

# ***Headquarters U.S. Air Force***

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## **NDIA Division Planning Meeting** ***AF Outlook for CY2016***



**Col(s) Colin Tucker**  
**SAF/AQRE**  
**09 December 2015**

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# *Topics*

- **Rapid acquisition**
- **Intellectual Property and Data Rights**
- **Development Planning & Experimentation**
- **Systems Engineering Effectiveness**
- **Systems Security Engineering**
- **Human Systems Integration**
- **STEM Workforce**

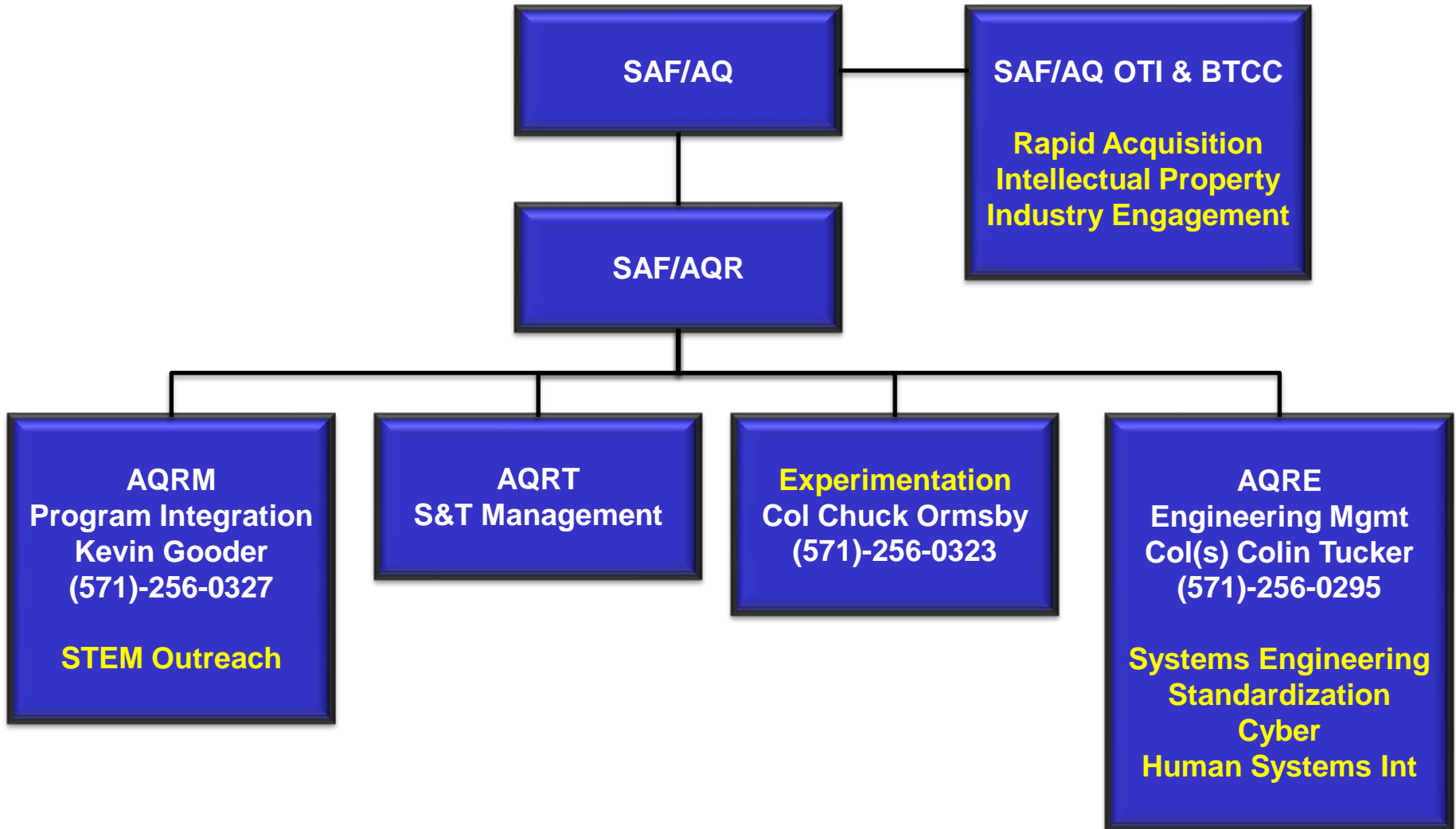
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# Topics by Organization

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# *Bending the Cost Curve*

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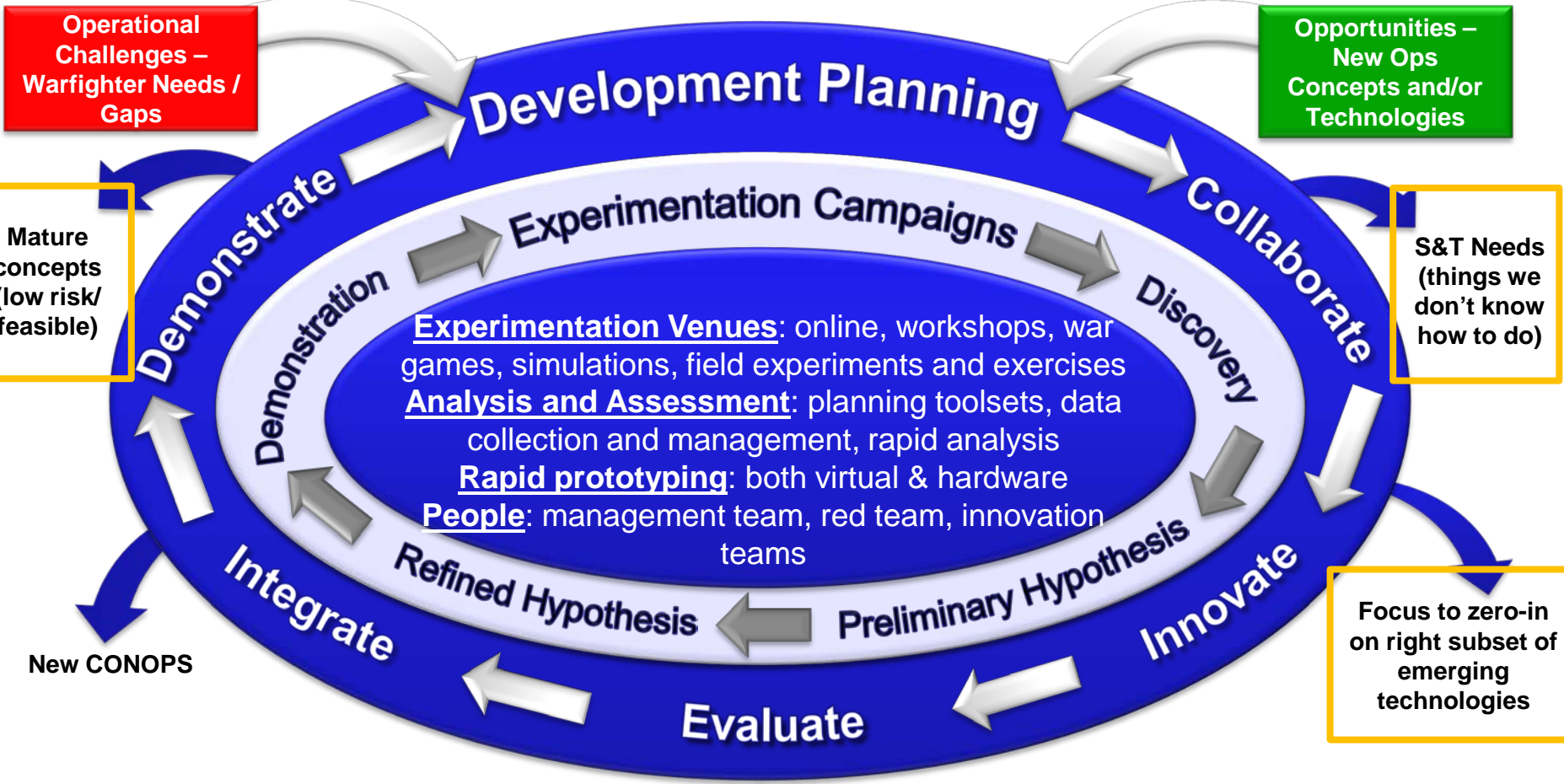
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- **SAF/AQ Office of Transformational Innovation (OTI) Bending the Cost Curve (BTCC) Activities:**
  - **Rapid Acquisition**
    - Reduce time to award sole source
    - Plug Fest Plus
      - OT “open” contract vehicle ready for business; building consortium
  - **Intellectual Property (IP)**
    - BBP 3.0 MOSA IPT and IP Forum participation from OSD, Services, and 10 companies
    - Govt low on experts and training
    - Need to seek win-win agreements on data rights
  - **Cost Capability Analyses**
    - Industry Engagement Guidebook ECD 31 Dec 2015 -- AFMC



# Experimentation Enabling Development Planning

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New CONOPS





# ***Systems Engineering***

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## ■ **Standardization**

- **AF is supporting DoD Coordination of Utilization Guidance for IEEE 15288 standards suite; guidance developed by an NDIA SE Standardization Working Group**
  - **Suite is comprised of IEEE Standard 15288, 15288.1 and 15288.3.**  
**Topics: Systems engineering and technical reviews & audits**
  - **ECD: Summer 2016**

## ■ **MOSA**

- **Need bidirectional encouragement for adoption of commonly used standards**

## ■ **Modeling and Sim – Digital Thread and Digital Twin**



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# *Digital Thread / Digital Twin*

## *The Analytical Framework*

- **Digital Thread** - An extensible, configurable and enterprise-level framework that seamlessly expedites the controlled interplay of authoritative data, information, and knowledge to inform decisions during a system's life cycle by providing the capability to access, integrate and transform disparate data into actionable information.
- **Digital Twin** - An integrated multi-physics, multi-scale, probabilistic simulation of an as-built system that uses the best available physical models, sensor information, and input data from the Digital Thread and a Digital System Model to mirror the life of its corresponding physical twin.

**Complementary and Integrated Concepts  
that put Engineering Back Into Systems Engineering**



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# ***Systems Security Engineering***

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- **Integrating SSE into SE Processes – AF Cyber Campaign LOA 2**
  - **Developing**
    - **Processes, training and education materials, RFP language , SETR entry/exit criteria, common CPI/CC identification processes, change management products and health metrics**
    - **Metrics have multiple sources – intended to enable continuous process improvement and enterprise metric collection, reporting, and analysis**
  - **Desired end state is to use the PPP to document SSE activities**
    - **Produce streamlined SSE instructions that help programs navigate through the PPP and cyber security policies, instructions, and stakeholder requirements while increasing mission assurance.**
- **DFARS / NIST SP 800-171**
  - **Protection of Unclassified Technical Information**





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# ***Human Systems Integration***

## **■ Human Systems**

- HSI Risk Tool (formerly known as Human Readiness Level project)**
- Joint HSI Working Group developing HSI standard**
  - Membership from Government, NDIA, IEEE, SAE, and others**

## **■ Air Force HSI Categories / Domains**

- 1. Manpower**
- 2. Personnel**
- 3. Training**
- 4. Environment**
- 5. Safety**
- 6. Occupational Health**
- 7. Human Factors Engineering**
- 8. Survivability**
- 9. Habitability**

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# ***STEM Outreach***

## ■ **STEM and Industry:**

- **As global technological innovation continues to advance at a rapid rate, it benefits both the Air Force and industry to invest in STEM education to ensure a highly-qualified STEM workforce persists**
- **The Air Force is committed to STEM outreach to attract and inspire students to an Air Force career**
- **Our programs can be more impactful and wide-reaching if we partner with industry**
  - **StellarXplorer program (<http://www.stellarxplorers.org/>), a SECAF initiative to increase high school student's interest in space, launched a successful pilot program last year. The program is hoping to grow from 20 teams to 200 teams in a year, but we need industry's help**



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# Questions?

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***Backup***

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# ***Open System Acquisition***

## ***SAF/AQ OTI Initiative***

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- **OSA Other Transactions vehicle open for business Nov 2015**
  - **Intended for prototyping, competing, and quickly awarding/implementing new technology solutions**
  - **Rapid acquisition: RFP to Award in <30 days**
  - **Pulls from not-for-profit consortium**
    - **Low barrier to entry**
    - **Incentivizes participation by traditional and non-traditional firms**
  - **Demonstration-based solicitation with clearly defined test environment, interface definitions, and measurable performance objectives**
  - **Goal to introduce as many AF-wide Open System initiatives to this contract vehicle as possible**
    - **OMS adopters, agile SW development, subsystem modernization, etc.**



# Acquisition Cyber Resiliency Campaign Plan

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**SMC**



**AFLGMC**



**NWC**

LOA 1: Mission Thread Analysis	LOA 2: Integrate into SE Process	LOA 3: Cyber Workforce Development	LOA 4: Enhance Adaptability	LOA 5: Develop Common Security Environment	LOA 6: Assess and Fix Legacy Systems	LOA 7: Intelligence for Cyber Security
End-to-end operational process supporting a mission	Incorporates systems security engineering into all phases of the acquisition life cycle	A cyber-savvy workforce capable of integrating cyber security measures into all phases of the acquisition process	Vigorously enhances the adaptability of our weapon systems to rapidly respond to threats	Facilitates the integration of cyber security measures into all phases of the acquisition process	Prioritizes legacy systems to fix existing and future cyber vulnerabilities	Strengthen acquisition cyber security through improved intelligence collection, analysis, and application

## ***Mission Assurance End State***

**Resilient Systems**

**Common Processes**

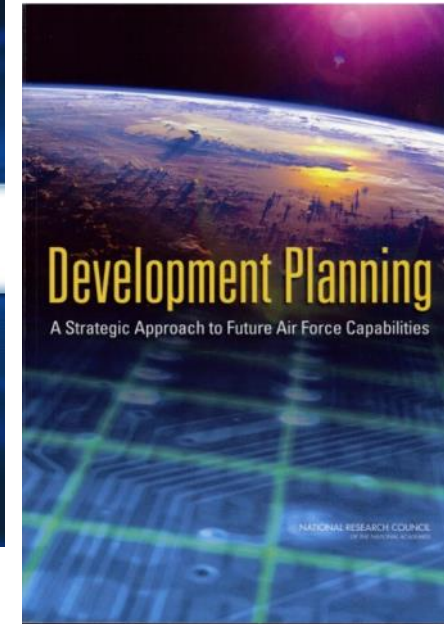
**Educated Workforce**

**High Confidence Missions**

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# AF Strategy & Development Planning



**Purpose and value of DP and Experimentation, to include best practices, outlined in AF Studies Board DP Study (Oct 2014) and DSB report (Oct 2013) – Being implemented to support vision, goals, and objectives of AFS and SMP**

**DP and Experimentation provide analytic foundation to properly inform SECAF and CSAF strategic investment decisions**



# AF M&S Relationships

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## AF M&S Tri-Chair (HAF/A9, SAF/AQ, HAF/A3)

**Strategic Focus:** Modeling & Simulation Infrastructure Support & Development

**RDT&E TECHNOLOGY DEVELOPMENT**  
AFRL

**Analytic Pillar**  
(Force Structure)  
Analytics Focus

**PROGRAM DEVELOPMENT:**  
HAF/A2 & AQ & A5/8 & A9 and AFMC, AFSPC

**Acquisition Pillar**  
Analytic & LVC Focus

**TEST:**  
AF TEST & AFMC/AFSPC

**Training Pillar**  
LVC for Training Focus

**TRAINING:**  
AF/A3, CAF/MAF DMO

<b>Research/Tech Dev.</b> AFRL, DARPA...	<b>Dev. Planning</b> Center XZ's...	<b>AQ, PEOs, Programs</b> Industry & AF Org	<b>Test (DT/OT/IOT&amp;E)</b> AFMC, AF/TE, AFOTEC...	<b>Sustainment/Training</b> AFMC, AFSPC, COCOMS...
- Engineering Models - AFSIM, BRAWLER... - Embedded H/W & S/W	- COVART, BRAWLER, SUPPRESSOR, THUNDER, STORM, AFSIM, EAAGLES - Embedded H/W & S/W, MT/SL, ITASE		- DIADS, MT/SL TMAP - F-22 Air Combat Simulator - F-35 Verification Simulator	- NGTS, XCITE, EADSIM - F-22 FMT - F-35 FMS/DMRT

**INTELLIGENCE MS&A SUPPORT (Data, MT/SL, TMAP, & ITASE)**



**Unique Engineering Level tools**  
- *Technology/Phenomenology Specific*  
**Engagement Level:** BRAWLER  
**Mission Level Models:** EADSIM, SUPPRESSOR, OPPRESSOR  
**Campaign:** THUNDER, STORM

**Unique Engineering Level tools**  
- *"ility" Specific, Contractor tools*  
**Engagement Level:** BRAWLER  
**Mission Level Models:** EADSIM, SUPPRESSOR, OPPRESSOR, EAAGLES  
**Campaign:** THUNDER, STORM

**Unique Engineering Level tools**  
- *DT Specific, Contractor tools*  
**Engagement Level:** F-22 ACS...  
**Mission Level Models:** DIADS, System Specific (F-22 ACS, F-35 VSIM), SUPPRESSOR  
**Campaign:** THUNDER, STORM

**Unique Engineering Level tools**  
- *Training, Logistics Specific*  
**Part Time Task Trainers**  
**System Mission Trainers**  
- F-22 FMT or F-35 FMS/MRT  
- Models like NGTS or XCITE  
**Distributed Mission Operations**  
- CAF DMO or LVC-OT