to months. The independent body should investigate not just the speed of the existing process but the value, and benchmark our process against industry. The study's finding could substantiate changes to current

Sponsoring Air Force Materiel Command

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Air University Research Topics - Academic Year 2016

Topic Title

Decentralized Civilian Staffing

Topic Description

Request study on the benefits of decentralized civilian staffing and classification services across the Air Force. This initiative has Center- and Command-level interest and the potential results would have an AF-wide impact, and allow the AF to create a world-class human resources system that aligns with the Air Force Sustainment Center goals and objectives. The probability of success is high due to implementation being within Air Force control.

Sponsoring Air Force Space Command

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Air University Research Topics - Academic Year 2016

Topic Title

Future High-Low Weapons Mix -- Capability/Quantity Optimization

Topic Description

Future Anti-Area/Area Denial (A2/AD) scenarios stress current tactical reconnaissance-strike capabilities to meet campaign objectives. Successful future counter-A2/AD capabilities will likely involve an optimized mix of capabilities that are manned and unmanned, stealth and EW, stand-off and close-in, as well as precision and wide-area in nature. Key drivers in these scenarios include: a large anticipated target set, costs associated with fielding and stocking new weapons systems, and the necessity to attack across the enemy A2/AD kill chain in time and space. Given these drivers, developing, procuring, and employing the optimal mix of munitions becomes critical. In the munitions area, various future concepts include hypersonic air-breathing cruise missiles, tactical boost glide weapons, supersonic cruise missiles compatible with F-35 internal carriage, GBU-X, swarming hunter-killers, and more. This proliferation of potential munitions types creates a conundrum of determining what would be the best mix to pursue and in what quantities based on reasonable price points. The purpose of this study would be to explore the tradespace of future weapons mixes to identify the most promising in terms of types, quantities, and costs so as to better guide S&T and RDT&E investments that produce a viable counter-A2/AD capability at an affordable overall cost. Short of that, identification of the salient analytical characteristics (most insightful measurands, proper scenario vetting/selection, sensitivities, etc.) would be highly useful.

Sponsoring Air Force Research Lab

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Air University Research Topics - Academic Year 2016

Topic Title

OPIR Industrial Base Strategy

Topic Description

Current material of choice for OPIR sensors is difficult to manufacture, resulting in low yields and increased costs. Problem Statement: Current material of choice for OPIR sensors is difficult to manufacture, resulting in low yields and increased costs. Task: Identification of an AF strategy to secure the industrial base or to divest of HgCdTe infrared material focal plane array technology.

Sponsoring Air Force Space Command

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Air University Research Topics - Academic Year 2016

Topic Title

Modeling and Simulation of Networks for Military Applications

Topic Description

Scarcity of computer network models which can create high enough fidelity in simulations of real-world network architectures for use as immersive cyber mission planning and rehearsal environments. Problem Statement: Scarcity of computer network models which can create high enough fidelity in simulations of real-world network architectures for use as immersive cyber mission planning and rehearsal environments. Task: Assist AFSPC in developing requirements for an Air Force cyber range using a modular development framework which may utilize or adapt existing software tools.

Sponsoring Air Force Space Command

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Air University Research Topics - Academic Year 2016

Topic Title

Viability of Trusted Manufacturing for DoD Space and Cyberspace

Topic Description

Faulty and/or counterfeit components in space and cyberspace not only have a detrimental impact to operations within their domains, but are additionally very costly to detect and replace. Problem Statement: Faulty and/or counterfeit components in space and cyberspace not only have a detrimental impact to operations within their domains, but are additionally very costly to detect and replace. Task: Explore the need and utility of trusted manufacturing of components for use in DoD systems, specifically those which support space and cyberspace operations.

Sponsoring Air Force Space Command

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Air University Research Topics - Academic Year 2016

Topic Title

Compare/Contrast/Assess methodologies for BPC, SFA, and FID

Topic Description

Compare/Contrast/Assess the methodologies used by the service components to Program, Plan, Budget, and Execute their respective BPC, SFA, and FID programs. This topic will specifically address the process in which competing priorities among COCOMs are de-conflicted and resourced.

Sponsoring AF Special Operations Command

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Air University Research Topics - Academic Year 2016

Topic Title

Partnerships for Cloud Computing, Big Data Analytics and Cyber Threat

Topic Description

Research how the Air Force can utilize existing infrastructure and best practices exhibited by the government, private sector and academia in the areas of cloud computing, big data analytics and cyber threat sharing to support Air Force mission at lower costs. These items are at the forefront of many high technology related Air Force mission areas. Yet numerous gains have already been made outside of DoD. What can the Air Force learn from these best practices? Are there any existing data centers or other infrastructure the Air Force can securely tap into without having to spend funds to build their own facility? Can the Air Force share and receive unclassified cyber threats from non-DoD entities through confidential models such as the Advanced Cyber Security Center?

Sponsoring Air Force Materiel Command

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Air University Research Topics - Academic Year 2016

Topic Title

Reestablishing the Air Force Nuclear Enterprise: An Action Plan to Make

Topic Description

RESEARCH OBJECTIVE: - Articulate and summarize the NDO mission set and driving regulations and treaties to include leadership guidance/intent - Understand and depict the requirements generation process for the Nuclear Enterprise - Summarize the adequacy of current resourcing for the existing NDO mission - Define the minimum acceptable requirements for future NDO systems and the adequacy of the current plan and anticipated programmatics - Depict and articulate the competing/complimentary roles of the various stakeholders - Identify overlapping efforts within the Service which contributes to Enterprise inefficiencyâ€"Identify gaps which are not being adequately addressed, but could be if we reallocated resources (from overlapping efforts) to better address the capability gaps - Provide recommendations with alternatives and suggested Lead OPRs to ensure operational relevancy to the far-reaches of the planning horizon (30 years) ADDITIONAL BACKGROUND: - The USAF Nuclear Enterprise (NE) is composed of the Air Force nuclear forces, supporting logistics structure, command and control organizations, weapons sustainment and modernization activities, and activities of relevant headquarters, agencies, and centers. - Multiple MAJCOMs, operational stakeholders and critical staff organizations are involved in the management, direction, and oversight of the NE; however, there is a deficiency which precludes a single voice and continuity in message when it comes to resources and requirements - The objective of this effort is to establish a vision for how the NE can best ensure a single and consistent message with regards to requirements and resources from a Title 10 perspective, which is so critical to USAF organize, traine and equip responsibilities - Key source document include: The Creedon Report, General Welch and Admiral Harvey Independent Report, the Rand Report, The Defense Science Board Review, The Air Force Comprehensive Assessment of Nuclear Sustainment, and other

Sponsoring Missing Organization

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Air University Research Topics - Academic Year 2016

Topic Title

AF Operations in the Future Megacity

Topic Description

Within the next 20 years, the US may be required to conduct operations within large urban environments. This may require AF forces to conduct operations in support of joint requirements. This study should examine the range of activities the AF may be required to support and the capabilities required to perform AF operations in the future urban sprawl known as the megacity. Specifically, the following are areas for consideration: What capabilities are required to conduct AF operations in the urban environment? Can the AF conduct,mobility, precision strike, C2, and/or PR in an urban environment? What potential new missions should the AF examine to

Sponsoring AF Special Operations Command

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Air University Research Topics - Academic Year 2016

Topic Title

Aeromedical Staging Facilities (ASFs): a casualty of war. The lost and/or

Topic Description

ASFs morphed to CASFs (Contingency ASF) (new term ERPSS - enroute patient staging system) at the outset of OIF. Although OIF and OEF have long ended and casualty flows from current overseas operations are significantly on the decline why do CASFs remain? Is it because those responsible for making the decision don't know or don't remember the true capabilities of an ASF? Did our 12 years of OCO erase it? Can a generation of medical Airmen who have never known an ASF or been part of an ASF execute its mission? Is there an ASF reconstitution plan? Why isn't there only a CASF (ERPSS 44-165) unifying concept of operations and not an ASF one?

Sponsoring US Air Forces Europe

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Air University Research Topics - Academic Year 2016

Topic Title

Transparency in Healthcare

Topic Description

The impact of transparency in healthcare delivery and what makes a healthcare organization transparent?

Sponsoring AFMSA/SG3OH

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Air University Research Topics - Academic Year 2016

Topic Title

Healthcare Literacy

Topic Description

The impact of patient health literacy on the delivery of safe care and what programs or interventions can and should be used to improve patient health literacy and engagement in their health.

Sponsoring AFMSA/SG3OH

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Air University Research Topics - Academic Year 2016

Topic Title

Healthcare workplace bullying

Topic Description

The impact of workplace bulling on safe healthcare delivery and how to identify and stop workplace bullying in the healthcare

Sponsoring AFMSA/SG3OH

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Air University Research Topics - Academic Year 2016

Topic Title

Adversary Capabilities within Human Genome Research

Topic Description

China has developed the largest, best-funded private genome research program through the Beijing Genome Institute. These publicly disclosed research capabilities hint at greater capabilities. The goal of this project is to evaluate the battlespace capabilities of adversary nations with regards to offensive or defensive human genomic research.

Sponsoring Missing Organization

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Air University Research Topics - Academic Year 2016

Topic Title

Opertional and Strategic Impact of Counterfeit Parts in the Air Force supply

Topic Description

The Air Force supply chain has been and continues to be a target for counterfeit parts (either for criminal purposes or for malicious code intent). While a variety of AF and DOD offices are working to mitigate this issue, what are the operational and strategic impacts of CP to the Air Force?

Sponsoring Air Force Materiel Command

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Air University Research Topics - Academic Year 2016

Topic Title

What is the impact of DLA supply planning practices on long term

Topic Description

DLA has implemented several supply planning practices based upon their internal metrics. Sometimes those practices fail to meet the needs of supplies on the shelf for long term sustainment of older weapon systems. Can any increase of MICAPs or decrease of Aircraft Availability be correlated to these supply practices.

Sponsoring Air Force Materiel Command

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Air University Research Topics - Academic Year 2016

Topic Title
Establishment of military bases overseas

Topic Description
Identify the history on how and why military bases were established overseas

Sponsoring Air Force Space Command

POC Office: PZAA

Email

Air University Research Topics - Academic Year 2016

Topic Title
Establishment of military bases overseas

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Identify the history on how and why military bases were established overseas

Sponsoring Air Force Space Command

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Email

Air University Research Topics - Academic Year 2016

Topic Title

Patient management strategies for medical operations in denied environments

Topic Description

Considering the potential for decreased patient survivability and decreased advanced surgical trauma care, conduct research and analysis on potential expectations, ethical dilemmas, and patient management strategies for medical operations in denied environments

Sponsoring PACAF Command Surgeon

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Air University Research Topics - Academic Year 2016

Topic Title
Current AF fitness standards

Topic Description
Research current AF fitness standards/(theater physical training) to determine suitability for performance in a denied environment.

Sponsoring PACAF Command Surgeon

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Air University Research Topics - Academic Year 2016

Topic Title

Additive Manufactoring (Incorporate new technology into the logistics and

Topic Description

Develop a sound policy / practice of developing new technology and required policy, training, certification and documentation of implementation and execution. Link AFI21-102, AFI21-101, and AFI63-101 requirements into Life Cycle guidance and policy so new technology becomes a viable process for depot and field level repair with clear direction on how technology is used, and technical guidance and training is meets users needs for safe execution.

Sponsoring Air Force Materiel Command

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Air University Research Topics - Academic Year 2016

Topic Title

Long Duration Logistics Wargame (LDLW)

Topic Description

Current Chief of Staff Title 10 wargames lack the ability to predict, beyond 30 days, the sustained logistics support for successful COCOM power projection leaving a critical gap of linking strategy and investments. It is imperative to develop and implement a process to improve active and realistic logistics participation in wargames, simulations, and exercises while minimizing concern areas throughout the Air Force Logistics Enterprise. LDLW is a HAF sponsored program to help fill those needs. LDLW will help: evolve logistics core competencies to fully support Joint Operations, posture logistics resources for the current and future fight, and deliver cost effective readiness through product support and operational logistics.

Sponsoring Air Force Materiel Command

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Air University Research Topics - Academic Year 2016

Topic Title

Additive Manufactoring (Incorporate new technology into the logistics and

Topic Description

Develop a sound policy / practice of developing new technology and required policy, training, certification and documentation of implementation and execution. Link AFI21-102, AFI21-101, and AFI63-101 requirements into Life Cycle guidance and policy so new technology becomes a viable process for depot and field level repair with clear direction on how technology is used, and technical guidance and training is meets users needs for safe execution.

Sponsoring Air Force Materiel Command

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Air University Research Topics - Academic Year 2016

Topic Title

Joint Patient Evacuation System C2

Topic Description

1. Examine C2 relationships for all casualty evacuation platforms. 2. Examine how a Joint C2 structure could enhance Medical Operations in warfighting environments. 3. Examine the impact a Joint C2 structure might have on patient hold capabilities during future engagements. 4. Explore how integrating Joint capabilities would allow for a more limited footprint while expanding capabilities and reducing health service support redundancies.

Sponsoring AFMSA/SG3XI

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Air University Research Topics - Academic Year 2016

Topic Title

AFMS Response to Viral Outbreaks in Deployed Settings

Topic Description

Anaylze current AFMS ability to respond to widespread infectious (including contagious human to human transmissible) biological agents in deployed settings. Identify gaps, challenges, and recommendations across the DOTMLPF spectrum related to typically fielded UTCs (personnel and equipment), current policies, likely medical interventions, AE limitations, existing plans, and medical logistics. Review historical scenarios for applicable lessons learned- SARS, Avian Flu, H1N1, Ebola, Norovirus, etc. Include considerations for operations in A2/AD environments.

Sponsoring AFMSA/SG3XI

POC Office: AFMSA/SG3X

Email trinette.flowers-torres@us.af.mil.

Air University Research Topics - Academic Year 2016

Topic Title

Measures of Effectiveness of AFMS Global Health Engagements

Topic Description

Review the way AFMS measures the effectiveness of Global Health Engagements. Determine if leaders are provided valuable decision points necessary for evaluating mission success.

Sponsoring AFMSA/SG3XI

POC Office: AFMSA/SG3X

Email juan.i.ubiera.mil@mail.mil

Air University Research Topics - Academic Year 2016

Topic Title

AFMS contributions to AF Global Partnership Strategy

Topic Description

Review how AFMS Global Health engagements link and support the USAF Global Partnership Strategy (SAF/IA).

Sponsoring AFMSA/SG3XI

POC Office: AFMSA/SG3X

Email juan.i.ubiera.mil@mail.mil

Air University Research Topics - Academic Year 2016

Topic Title

AFMS contributions to Aviation Enterprise Development

Topic Description

Review how AFMS Global Health engagements link and support the Aviation Enterprise Development.

Sponsoring AFMSA/SG3XI

POC Office:

Email juan.i.ubiera.mil@mail.mil

Air University Research Topics - Academic Year 2016

Topic Title

Development of patient preparation criteria for movement/transport IAW

Topic Description

Examine the Joint Inspection of Cargo process and developed similar criteria/preparation guidance for patient movement

Sponsoring Air Mobility Command

POC Office: HQ AMC/SGX

Email linda.guerrero@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Are manning cuts in the Acquistion career field counter-productive for cost

Topic Description

DoD Acquisitions, like all other career fields, have been under significant manning pressure; most acquisition and base contracting centers are undermanned. At what point do manning cuts cost more than they save? Compare program performance and cost stability/increases relative to manning levels. Is the DoD paying more in poor acquisition management than it is saving in manpower

Sponsoring Missing Organization

POC Office: AFNWC

Email dylan.monaghan.1@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

The unique challenges faced by "functional" COMAFFOR staffs versus

Topic Description

Compare/contrast the challenges of functional or global mission areas to geographically "bound" mission areas; explore the difference and similarities between a "functional COMAFFOR's" engagement strategy/Campaign Support Plan and a geographic COMAFFOR's Country Plan/Campaign Support Plan.

Sponsoring Air Force Space Command

POC Office: HQ AFSPC/A2/3/6OP

Email nia.bluford@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Examine the unique challenges to C2 when functional missions cross domains.

Topic Description

Many space operations missions use communication links to accomplish the mission; USCYBERCOM is tasked oversee all things cyber (i.e., communications links). Research should answer: where does space operations "stop" and cyberspace operations "begin"? Who takes the lead / who takes command where they meet? When the two conflict, which mission area has precedence?

Sponsoring	Air Force Space Command
POC Office:	HQ AFSPC/A2/3/6OP
Email	nia.bluford@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

The application of Total Force to sustain Conus (contingency) operations

Topic Description

Examination of pros and cons of partial or wholesale transfer of missions to ARC units. What is the optimal mix of Regular Air Force and ARC personnel to ensure Regular Air Force personnel flow through ARC sustained missions/systems in order to enable experience-based HQ's management? How do standing legal authorities (Title 32 and Title 10), enable or impede rapid accessibility of ARC forces during quickly emerging crisis within the Conus (e.g. space or cyberspace contingencies)?

Sponsoring Air Force Space Command

POC Office: HQ AFSPC A2/3/6OR

Email nia.bluford@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Electronic Readiness Tracking

Topic Description

Analyze current commercial/industry standards and practices for electronically tracking personnel, equipment, and training (e.g. GPS, scanning bar codes, etc.) and how data is collected and analyzed (use of analytical software). Also analyze other DoD/service (i.e. Navy) capabilities/tools used to track readiness. Identify initial costs, long term benefits, and risks involved in implementing an AF wide system and develop a phased implementation plan.

Sponsoring Air Force Space Command

POC Office: HQ AFSPC A2/3/6OR

Email jerome.white@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

What constitutes a Wounded Warrior? An examination of the Services' use of

Topic Description

Over the years, we've seen the definition of a Wounded Warrior expanded to include personnel who have never served in combat. We've also seen a large increase in the number of personnel diagnosed with PTSD. What is driving the use of these categorizations and what are the implications on military medical retirements?

Sponsoring Missing Organization

POC Office: 75 MDG

Email jeffrey.cook.3@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Unintended Consequences that Modernizing the Military's Retirement System

Topic Description

Physicians already receive large professional pay bonuses and yet we have trouble retaining them past their initial commitment. With the ability to leave the service with a significant TSP balance, will we see even lower physician retention rates? Will the professional pay have to be further increased to retain physicians?

Sponsoring Missing Organization

POC Office: 75th Medical Group

Email jeffrey.cook.3@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

What Impact Does the Air Force's Lack of Family Practice Physicians Have

Topic Description

As the Air Force Medical Service struggles with retaining Family Practice Physicians, one of the answers is to hire healthcare extenders (Nurse Practictioners and Physican Assistants). Although extenders are very capable, they are not physicians. Will this have an effect on patient safety?

Sponsoring Missing Organization

POC Office: 75 MDG

Email jeffrey.cook.3@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Patient management strategies for medical operations in denied environments

Topic Description

Considering the potential for decreased patient survivability and decreased advanced surgical trauma care, conduct research and analysis on potential expectations, ethical dilemmas, and patient management strategies for medical operations in denied environments

Sponsoring Missing Organization

POC Office: PACAF SGR

Email james.sandvig.1.ctr@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title
Current AF fitness standards

Topic Description
Research current AF fitness standards/(theater physical training) to determine suitability for performance in a denied environment.

Sponsoring PACAF Command Surgeon

POC Office: PACAF SGR

Email james.sandvig.1.ctr@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Impact of Military Health System's Electronic Medical Records (AHLTA and

Topic Description

Determine if current Military Health System's Electronic Health Records (AHLTA and CHCS) improving overall Patient Safety

Sponsoring PACAF Command Surgeon

POC Office: PACAF SG

Email joseph.anderson@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

The identification of toxic leadership behaviors and how to facilitate change to

Topic Description

First, providing information on how organizations and individuals identifiy toxic leaders. Second, providing individuals and organizations with information and resources for facilitating changes in those behaviors.

Sponsoring Missing Organization

POC Office: 75 ABW

Email linda.mckenzie_bergloff.2@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

The identification of bullying and other nonsexual harassment behaviors and

Topic Description

The identification of bullying and other nonsexual harassment behaviors and how to facilitate changes to those behaviors.

Sponsoring Missing Organization

POC Office: 75 ABW

Email linda.mckenzie_bergloff.2@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Using GPOPS-II: Next-Generation Optimal Control Software Determine

Topic Description

Using GPOPS-II: Next-Generation Optimal Control Software (http://www.gpops2.com/) Determine Feasibility of Unmanned Refueling of a Suborbital Vehicle via an Air-based Carrier likely at 80,000-150,000ft Perpetual Altitude (Moving or Stationary) over CONUS or International Waters via Suborbital Flights from space and to the Air-based Carrier or back to the Surface of the Earth; calculations should include the ability of Suborbital Vehicle to safely and autonomously Intercept the Air-based Carrier for refueling then transit back to orbit or descent to the surface of the earth for prosecuting ISR missions. Additionally, there should be a comparison of Suborbital Vehicle refueling at various altitudes versus traditional space launch capabilities; that is intuitively, a Suborbital Vehicle requires less fuel when launched at 80,000-150,000 ft altitudes and Suborbital Vehicle can demonstrate extreme and on-demand responsiveness for the conduct of ISR missions anywhere in the world. From a broader perspective, these calculations are to demonstrate the feasibility of the unused 80,000ft to exoatmospheric domain for strategic and tactical advantage in the prosecution of future missions; a partial exemplar exists in the conduct of missions of the X37 and the potential of future commercial suborbital flights and the ability to reduce launch costs from the surface of the earth (e.g., SpaceX recoverable primary rocket stages). If feasible, these calculations would inform the capability of a novel capability in the control of the 80,000ft to exoatmospheric domain (300,000ft) for

Sponsoring Air Force Research Lab

POC Office: AFRL/RVES

Email eddy.wright.1@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Perceived risks in the use of Genetic/Genomic Information for Personalized

Topic Description

As genomic and genetic testing becomes more mainstream, there are concerns about information security and potential misuse of genetic information. There may be additional concerns on behalf of Active Duty members as the 2008 Genetic Information Nondiscrimination Act (GINA) prevents discrimination based on genetic information for employment and health coverage in the civilian population, but does not apply to members of the DoD. This study could look at perceived risks among Active Duty Air Force members with regards to genetic testing, as well as potential risks associated with Commandersâ€™ access to this information and their subsequent career progression. As a benefit, this study could provide Air Force service members with awareness on current policy and

Sponsoring	Missing Organization
POC Office:	AFMSA/SG#PM
Email	ruth.brenner.mil@mail.mil

Air University Research Topics - Academic Year 2016

Topic Title

Development of US Air Force Fatigue Risk Management System Instruction

Topic Description

Human fatigue remains a ubiquitous and pervasive threat throughout the Air Force and to national security. Numerous aviation and ground mishaps cite human fatigue as causal or contributory. Human fatigue continues to plague Air Force 24/7 operations. A study by Rand, Sleep Problems and Their Impact on U.S. Servicemembers, published 6 Apr 2015, stated "Not only was it rare for servicemembers to get the recommended seven to eight hours of sleep per night, but around 31 percent reported getting five hours or less - an amount linked to an increased risk of mental and physical health problems. This rate is much higher than that reported in the general population...Somewhat surprisingly, there were few statistically significant differences in sleep problems or sleep-related behaviors according to deployment history." Multiple Air Force Instructions define duty limits to at least partially mitigate fatigue (AFI 11-202V3, AFI 11-2MDS-V3, AFI 21-101, AFI 44-119). Numerous programs and resources provide sleep physiology and fatigue management training (Aerospace & Operational Physiology, Airmen Resiliency, Safety, etc.). There have been multiple attempts to integrate policy and requirements into various career fields (i.e. maintenance, intelligence and security forces). However, there is no

Sponsoring AFMSA/SG3PB

POC Office: AFMSA/SG3/5PT

Email james.w.lasswell2.mil@mail.mil

Air University Research Topics - Academic Year 2016

Topic Title

EMP survivability of all essential aircraft, systems, and facilities AF-wide

Topic Description

Examining the AF as a whole, how prepared are we for an electro-magnetic pulse (EMP) event. What aircraft and systems would survive such an event and which ones would we need to respond to such an event?

Sponsoring HQ Air Combat Command

POC Office: HQ ACC/A10

Email acca10oOperations@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Personnel Recovery (PR) in an Anti-Access/Area Denial (A2/AD)

Topic Description

Determine multi-dimensional future Personnel Recovery force capability requirements to successfully operate in an A2/AD environment. Requirements should not focus on platforms but emphasize future cross functional offensive, defensive, and cyber capabilities and address requisite recruitment and training requirements for the future Combat Rescue Force.

Sponsoring	HQ Air Combat Command
POC Office:	HQ ACC/SG
Email	acca10oOperations@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

National and International policy overview concerning transit of potentially

Topic Description

Recent events related to the 2014 Ebola and 2011 Operation Tomodachi contingency response operations highlight the difficulty ensuring aircraft can transit international borders and return to the United States. There are many stakeholders in the public policy regarding transit of aircraft in these circumstances. With the advent of dispersed operations in A2/AD environments, the issue will become even more complex. The objective of this research topic is to identify the relevant public policies and regulatory framework for aircraft transiting international borders, and domestically within the United States, that may be CBRN contaminated or suspected of CBRN contamination. The author is encouraged to make recommendations for future tactics, techniques and procedures to facilitate the safe transit of aircraft while complying with applicable regulatory standards.

Sponsoring	HQ Air Combat Command
POC Office:	HQ ACC/SG
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Air University Research Topics - Academic Year 2016

Topic Title

Operationalizing the Combat Cloud

Topic Description

Determine future Combat Air Force capability requirements and employment considerations to support the full range of military

Sponsoring HQ Air Combat Command

POC Office: HQ ACC/A3

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Air University Research Topics - Academic Year 2016

Topic Title

Operationalizing the Combat Cloud

Topic Description

Determine future Combat Air Force capability requirements and employment considerations to support the full range of military

Sponsoring HQ Air Combat Command

POC Office: HQ ACC/A3

Email acca10oOperations@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

The Application of Combat-to-Dwell Inside the MQ-1/9 Force Presentation

Topic Description

Combat to Dwell time for aircrew members within the MQ-1/9 enterprise. Does it improve training/retention/health/morale of the aircrews assigned to this weapon system.

Sponsoring HQ Air Combat Command

POC Office: HQ ACC/A3

Email joe.joyce.1.ctr@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

The Impacts of a High Fidelity Simulator for RPA Training and Distributed

Topic Description

Advantages/Disadvantages of training with high fidelity simulator connected to the DMO network and integration with other airborne

Sponsoring HQ Air Combat Command

POC Office: HQ ACC/A3

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Air University Research Topics - Academic Year 2016

Topic Title

The Implementation of RPA Aerial Refueling and the Impacts to the Warfighter

Topic Description

RPA refueling and the impacts to the warfighter of increased on station times/increased transit distances.

Sponsoring HQ Air Combat Command

POC Office: HQ ACC/A3

Email joe.joyce.1.ctr@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Capturing service retained forces supporting Combatant Commanders in

Topic Description

Services retained forces currently execute AF operations satisfying Combatant Commander requirements (RPA, Intel DCGS, Opn Wx Sqdn, etc.). These mission sets are conducted outside the OPCON definitions of JP-1. A solution to this authorities conflict is required to codify the support relationships.

Sponsoring HQ Air Combat Command

POC Office: ACC/A3W

Email william.courtemanche@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Merits of Computer Based Training (CBT) vs. Squadron Training Office

Topic Description

Review merits of CBT vs. Squadron Training Office conducting training. While CBTs provide individual scheduling flexibility, we may have moved too far away from critical training (i.e., Suicide Prevention) being taught through CBTs vs. an individual under the supervision of the Squadron Training Office. In person training offers several advantages: 1. Complex issues (like Suicide Prevention) can be more fully explored in group settings 2. Enhances group cohesiveness, morale and teamwork Also, Senior Leadership should be aware how much time is allocated to CBTs vs. mission accomplishment. We are not suggesting there is no place for CBTs in training, but we believe there is value in a review of how training is accomplished.

Sponsoring HQ Air Combat Command

POC Office: HQACC/A3

Email Evan.Scaggs@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Restoring the High/Low Mixture of Forces - Developing a Analysis Based

Topic Description

Much force development in recent years has been towards "Cadillac systems" like the F-35, Carrier Strike Groups, and other high end systems; high-end forces with highly concentrated capability sets. Some systems with high capability are needed in the future major conflicts, but there is a canary in the coalmine with past work using Lanchester's laws and the Salvo Equations, that suggest if cost to equip is a constraints that applying national resources to a mixture of high-low forces may present a more survivable and capable force using cost as a constraint. Recent technological trends such as cheap swarm-based drones, highly networked sensor-shooters, and additive manufacturing may swing the pendulum towards fielding inexpensive platforms with "diffused capability" featuring mixed medley of a lot of single- or few-capability platforms. Is there a way to develop an analysis based method to plan for future forces recognizing cost to equip and combat effects on the dollar? A case study developed with a limited Joint mission set like Combat Air Patrol, or Close Air Support with some projected force mixtures may be revealing...?

Sponsoring HQ Air Combat Command

POC Office: HQACC/A5

Email oliver.easterday@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Rising cost of Information Assurance (IA) compliance to IT systems

Topic Description

Rising cost of Information Assurance (IA) to IT systems Operations & Maintenance (O&M) sustainment budget. Paper should focus on rising costs of IA compliance make, impacts to reduced funding for fixes and enhancements.

Sponsoring HQ Air Combat Command

POC Office: HQ ACC/A5

Email john.swartz.4@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

C2 Operational impact of 5th generation platforms reporting in SAP/SAR

Topic Description

C2 Operational impact of 5th generation platforms reporting in SAP/SAR domain. Paper should focus on operational impacts in the C2 community where SAP/SAR is not employed, nor operators cleared for this information. Paper can consider impact on rising number of beyond secret clearances required to implement as 4th gen and earlier systems retire and are replaced by newer platforms.

Sponsoring HQ Air Combat Command

POC Office: HQ ACC/A5

Email John.swartz.4@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Long-term operational impacts to radar tracking as cooperative reporting rises.

Topic Description

Paper should focus on operational role of radar surveillance as cooperative reporting (self-reporting) from data linked equipped platforms becomes platform wide. Should radar surveillance become more of an intel function as blue forcing tracking will provide much better identification and positional data.

Sponsoring HQ Air Combat Command

POC Office: HQ ACC/A5

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Air University Research Topics - Academic Year 2016

Topic Title

Major acquisition impacts since USAF decision to move PEMs out of the

Topic Description

Paper should focus on the impact of the 1999/2000 decision to move the PEMs from the operational MAJCOMs to AFLCMC. Special consideration should be given to major acquisition performance since this change, limiting of operational communities options to address critical issues (e.g. limiting to termination of the program), and the delta between acquisition need for cost/schedule versus user's primary need for capability/performance.

Sponsoring HQ Air Combat Command

POC Office: HQ ACC/A5

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Air University Research Topics - Academic Year 2016

Topic Title

Operational impacts of cloud computing versus C2 needs for positive control

Topic Description

Paper should focus on the impact software engineering pushing DoD to invest in clouding computing where positive control of C2 data may not be possible, how C2 doctrine will be affected and if traditional C2 doctrine for positive control remains operationally sound.

Sponsoring HQ Air Combat Command

POC Office: HQ ACC/A5

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Air University Research Topics - Academic Year 2016

Topic Title

Assessing Information Assurance and Mission Effectiveness

Topic Description

What does information sharing contribute to mission effectiveness and how can it be assessed? The advent of the Joint Information Environment (JIE), Mission Partner Environment (MPE), and other DoD and USAF initiatives (Unified Capabilities, Cloud, Cyber, Mobile Devices, ISR Information Architecture, etc.) all emphasize the need for information sharing (IS). This carries with it a need for a common data framework, federated information architectures, integration of system of system (SoS) construct functions to provide needed information sharing capabilities, and interoperability (structural, syntactic and semantic) of information across Air Force Service Core Functions (SCF); among domains, organizations and users (Joint, coalition, allied); throughout ROMO. Information sharing is more than simply a process of connecting networks and nodes or information exchange requirement (IER) identification related to mission. The IS chain (gather, post, process, archive, dispose) and the IS capabilities delivered along that chain, needs to be linked to the mission chain (plan, execute, monitor, assess) in order to categorize, quantify, qualify, and evaluate the contribution of IS capabilities to mission accomplishment within an operational context and along a mission thread.

Sponsoring HQ Air Combat Command

POC Office: ACC/A6

Email hugh.way@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Assessing Information Assurance and Mission Effectiveness

Topic Description

What does information sharing contribute to mission effectiveness and how can it be assessed? The advent of the Joint Information Environment (JIE), Mission Partner Environment (MPE), and other DoD and USAF initiatives (Unified Capabilities, Cloud, Cyber, Mobile Devices, ISR Information Architecture, etc.) all emphasize the need for information sharing (IS). This carries with it a need for a common data framework, federated information architectures, integration of system of system (SoS) construct functions to provide needed information sharing capabilities, and interoperability (structural, syntactic and semantic) of information across Air Force Service Core Functions (SCF); among domains, organizations and users (Joint, coalition, allied); throughout ROMO. Information sharing is more than simply a process of connecting networks and nodes or information exchange requirement (IER) identification related to mission. The IS chain (gather, post, process, archive, dispose) and the IS capabilities delivered along that chain, needs to be linked to the mission chain (plan, execute, monitor, assess) in order to categorize, quantify, qualify, and evaluate the contribution of IS capabilities to mission accomplishment within an operational context and along a mission thread.

Sponsoring HQ Air Combat Command

POC Office: ACC/A6

Email hugh.way@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

AF-Wide Cyber Mission Awareness

Topic Description

How can cyber mission assurance be provided to combat and other platforms that are not visible to 24th AF on AFNET on a 24/7 basis.. The need for information dominance makes organizations and missions increasingly dependent on cyber resources, ranging from general-purpose information and communications technologies to mission or business function-specific information systems. Those resources are subject to disruption, degradation and failure due to both hostile activities by threat actors and by environmental conditions. Interruption, degradation or imitation of critical information and data needed to support decision makers and mission owners poses significant risk to C2, mission execution, and other air operations that require integration and synchronization of

Sponsoring	HQ Air Combat Command
POC Office:	ACC/A6
Email	hugh.way@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Cyber Sneak Attacks

Topic Description

Are we prepared to defend against a Cyber Pearl Harbor or 9/11 type attack? ACC depends on the availability and security of the cyber domain to execute combat missions. Currently 24 AF is designated AFCYBER and is tasked with the safeguarding of our networks and information systems. Has USAF or AFSPC as the lead for Cyber, adequately resourced 24 AF to defend the cyber terrain, or are we vulnerable to a surprise attack that could render our technical advantage useless?

Sponsoring HQ Air Combat Command

POC Office: ACC/A6

Email hugh.way@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Combat Cloud and the Air Force's role as Services provider

Topic Description

As part of the development of the Combat Cloud concept, should DoD and Service cyber assets retain a services provider role or transition to the role of services consumers in a cloud enabled environment? We are looking for an optimal approach determined from a set of possibilities of how to have the benefits of cyber services as we move to a cloud architecture.

Sponsoring HQ Air Combat Command

POC Office: ACC/A6

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Air University Research Topics - Academic Year 2016

Topic Title

Child Combatants in Africa: POW Status and Medical Care Requirements.

Topic Description

What are the ethical challenges associated with the imprisonment of child combatants? What are the requirements for medical care of child combatants? What military assets are presently dedicated and/or most appropriate for this mission? What limitations exist? How might the US Government establish international norms of behavior regarding imprisonment and medical care of children in POW status? What are the international, US governmental and AFMS impacts of child combatants and how do we best prepare as a military for this developing requirement.

Sponsoring AFMOA/SGHW

POC Office: AFMOA/SGHM

Email donald.lane@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Combat and Combat Support Utilization of Air Force Physician Assistants in

Topic Description

Describe the evolving role of the physician assistant in the wartime setting, as well as how that optimized utilization could positively impact the strategic AF medical enterprise in garrison and in future operations.

Sponsoring AFMOA/SGHW

POC Office: AFMOA/SGHM

Email rene.chadwell@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Cost Effectiveness and Patient Safety Comparative Analysis of AF Physician

Topic Description

Critical, trended analysis of cost effectiveness and patient safety data associated with Physician Assistant Utilization in the Air Force over the past 20 years.Provide comparative analysis of data for both topics to best inform strategic manpower and utilization decisions in the AFMS

Sponsoring AFMOA/SGHW

POC Office: AFMOA/SGHM

Email rene.chadwell@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

The Shifting Culture of Religion in the Military

Topic Description

Research is needed to better understand the relationship between religion and non-federal entities. Due to changes across the religious landscape of America (i.e. executive orders and the repeal of DADT and DOMAâ€™s decision that DADT is unconstitutional and its impact upon religion in the military), the relationship between the military chaplaincy and non-faith entities have been seen as adversarial. Research in this area could help to provide insights for future relationships with regard to the shifting culture of religion in

Sponsoring HAF/HC

POC Office: AF/HCX

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Air University Research Topics - Academic Year 2016

Topic Title

Determine the viability of a 30-year retirement as an option to the current 20

Topic Description

- The 30 years would be cumulative, vice consecutive, allowing individuals to depart the service entirely for periods of time. Only periods of satisfactory performance in the military would be considered as a qualifying year. This time could be comprised of a combination of full time Active Duty, full time Reserve, or part time Reserve. - Like the Reserve Component retirement system currently in place, retirement pay would be based on the individuals rank and the number of active duty points accrued during the 30 year period. Pay could start immediately upon satisfaction of 30 qualifying years, or similar to the current Reserve Component retirement system, at the age of 60 (unless reduced do to active duty support of a named contingency). Recommendations would require a corresponding cost benefit analysis. Considerations: - Effects to time in grade requirements - Health benefits - Law modifications - Risk assessment - Barriers - Cost

Sponsoring Air Force Space Command

POC Office: AU/RF

Email barbara.lee.1@us.af.mil

Air University Research Topics - Academic Year 2016

Topic Title

Strategic Planning and Performance Measurement for the USAF Nuclear

Topic Description

Research for this topic is aimed at gaining a better understanding of how resourcing and policy decisions impact readiness and mission execution in the USAF Nuclear Enterprise. A natural extension of this line of inquiry is the construction of a framework for strategic planning and performance measurement based on such a plan. The result of this research, which could be multiple research efforts, should provide senior decision-makers insight into setting priorities, measuring and managing performance and achieving the desired level of readiness and success in mission execution.

Sponsoring HQ USAF A10

POC Office: HAF/A10

Email david.d.odonnell.civ@mail.mil

Air University Research Topics - Academic Year 2016

Topic Title

Strategic Stability in an Unstable World: Potential Military Aspects of

Topic Description

During the Cold War, the term â€œstrategic stabilityâ€ referred to the nuclear balance between the two superpowers. In recent years, strategic stability has generally referred to the strategic relationship between the major nuclear powers â€“ including, but not limited to, the relationship between their nuclear forces. Recent U.S. government efforts to open â€œstrategic stabilityâ€ dialogues with Russia and China have not gained traction. With US-Russian relations facing increasing challenges â€“ and US-China relations increasingly complex â€“ what measures (whether, unilateral, bilateral, or multilateral), if any, could the U.S. military propose to U.S. policymakers bolster strategic stability in the nuclear, space, or cyberspace domains?

Sponsoring HQ USAF A10

POC Office: AF/A10-SI (CTR)

Email justin.v.anderson4.ctr@mail.mil

Air University Research Topics - Academic Year 2016

Topic Title

Assessing Potential Space Arms Control Agreements

Topic Description

Should the U.S. support a new space arms control treaty and, if so, what type of treaty limitations, restrictions, information exchanges, and verification measures would be beneficial to US security? Current U.S. space policy strongly supports developing multilateral mechanisms to address issues that represent common challenges to all space-faring nations, to include the potential negotiation of space arms control agreements. U.S. policy also states, however, that it will only consider space arms control agreements that are â€œequitable, effectively verifiable, and enhance the national security of the United States and its allies.â€ Since the Outer Space Treaty entered into force in 1967, attempts to develop space arms control agreements have proven unsuccessful. Space arms control proposals have generally failed to pass the â€œequitable, effectively verifiable, and enhance [US national security]â€ test. This proposed paper would assess whether a future space arms control agreement could meet these standards, and, if so, would further investigate the potential parameters of this agreement with regard to central limits, information exchanges, and the verification regime it would need to

Sponsoring HQ USAF A10

POC Office: AF/A10-SI (CTR)

Email walter.m.conrad.ctr@mail.mil

Air University Research Topics - Academic Year 2016

Topic Title

What is the best mechanism for AF to command and control (C2)

Topic Description

AF executes C2 for conventional forces very well. AF executes C2 for nuclear forces very well. However, AF does not have the capability, including both forward deployed equipment and trained personnel, to C2 a conflict that begins as a conventional war, escalates to include a limited nuclear strike, and de-escalates back to a conventional war. Examples of these limited nuclear operations executed in conjunction with enabling conventional air operations could include JASSM-ER support to ALCM, JASSM-ER support to B-2 nuclear operations, or F-16 SEAD support to NATO-led F-15E nuclear operations. National Command Authority (NCA) retains C2 of nuclear forces, while the Air Operations Center (AOC) retains C2 of conventional forces. AOCs do not receive nuclear Emergency Action Message (EAM) execution and termination orders, and NCA C2 nodes are not co-located with AOCs. An example of one of the challenges is communication and coordination of mission efforts related to survivability and the acceptable level of risk (ALR) to air operations. The President retains sole execution and termination authority; as such, the airborne mission commander during a nuclear sortie does not have the authority to deviate from Presidential authorizations. However, during this mission the enabling conventional support assets may face a threat environment greater than allowed by the mission ALR. At that point coordination would be required back to NCA to terminate the nuclear mission, but airborne mission commander platforms in theater may not have the capability to do so, especially in a communications denied or degraded environment. Proposed research would address appropriate mechanisms to simultaneously C2 nuclear and conventional forces worldwide; and include analysis of issues such as trained deployable manpower,

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Air University Research Topics - Academic Year 2016

Topic Title

How can the State Partnership Program relationships be best leveraged in

Topic Description

The State Partnership Program has a worldwide footprint with some relationships dating back to 1991. The dual role of the National Guard as a traditional national defense force and a state controlled defense force has the capability to bring together key military and civilian players. This study will provide a look at how to best leverage SPP relationships, capabilities and capacity to attain strategic

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Air University Research Topics - Academic Year 2016

Topic Title

1. Small Satellite Concerns

Topic Description

The proliferation of small satellites (smallsats) is a growing problem for the national security space community. In 2013, there was a 269% increase in the launch of 1kg-to-50kg smallsats over the previous year. Substantial annual growth in numbers of these satellites is projected to continue, based on existing programs and announced plans of developers. By one estimate, between 2,000 and 2,750 smallsats of this size are expected to be launched from 2014 to 2020. A single launch vehicle can deploy dozens of cubesats. The International Space Station (ISS) also has the ability to deploy small payloads routinely. New services, intended to be operational before the end of this decade, are being developed to place an increasing number of smallsats in orbit at decreasing cost. The growth is primarily driven by rapidly expanding non-governmental activity. Attracted by low-cost commercial off-the-shelf (COTS) technology, greater access to space via increased rideshare opportunities, a growing industrial base, and sophisticated satellite buses that are declining in cost, smallsat companies are carving out a market niche and academic institutions are embracing the hands-on learning opportunities. As greater numbers of smallsat constellations are deployed, issues of maneuverability (or the lack of it), active and passive identification, and end-of-life disposition must be addressed. The U.S. regulatory regime for these operations is still in its development stage. There is also no agreed-upon international standard or code of conduct addressing this activity. The research project should explore policy and safety considerations; identify impact, if any, to orbital debris standards compliance (nationally and internationally); assess the effectiveness of advocating and adopting appropriate international norms of behavior; and evaluate other remedies which might ease the potential space traffic management problems associated with the proliferation of small satellites in low

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Air University Research Topics - Academic Year 2016

Topic Title

Proliferation of Global Navigation Satellite Systems (GNSS), Pseudolites, and

Topic Description

What policies, if any, should the U.S. implement to manage the proliferation of GNSS systems, and especially the proliferation of air and ground-based pseudo-satellites (pseudolites) and positioning beacons? GNSS systems with at least some satellites on-orbit include GPS, GLONASS (Russia), Galileo (EU), and Beidou (China). Regional satellite navigation systems underway include QZSS (Japan) and IRNSS (India). These systems are being augmented by air and ground based pseudolites and positioning beacons including the Locata system being deployed on Air Force test ranges, and Japan's Indoor Messaging System (IMES). Pseudolites and beacons may be widely proliferated, especially for indoor use. Questions to consider include: - What policies should be developed concerning spectrum use, including: o Use and issuance of pseudo-random noise codes o Incorporating message or other data capability into navigation signals o Compatibility/interoperability standards? o Spectrum bands appropriate for use by pseudolites and beacons for various applications - Which capabilities should DoD explore further for possible use and why? - How does the need for coalition interoperability affect these policies? - What are the advantages and disadvantages of incorporating various allied (or potential adversary) GNSS signals into U.S. GPS user equipment?

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Air University Research Topics - Academic Year 2016

Topic Title

The Future of Proximity Operations in Space

Topic Description

Rendezvous and proximity operations (RPO) are specific processes where two resident space objects are intentionally brought close together for operational purposes. Such operations pose a safety concern as well as raise the specter of adversary interference with our critical space assets. However, proximity ops are poised to expand to multiple government and private sector entities pursuing a variety of applications. In the future we will likely see on-orbit activities such as satellite servicing (repair, refueling, and station-keeping/orbit adjustment), debris removal, robotic assembly of structures, cooperative distributed systems, and operation of habitable facilities for research and industrial purposes. Future space development will undoubtedly see increases in the frequency and sophistication of RPO. As proximity operations become routine we will likely see an operational environment in which the high sensitivity of this activity will seem increasingly out of place. At the same time, the recent strategic portfolio review for space calls for resilience and agile defense in an environment of evolving threats. Questions to consider: - What are the national security space implications of increasingly common RPO, and how could we mitigate risks? - Which types of proximity operations are of greatest concern, and how could they be detected, monitored, and if necessary, discouraged? - How should national policies and international agreements evolve to accommodate a future in which numerous global players are actively engaged in proximity operations? - Are there lessons to be learned from the gradual loosening of restrictions in other high-sensitivity space activities, such as high-resolution commercial remote

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Air University Research Topics - Academic Year 2016

Topic Title

PNT Leadership Strategy

Topic Description

The U.S. Space-Based Positioning, Navigation, and Timing Policy calls for the U.S. to remain the global leader in providing satellite navigation systems and services for worldwide use. However, global leadership can no longer be interpreted as being a monopoly provider, since many foreign systems are being actively pursed for civil, commercial, and military use. - What does this mean for PNT-related engagement with other nations fielding space navigation systems? - To maintain leadership, should the U.S. commit to a GPS acquisition and launch schedule based on firm operational dates for modernized capabilities, or is a schedule based on satellite end-of-life estimates still appropriate? How much, if anything, could be gained? - What are the implications (pro and con) of adding foreign PNT capabilities to U.S. military user equipment? - What complementary PNT sources would provide low-cost, robust military service in electromagnetically and physically impeded environments? For which military applications might they be cost-effective? - What are the PNT leadership implications of the U.S. deciding to deploy, or not deploy, an eLORAN system as a complementary PNT system to GPS? What is the most cost-effective force structure to deploy for U.S. critical infrastructure applications? What force structure would be required to support national security applications given U.S. global commitments?

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Air University Research Topics - Academic Year 2016

Topic Title

Role of Operationally Responsive Space (ORS) in International Engagement

Topic Description

The Department of Defense (DoD) signed a multi-lateral Responsive Space Research, Development, Test & Evaluation (RDT&E) Memorandum of Understanding (MOU) that provides a legal framework and authority for conducting information exchange and exploring potential projects with international partners. The MOU holds promise for promoting allied interoperability and for leveraging country-specific expertise, thus encouraging mutually beneficial technological advancements. Perhaps more importantly, it provides a mechanism for U.S. involvement and leadership in the development of common technical standards, without which some current U.S. technology advantages may erode. How can the U.S. best leverage the ORS RDT&E International MOU to increase U.S. advantage? Potential lines of inquiry include: - What are potential benefits of modular satellite designs and electronic â€œplug and playâ€ standards (such as reduced satellite construction costs and more timely assembly, integration and test)? - How could commonality serve to make U.S. and partner nation responsive space products attractive to a world market? - How might cost-sharing arrangements enable projects? - How is this agreement unique (or not unique), and how might this agreement serve as a template for expanded cooperation with countries not included in the agreement? - How will additional layers of complexity inherent in shared projects impact execution? - How can we mitigate the risks of fragile and interdependent cost-sharing arrangements? - What are the residual risks/challenges to technical data sharing, even with an MOU in place? What approaches

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Topic Title

Impact of Global Space Endeavors on International Space Security

Topic Description

International space activity is increasing in scope and activity from a relatively small number of well-known players to many emerging nations and other new entrants. With this awareness, the recent Strategic Portfolio Review (Space) identified the ability of the United States to work in alliances and international partnerships as a great national strength. The development of U.S. space strategy would benefit from an improved understanding of spacefaring nationsâ€™ political context, and an assessment of their national and corporate policies, strategies, and trends, to supplement the more conventional approach of documenting space hardware development efforts. Avenues for investigation include: - An analysis of official policy contrasted with observed activity - Pursuit of or investments in innovative or breakthrough technology - Impact of the proposed International Code of Conduct for Outer Space Activities - Incentives and likelihood of adhering to internationally established norms of behavior - Long-term impact of policies departing from treaty language limiting territorial or sovereignty claims on space bodies (i.e., property rights in space and the implications for

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Air University Research Topics - Academic Year 2016

Topic Title

How Service-specific Training of Space Cadre Affects Joint Environment

Topic Description

By law each military Service is required to maintain a cadre of space professionals. The requirements for these professionals are determined by the individual Services based on their specific needs. However, U.S. Strategic Command has argued that this Service-specific training makes them ill prepared for assignments to joint billets. How should space cadre be trained in order to provide the maximum benefit to the joint force commander? Lines of inquiry include: - Should overarching Joint Space Training be required for all space cadre members as a prerequisite or adjunct to individual Service space cadre training? (Analogous to the requirement for all Marine officers to attend the Basic School to understand the fundamentals of the infantry before learning their specific occupational specialty to ensure a certain level of proficiency and understanding.) - If Joint Space Training is recommended, at what point in a career should it take place, and what organization should administer and resource this training? - Are their similar parallels in other military career fields (for example: aviation or acquisition)? - What are the drawbacks or disadvantages of a Joint Space Training

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Topic Title

Establishment of a Space Traffic Management capability

Topic Description

As space is increasingly becoming congested, an inter-agency proposal recommends the establishment of a Space Traffic Management capability, possibly building on the model of the International Civil Aviation Organization (ICAO) as it pertains to aviation. Areas for consideration include: - Are there inherently non-military activities currently performed by U.S. Strategic Command (USSTRATCOM) that can be better accomplished by a civil or commercial entity? - What is the best construct between civil organizations and DoD? Consider the following: o The Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST) is the U.S. licensing authority for non-federal launch and re-entry. o USSTRATCOM's Joint Functional Component Command for Space is the only U.S. entity with the analytical staff and space surveillance capacity to effectively monitor space traffic. - What are the benefits and risks of transferring responsibilities for conjunction assessments and advisory notices to a civilian agency?

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Air University Research Topics - Academic Year 2016

Topic Title

Space and Cyber Cross-domain Synergies

Topic Description

The 2011 National Security Space Strategy specifically calls for exploring cross-domain solutions for capabilities that are currently delivered from space. However, cross-domain operations may offer more than simply an alternative means to deliver capability. Operating in multiple warfighting domains simultaneously can create synergistic effects. These effects are well understood in the conventional warfighting domains and the synergistic effects of combining space or cyber with land, air and sea are well appreciated. However, the effects of combining space and cyber operations are as yet largely unexplored. Areas for consideration: - What does cross-domain synergy (CDS) mean to your Service (as it relates to space and cyber)? o How does space power contribute to cyber operations? o How does cyber power impact space operations? - Do you see cross-domain synergy as a capability optimized for the A2/AD challenge, or is it something that is relevant to a broader set of challenges and that the Joint Force should integrate across the force as a matter of course? - What does CDS do for the joint force? - What are the attributes of a force that is able to conduct space and cyber cross-domain operations? - Are joint forces capable of conducting cross-domain operations today? - What changes to doctrine, organization, training, materiel, leadership and education, or personnel and facilities (DOTmLPF) could enhance

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Topic Title

Exploitation of commercial and international space capabilities to conduct

Topic Description

The portfolio of space capabilities available both commercially and internationally is growing rapidly, particularly in remote sensing and satellite communications. For example, commercial entities are exploiting small satellites to deliver persistent high-resolution imagery and full motion video. In satellite communications, numerous companies are planning to blanket the world with communications services that provide fiber-like throughputs. In the context of information dominance, access to these growing capabilities is critical to military operations. Moreover, potential adversaries will also be capable of using these resources. The current DoD policy landscape may present challenges in exploitation of these resources due to security implications and inflexible procurement rules. In light of these challenges, the following issues require investigation: - Will capabilities indigenous to the United States and those of close allies be sufficient to deliver the required space capabilities to achieve information dominance in support future military operations? - How can the elements of national power (diplomatic, informational, military, economic) be used to ensure access to emerging foreign space capabilities while denying them to potential adversaries? - How can the use of foreign space capabilities be

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Air University Research Topics - Academic Year 2016

Topic Title

ROI associated with developing new methods for Airman selection, mission-

Topic Description

What is the return on investment associated with developing new methods for Airman selection, mission-alignment, mission readiness, and retention, to include enhanced psychological/ psychiatric assessments and identification of predictive genetic and biological markers for the major career fields (Air, ISR, Cyber, RPA, Spec Ops) across the Airman's lifecycle? Develop enhanced aptitude assessment to optimize personnel and the career field matching process across the enterprise.

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Air University Research Topics - Academic Year 2016

Topic Title

Ethical Decision-Making Situations faced by Airmen

Topic Description

- The increased reliance on human-computer systems interactions in dynamic environments with ambiguity and uncertainty creates opportunities for ethical decision making situations to become more pronounced and have an impact on choice and outcomes that have impactful consequences such as life-death situations. There is little to no research documenting ethical dilemmas and situations between Airmen, artificial intelligence and computers at the unclassified, let alone classified, levels. - Objectives: Determine the types of ethical decision making situations faced by Airmen and identify key characteristics of these situations. Investigate the extent to which Laws of War and/or Rules of Engagement are either consciously or subconsciously applied in these settings. - The potential classification levels of the information could be as high as TS/SCI. Ultimately; the idea is to re-write the scenarios/situations so they can be tested in other research done at the unclassified level.

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Air University Research Topics - Academic Year 2016

Topic Title

Policy and Foreign Relations Implications of <1 Day Launch on Demand

Topic Description

- AFRL/RQ is working with AU LeMay Wargame center to quantify AU/CC's vision for a CONUS based platform to deliver air power globally in about 1 hour (called Air Guardian) - Topic scope includes examining implications of delivering air power (e.g. weapons, supplies, troops, etc) anywhere on the globe via an extra-atmospheric vehicle to national and international policy - Example potential policy concerns are 1) foreign air space violations, 2) projecting weapons through space, and 3) perception of a nuclear ICBM

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Air University Research Topics - Academic Year 2016

Topic Title

Can autonomous software be designed and licensed like a pilot is trained and

Topic Description

- Today: Certify platforms and license operators (pilots). - Future: Certify platforms and license Autonomous algorithms Applies to the V&V and Certification of all near future Autonomy based DoD systems. - Investigate current processes for training autonomous system operators, identifying requirements for documenting the ‘pedigree’ of an Autonomy algorithm (in design or as it learns) as it relates to the ‘pedigree’ or ‘competency’ of a human operator - Identify tech gaps, social implications, military advantages, should approach be pursued within DoD

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Air University Research Topics - Academic Year 2016

Topic Title

DE Weapons impact in 2030 on Hypersonics, Autonomy, Policy and Strategy

Topic Description

- How will DE weapons, hypersonics, autonomy, impact US national strategy in 2030? What policies will these technologies require? - Objective - Gain insight on top level US Strategy for DE Weapons Usage & Protection - Missions -- Air and Space Superiority - Desired Insights -- Best area to focus limited resources to defend against DE Weapons

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Air University Research Topics - Academic Year 2016

Topic Title

Innovative and Agile

Topic Description

- What should the USAF do to make us more innovative and agile? What policies/processes can we streamline to make our research efforts more agile? - Objectives -- Independent review and analysis of USAF Policies/Processes and possible suggestions to make USAF more agile. Missions -- Air Dominance Desired Insights -- Recommendations for streamlining and enhancing Productivity and

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Topic Title

PEO Lifecycle Cost Accountability

Topic Description

- How should we hold USAF PEOs more accountable for lifecycle costs? - Objectives -- Help our organization deliver affordable Capabilities and Weapons - Missions -- Air Dominance - Desired Insights -- Best transition and acquisition processes to maximize value

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Topic Title

USAF Weapons Review

Topic Description

Why have weapons been overlooked in the USAF in the past several decades? - Objectives -- Refocus USAF attention on weapons development, utilization and optimization and determine where the development broke down. - Missions -- Air and Space Dominance - Desired Insights -- Highlight opportunities for increased Lethality

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Topic Title

F-35 Weapons Limited Capability

Topic Description

- Why is the F-35 so limited in its weapons capabilities? - Objectives -- To understand F-35 Weapons capabilities & limitations - Missions -- Air Dominance - Desired Insights -- Understand possibilities and limitations of F-35 weapon Types"

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Topic Title

Understanding & Adopting Acquisition Lessons

Topic Description

- How do we learn lessons in acquisition? Should the USAF adopt acquisitions doctrine? Why do we continue to repeat acquisition mistakes? Why can't streamline acquisition? Why does it take so long? - Objectives -- Review, analyze and improve the acquisition process - Goal -- How to improve USAF processes

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Topic Title

What are the Challenges in Integrating 5th Generation Air Power Capabilities

Topic Description

The USAF and RAAF (and other western Air Forces) have either begun the process of introducing fifth generation air power systems, or have (USAF F22) done so. Fifth generation air power systems provide revolutionary capabilities that will require, inter alia, transformation in concepts, organization and personnel training and education to ensure these capabilities are used to best operational effect in a future fully integrated force. These same western Air Forces will continue to operate legacy systems in some cases for decades to come. There will therefore be significant challenges in integrating fifth generation air power capabilities such that a seamless, secure and fully connected joint force is developed, which fully caters for and integrates the capabilities of legacy systems. The aim of this research topic is to better understand the challenges inherent in fully integrating fifth generation air power capabilities, and to identify solutions to better enable the required transformation in the Air Forces concerned.

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Air University Research Topics - Academic Year 2016

Topic Title

SOF as a strategic instrument of war: How to employ SOF to

Topic Description

SOF have become one of the primary military capabilities for senior policy makers and DOD leaders to employ in the uncertain environment of today. This reflects a shift from the use of conventional forces (CF) to a heavy reliance on SOF. What are the implications for U.S. strategy for senior leader reliance on SOF? How should SOF be best employed to achieve national security objectives? What is the effectiveness of SOF: their role; their use as a strategic tool of warfare; and their ability to meet the security needs of the United States and the international community? What are the impacts of CF budget and personnel reductions upon SOF capabilities (equipment and personnel recruitment)?

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Air University Research Topics - Academic Year 2016

Topic Title

Beyond stealth to maintain technical overmatch: What does SOF need from

Topic Description

In the fall of 2014, then-Secretary of Defense Chuck Hagel announced the “Defense Innovation Initiative.” An initiative to develop a ‘third offset’ in technology (stealth was part of the second offset). The third offset is meant to give U.S. forces technological overmatch of its adversaries. Possible examples of this new offset include robotics, autonomy, miniaturization, 3-D printing, big data, and/or swarming. Innovation is not constrained to the defense industry, and the DOD may have to look to the commercial market for breakthrough technologies. What capabilities and/or advances in technologies need to occur to ensure United States’ SOF (USSOF) maintains a technological advantage over our adversaries? How can SOF capitalize on the third offset? What are the future technology-based threats to SOF operators across the range of military and special operations? Can SOF overcome these threats? How can SOF benefit from these same technologies for operators’ safety and effectiveness? How can SOF use recent technological advances to sustain a force in austere environments, or decrease the footprint of a force in a situation that demands low visibility?

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Air University Research Topics - Academic Year 2016

Topic Title

Training SOF for the future: Identifying skill gaps and seams

Topic Description

The future operating environment is defined by an increasingly interconnected global commons paired with the increasing effects of non-state actors. SOF preparing to operate within this environment are bound by fiscal constraint, decreasing resources, and manpower limitations amongst an era of expanding SOF requirements. While the characteristics of warfare within this environment will continue to evolve, what are the skills not yet currently present within special operations that are assessed as necessary for success? How can USSOCOM effectively prioritize training efforts while addressing the risks assumed with inaction? Given the likely requirement for Foreign Internal Defense (FID) and UW missions, how critical are language capabilities? How does culture and cultural intelligence play a role? What are the current training gaps, and what are the future training requirements? Should training be broadened throughout all SOF or focused on specific SOF specialties?

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Air University Research Topics - Academic Year 2016

Topic Title

Unconventional Warfare (UW): Is America politically prepared to support any

Topic Description

UW has become an increasingly important tool of U.S. policy as resistance forces in many parts of the globe organize to confront oppressive regimes. This proposal examines the success and failures of past UW operations to include: the Office of Strategic Services in World War II, Russian UW in the Ukraine/Crimea, the initial stages of Operation Enduring Freedom with the U.S. in support of the Northern Alliance, Contras in Nicaragua, and the U.S. in Operation Iraqi Freedom in partnership with the Kurds. Other considerations: - Are SOF trained and equipped to capitalize on opportunities and enable resistance operations in times and locations of choice as approved by U.S. authorities? - In each example, describe the conditions; how was success defined? - What were the common denominators for success or failure? - What were the best practices? - Are the American people and political leaders prepared to support expanded UW given ethical questions and the long-term demands of UW?

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Air University Research Topics - Academic Year 2016

Topic Title

Africa is the new frontier: Learning from recent interventions

Topic Description

Comparatively speaking, Africa has become the new frontier and an area in which USSOF are active or becoming more active, in particular in the Sahel and the Horn of Africa. It is a huge continent with unique challenges. This topic looks at the differences and uniqueness in SOF operations in Africa versus the Middle East, Europe, or other regions. Other considerations: - What are the greatest obstacles to SOF effectiveness in Africa, and how can they be overcome? Have other regions encountered the same issues? If not, why not? - What can USSOF learn from historical and recent French, Canadian, and British interventions in Africa? - What regional dynamics are of greatest concern? What problems cross multiple regions of the continent? - What unique logistical and operational problems does Africa present? What are the dynamics of religious and cultural conflict?

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Air University Research Topics - Academic Year 2016

Topic Title

Preventing, countering, and disrupting foreign fighter flow (FFF) to include

Topic Description

The steady state of FFF across and into various Geographic Combatant Command (GCC) areas of responsibility continues to be a concern, as an example, into and out of Syria. This flow has been attributed to a range of factors, including the recruiting campaigns orchestrated by violent extremist groups and the ease with which militants from the Middle East, North Africa, and Europe can access this region. The same is true of FFF across Southeast Asia and the relationship of VEOs with the FFF phenomenon. This research topic seeks to explore the antecedents of FFF with a focus on the social, environmental, and psychological factors that deter or motivate foreign fighters to join or support extremist causes in any of the regions/GCCs and across GCC areas of responsibility. What efforts have been made to deter, disrupt, and destroy these foreign fighter threats? Have they been successful? Additionally, the study should address FFF-defeat and countering- FFF operations. Other considerations: - How do kinetic operations, such as airstrikes, impact these antecedents? - How might influence operations weaken these causal factors? - What are the information environment's most appropriate leverage points for deterring or disrupting FFF? - How do SOF identify, track, and monitor the activities of those foreign fighters that return home to do damage to the home front?

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Air University Research Topics - Academic Year 2016

Topic Title

Identifying, assessing, developing, and motivating potential partners in

Topic Description

Recent conflicts have highlighted opportunities and policy dilemmas in the conduct and support of IW. In most of these conflicts, the United States has partnered with state or non-state actors to support or oppose an existing government. What are the best practices and other mechanisms for understanding, identifying, assessing, developing, and motivating potential partners' behavior, objectives, organization, and composition to successfully partner with SOF? Which partnership efforts are most effective and most cost-efficient? What other interests or issues must be considered (stability, capability, etc.) when partnering with others in conducting and supporting

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Air University Research Topics - Academic Year 2016

Topic Title

Resource scarcity and the impact on SOF operational capabilities: Competition

Topic Description

Water is becoming the new oil. Resource scarcity and specifically potable water scarcity is projected to be a major driver of conflict in many parts of the world where USSOF operate. How will competition over resources shape conflict in the future, and what are the implications for USSOCOM? SOF forces are expected to operate in environments where potable water shortages are pervasive. How will SOF capabilities be impacted when operating in water-scarce environments? Research can focus broadly on analysis of current SOF capabilities for operating in water scarce environments, as such, what future technological advances should USSOF be cognizant of that can help small SOF units operate successfully? What are the potential 'mine, save, and recycle'? alternatives? Is 'harvesting fog,'? a method of retrieving moisture in coastal areas, still a viable practice in other environments? How does resource scarcity affect Joint Intelligence Preparation of the Operating Environment doctrine 'systems perspective?'? What are the land use issues and

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Air University Research Topics - Academic Year 2016

Topic Title

SOF challenges and opportunities in future operating environments: How and

Topic Description

Since the end of the cold war, the U.S. has inexorably moved to a less stable and less predictable global environment. Predicting future instability, conflicts, and direct and indirect threats to U.S. interests is profoundly important to USSOCOM. What are the projected global hot spots in five, 10, 15 years? What future state, non-state, social, and technological ‘game changers’ could impact global U.S. interests? What do SOF need to understand about the myriad projections and predictions regarding the future operating environment so USSOCOM is prepared for the future? Where should USSOCOM focus future ‘Phase 0’ activities to enhance stability and prevent conflict? Should there be increased emphasis on campaign planning and the application of operational design to help develop strategies for activities short of war?

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Air University Research Topics - Academic Year 2016

Topic Title

SOF and war by proxy: Strategic asymmetry and points of advantage

Topic Description

Proxy wars with external support for combatants in civil war situations are common in warfare, yet arguably the least understood aspect of modern conflicts. A comprehensive understanding of the types of proxy interventions since 1945, their magnitude, intent, and outcome, can provide inferences for USSOCOM strategies for proxy interventions and UW. Does USSOF have a valid knowledge base on the 'success' or 'failure' of proxy wars since 1945? Safe-havens, financial flows, military assistance, military training, UW, level of economic development, size of adversary CF, and air superiority are proxy war advantages, are there others? What case studies are relevant for examining strategic asymmetries and the points of comparative advantage between the opposing forces?

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Air University Research Topics - Academic Year 2016

Topic Title

Mitigating SOF suicides: Susceptibility and risk factors

Topic Description

According to a 2014 New York Times article, “In the past two and a half years, 49 Special Operations members have killed themselves, more than in the preceding five years. While suicides for the rest of the active-duty military have started to decline after years of steady increases, they have risen for the nation’s commandos.” SOF suicides continue to happen, even with focused attention from the current USSOCOM commander (as stated in his confirmation hearing) and throughout the chain of command. What’s driving the increase? What has been overlooked? Are the current statistics an anomaly or a gauge for concern? What indicators correlate with susceptibility to suicide? Are there unique risk factors associated with SOF suicides? Are SOF suicides precipitated by different factors among the specialties within the SOF community? What preventive measures can be taken to reduce

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Air University Research Topics - Academic Year 2016

Topic Title

Examine the implications and effects of adopting programs to optimize SOF

Topic Description

An extensive study directed by a former USSOCOM commander, Admiral Eric Olson, revealed that the current operational environment has been more difficult than operators and their families expected, leaving little time for them to adjust to the daily strains of perpetual absences. The study noted troubling consequences, with increases in domestic and family problems, substance abuse and self-medication, risk-taking behaviors, post-traumatic stress, and even suicides. The study found that SOF were frayed. Currently, there is legislative reluctance to fund USSOCOM human performance programs and infrastructure as opposed to Military Service funded programs. USSOCOM human performance efforts are currently integrated under the POTFF initiative. What are the values of SOF specific human performance programs? Should it be a stand-alone program more aligned with operational needs? Should or will the human performance initiative be considered an operational USSOCOM requirement? Why should USSOCOM spend money on such additional programs? What are the limits for the program to research enhanced or augmented physical and mental capabilities? What are the moral and ethical issues beyond optimizing mental and physical capabilities, sleep, nutrition, and resilience; as opposed to augmenting or enhancing physical and cognitive abilities through advances in biomechanics, pharmaceuticals, and genetic therapies?

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Air University Research Topics - Academic Year 2016

Topic Title

Fighting ISIL

Topic Description

An exploration of the US strategy for fighting and defeating ISIL including such things as: 1) under what authorities the US would use to send troops to fight ISIL, 2) is air power enough to defeat ISIL, 3) what is the best course of action to defeat ISIL, 4) how should the international community fight ISIL with social media, and 5) what should be the roles of Turkey and Iran be in fighting ISIL. This topic is proposed by the Royal Jordanian Air Force (RJAF) Commander Maj Gen Mansour al Jabour, who lost Capt Moadh al Kasasbeh in their own fight against ISIL. He is eager to engage the Air University on studying this common enemy. Contact information listed is for US Air Attache to Jordan Lt Col Matt Yocum.

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Air University Research Topics - Academic Year 2016

Topic Title

Hosting Coalition Air Forces

Topic Description

A study for the benefit of improving the infrastructure, maintenance facilities, fuel storage, logistics aspects of operations to help serve joint and coalition operations with the ultimate goal of planning, budgeting and cost sharing between allied countries and host nation. This topic is submitted by Royal Jordanian Air Force (RJAF) Commander Maj Gen Mansour al Jabour, who lost Capt Moadh al Kasasbeh in their own fight against ISIL and are hosting multiple coalition partners on their bases for Operation Inherent Resolve. The contact information listed is for US Air Attache to Jordan Lt Col Matt Yocum, who submitted at the request of the RJAF Commander.

Sponsoring Defense Intelligence Agency

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Air University Research Topics - Academic Year 2016

Topic Title

The proliferation of Unmanned Aerial Vehicles and Drone Warfare

Topic Description

The proliferation of cheap UAV technology gives any potential adversary access to off-the-shelf drones that could be used to disrupt US operations, challenging the air component's ability to provide air superiority in a contingency. What technologies and capabilities should the Air Force be investing in to stay ahead of this emerging challenge? Are there non-materiel solutions that lend themselves to this challenge? How might a "counter-drone" CONOP work?

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Air University Research Topics - Academic Year 2016

Topic Title

How should the Air Force prepare for the proliferation of Remotely Piloted

Topic Description

The proliferation of cheap RPA technology provides any actor with access to off the shelf RPA capabilities that could disrupt military operations. These capabilities will challenge the air component's ability to deliver air superiority to joint force commanders. What types of counter-RPA capabilities should the Air Force invest in to address this issue? What would be viable concepts of operations for countering the adversary RPA threat to air superiority?

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Air University Research Topics - Academic Year 2016

Topic Title

How can the Air Force keep pace with technological advances?

Topic Description

Major force programs often take decades to advance from concept to fielding. In that span of time technology can rapidly progress, increasing the risk that the platforms and munitions we field will approach technical obsolescence soon after deployment. What legal authorities does the Air Force possess in order to accelerate the acquisition processes of its major programs? What type of authorities would be required for reform? How should the Air Force balance oversight steps in the acquisition process with timely, relevant capability development?

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Air University Research Topics - Academic Year 2016

Topic Title

How might the Air Force realize "multi-domain approaches" described in A

Topic Description

Multi-domain approaches, as described in A Call to the Future and the Strategic Master Plan, imply the seamless integration of air, space, and cyber capabilities to accomplish the five core Air Force missions. What technology investments should the Air Force consider to advance multi-domain approaches? What organizational models would best enable successful multi-domain approaches? How should the Air Force present forces for multi-domain approaches to joint force commanders?

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Air University Research Topics - Academic Year 2016

Topic Title

What is an affordable strategy for recapitalizing the Air Force for the future?

Topic Description

Rebalancing to an exclusively 'high-end" force may expose the Air Force to an adversary's long-term attrition strategy. There is additional risk that high-end capabilities increasingly diverge from those of partner nations, challenging interoperability. Two principal items need to be evaluated against today's strategic context: 1. The tempo at which the Air Force transitions to a high-end focused force; 2. the balance of Air Force capabilities to provide effective airpower across a wide spectrum of operations.

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Air University Research Topics - Academic Year 2016

Topic Title

How should the Air Force construct a near/far mix of capabilities for the

Topic Description

As the Air Force decreases in numbers of platforms, our global basing network may soon become unsustainable. This will force difficult choices for global posture. An analysis of the strategic environment offers more questions than answers as we consider a diverse array of challenges and potential operating locations. Some have suggested a shift away from permanent overseas bases to an predominantly expeditionary force based in the US. Consider the role of permanent and temporary overseas bases vis a vis US bases: what is the appropriate balance?

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Air University Research Topics - Academic Year 2016

Topic Title

How should the Air Force address test and training infrastructure

Topic Description

Aging platforms are not the service's only modernization concern, and in some cases not even the most pressing concern. The service has made a commitment to live-virtual-constructive training to support its modernization efforts. The Air Force may need to think of its testing and training infrastructure part of the weapon systems they serve, or as weapon systems in their own right. Does aging test and training infrastructure constitute a readiness concern as well as a modernization concern as the newest platforms and munitions arrive? What tradeoffs should the Air Force contemplate to preserve or replace these vital test and training capabilities?

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Air University Research Topics - Academic Year 2016

Topic Title

Is it time for a paradignm shift in managing people?

Topic Description

The future Air Force faces two major management challenges. The first challenge is fueled by generational change and shifts in the US economy and its workforce: how can the Air Force bolster the retention of its most talented and innovative people? The second challenge is to reward innovation and foster organizational agility: how can the Air Force purposefully integrate modern organizational design, leadership theory, and smart risk-taking to these ends? What legal and policy authorities does the Air Force possess to address these challenges? What changes in law and policy does the service require to address these challenges?

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Air University Research Topics - Academic Year 2016

Topic Title

How should the Air Force leverage its Allies and partners into the future?

Topic Description

Alliances and partnerships provide a multitude of stabilizing benefits ahead of conflict, including mass, political resilience, legitimacy, and strategic 'breathing room.' Many traditional allies and partners find themselves in a strategic context very similar to that of the US: increasing commitments around the globe with reduced resources for those commitments. How should interoperability among the Air Force and its Allies and partners be enhanced? To what extent should the Air Force shift from an interoperability to an interdependence mindset with its allies and partners? Is there historical precedent for doing so? What benefits can be reaped from such an approach? What pitfalls call such an approach into question?

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Air University Research Topics - Academic Year 2016

Topic Title

Achieving the right balance between real and synthetic flight time.

Topic Description

Air Forces around the world are constantly relying on synthetic flight training. This increasing trend is directly linked to shrinking budgets not allowing the same level of live training that Air Forces had always experienced. Moreover, while the use of flight simulators allows for more complex scenarios (sometimes impossible to perform live), taking this practice to the extreme might induce unexpected results on flight crews (not exposed to real flight condition as they used to). The scope of this research is to give an answer to the matter of finding the right balance between live and synthetic flight time using objective criteria's thus exploring advantages and disadvantages of both type of training and potential side effects of the extensive use of flight simulators.

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