OUSD(P&R)

Established via Executive Order in 1999
To conduct R&D on learning science and technology
To improve learning effectiveness and efficiency across government

LEADERSHIP
Help craft the future vision of learning science and tech

TRANSITION
Provide customer support to facilitate implementation

INNOVATION
Show the “art of the possible” via applied R&D

Sae Schatz, Director
sae.schatz@adlnet.gov
Industry
Scholarly Research Community
Coalition Defense Partners
Whole of Government
DoD and Security Sector

Primary Stakeholders
**Activities**

**Thought Leadership:** Help craft the vision for future learning science and technology

- Emerging Concepts Exploration
- Requirements Engineering
- Visioning and Dissemination

**Transition:** Help bridge the research-practice gap

- Engage the Community
- Active Outreach to DoD/Gov
- Collaborative Research
- Emphasis on Open-Source
- Policy and Specifications

**Innovation:** Mature learning ideas and technologies

- Design-Based Research
- Internal R&D
- BAA Research Portfolio
- Including
  - e-Learning
  - m-Learning
  - VWs / Simulations
  - Learning Theory
  - TLA infrastructure
  - Performance Data

- xAPI
  - e.g.
  - SCORM

**Via**

- ADL Partnership Network
- Coalition: NATO, TTCP, PfPC
- ADL Communities of Practice
- Defense ADL Advisory Committee

**DODI 1322.26 STANAG 2591**

**E.g.**

- Competencies and Credentialing
- Persistent and Open Models
- Visualizations
- Learner Modeling

**Thought Leadership:**

Help craft the vision for future learning science and technology

**Transition:**

Help bridge the research-practice gap

**Innovation:**

Mature learning ideas and technologies

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**E.g.**

- Competencies and Credentialing
- Persistent and Open Models
- Visualizations
- Learner Modeling
Budget Activity 6.3:
Advanced Technology Development

**TECHNOLOGY READINESS LEVELS**

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<tr>
<td>Basic/applied research and feasibility studies</td>
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<td>Technology development and demo</td>
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<td>System development, test, launch, operations</td>
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**TRL 4**

Component and/or breadboard validation in a laboratory

Basic technological components are integrated to establish that they will work together; “low fidelity”

**TRL 5**

Component and/or breadboard validation in a relevant setting

Basic technological components and their supporting elements are tested in a realistic simulated environment; “high fidelity”

**TRL 6**

Prototype demonstration in a relevant environment

Prototype system, beyond that of TRL 5, is tested in a relevant environment to show the technology’s readiness
The ADL Initiative is to develop a Personal Assistant for Learning (PAL) for effective, personalized learning content and/or job performance aids that can be accessed from multiple devices/platforms.

Solicitation Number: ADL.BAA12003
Agency: Department of the Army
Office: Army Contracting Command
Location: ACC - APG - Natick (SPS)

Note: There have been modifications to this notice. You are currently viewing the original synopsis. To view the most recent modification/amendment, click here.

Original Synopsis

Solicitation Number: ADL.BAA12003
Notice Type: Special Notice
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Original Set Aside: N/A
Set Aside: N/A
Classification Code: A - Research & Development
NAICS Code: 541 - Professional, Scientific and Technical
Why I Matter? (WIIFM?)

- Learning Ecosystem of the Future (Vision)
- Return on Investment (ROI) data for HSI
- Free learning science and technology stuff
PART 2: Future Learning Ecosystem
Simplify

Develop technology and systems

Prepare personnel to cope with VUCA !!
Carter Details Force of the Future Initiatives
By Jim Garamone
DoD News, Defense Media Activity

WASHINGTON, November 2, 2016. Secretary of Defense Ash Carter announced the Force of the Future concept in one of his first speeches after taking office in February.

The secretary visited many corporations and learned from academia and elsewhere.

"Throughout this process, we’ve always been mindful that the military is a profession of arms," he said. "It’s not structured to be a business, yet we have to think about how we can be more efficient in the way we operate and maintain our national security."
☐ Simplify
☐ Develop technology and systems
☐ Prepare personnel to cope with VUCA

!! thrive in
Simplify

Develop technology and systems

More Skills

Higher Order

More Agile
Learner-centric, technology-enabled: Flexibly, efficiently, and seamlessly (truly blended)
Data-driven learning tailored is to what, where, when, and how learners need it.
Learning system is guided by evidence-based best practices and continuously improved.
Technology enables action from self, commanders/instructors, and peers (social learning)
Organizations learn lessons and disseminate them effectively
Learner-Centric Technology-Enabled
Data-Driven Learning
Learning Science
Social Learning
Learning Organizations

Training and Learning Architecture
PART 2:
ROI of HSI
HSI is a philosophy and set of processes that focus on systems-level human performance concerns throughout a system’s life-cycle. Its purpose is to mitigate the risk of downstream system failure.
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**Emphasize Humans**
Emphasize human performance early and often in the system design process; give humans equal treatment to hardware and software

**Optimize Total System**
Optimize overall system performance at the comprehensive (big picture) level and not simply at the individual component levels

**Consider Full Life-Cycle**
Take a long view; maximize a system’s benefits—while controlling its costs and mitigating risks—across the entire system life-cycle

**Facilitate Design**
Facilitate multidisciplinary design; help “translate” among specialists in different disciplines as well as between designers and other stakeholders
HSI Core Tenets

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HSl domains

MANPOWER  PERSONNEL  TRAINING

HUMAN FACTORS  SAFETY/HEALTH  HABITABILITY  SURVIVABILITY
× Optimizing across components
× Maximizing total life-cycle ROI
× Facilitating multidisciplinary design

Hey!

That's human factors
× In practice, SE usually “forgets” the human

Hey!

It's Systems Engineering
Essentially, HSI is an alloy of HF/E (broadly defined) and SE
FORMALLY MANDATED
Agencies, such as the DoD, have developed guidelines mandating or instructing the use of HSI; e.g., the DoD “5000 Series” formally directs the use of HSI in all DoD system acquisitions processes.

RETURN ON INVESTMENT
HSI has high ROI; e.g., Booher reports a USAF program that had a 50:1 ROI (savings of $50 or every $1 spent on HSI) and two Army helicopter programs with 44:1 and 22:1 ratios, respectively.

REDUCE RISK OF FAILURE
HSI mitigates the risk of system failure, including three of the most common causes: (1) Underuse due to poor design, (2) Human error, (3) High operations and maintenance costs.
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Only 34% of technology development projects in the US are successful. Projects most frequently fail because (1) inadequate understanding of the intended users/context and (2) vague usability requirements.
Integration is worth the money when the implementation of Human Systems Integration (HSI) in Defence capability acquisition.

The F119 Engine: A Success Story of Human Systems Integration in Acquisition

Harold R. Booher

The Department of Defense recently mandated the incorporation of Human Systems Integration (HSI) early in the acquisition cycle to improve system performance and reduce ownership cost. However, little documentation of successful examples of HSI within the context of systems engineering exists, making it difficult for the acquisition community to disseminate and apply best practices. This article presents a case study of a large Air Force project that represents a successful application of HSI. The authors explore the influence of both the Air Force and the project contractor. Additionally, they identify key lessons learned in support of integrating HSI into systems engineering processes as a key to HSI success, reinforcing the importance of treating HSI as an integral part of pre-Strategic A activities.

HSI ROI Resources
PART 3:
LS&T Goodies
VR, AR, Simulation and Games

Virtual World Sandbox, Open-source simulations via web browser
Performance Tracking/Analysis

xAPI, Open-source specification for big human-performance data
mLearning Reference Model, interactive flowchart to guide mlearning and support design
Tools Guides, support review and selection of learning technologies
Open Learner Models (University of Pittsburgh), Motivate students through social comparisons