Air Force Institute of Technology
School of Systems & Logistics

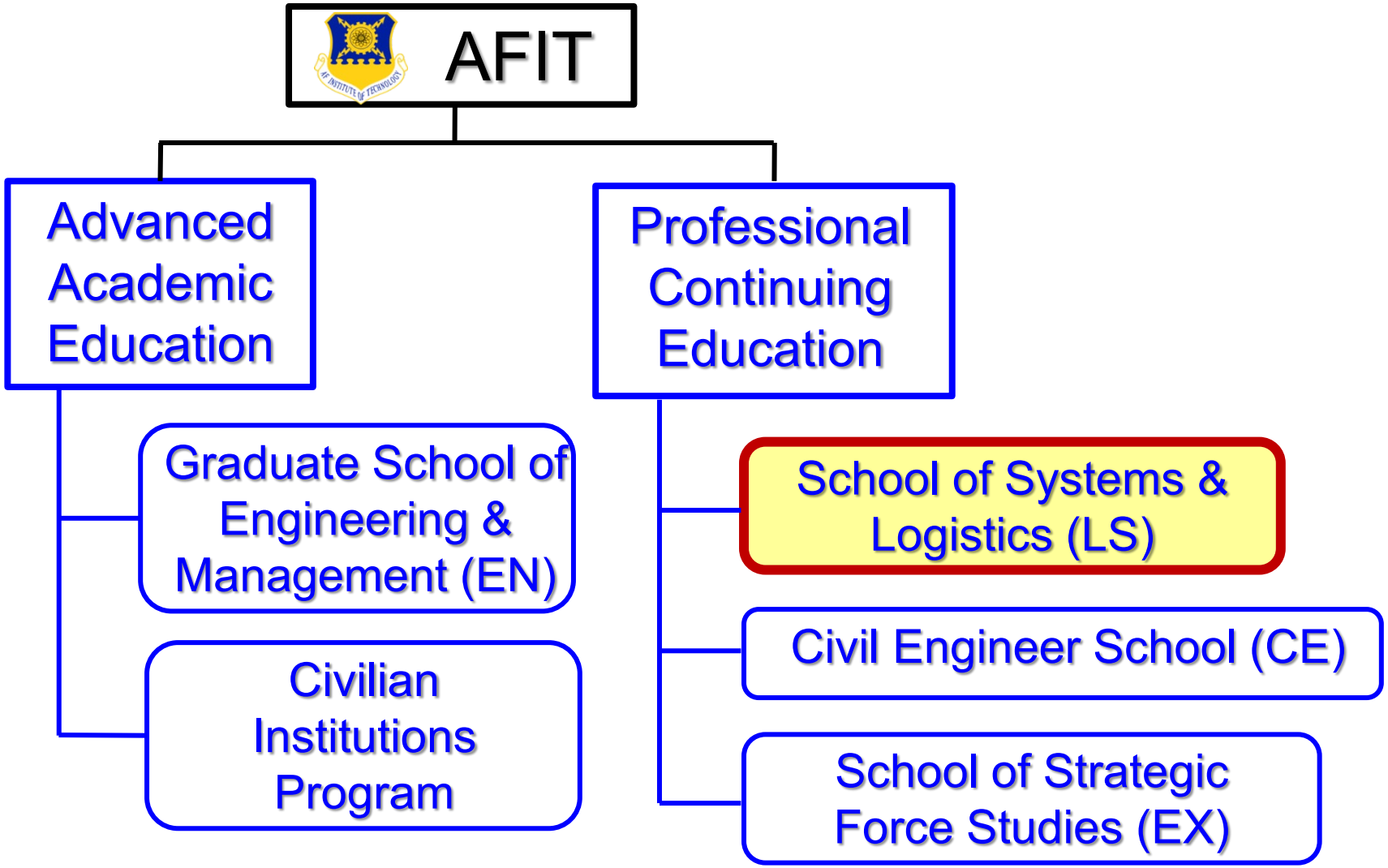
Digital Materiel Management Academy

Richard Sugarman
Department Head

Maj Jeffery King
Lead, Digital Education

IAW JER para. 3-209: The views expressed are those of the authors and do not reflect the official guidance or position of the United States Government, the Department of Defense the United States Air Force or the United States Space Force

AFIT's Organization



LSS Overview

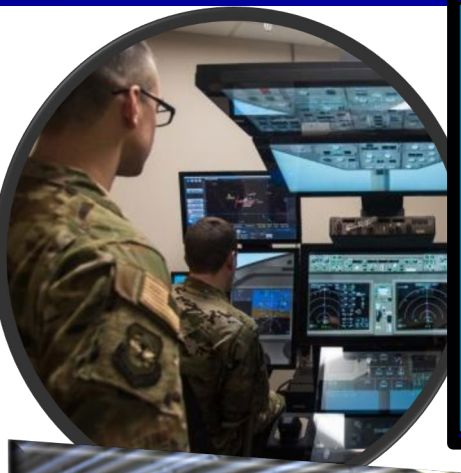
Technical Competency-Based Education & Consulting

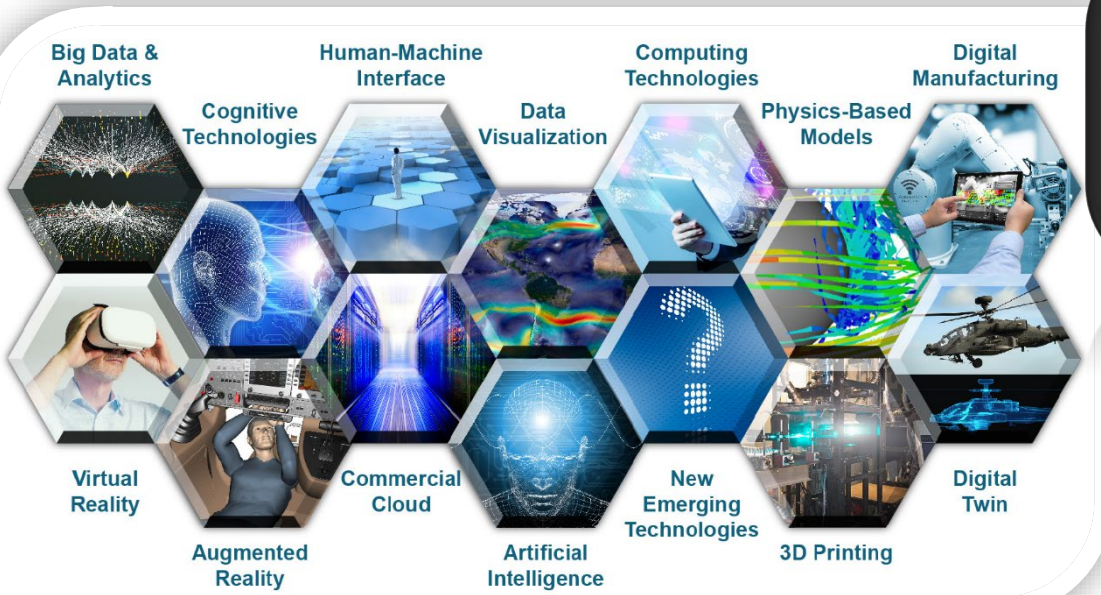
Numerous sponsors & customers, including:

- Air Staff – SAF/AQR, AF/A2/6, AF/TE, NASIC
- MAJCOMs – AFMC, ACC, AMC, AFGSC, AFSOC
- Centers & SPOs – AFRL, AFLCMC, 711 HPW, CROWS, F-35
- U.S. Space Force – SpOC, SSC

Numerous & Diverse Topics

- Systems & Digital Engr, MBSE
- Test & Evaluation
- Reliability and Reliability Growth
- Science of Test, Design of Exprmt
- Software Development & Mgmt
- Architectures
- Intelligence Analysis & Acquisit'n
- Risk Management
- Manufacturing Assessment
- Human Systems Integration
- Airworthiness Certification
- Cybersecurity





AFIT Education Excellence:
Inspiration → Imagination → Innovation → Invention → Implementation → Impact

Digital Acceleration and Transformation

Right Sized Education

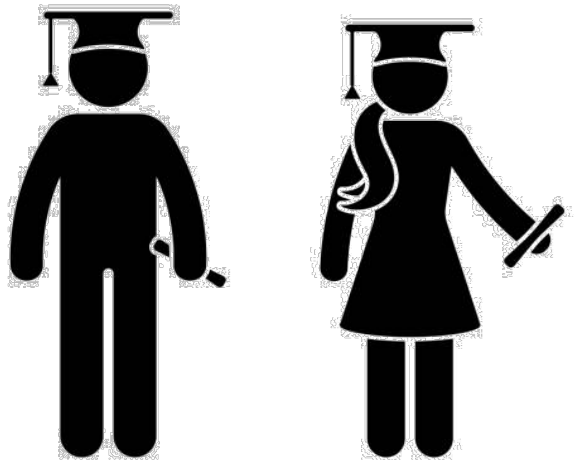
Professional Continuing Education

- Multi-tier short course ranging from 1 hour to 6 months
- Variety of disciplines

Digital Materiel Management Academy

- Applied learning based on program's stage of acquisition and model
- Industry, academia, and government focused on program workforce development to achieve ATO within the program

Graduate Education & Research



- Traditional degree seeking education – MS, PhD levels
- Deep dive on a topic area

Digital Materiel Management Academy

- **Create a Digital Literate Force**
- **Integrates Education, Tools, Exercises**
- **Produce Program Digital Artifacts**

Executed by the School of Systems & Logistics in conjunction with DIICE

WDMMA 001 Research and Early System Development

Pre Milestone A through ~Systems Requirements Review (SRR)

WDMMA 002 System Acquisition

~SRR through ~Critical Design Review / Fielding

WDMMA 003 System Sustainment

Fielding through Service Life

Example teaching tools and products:

MeTRA®

How the DMMA Works

- **All IPT Functions Invited**
- **Asynchronous Education**
- **Synchronous Exercises**

Instructors will help you build your Gov't Reference Model for your system that your program can use after participating

Source: https://www.familyhandyman.com

Sample DMMA Exercise

- **Building a Requirements Management Powerhouse: Integrating Stakeholder Inputs, Change Management, and System Requirements**
- Using concepts learned in Lessons 3 and 4, create a comprehensive model that showcases a robust requirements management process.
  - Develop change management workflows
  - Elicit and model stakeholder inputs using MBSE tools
  - Evaluate and resolve conflicting requirements to ensure system integrity
  - Generate system requirements that meet stakeholder needs
  - Document and execute all activities and workflows to ensure transparency and repeatability
- By the end of this model build, you will have a functional model that demonstrates your mastery of requirements management, change management, and stakeholder input integration. You will be able to showcase your model as a best practice example of how to effectively manage requirements and drive system development success.

DMMA 001 Alpha Class

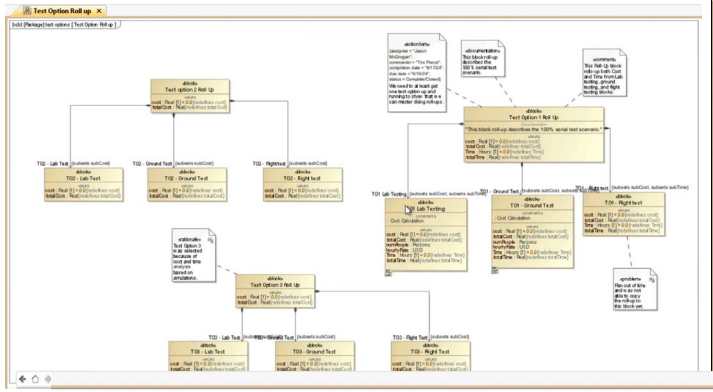
- **Organization: AFLCMC/WII Medium Altitude UAS**
- **Student Body: 22 Participants**
  - **2 Program Managers**
  - **3 Logisticians**
  - **17 Engineers**
- **Dates: 3 June – 12 July 2024**
- **Time: 136 hours of anticipated content**
  - **28 hours self-study material review (slides and demo videos)**
  - **108 hours working as an IPT live in a virtual classroom**

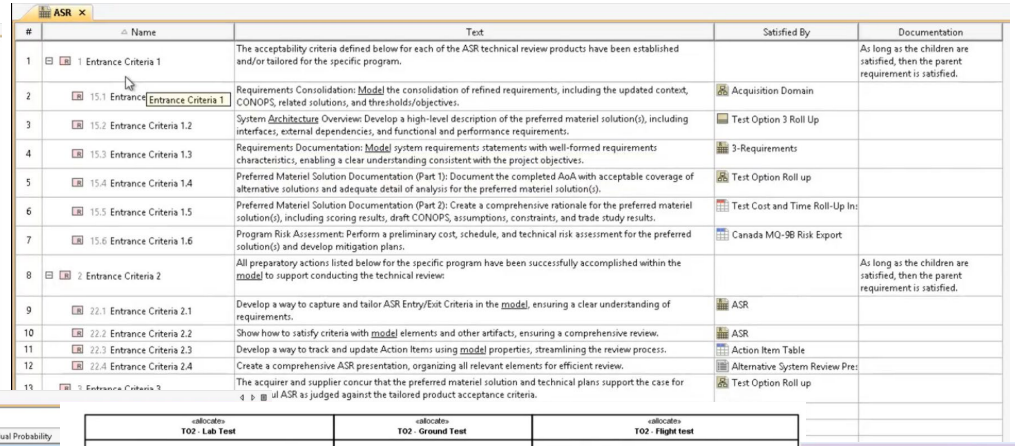
Source: militarymachine.com

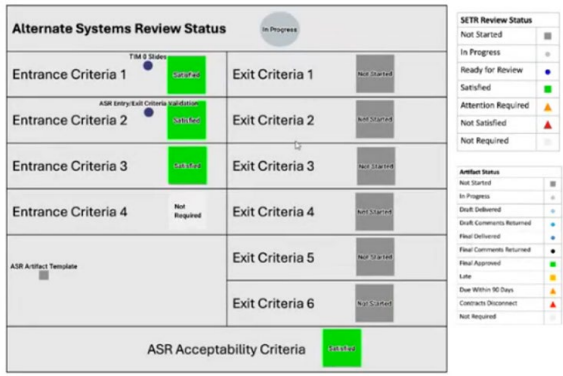
Timeframe and hours may vary pending size of project

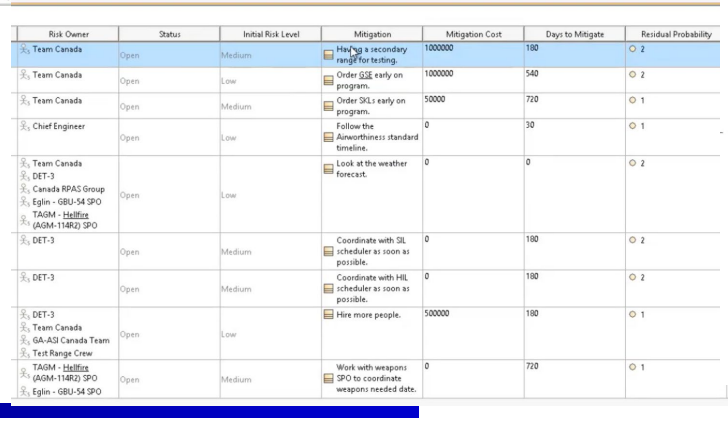
DMMA 001 Alpha Class

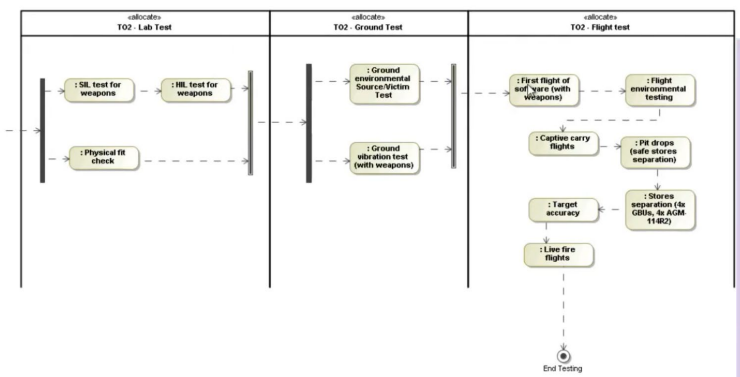
- Cohort divided into 2 Team Projects
  - Project 1: Configuration, Integration, and Interface Requirements
  - Project 2: System Performance Requirement Traceability and Verification

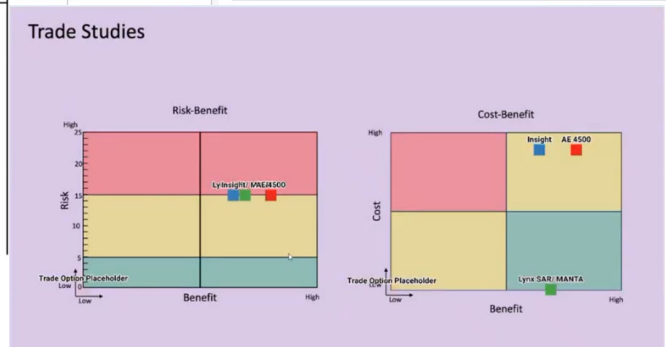












Lesson Learned – DMMA 001 Alpha Class

- **Benefits Seen**
  - DMM can boost system insight and understanding with a digital advantage
  - DMM can provide valued input into multiple functions.
  - DMM can be learned and applied in a matter of weeks.

- **Student Feedback**
  - Having a chance to execute the actions to create a model was very helpful
  - Lots of training available for language and tool tips and tricks, but taking the acquisition process and robustly applying complex SysML and Cameo processes was new and effective.
  - Watching someone go through a canned presentation is one thing, but then rolling up your sleeves and doing it on your project where it might not be so neat and fit perfectly, that is where the real learning and problem solving comes.

Digital Materiel Management Education

"Digital" context now in many existing courses and workshops

- WKSP 0732: Current Topics in Digital Acquisition & Digital Materiel Management*
- SYS 282: Management of the Systems Engineering Process (24 hrs)
- WKMBSE 101 – DMM in a Model-Based Environment (2 hrs)
- WKMBSE 201 – Introduction to MBSE and SysML (8 hrs)
- WKMBSE 301 – Applied MBSE using SysML (12 hrs)
- WKMBSE 401 – SysML Model Analysis and Evaluation (12 hrs)
- Avolve Learning Paths*

In-work:

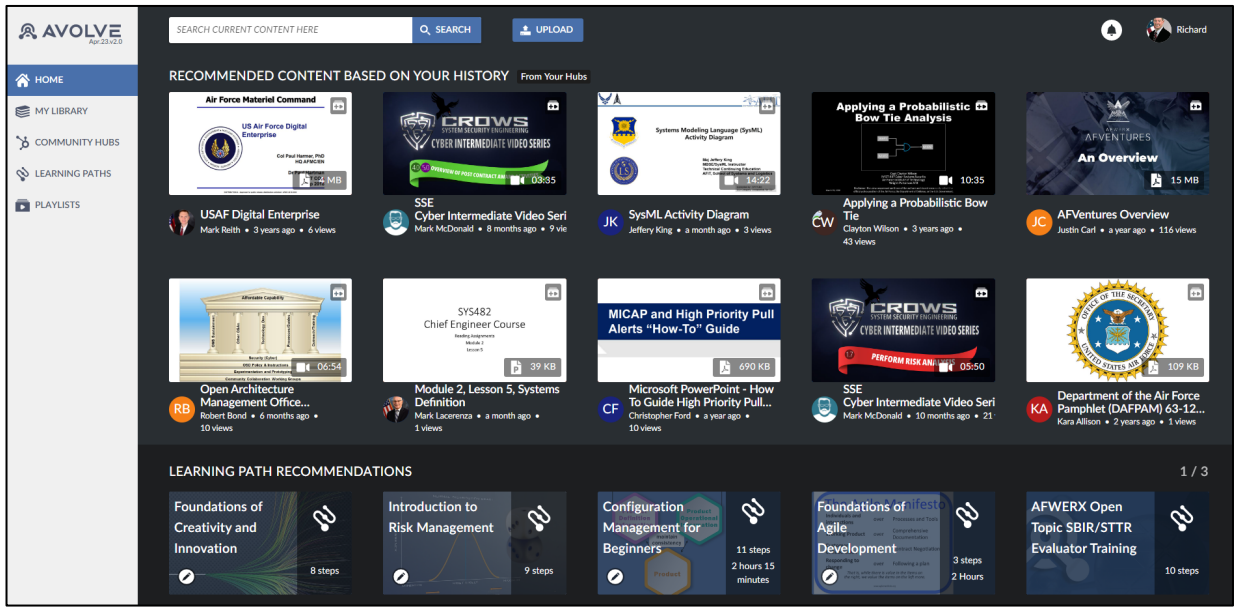
- Multi-functional DMM application workshops
- MBSE micro-credential

- **Formal Courses & Workshops**
- **Educational Resources**
- **Research & Consulting**

* - Free to eligible defense industry contractors

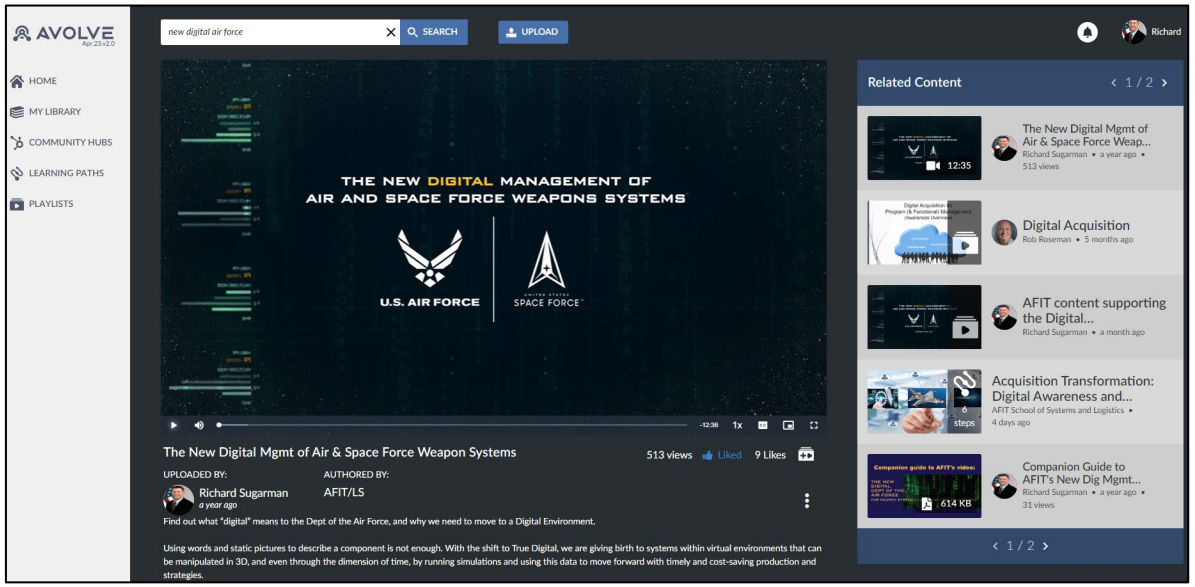
AVOLVE

www.afit.edu/LS/avolve.cfm



- Content organized into domain “hubs” & “tag” searchable
- Knowledge-centric vs. Organization-centric
- CAC authenticated – IL-4 certified

- Content sharing application with Netflix/YouTube-type of look & feel
- Crowd-sourcing of content, increased accessibility to DoD-focused content



Unclassified

Questions?

Interested in attending
contact Maj Jeff King
jeffery.king.1@us.af.mil

http://www.afit.edu/ls