STELLAR TEAM NOBLE MISSION

Missile Defense Agency University Innovation Summit March 3 & 4th, 2021

Embracing Innovation, Science and Technology to Outpace the Threat

Hacking for Defense University Program

Briefer: Dr. Donna Havrisik
Mission Assurance Specialist, STEM Ambassador

Approved for Public Release
21-MDA-10707 (23 Feb 21)

Hacking for Defense (H4D) University Program

WHAT IS H4D?

- **It's a University Course that brings the brightest engineering, business and policy students together to work on government sponsored national security problems over the course of a semester.**
- **In H4D courses, student teams receive real-world national security problems sourced from DoD agencies.**
- **Teams are instructed in and apply Lean Startup principles in order to iteratively develop and test potential solutions.**
- **By the end of the course, the team will have interviewed an extensive number of stakeholders, and developed a minimally viable product concept that addresses the needs of their DoD Sponsor.**

H4D History

- **The H4D Course was designed by Steve Blank, Pete Newell, and Joe Felter**
- **The course was originally an experiment with Stanford University in 2015, advised by former Secretary of Defense, William Perry**
- **First taught as an official course at Stanford University in 2016**

H4D Course Authors: Steve Blank (Center), Colonel (Retired) Pete Newell (Left), and Colonel (Retired) Joe Felter, PhD (Right).

H4D Today

- **A University entrepreneurship course based on core principles of the Lean Start-up Methodology**
- **Sponsored by DoD's National Security Innovation Network (NSIN) delivered in partnership with BMNT and Common Mission Project**
- **H4D is recognized by the DoD as an innovation capability**
- **Congressionally supported**
- **Taught at over 37 universities across the United States**

HD4 is taught Nationwide

1. **Arizona State University**
2. Colorado School of Mines
3. **Colorado State University**
4. **Columbia University**
5. Defense Acquisition University
6. Duke University
7. Georgetown University
8. Georgia Institute of Technology
9. **Indiana University**
10. James Madison University
11. National Defense University
12. **Naval Postgraduate School**
13. **New York University**
14. North Carolina State University
15. Rochester Institute of Technology
16. **San Diego State University**
17. **South Dakota School of Mines & Technology**
18. Stanford University
19. **Texas A&M University**
20. **United States Air Force Academy**
21. United States Military Academy at West Point
22. **University of Alabama - Huntsville**
23. University of Alaska - Fairbanks
24. University of California - Berkeley
25. University of California - Davis
26. University of California - San Diego
27. **University of Chicago**
28. University of Colorado - Boulder
29. University of Michigan
30. University of Pittsburgh
31. University of Southern California
32. **University of South Florida**
33. University of Southern Mississippi
34. University of Texas - Austin
35. **University of Texas - Dallas**
36. **University of Virginia**
37. University of West Florida

***Bold indicates a Fall 2020 University**

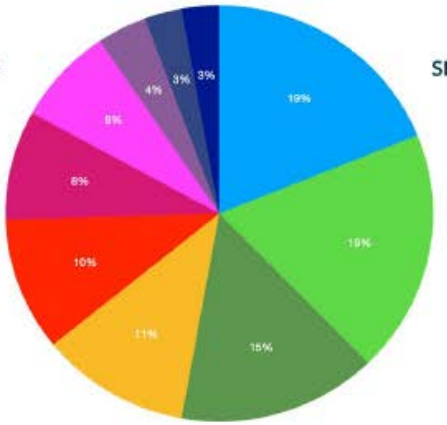
H4D Problem Types

Types of H4D Problems

H4D

FALL 2020 CHALLENGE DISTRIBUTION

19% PROCESS	3% POLICY	4% INTELLIGENCE	11% OPERATIONS
10% PERSONNEL MANAGEMENT	8% MEDICAL	19% DATA	3% COMMUNICATIONS
15% TECHNOLOGY APPLICATIONS			8% SITUATIONAL AWARENESS



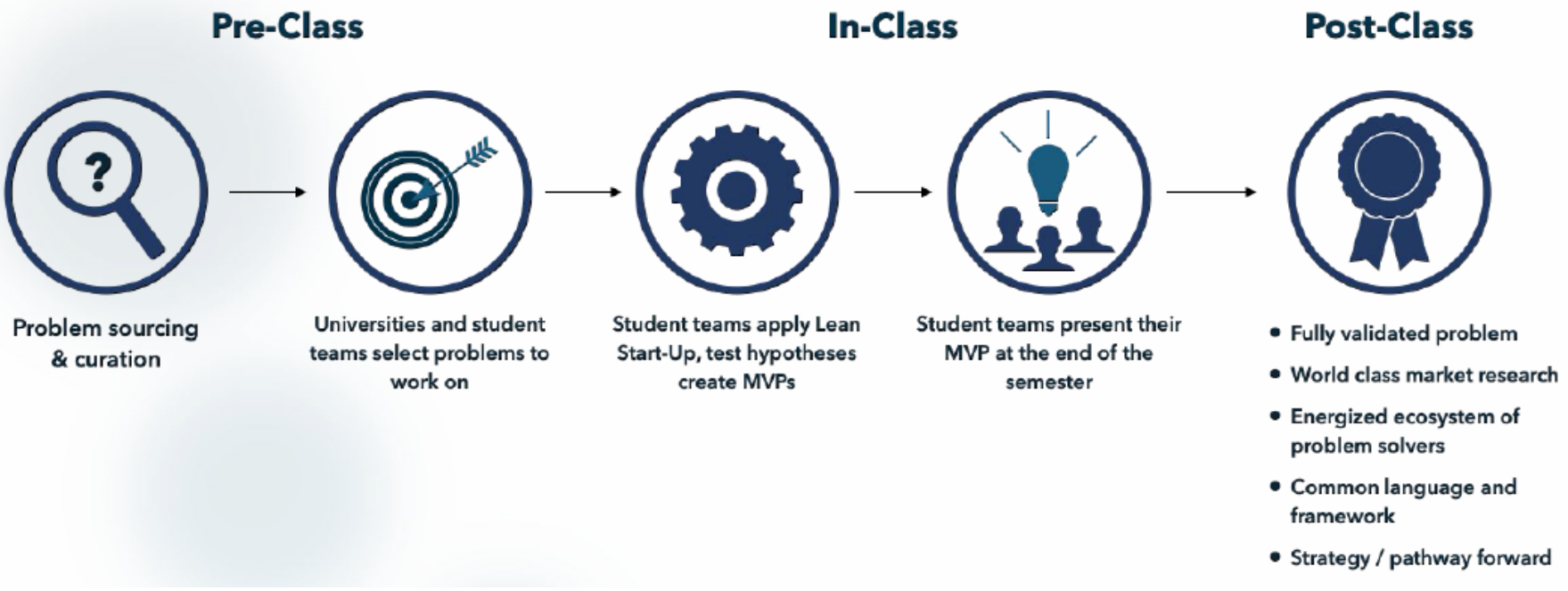
H4D Curriculum

The flipped classroom concept:

- **In class each week, student teams brief their findings from beneficiary interviews**
- **Professors provide guidance/mentorship to the student teams in real time during weekly presentations**
- **Professors provide continuous feedback to the students to simulate the intensity of a start-up**

Connecting the Classroom to Real-World Problems

H4D is Problem-Based and Rigorous

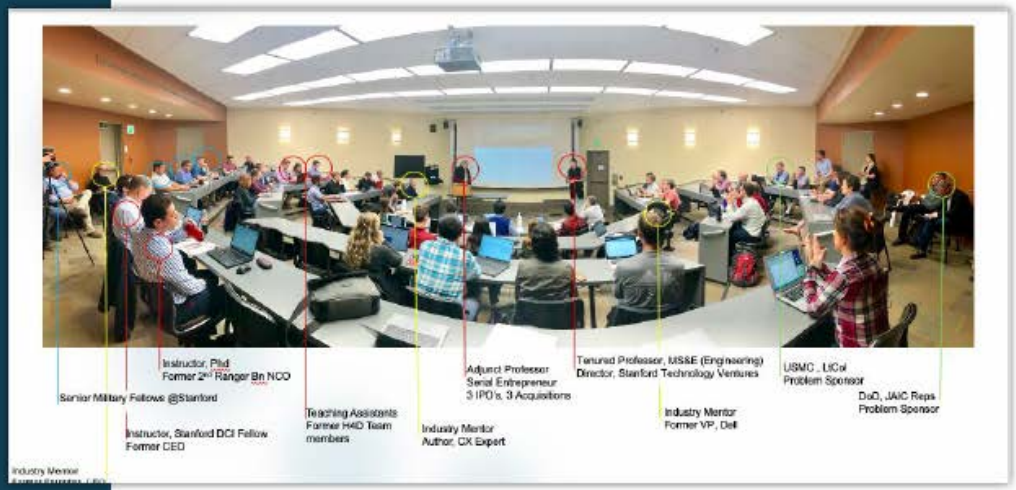


H4D Curriculum

The H4D Ecosystem

H4D

- Department of Defense (and other relevant agencies)
- Student Teams
- Teaching Teams
- Problem Sponsors
- Government Mentors
- Industry Mentors



H4D Educators

Typical H4D Course Composition

- Housed in political / social science, engineering, and business programs
- Two professors
- One - three teaching assistants
- Class meets on a weekly basis

**Knowledge of DoD not required*

H4D Teaching Team & Role

Role of the H4D Teaching Team

H4D

- Teach students how to form hypotheses and test them through beneficiary discovery
- Build Minimum Viable Products (MVPs)
- Coach students in extracting insights from their own data
- Hold students to performance standards - 10 interviews and updated MVP weekly
- Provide advanced lectures about the DoD and H4D methodology

H4D Students and Team Composition

Typical H4D Student Team

H4D

- Graduate-level course listing with select undergraduate enrollment
- Three - five students per team
- Dedication of 15 - 20 hours per week
- Multi-disciplinary — technical and non-technical backgrounds
- Taking H4D for university credit

**Knowledge of DoD and IC are not required*

Student Team from the University of Colorado, 2018 (left)

Student Team from the University of Virginia at the Pentagon (right)

H4D Team Goals

Role of the H4D Student Team

H4D

- Interface with their DoD Problem Sponsor on a weekly basis
- Conduct interviews (beneficiary discovery) to validate the problem
- Test Minimum Viable Products (MVPs)
- Identify potential solution pathways

Student Team from Columbia University

H4D Sponsors

The H4D Problem Sponsor

H4D

- Problem Sponsors are military personnel and government civilians — often a senior non-commissioned officer, field grade officer, or civilian equivalent
- Has knowledge of, or experience with, the pain point of the problem
- Can navigate student teams to potential end-users, beneficiaries, and individuals who experience the problem

H4D Sponsors Making a Difference

Role of the H4D Problem Sponsor

H4D

- Educate student team on the problem area and pain points
- Navigate student team to their first 15 interviews
- Engage with the student team three - five hours per week
- Examine ways to transition student team MVPs into the DoD

Megan Lacy, Co-Founder of Lumineye

H4D Benefits

- **Educating the Next Generation Workforce** to validate a public problem and pathways for deployment
- **Building New Mission-Driven Entrepreneurs** focused on solving public problems
- **Connecting Unique Expert Networks** around each problem area that cut across government, academia, and entrepreneurs/start-ups
- **Developing Viable Solutions** in the form of new policies, business practices, technologies, and companies

Solving the Critical Challenges of Our Time

NSIN Portfolios

https://www.nsin.us/

Create a world that is Better. Safer. Stronger.

NSIN, the National Security Innovation Network, is an unrivaled problem-solving network that adapts to the emerging needs of those who serve in the defense of our national security. We are dedicated to the work of bringing together defense, academic and entrepreneurial innovators to solve national security problems in new ways.

H4D is sponsored by the National Security Innovation Network and powered by BMNT and COMMON MISSION PROJECT

H4D – MDA and Redstone Arsenal Sponsors

X-Force Fellowship

X-Force Capstone

Georgia Tech – STING program

EDUCATORS

UC Berkeley

Duke Univ. – Phoenix Program

US Army Futures Command – Assured Positioning, Navigation and Timing

Texas A&M University

University of Alabama In Huntsville

Quality, Safety and Mission Assurance Directorate – Radiation Hardening

SPONSORS

Innovation, Science and Technology Directorate – Quantum Algorithms; Chip Resiliency; AI/ML

Acquisition - Contracting

Chief Architect – Advanced Tracking Algorithms; Cyber Security

Test Directorate – Network Security

Technical Intelligence / Engineering

Continually Growing the pool of Program Sponsors

H4D Leadership

For more Information on H4D, please contact…

Max Weintraub
H4D Program Manager
National Security Innovation Network (NSIN)
US Department of Defense
mweintraub@nsin.us

Emily McMahan
Education Program Manager
H4D Team
Common Mission Project
emcmahan@commonmission.us

Claire Bouchard
H4D Problem Sourcing and Curation Project Lead
BMNT
cbouchard@bmnt.com

Honorable Tommy Sowers, Ph.D.
Southeast Regional Director
National Security Network (NSIN)
US Department of Defense
tsowers@nsin.us

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