PRODUCT INNOVATION LAB
FALL 2020 SYLLABUS

Time: Monday, 6:00pm – 9:00pm
Classroom: Nelson Hall, second floor rooms 2402 to 2406 and 2210
Course Moodle Website: https://wolfware.ncsu.edu

FACULTY TEAM

College of Management:	*College of Design:*	*H4D Program:*	*Advisor:*
Prof. Jon Bohlmann Business Management (919) 513-0939 jdbohlma@ncsu.edu	Prof. Percy Hooper Industrial Design (919) 515-8324 (919) 656-4980 (cell) phooper@ncsu.edu	Dr. Bull Holland Hacking for Defense (H4D) tjhollan@ncsu.edu	Rachael Newberry Program Director RIoT rachael@riot.org
College of Engineering:			
Prof. Ola Harrysson Industrial & Systems Engineering (919) 513-0220 harrysson@ncsu.edu	Prof. John Muth Electrical & Computer Engineering (919) 513-2982 muth@ncsu.edu	Prof. Troy Nagle Biomedical Engineering (919) 515-3578 nagle@ncsu.edu	Tom Snyder Electrical & Computer Engineering; RIoT tom@riot.org

REQUIRED TEXT

Ulrich, K. T. Eppinger, S. D.: *Product Design and Development, 6th edition,* 978-0-07-802906-6, McGraw-Hill, New York, 2016.

OPTIONAL REFERENCE TEXT

Osterwalder, Alex, et al.: *Value Proposition Design*, strategyzer.com/vpd .

COURSE PHILOSOPHY

New product development is a critical process that crosses multiple functional areas in a firm. In today's globally competitive business environment, new product development is not a strategic option – it is a fundamental prerequisite for a company's survival, organizational renewal, and economic prosperity. Innovative new product development is not the domain of any one function, but a multidisciplinary process that requires coordination, communication, and integration. This course accomplishes business-design-engineering collaboration by creating cross-disciplinary teams whereby students learn and apply the necessary skills to develop and prototype an innovative product solution that meets market needs.

COURSE OBJECTIVES

This course will present and utilize an integrated approach to new product design, development, and marketing. The course will provide a team experience of formulating, designing, and evaluating a new product concept. Students completing this course will gain competence with a set of tools and methods for product design and development. Students will be able to coordinate multiple, interdisciplinary tasks in order to achieve a common objective in a project setting. Other objectives include:

- Investigate, develop and use current methods in business analysis, design, and engineering pertaining to an integrated approach to product development.
- Provide a team experience through hands-on multidisciplinary project work.
- For a given market opportunity, develop an innovative product solution defined by thorough business analysis and a go-to-market strategy, design prototypes, and engineering analysis.

COURSE APPROACH

Students in the course will identify a product opportunity and develop a new concept that meets relevant market needs. Project definitions for the course will be presented at the first class meeting. The product opportunity will be developed through an integrated team approach. Therefore, each team will typically have members from three core disciplines (industrial design, engineering, and business management).

CLASS AND TEAM MEETINGS – subject to COVID adjustments

The entire class will meet as a group on Monday evenings. These Monday evening class sessions are mandatory for everyone enrolled in the course. Your team will be also be scheduled to meet each Monday with one or more faculty members to review your project's status, progress, and key outstanding issues. Everyone on the team is expected to be present and participate in these meetings. Also, regardless of when this team-faculty meeting is held on any given Monday evening, you should expect to be available for the entire class period to work with your teammates.

Each individual project team must designate one other regular meeting time for each week, other than Monday evening class. Team meetings can be virtual or face-to-face, on/off-campus, and they can be coordinated however the team deems appropriate to complete the necessary work. Each student should expect to spend *10+ hours per person per week* on this class.

Teams should designate a student as the project manager for each phase, which may be an MBA student but is not strictly required to be so. This can be a rotating responsibility over the length of the semester. The project manager will serve as the team coordinator and a key contact for the team. The role of project manager does not in any way imply being in charge of a team. Rather, it is designed to be a role with an emphasis on building a spirit of cooperation, coordination, and shared responsibility within the team. Everyone on the team is ultimately responsible for doing the necessary work, making sufficient progress on the project, working together in a harmonious manner, dealing constructively with project and team problems when they occur, and making the project a success.

GRADING

The grading objective is to give each team project one grade. However, individual team members may receive different grades if it is determined through faculty observation and team member feedback that there is significant variation in individual performance on a team. Student peer evaluations will contribute to individual grades. Letter grades will be assigned for each phase of the project as follows. Each project team may have weekly tasks or goals tailored specifically to their project activities and needs.

Activity	Percentage
Progress Reports and Weekly Project Tasks	15%
Project Charter and Work Plan	5%
Milestone 1: Report and Presentation	10%
Milestone 2: Report and Presentation	15%
Final Review: Report and Presentation	50%
Project Poster Showcase	5%

TEAM DYNAMICS

In an integrated product approach, differences in both functional disciplines and personalities will inevitably lead to conflict. However, in order for a team to be successful in this course, these differences must become an advantage. Teams must learn to work different styles and opinions into a common strategy/direction shared by all members of the team. Teams must self-determine distribution of responsibilities for meetings, reports, and presentations. It is very important to handle team problems in an up-front, open, and professional manner. Your ability to do well in this course depends on it! Faculty are available to mediate whenever necessary. Each week, teams must indicate on the progress report whether or not there is a need for faculty intervention in team interactions.

Student peer evaluation of team members will take place following each major project phase. Peer evaluations are an important and integral part of faculty evaluations. Peer evaluations can affect individual team member grades as deemed appropriate by the faculty. An under-performing team member may be fired with the permission of the instructors.

PROJECT POSTER SHOWCASE & GALLERY WALK

At the end of the semester, after final presentations and reports are completed, we will organize a poster showcase and "gallery walk" for all projects. In this showcase, all teams will have the opportunity to present an overview of their project results to an external audience. Each team will display a project poster that summarizes its work, including main project activities, outcomes, and potential next steps. Each team will also display its final prototype for review. This is an excellent opportunity to network with other interested parties inside and external to NC State. The showcase is in cooperation with RIoT (www.riot.org), and HQ Raleigh (www.hqraleigh.com), an incubator in downtown Raleigh. For those teams interested in carrying their projects forward beyond the end of the course, the showcase provides a forum for meeting people who may provide knowledge, mentoring, resources, or useful contacts.

COURSE REQUIREMENTS and POLICIES

- *Class Attendance and Team Policy:* Class attendance and full participation in course activities and project teams are expected.
- *Intellectual Property*: The NCSU Policy regarding intellectual property is in effect for this class. For more information, see the following website: http://policies.ncsu.edu/policy/pol-10-00-01
- *Final Reports and Milestone Deliverables*: It is the student's responsibility to review and follow all guidelines regarding report and presentation requirements and formatting for milestones and final reports. See the "Course Deliverables" document on the Moodle website.
- *Weekly Progress Reports and Project Tasks*: Each team is required to submit a written weekly progress report *by 8:00pm Sunday* each week. The weekly progress report should be 2-3 pages long with attachments or links to files as necessary. The progress reports should be formatted as described in the "Progress Report Form" document on the Moodle website. Additional weekly project tasks may also be included, depending on specific goals or activities of each project in consultation with faculty and project mentors. All electronic or hard copy submissions to the faculty team, including the Progress Reports, should follow the file naming and document conventions as described in "Document Submission Notes" posted on Moodle.
- *Peer Evaluations*: A confidential team peer evaluation form should be submitted in hardcopy at Milestone 1 and 2, and at the Final Review. See the "Team Evaluation Form" on Moodle.
- *Prototypes and Poster Presentations*: Each team is required to build a prototype model for their project, and to develop content suitable for presenting an overview of the project to interested parties, subject to confidentiality restrictions. Details concerning these materials will be provided during the semester. All prototypes and summary presentation content are the property of the course and must be submitted to the instructors.
- *Project Expense Budget*: Each team will have a modest budget, if needed, to help cover expenses related to report generation and prototype building. Expenses will be reimbursed at the end of the semester. Students must submit receipts along with a completed "Expense Reimbursement Form" that will be posted on the Moodle website. Each student must submit his or her own expense report for legitimate expenses incurred. The deadline for submitting receipts is listed on the reimbursement form. All reimbursable expenses must be pre-approved by a faculty member.

- *Late Assignments:* All assignments are due at the date/time posted for each assignment. It is expected that all written assignments will be typed and of professional quality. Assignments may be added or changed as the term progresses. **No late assignments will be accepted.**
- *Academic Integrity and Honesty:* Students are expected to understand and follow the policies on academic conduct (http://policies.ncsu.edu/policy/pol-11-35-01). Academic dishonesty will be severely penalized. Submission of any test or assignment indicates your agreement with the statement: "I have neither given nor received unauthorized aid on this test or assignment."
- *Incomplete Grades:* The burden of fulfilling an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at http://policies.ncsu.edu/regulation/reg-02-50-03. Additional information relative to incomplete grades for graduate students can be found in the Graduate Administrative Handbook Section 3.18.F http://www.fis.ncsu.edu/grad_publicns/handbook/.
- *Electronically-Hosted Components:* Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web-postings, where relevant to the course. Examples include online discussions of class topics, posting of student coursework, and registration for required software. All students are expected to respect the privacy of each other by not sharing or using such information outside the course. See policy details at http://www.ncsu.edu/policies/informationtechnology/pdf/REG08.00.11.doc.
- *Students with Disabilities:* Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with the Disability Services Office at Holmes Hall, Suite 304, Campus Box 7509, (http://www.ncsu.edu/dso), 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation at http://policies.ncsu.edu/regulation/reg-02-20-01.
- *Non-Discrimination Policy:* NC State University provides equality of opportunity in education and employment for all students and employees. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at http://policies.ncsu.edu/policy/pol-04-25-05 or http://www.ncsu.edu/equal_op/. Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.
- *NC State University Policies, Regulations, and Rules (PRR):* Students are responsible for reviewing the PRRs which pertain to their course rights and responsibilities. These include: http://policies.ncsu.edu/policy/pol-04-25-05 (Equal Opportunity and Non-Discrimination Policy Statement), http://oied.ncsu.edu/oied/policies.php (Office for Institutional Equity and Diversity), http://policies.ncsu.edu/policy/pol-11-35-01 (Code of Student Conduct), and http://policies.ncsu.edu/regulation/reg-02-50-03 (Grades and Grade Point Average)

ADDITIONAL POLICIES FOR FALL 2020

Due to the Coronavirus pandemic, public health measures have been implemented across campus. Students should stay current with these practices and expectations through the Protect the Pack website (https://www.ncsu.edu/coronavirus/). The sections below provide expectations and conduct related to COVID-19 issues.

Health and Participation in Class

We are most concerned about your health and the health of your classmates and instructors.

- If you test positive for COVID-19, or are told by a healthcare provider that you are presumed positive for the virus, please work with your instructor on health accommodations and follow other university guidelines, including self-reporting: https://healthypack.dasa.ncsu.edu/coronavirus/. Self-reporting is not only to help provide support to you, but also to assist in contact tracing for containing the spread of the virus.

- If you feel unwell, even if you have not been knowingly exposed to COVID-19, please do not come to class.
- If you are in quarantine, have been notified that you may have been exposed to COVID-19, or have a personal or family situation related to COVID-19 that prevents you from attending this course in person (or synchronously), please connect with your instructor to discuss the situation and make alternative plans, as necessary.
- If you need to make a request for an academic consideration related to COVID-19, such as a discussion about possible options for remote learning, please talk with your instructor for the appropriate process to make a COVID-19 request.

Health and Well-Being Resources

These are difficult times, and academic and personal stress is a natural result. Everyone is encouraged to take care of themselves and their peers. If you need additional support, there are many resources on campus to help you:

- Counseling Center (https://counseling.dasa.ncsu.edu/)
- Health Center (https://healthypack.dasa.ncsu.edu/)
- If the personal behavior of a classmate concerns or worries you, either for the classmate's well-being or yours, we encourage you to report this behavior to the NC State CARES team: (go.ncsu.edu/NCSUcares).
- If you or someone you know are experiencing food, housing or financial insecurity, please see the Pack Essentials Program (https://dasa.ncsu.edu/pack-essentials/).

Community Standards related to COVID-19

We are all responsible for protecting ourselves and our community. https://www.ncsu.edu/coronavirus/

Course Expectations Related to COVID-19:

- **Personal Protective Equipment:** As a member of the NC State academic community you are required to follow all university guidelines for personal safety with face coverings, physical distancing, and sanitation. Face coverings are required in this class and in all NC State buildings. Face coverings should be worn to cover the nose and mouth and be close fitting to the face with minimal gaps on the sides.

  Note that face coverings must meet safety specifications, be worn correctly, and be socially appropriate as per the Code of Student Conduct (https://studentconduct.dasa.ncsu.edu/code/) and Free Speech Guidelines (https://www.ncsu.edu/free-speech/). In addition, students are responsible for keeping their course/work area clean.

- **Course Attendance**: NC State attendance policies can be found at: https://policies.ncsu.edu/regulation/reg-02-20-03-attendance-regulations/ . Please refer to this course's attendance, absence, and deadline policies for additional details. If you are quarantined or otherwise need to miss class because you have been advised that you may have been exposed to COVID-19, you should not be penalized regarding attendance or class participation. However, you will be expected to develop a plan to keep up with your coursework during any such absences. If you become ill with COVID-19, you should follow the steps outlined in the health and participating section above. COVID 19-related absences will be considered excused; documentation need only involve communication with your instructor.
- **Course Meeting Schedule**: Be sure to pay attention to any updates to the course schedule as the information in this syllabus may change. Please discuss any questions you have with the instructor.
- **Technology Requirements:** This course may require particular technologies to complete coursework. Be sure to review the syllabus for these expectations. If you need access to additional technological support, please contact the Libraries' Technology Lending Service: https://www.lib.ncsu.edu/devices.

Course Delivery Changes Related to COVID-19

Please be aware that the situation regarding COVID-19 is frequently changing, and the delivery mode of this course may need to change accordingly, including from in-person to online. Regardless of the delivery method, we will strive to provide a high-quality learning experience.

Grading/Scheduling Changing Options Related to COVID-19

If the delivery mode has a negative impact on your academic performance in this course, the university has provided tools to potentially reduce the impact:

- **Enhanced S/U Grading Option**: https://studentservices.ncsu.edu/your-resources/covid-19/spring2020-sat-grading/
- **Late Drop**: https://studentservices.ncsu.edu/your-resources/covid-19/spring2020-latedrop/

In some cases, another option may be to request an incomplete in the course. Before using any of these tools, discuss the options with your instructor and your academic advisor. Be aware that if you use the enhanced S/U, you will still need to complete the course and receive at least a C- to pass the course.

Other Important Resources

- **Keep Learning:** https://dasa.ncsu.edu/students/keep-learning/
- **Protect the Pack FAQs:** https://www.ncsu.edu/coronavirus/frequently-asked-questions/
- **Introduction to ZOOM:** https://youtu.be/5LbPzzPbYEw

DRAFT

Hacking for Defense @ NC State

(Addendum to PIL Fall 2020)

Course: MBA 555, Product Innovation Lab
Hacking For Defense (H4D): Special Operations Excursion
Instructors: LTC Bull Holland, PhD & Dr. Matthew Munson, PhD
Location: 3210 Nelson Hall
Days: Mondays **Times:** 6 PM – 9 PM
Office Hours: Coordinated with team mentors
Webpage: https://hackingfordefense.wordpress.ncsu.edu/

Texts:	*Business Model Generation:* Osterwalder, et al	**[BMG]**
	Value Proposition Design: Osterwalder, et al	**[VPC]**
	Startup Owner's Manual: Blank & Dorf	**[SOM]**

Goal: Handson experience in understanding, and working with the Special Operations Community on actual current problems

PIL H4D Sections Summary and Schedule

Date	Team Presentation	Lecture Topic
10 AUG 20	Team Formation + Beneficiary Discovery	Beneficiary Discovery + Classroom Expectations
17 AUG 20	Problem 101	DOD 101
24 AUG 20	Mission Model Canvas	Beneficiaries
31 AUG 20	Beneficiaries	Value Proposition
7 SEP 20	Value Proposition	Product/Mission Fit
14 SEP 20	Product/Mission Fit	Dual Use
21 SEP 20	Dual Use	Mission Achievement
28 SEP 20	Mission Achievement	Buy-in & Support
5 OCT 20	Buyin & Support	Deployment
12 OCT 20	Deployment	Activities, Resources, + Key Partners
19 OCT 20	Activities, Resources, + Key partners	Mission Budget + Operating Plan
26 OCT 20	Mission Budget + Operating Plan	Reflections
2 NOV 20	**Lessons Learned**	Presentation Tips & Best Practices
9 NOV 20	**Lessons Learned:** **Final Presentations**	Final Lessons Learned Presentation
X NOV 20		
Y NOV 20		

Grading Criteria
In accordance with Product Innovation Lab syllabus grading criteria.

Class 1: Team Formation and Beneficiary Discovery

Week 1	**Team Formation + Beneficiary Discovery**	**Lecture 1**	**Introduction: Beneficiary Discovery + Class Expectations**
Week 2	DOD/IC 101	**Lecture 2**	DOD/IC 101
Week 3	Mission Model Canvas	**Lecture 3**	Beneficiaries

There is **No Student Team Presentation** this week.

Read	● Read Steve Blank's blog post Introducing Hacking for Defense ● Read Why the Lean Start Up Changes Everything article on HBR ● Read Steve Blank's blog post Introducing the Mission Model Canvas
Watch	● Watch STVP's Hacking for Defense video overview
Create (8 min + 4 min Q&A)	Normally students give an 8-minute presentation, followed by 4 minutes of Q&A with the teaching team. This week students will engage in faculty-led beneficiary discovery and team-forming exercises in lieu of their presentations.
Prepare	**Come prepared to answer the following questions:** ● What is the *Lean Methodology?* ● What is a *Mission Model Canvas*? ● Which problems do you want to work on? ● Who do you need to make a team? What skills do you want your teammates to have? ● What personality traits should I look for in teammates?

Advanced Lecture Objectives: **Introduction: Beneficiary Discovery + Class Expectations**

- *Introduce* the Lean Startup Methodology principles
- *Introduce* Beneficiary Discovery
- *Explain* the Mission Model Canvas (MMC) and Value Proposition Canvas
- *Explain* Hypotheses, Experiments and Minimum Viable Products

This week students will also be forming their teams, filling out applications, and undertaking interviews with the Teaching Team.

Class 2: DOD/IC 101

Week 1	Team Formation + Beneficiary Discovery	**Lecture 1**	Beneficiary Discovery + Class Expectations
Week 2	**DOD/IC 101**	**Lecture 2**	**DOD/IC 101 + MMC**
Week 3	MMC	**Lecture 3**	Beneficiary

To prepare for today's presentation on **DOD/IC 101**:

Read	● Read DOD/IC Primer ● Read 12 Tips for Customer Discovery blog post ● Read SOM pp. 22-30: An Introduction to Customer Development ● Read SOM pp. 31-50: The Customer Development Manifesto ● Read SOM pp. 67-68: Overview of Customer Discovery
Watch	N/A
Create (8 min + 4 min Q&A)	**Slide 1: Title Slide** ● Team Name ● Team Members ● Number of Beneficiaries Interviewed ● Total number of Interviews (over all weeks) ● Three-sentence description of the problem and why it matters. **Slide 2: Team Introduction Slide (for 1st presentation only)** ● For Week 1, include a slide about yourselves: o Team Members + Photos o Degree and Department / Major o Designate a Subject Matter Expert o Links to LinkedIn Profiles o How your experience is relevant to the problem **Slide 3: Beneficiary Discovery Slide** ● Tell us what you learned from your 10 Beneficiary <u>Interviews</u> o *Hypotheses:* What did you think beginning the week? o *Experiments:* What did you do this week? o *Results:* What did you discover? o *Actions:* What will you do now? How will you proceed? **Slide 4: Problem Diagram**

	● Visually depict your problem through a graphic or diagram. Use this to explain what is wrong. **Slide 5: Minimal Viable Product (MVP)** ● Show the MVP of the week. Include pictures (if possible). ● Tell us what you think the MVP is testing, what data you expected, and what data you received. **Slide 6: Mission Model Canvas + Value Propositions** ● Present your Mission Model Canvas ● Use the one in your application as a template **Slide 7: Next Week** ● What is your plan for next week? ● Who will you talk to? ● What will you do? ● What do you need to find out?
Prepare	**Come prepared to answer the following questions:** ● What is Beneficiary Development? ● What is Beneficiary Discovery? What are its tenants? ● What are good practices of Beneficiary Discovery? What are bad practices?

Advanced Lecture Objectives: **DOD/IC + Mission Model Canvas**

- *Give students* an overview of how the DOD/IC is organized and how it operates
- *Enable students* to navigate the complex bureaucracy of the DOD/IC
- *Impart upon students* the diversity of roles within the DOD/IC
- *Expose students* to the DOD/IC procurement process
- *Introduce* the Lean Startup Methodology principles
- *Introduce* the Mission Model Canvas (MMC) and Value Proposition Canvas
- *Introduce* Hypotheses, Experiments and Minimum Viable Products

Class 3: Mission Model Canvas, Beneficiary Discovery

Week 2	DOD/IC 101	Lecture 2	DOD/IC 101
Week 3	**Mission Model Canvas**	**Lecture 3**	**Beneficiaries**
Week 4	Beneficiaries	Lecture 4	Value Proposition

Live Streaming Presentations
Past classes have found that *live streaming* the student team presentations is a valuable for Sponsors, Mentors, and others that want to watch the student presentations but are unable to attend in person. This can be accomplished easily with an iPad or other media device using various software options. Have your Teaching Assistant plan for this if you intend to live stream. This is highly recommended by past teaching team cohorts.

To prepare for today's presentation on the **Mission Model Canvas**:

Read	• Read "An MVP is not a Cheaper Product" Blog Post • Read Mission Model Canvas Introduction Blog Post
Watch	• Watch Beginners Mindset Video
Create (8 min + 4 min Q&A)	**Slide 1: Title Slide** • Continue to update the interview counts • Clearly update your problem description. **Slide 2: Beneficiary Discovery Slide** • Same format as last week. Tell us what you learned from your 10 Beneficiary Interviews (*hypotheses, experiments, results, actions).* **Slide 4: Minimal Viable Product (MVP)** • Show us your MVP for this week. Include pictures (if possible). • Tell us what you think the MVP is testing, what data you expected, and what data you received. **Slide 5: Mission Model Canvas + Value Propositions** • Present your Mission Model Canvas • Use the one in your application as a template **Slide 6: Choice Diagram**

	● Present a diagram of your choice, depicting something you learned this week (e.g. Beneficiary Workflows, Competitive Landscape, Beneficiary Archetype, etc.). **Slide 7: Next Week** ● What is your plan for next week? ● Who will you talk to? ● What will you do? ● What do you need to find out?
Prepare	**Come prepared to answer the following questions:** ● What's the difference between search and execution? ● What is a business model versus a business plan? ● What is the Business Model Canvas? ● What is the Mission Model Canvas? ● What are the 9 components of the Mission Model Canvas? ● What is a hypothesis? ● What do we mean by "experiments"? ● What is Customer Development? ● What are the key tenets of Customer Development? ● What is an MVP? ● What are your first few of MVPs going to be?

Advanced Lecture Objectives: **Beneficiaries in the DOD/IC**

- *Set* expectations for *documenting* Beneficiary Discovery
- *Introduce* Pain Relievers and Gain Creators
- *Review* Beneficiaries, Pains, and Gains
- *Enable* students to complete Value Proposition Canvases
- *Explain* the relationship between Value Propositions, Value Proposition Canvas and MVPs
- *Prepare students to* complete Beneficiaries Archetypes

Class 4: Beneficiaries

Week 3	Mission Model Canvas	**Lecture 3**	Mission Model Canvas, Beneficiary Development
Week 4	**Beneficiaries**	**Lecture 4**	**Value Proposition**
Week 5	Value Proposition	**Lecture 5**	Product-Mission Fit, Dual Use

To prepare for today's presentation on **Beneficiaries:**

Read	• Read SOM pp. 85 92: Customer Segments, Types, and Archetypes • Read SOM pp. 203- 211: Problem Understanding • Read SOM pp. 218- 219, 222- 224: Problem Understanding, Market Knowledge • Read SOM pp. 476- 477: Customer Segment Checklist (Create H4D Specific if possible) • Read VPD pp. 7-25 Value Proposition Definition and Customer Profile
Watch	• Watch Pre-Planning Customer Discovery #1 • Watch Pre-Planning Customer Discovery #2 • Watch Pre-Planning Customer Discovery #3 • Watch Customer Discovery Interviews #1 • Watch Customer Discovery Interviews #2 • Watch Asking the Right Question
Create (8 min + 4 min Q&A)	**Slide 1: Title/Intro Slide** • Continue to update the interview counts • Clearly update your problem description. **Slide 2: Beneficiary Discovery** • Same format as last week. Tell us what you learned from your 10 Beneficiary Interviews (*hypotheses, experiments, results, actions).* **Slide 3: Beneficiary Discovery Proof** • Get out of the building for your Customer Discovery this week. (Visit your problem sponsor!) • Show photos and videos from your experiential learning **Slide 4: Mission Model Canvas** • Update the MMC. Show changes in **red**. • Color code Beneficiaries & their value propositions. **Slide 5: Value Proposition Canvases* + Beneficiary Archetypes***

	● Complete one Value Proposition Canvas for each Beneficiary ● Show the Value Proposition Canvas and note changes to it that resulted from this week's Customer Discovery. ● Below each VPC, create a *Beneficiary Archetype* **Slide 6: Beneficiary Workflow** ● Each Beneficiary has a unique job-specific workflow. You need to diagram it. This means you must have a thorough understanding of your Beneficiary's day-to-day life. ● If you have difficulty completing this diagram, you likely need a more detailed understanding of your Beneficiary. ● Have your sponsor (or whomever is your Beneficiary) sign off on this diagram. Tell us what they said. **Slide 7: MVP (+ Experiments conducted)** ● Show us your latest MVP. Include pictures (if possible). ● Remember that this is not a full-fledged prototype. ● What experiment was it being used for? What were your expected results? What did you actually find? **Slide 8: Next Week** ● What is your plan for next week? ● Who will you talk to? ● What will you do? ● What do you need to find out?
Prepare	**Come prepared to answer the following questions:** ● What did I *see* during Beneficiary Discovery and what does it *mean*? ● What is a *Beneficiary*? ● Who are my *Beneficiaries*? ● What is a *Beneficiary Archetype?* ● What are my *Beneficiary Archetypes?* ● Are organizations Beneficiaries?

Advanced Lecture Objectives: **Value Propositions**

- *Investigate* the relationship between the Value Proposition, Value Proposition Canvas and Minimum Viable Products
- *Explain* that the Value Proposition exists to solve a beneficiary's problem
- *Explain* that Value Propositions have a one-to-one relationship with Beneficiaries
- *Describe* the challenges of Beneficiary Creep
- *Emphasize* use of MVPs to test hypotheses on the MMC and Value Prop Canvas
- *Introduce and Explain* why we look for Product-Mission fit

Class 5: Value Propositions

Week 4	Beneficiaries	Lecture 4	Value Proposition
Week 5	**Value Proposition**	**Lecture 5**	**Product-Mission Fit**
Week 6	Product-Mission Fit	Lecture 6	Dual Use

To prepare for today's presentation on **Value Propositions:**

Read	● Read SOM pp. 76- 84: Value Proposition Hypothesis ● Read Osterwalder's blog post on the Value Proposition Canvas ● Read Steve Blank's Blog Post: Watching my Students Grow into a Company ● Read Air War College Paper: Commercial Eyes in Space ● Read VPD: pp. 26- 63 Value Map, Fit
Watch	● Watch Online Lesson 2 (Value Propositions)
Create (8 min + 4 min Q&A)	**Slide 1: Title/Intro Slide** ● Continue to update the interview counts ● Clearly update your problem description. **Slide 2: Beneficiary Discovery** ● Same format as last week. Tell us what you learned from your 10 Beneficiary Interviews (*hypotheses, experiments, results, actions).* **Slide 3: Get out of the Building!** ● Get out of the building for your Beneficiary Discovery this week. (Visit your problem sponsor!) ● Show photos and videos from your experiential learning **Slide 4: Mission Model Canvas** ● Update the MMC. Show changes in **red**. ● Color code Beneficiaries & their value propositions. ● Note that you should **not** list *entire organizations* as Beneficiaries. **Slide 5: Value Proposition Canvases + Beneficiary Archetype** (one per Beneficiary) ● Complete one Value Proposition Canvas for each Beneficiary ● Note what changes resulted from this week's Beneficiary Discovery. ● Below each VPC, create a *Beneficiary Archetype* **Slide 6: Beneficiary Workflow**

	● Update your *Beneficiary Workflow* slide from last week to capture what you learned over the past week. ● Highlight the evidence that prompted these changes ● Show to your sponsor / beneficiary, and tell us what they said. **Slide 7: Draft Organizational Chart** ● Draw the relationships between your Beneficiaries ● Include anyone else who they regularly interact with. ● Continue to refine and update this over the course of the quarter. ● Note that this is not the same as the Beneficiary Workflow **Slide 8: MVP (+ Experiments conducted)** ● Show us your latest MVP. Include pictures (if possible). ● Remember that this is not a full-fledged prototype. ● What experiment was it being used for? What were your expected results? What did you actually find? **Slide 9: Next Week** ● What is your plan for next week? ● Who will you talk to? ● What will you do? ● What do you need to find out?
Prepare	**Come prepared to answer the following questions:** ● What is a Value Proposition? ● How is your MVP connected to your value proposition? ● How did your Beneficiary Discovery inform the evolution of your Value Proposition? ● What pain-points does you solution solve? ● What gains does your solution provide? ● Why do *value propositions* have a one-to-one relationship with *Beneficiaries*? ● How do the needs of your Beneficiaries diverge? Are they in conflict with one another?

Advanced Lecture Objectives: **Product-Mission Fit**

- *Reinforce the concept of* tiered Beneficiaries
- *Confirm they know how to* validate Product / Mission Fit
- *Understand where and under what conditions it is necessary to* Pivot
- *Introduce* the concept of Dual-Use and why the DOD and VC's think it's important

Class 6: Product-Mission Fit

Week 5	Value Proposition	Lecture 5	Product-Mission Fit
Week 6	**Product-Mission Fit**	**Lecture 6**	**Dual Use**
Week 7	Dual Use	Lecture 7	Mission Achievement

To prepare for today's presentation on **Product-Mission Fit:**

Read	● Read SOM pp 257-273: Chapter 7 ● Read VPD pp. 26- 63: Value Map, Fit ● Read "Pivot" Section from Steve Blank's Week 6 H4D Blog Post ● Read "Beneficiary Creep" Blog post (To be Written)
Watch	● Watch Bill Perry interview on Innovation
Create (8 min + 4 min Q&A)	**Slide 1: Title Slide** ● Continue to update the interview counts ● Clearly update your problem description. **Slide 2: Beneficiary Discovery** ● Same format as last week. Tell us what you learned from your 10 Beneficiary Interviews (*hypotheses, experiments, results, actions).* **Slide 3: Pivot or Proceed?** ● Did you team make a Pivot this week? ● If so: What prompted the pivot? What is your new hypothesis? What will you do to follow up and test it? ● If not: How did your Beneficiary Discovery support product-mission fit? What are your next steps? **Slide 4: Get out of the Building!** ● Same as last week. Show us photos and videos from your activities. ● If you didn't visit your sponsor last week, do it this week. **Slide 5: Mission Model Canvas** ● Update the MMC. Show changes in **red**. ● Color code Beneficiaries & their value propositions. ● Note that you should **not** list *entire organizations* as Beneficiaries. **Slide 6: Beneficiary Evolution**

	- Capture the evolution of your understanding about your Beneficiaries and their archetypes. How did they change over time? Who was eliminated / pruned? Who was discovered? Note any major events that prompted significant reassessments of your Beneficiaries. **Slide 8: Tiered Beneficiary Diagram** - Create a graphic that sorts your remaining Beneficiaries into *Target, Tangential, Upstream,* and *Downstream*. **Slide 9: Value Proposition Canvases + Beneficiary Archetypes** - Update from last week's slide deck. Note any changes (additions or removals). - Tie into Product-Mission Fit by preparing evidence from your Beneficiary Discovery to support each entry within a section. Having verified each section, you're well on the way to Product-Mission Fit. **Slide 9: MVP (+ Experiments conducted)** - Show us your latest MVP. Include pictures (if possible). - Remember that this is not a full-fledged prototype. - What experiment was it being used for? What were your expected results? What did you actually find? **Slide 9: Next Week** - What is your plan for next week? - Who will you talk to? - What will you do? - What do you need to find out?
Prepare	**Come prepared to answer the following questions:** - Have we validated product-mission fit? If so, what evidence do you have? - Are you making any pivots? If so, what are you pivoting to? Why? - What Gains is your MVP creating? What pain-points is it relieving? - Are all entries on your MMC harmonious or is there conflict / tension between some? - Who are your target Beneficiaries? Who are the tangential ones? The up / down-stream Beneficiaries? - How do you triage Beneficiaries? - What is *Beneficiary creep* and how do you avoid it?

Advanced Lecture Objectives: **Dual Use**

- *Confirm* students understand the advantages of pursuing Dual-Use opportunities
- *Confirm* that teams have sought Dual-Use applications.
- *Explain* the concept of Mission Achievement in the context of mission driven organizations such as the DoD/IC.
- *Explain the* differences between assessing and measuring success in commercial ventures versus success in the DoD/IC and Dual Use ventures
- *Explain* why Beneficiaries can have unique Mission Achievement criteria and why they

may not be aligned and - in some cases- can even be opposed.

- *Emphasize* the importance of developing metrics and measures that can be used to assess progress towards Mission Achievement

Class 7: Dual-Use

Week 6	Product-Mission Fit	Lecture 6	Dual Use
Week 7	**Dual Use**	**Lecture 7**	**Mission Achievement**
Week 8	Mission Achievement	Lecture 8	Buyin + Support

To prepare for today's presentation on **Dual Use:**

Read	● Read Blog Post on the Dual Use Diagram (To be Written) ● Supplemental: Read Case study on In-Q-Tel and their attempts to align dual-use tech with the right product-market (see Harvard Business Review Case Study).
Watch	●
Create (8 min + 4 min Q&A)	**Slide 1: Title Slide** ● Continue to update the interview counts ● Clearly update your problem description. **Slide 2: Beneficiary Discovery** ● Same format as last week. Tell us what you learned from your 10 Beneficiary Interviews (*hypotheses, experiments, results, actions)* **Slide 3: Mission Model Canvas** ● Color code and associate Value Propositions with Beneficiaries ● Note that Beneficiaries are *not entire organizations*. **Slide 4: Dual-Use Summary** ● Show the options that the team explored and their analysis / conclusions as to whether they are good opportunities. **Slide 5: Value Proposition Canvases + Beneficiary Archetypes** ● Same format as last week, but added focus on Dual Use. ● Does this Beneficiary present a viable Dual-Use opportunity? ● What are this Beneficiaries attitudes towards using a dual-use technology? ● Highlight any other relevant Dual-Use Information and learning **Slide 6: MVP (+ Experiments conducted)** ● Show us your latest MVP. Include pictures (if possible).

	● Remember that this is not a full-fledged prototype. ● What experiment was it being used for? What were your expected results? What did you actually find? **Slide 7: Optional Diagram** ● Add any extra diagrams you can create that visually convey what you learned this past week. **Slide 8: Next Week** ● What is your plan for next week? ● Who will you talk to? ● What will you do? ● What do you need to find out?
Prepare	**Come prepared to answer the following questions:** ● What is your dual-use value proposition? ● Who are your dual-use Beneficiaries? ● What role does Dual-Use play in your larger-business plan? ● What deployment options do you have for dual-use markets? ● What benefits does Government financing offer over VC financing?

Advanced Lecture Objectives: **Mission Achievement**

- *Reinforce* the concept of Mission Achievement in the context of mission driven organizations such as the DoD/IC.
- *Remind teams the* differences between assessing and measuring success in commercial ventures versus success in the DoD/IC
- *Explain* why Beneficiaries can have unique Mission Achievement criteria and why they may not be aligned and - in some cases- can even be opposed.
- *Emphasize* the importance of developing metrics and measures that can be used to assess progress towards Mission Achievement
- *Explain* Buy-in and “Get, Keep, Grow” concept and graphic
- *Explain* Support comes after “Get” and is a part of “keep”
- *Explain* Supporters versus Advocates
- *Explain* Standards and Field Support

Class 8: Mission Achievement

Week 7	Dual Use	Lecture 7	Mission Achievement
Week 8	**Mission Achievement**	**Lecture 8**	**Buyin & Support**
Week 9	Buyin & Support	Lecture 9	Deployment

To prepare for today's presentation on **Mission Achievement:**

Read	•
Watch	•
Create (8 min + 4 min Q&A)	**Slide 1: Title Slide** • Continue to update the interview counts • Clearly update your problem description. **Slide 2: Beneficiary Discovery** • Same format as last week. Tell us what you learned from your 10 Beneficiary Interviews (*hypotheses, experiments, results, actions)* **Slide 3: Mission Model Canvas** • Color code and associate Value Propositions with Beneficiaries • Note that Beneficiaries are *not entire organizations*. **Slide 4: Mission Achievement** • For each of your Beneficiaries, what is their Mission Achievement? • What are your metrics for assessing Mission Achievement? • Break-down your beneficiaries by their definitions and/or metrics for Mission Achievement. Use these differences to create a *tiered mission achievement diagram* that shows how the criteria for *mission achievement* changes with rank and position within your sponsor's organization. **Slide 5: Tiered Mission Achievement Diagram (optional)** • In hierarchical military organizations mission achievement may be defined differently across different rank levels or by different levels of focus- e.g. tactical, operational, and strategic. In these cases, students may want to adapt a "Tiered Mission Achievement". Template available here. **Slide 6: Value Proposition Canvases + Beneficiary Archetypes**

	● Same format as last week. Discuss what is new. ● Add *Mission Achievement* criteria to your Beneficiary Archetype. **Slide 7: MVP (+ Experiments conducted)** ● Show us your latest MVP. Include pictures (if possible). ● Remember that this is not a full-fledged prototype. ● What experiment was it being used for? What were your expected results? What did you actually find? **Slide 8: Next Week** ● What is your plan for next week? ● Who will you talk to? ● What will you do? ● What do you need to find out?
Prepare	**Come prepared to answer the following questions:** ● What is Mission Achievement? ● How is Mission Achievement defined for your Sponsor? ● How are you defining Mission Achievement? ● What are your metrics for Mission Achievement? ● How does Mission Achievement change between your Beneficiaries?

Advanced Lecture Objectives: **Buy-in & Support**

- *Reinforce* Buy-in and "Get, Keep, Grow" concept and graphic
- *Reinforce* Support comes after "Get" and is a part of "keep"
- *Review* Supporters versus Advocates
- *Review* Standards and Field Support
- *Introduce* students to the different paths that solutions are deployed within the DoD
- *Introduce and familiarize* students with key deployment related concepts including Acquisition Cycles; Technology Readiness Level (TRL); Bracket Cost
- *Prepare students to* draw Deployment Flow diagrams.

Class 9: Buy-in / Support

Week 8	Mission Achievement	Lecture 8	Buyin & Support
Week 9	**Buyin & Support**	**Lecture 9**	**Deployment**
Week 10	Deployment	Lecture 10	Activities, Resources, + Key Partners

To prepare for today's presentation on **Buy-in & Support:**

Read	• Read SOM pp. 126-143: Customer Relationships Hypothesis • Read SOM pp. 296-303: Get/Keep/Grow
Watch	• [Watch Online Lesson 5: Customer Relationships]()
Create (8 min + 4 min Q&A)	**Slide 1: Title Slide** • Continue to update the interview counts • Clearly update your problem description. **Slide 2: Beneficiary Discovery** • Same format as last week. Tell us what you learned from your 10 Beneficiary Interviews (*hypotheses, experiments, results, actions)* **Slide 3: Mission Model Canvas** • Color code and associate Value Propositions with Beneficiaries • Focus on the *Buy-in & Support* and *Deployment* sections. **Slide 4: Organizational Chart/Influence Chart** • Create an organizational chart of your sponsor, and detail all the relationships and connections that exist that could impact your success. o Who reports to who? o How is information passed along? o Who are the gate-keepers? o Who writes requirements? o Who authorizes funding / moves money? o Who's buy-in / support is critical? o Who are the saboteurs? **Slide 5: Buy-in / Support story for your product** • Explain who is are the necessary people to rapidly deploy your product and how you are going to win them over.

	Slide 6: Get-Keep-Grow Diagram ● Create a Get-Keep-Grow diagram for your solution. **Slide 5: Value Proposition Canvases + Beneficiary Archetypes** ● Same format as last week. Discuss what is new. ● Include general ways to get Buy-In for each Beneficiary Archetype. **Slide 6: MVP (+ Experiments conducted)** ● Show us your latest MVP. Include pictures (if possible). ● Remember that this is not a full-fledged prototype. ● What experiment was it being used for? What were your expected results? What did you actually find?
Prepare	**Come prepared to answer the following questions:** ● What are *saboteurs, supporters* and *advocates*? ● Who are your saboteurs? ● Who are you advocates? ● Who are your supporters? ● Why are your *saboteurs sabotaging* you*?* ● Who are the critical influencers in your influence/org chart? ● What are you going to do to initially *get* beneficiaries? To *grow* your market size? And to *keep* customers?

Advanced Lecture Objectives: **Deployment**

- *Ensure the students are familiar* with deployment concepts including Acquisition Cycles; Color of Money, Technology Readiness Level (TRL); Bracket Cost and that they can draw Deployment Flow diagrams.
- *Introduce* Activities, Resources, and Key Partners
- *Explain* risks, benefits, and difficulties of Partnerships.
- *Explain* differences between Government Partnerships, Dual-Use Partnerships, and traditional Corporate Partnerships.
- *Explain* unique benefits that Government and Dual-Use Partnerships provide.
- *Ensure Students can* complete Gantt Charts, Activity Maps, and Key Partner Canvas

Class 10: Deployment

Week 9	Buyin & Support	Lecture 9	Deployment
Week 10	**Deployment**	**Lecture 10**	**Activities, Resources, + Key Partners**
Week 11	Activities, Resources + Key Partners	Lecture 11	Mission Budget + Operating Plan

To prepare for today's presentation on **Deployment:**

Read	● Read "Building Partnerships for Efficiency" pp. 6-9 by Tony Davis on SOCOM's agile acquisitions efforts.
Watch	● Watch Online Lesson 4: Channels
Create (8 min + 4 min Q&A)	**Slide 1: Title Slide** ● Continue to update the interview counts ● Clearly update your problem description. **Slide 2: Beneficiary Discovery** ● Same format as last week. Tell us what you learned from your 10 Beneficiary Interviews (*hypotheses, experiments, results, actions)* **Slide 3: Mission Model Canvas** ● Color code and associate Value Propositions with Beneficiaries ● Focus on the *Buy-in & Support* and *Deployment* sections. **Slide 5: Value Proposition Canvases + Beneficiary Archetypes** ● Same format as last week. Discuss what is new. ● Include general ways to get Buy-In for each Beneficiary Archetype. **Slide 6: MVP (+ Experiments conducted)** ● Show us your latest MVP. Include pictures (if possible). ● Remember that this is not a full-fledged prototype. ● What experiment was it being used for? What were your expected results? What did you actually find? **Slide 7: Technology Readiness Level (TRL)** ● Create a slide that indicates what TRL you have achieved. ● How much will it cost to get from the current TRL to future TRLs?

	Slide 7: Sponsor Procurement Process ● Create a diagram that that illustrates the steps to deployment that you sponsor would typically take. ● This requires you to understand how your sponsor conducts business. Show this slide to them before your presentation to solicit feedback. **Slide 8: Potential Deployment Strategies** ● There is no one-way to get things done in the DOD. Highlight the different avenues for deploying your solution that you have discovered. Include different sources of funding, contract mechanisms, programs, etc. ● Compare the pros and cons of each deployment-strategy. Consider both their timelines and funding constraints. ● Detail the deployment strategy that your team is most likely to pursue. ● Identify the constraints and conditions of using <u>that</u> deployment method. **Slide 9: Deployment Diagram** ● If your sponsor does have a method to propose deployment of a solution, work with them to lay out the specific activities that need to be completed to rapidly deploy. ● In addition to necessary activities in this process <u>identify the people</u> who will be involved (organizations don't do things, the people inside them do) **Slide 7: Next Week** ● What is your plan for next week? ● Who will you talk to? ● What will you do? ● What do you need to find out?
Prepare	**Come prepared to answer the following questions:** ● How is your sponsor's organization organized? (Draw it out) ● What viable funding mechanisms exist within your sponsor's organization? How about from outside organizations? ● Are there any relevant BAAs or RFPs? ● What Technology Readiness Level (TRL) have you achieved? ● How much will it cost to get from your current TRL to the next? (est) ● What are the different Deployment routes? ● What are the associated timelines of the different deployment routes?

Advanced Lecture Objectives: **Activities, Resources, + Key Partners**

- *Ensure the students are familiar* with Activities, Resources, and Key Partners concepts and understood the risks, benefits, and difficulties of Partnerships.
- *Ensure they understand* Government and Dual-Use Partnerships.
- *Ensure Students* understand Gantt Charts, Activity Maps, and Key Partner Canvas
- *Introduce* Operating Plans
- *Introduce* Burn Rate
- *Explain* Costs in DoD/IC Terms
- *Explain* the differences between Traditional Commercial Operating Plans, Commercial Startup Operating Plans, and Operating Plans for Startups selling to the DoD/IC

Class 11: Activities, Resources, + Key Partners

Week 10	Deployment	Lecture 10	Activities, Resources, + Key Partners
Week 11	**Activities, Resources + Key Partners**	**Lecture 11**	**Mission Budget + Operating Plan**
Week 12	Mission Budget + Operating Plan	Lecture 12	*Reflections*

To prepare for today's presentation on **Activities, Resources, + Key Partners:**

Read	● Read SOM pp. 169-175: Key Resources ● Read SOM pp. 176-177: Partners ● Read blog post on Key Partners & Key Partner Canvas (To be Written)
Watch	● Watch *Online Lesson 8: Activities and Resources* (Before watching Online Lesson 7) ● Watch Online Lesson 7: Partners
Create (8 min + 4 min Q&A)	**Slide 1: Title Slide** ● Continue to update the interview counts ● Clearly update your problem description. **Slide 2: Beneficiary Discovery** ● Same format as last week. Tell us what you learned from your 10 Beneficiary Interviews (*hypotheses, experiments, results, actions)* **Slide 3: Mission Model Canvas** ● Color code and associate Value Propositions with Beneficiaries ● Focus on the *Activities, Resources,* and *Key Partners* sections. **Slide 4: MVP (+ Experiments conducted)** ● Show us your latest MVP. Include pictures (if possible). ● Remember that this is not a full-fledged prototype. ● What experiment was it being used for? What were your expected results? What did you actually find? **Slide 5: Activities Map** ● Connect your *needs* to the *Activities* you will use to complete them. ● Separate your *Activities* into *Resources* (internally owned) and *Key Partners* (externally owned). ● Who will you partner with as *Key Partners*?

	Slide 7: **Critical Resources Gantt Chart** ● What resources do you have? What do you need? How will you acquire what you need? How much will it cost? ● Are they resources you already have? Do you need to acquire or partner with others to get them? How much will they cost? ● What human resources will you need? What equipment resources will you need? What financial resources will you need to acquire all these resources? **Slide 8**: **What are your Key Activities?** ● What are the activities you need to perform to complete your team's value proposition? (e.g. manufacturing, launching rockets, getting funding) ● What is the timeline of those activities? **Slide 9: Key Partner Canvases** ● For each Key Partner, complete a *Key Partner Canvas* to characterize the partnership. ● Remember partnerships must be a 2-way street. Realistically you must offer them something in return. **Slide 10: Value Proposition Canvases + Beneficiary Archetypes** ● Same format as last week. Discuss anything new.
Prepare	**Come prepared to answer the following questions:** ● What are Activities, Resources, and Key Partners? How are they related? ● What are your Key Activities? Your Resources? Your Key Partners? ● What are the different types of resources that one can have? ● What is your most important type of Resource? ● What is a "coin-operated" partnership? ● What impact would pursuing a dual-use application have on your *Activities*, *Resources*, and *Key Partners?* ● What <u>*resources* do you already have? What do you need?</u>

Advanced Lecture Objectives: **Mission Budget + Operating Plan**

- *Ensure the students are familiar* with Operating Plans
- *Ensure the students are familiar* with Burn Rate
- *Ensure the students are familiar* with Costed Bill of Materials
- *Ensure the students are familiar* with Costs in DoD/IC Terms
- *Ensure the students are familiar* with the differences between Traditional Commercial Operating Plans, Commercial Startup Operating Plans, and Operating Plans for Startups selling to the DoD/IC
- *Explain the Format and Expectations* for final Lessons Learned presentations.

Class 12: Mission Budget + Operating Plan

Week 11	Activities, Resources + Key Partners	Lecture 11	Mission Budget + Operating Plan
Week 12	**Mission Budget + Operating Plan**	**Lecture 12**	**Reflections**
Week 13	Lessons Learned: Reflections	Lessons Learned	Presentation Tips + Best Practices

To prepare for today's presentation on **Mission Budget + Operating Plan:**

Read	● Read SOM pp. 438-446: Metrics that Mater ● Read SOM pp. 528: Validate Financial Model ● Review Mark Leslie's Slides on Business Models
Watch	● Watch Online Lesson 6: Revenue Models
Create (8 min + 4 min Q&A)	**Slide 1: Title Slide** ● Continue to update the interview counts ● Clearly update your problem description. **Slide 2: Beneficiary Discovery** ● Same format as last week. Tell us what you learned from your 10 Beneficiary Interviews (*hypotheses, experiments, results, actions)* **Slide 3: Mission Model Canvas** ● Color code and associate Value Propositions with Beneficiaries ● Focus on the *Activities, Resources,* and *Key Partners* sections. **Slide 4: MVP (+ Experiments conducted)** ● Show us your latest MVP. Include pictures (if possible). ● Remember that this is not a full-fledged prototype. ● What experiment was it being used for? What were your expected results? What did you actually find? **Slide 5: Value Proposition Canvas for each Beneficiary** ● Continue to refine your Value Prop and Customer Archetype / Persona for each beneficiary **Slide 6: Diagram of Cost Flows (e.g. Bill of Materials / BOM)** ● Create a diagram of your cost flows. ● If you have an idea of what is needed in your product, include the BOM

	Slide 7: 3 Year Financial / Operations Timeline ● Present financial and operations timeline for the next 3 years. **Slide 8: (If Dual-Use) Commercial Operations Timeline** ● Map out an Operational timeline for the next 3 years
Prepare	**Come prepared to answer the following questions:** ● What is Burn Rate? What is your estimated burn rate? ● What is a BOM? ● What does your financial operations timeline look like for the coming 3 years? ● When will you need new cash injections?

Advanced Lecture Objectives: **Reflections**

- *Explain the Format and Expectations* for final Lessons Learned presentations
- *Give students* the opportunity to reflect on their experiences in Hacking 4 Defense
- *Polish students'* final presentations
- *Ensure* that students present what they learned over the course of the quarter and not simply another demo.

Class 13: Lessons Learned– Reflections

Week 12	Mission Budget + Operating Plan	Lecture 12	Reflections
Week 13	**Lessons Learned: Reflections**	**Lecture 13**	**Presentation Tips + Best Practices**
Week 14	Lessons Learned: *Final Lessons Presentation*		

To prepare for today's presentation on **Reflections:**

Read	● Review sample final presentation slide decks
Watch	● Watch Final Presentations video from Stanford 2016 class
Create (8 min + 4 min Q&A)	**Suggested Final Presentation Outline** **Slide 1** ● Team name ● A few lines of what your initial idea was ● The size of the opportunity (TAM/SAM) ● Total number of interviews personally conducted (include any email interactions or survey numbers in parentheses) **Slide 2** – Team members – name, background, expertise and your role on the team. Name of mentors and their affiliation. **Slide 3** – Original Hypotheses ● The World – market/opportunity, how does it operate ● The Characters – customers/value proposition/ productmarket fit, pick a few examples to illustrate ● Narrative Arc – lessons learned how? Enthusiasm, despair, learning then insight ● Quotes from customers "we loved it" or "stupid idea" ● Show us – images and demo to illustrate **learning** = diagrams, wireframes & pivots to finished product) ● Editing – does each slide advance the learning *Theater* ● Point us to what you want us to see ● Ought to be selfexplanatory ● Use analogies ● Bring any "show and tell" examples

	Slide 4 Mission Model Canvas **Version 1** (use the modified Osterwalder Canvas; do not make up your own). "Here was our original idea." ● Zoom in on the important parts of the canvas to make any key points **Slide 5** – "So here's what we did…" (explain how you got out of the building) ● Show us your first MVP **Slide 6** – "So here's what we found (what was reality), so then… here's what we did" ● Zoom in on the important parts of the canvas to make any key points ● Presentation *requires* at least three Mission Model Canvas slides. ● Presentation *requires* at least three diagrams of some part of the canvas. For example: o Get Keep Grow Pipeline o Channel Diagram o Customer / Payer Flow o Activities / Resources / Partners Connections o Petal Diagram o TAM / SAM **Side n1** – "So here's where we ended up." Talk about: ● What did you learn ● Show us your final MVP **Slide n** ● Investment readiness slide ● Whether you think this a viable business, ● Whether you want to pursue it after the class, etc.
Dead-lines	The **Next draft of your slides** needs to be uploaded by [Time] [Date] The Teaching team will give your slides one final review and send you comments that evening **Final slides and videos – approved by teaching team need to uploaded by (Time) (Date)**

Advanced Lecture: **Presentation Tips + Best Practices**

Class 14: Lessons Learned— Final Presentation

Week 12	Mission Budget + Operating Costs	**Lecture 12**	Reflections
Week 13	Lessons Learned Reflections	**Lecture 13**	Presentation Tips + Best Practices
Week 14	**Final Lessons Learned Presentation**		

H4D Final Assignment

Deliverable: On [Date] each team will present a 10minute "Lessons Learned" presentation (2 min video summarizing journey; 8 min final presentation) and will have 5 min Q&A from the teaching team.

Goal: Communicate what you learned in 10 weeks and how you learned it. Show what you learned and <u>how you learned it</u>.

Use the language of class: interview, iterations, pivots, restarts, experiments, MVPs, evidence. The focus of your presentation will be on how you gathered evidence and how it impacted your understanding of your business models, while you were building your MVP.

Strategy: Tell us how you used customer discovery and MVPs to evolve your mission model through iterations, and how the accumulation of evidence outside the classroom led you to pivot.

Tactics:

- Initial hypotheses and petal diagram
- Quotes from customers that illustrate learnings insights
- Diagrams of key parts of the Canvas: customer flow, channel, get/keep/grow (before and after)
- Pivot stories
- Screenshots of the <u>evolution</u> of MVP
- Demo of final MVP
- Bring any "show and tell" items

View the *best practice examples* on Dropbox at
http://bit.ly/1WDOUez

Steve Blank's Slide Repository:

http://www.slideshare.net/sblank

2minute video

In addition to your 8minute presentation, create a 2minute video to be *shown at the beginning* of your final presentation. The video should summarize the customer discovery journey your team went on, highlighting the key customer insights that took you from your initial idea to today. Storytelling quality is critical. High production value is not (some of the best videos have been very straightforward).

Make it personal include the team in the video as well as key "aha" moments. This video is about the discovery process. It is NOT a marketing video for your product.

See sample videos here: Bionicks Video, Gutwiser Final Video, Dentometrix Video

Final Presentation Tips

This is not a YCombinator Demo Day. You've learned a lot and we want to see what you learned., not how smart you are at the end of the class.

You cannot possibly cover everything you learned in 10 weeks an 8minute presentation. Don't try to. The final presentation is partly an exercise in distilling the most critical, surprising, and impactful things you learned in the process.

Don't fall into the trap of making your final presentation too highlevel. If it becomes an overview with no details you will lose the audience and you will look no smarter than day 1. We need to see WHY your Mission model canvas evolved the way it did.

Include anecdotes about specific customer interviews that support the "what we learned story" you are telling. Draw on insights recorded weekly in

If you have a demo, prototype, screenshots, etc. include them in your presentation to illustrate your learning process and where it has gotten you **(it is called "Lessons Learned Day" and not "Demo Day" for a reason)**. We are not just interested in WHAT your
product is, but WHY your product is – what did you learn from customers that shaped the product?

1. Final draft of your slides needed to be uploaded the night before class, by [Deadline]
   - Teaching team will give your slides one final review and send you comments that evening

2. Final slides and videos – approved by teaching team need to uploaded the day of the final class, by [Deadline #2]
    - Videos need to handed to TA on a memory stick before class

Congratulations!

Syllabus Appendix A: Class Strategy

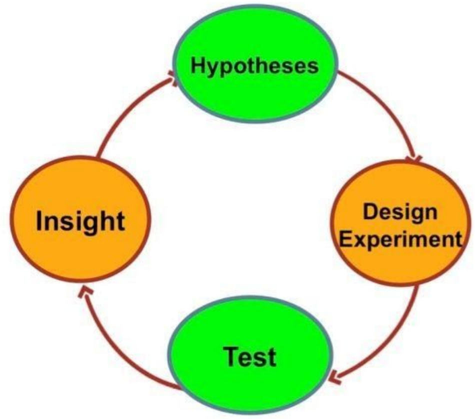
This is a practical class – essentially a lab, not a theory or "book" class. Our goal, within the constraints of a classroom and a limited amount of time, is to *help you understand customer and stakeholder needs in the* Department of Defense and Intelligence Community *and:*

1. Profoundly understanding the problems/needs of government customers using the Lean LaunchPad Methodology
2. Rapidly iterate technology solutions while searching for productsponsor fit
3. Understand all the stakeholders, deployment issues, costs, resources, and ultimate mission value

The class uses the Lean Startup method. Rather than engaging in months of business planning, the method assumes that all you have is a series of untested hypotheses—basically, good guesses about what the product solution is, who the customer is, other stakeholders, impact of potential regulation, deployment, funding, etc. And that regardless of how elegant your plan, the reality is that most of it is wrong. You need to *get out of the building and get off campus* to search for the facts that validate or invalidate your hypotheses, and ultimately enable you to pursue strategies that will accelerate the identification and development of a solution for your sponsor that helps the organization achieve its mission.

Our class formalizes this *search for a repeatable, scalable mission model.* We do it with a process of hypothesis testing familiar to everyone who has been in a science lab. In this class you'll learn how to use a *mission model* canvas (a diagram of how your organization will create value for itself and mission value for its customers) to frame your hypotheses.

Second, you'll "*get out of the building*" using an approach called *Customer Development* to test your hypotheses. You'll run experiments with DOD/IC end users and stakeholders and collect evidence about whether each of your hypotheses is true or false. (Simultaneously you'll be using use *agile development* to rapidly build minimal viable products to accompany those experiments to elicit customer feedback.) That means that every week you'll be talking to DOD/IC customers and stakeholders outside the classroom testing your assumptions about different customers, product features, mission value, deployment, requirements and the government acquisition process. (You'll talk with at least 100 of them during the class.)



Then, using those customers' input to revise your assumptions and hypotheses, you'll start the cycle over again, testing redesigned offerings and making further small adjustments (iterations) or more substantive changes (pivots) to ideas that aren't working. The goal is to build/design something DOD/IC customers would actually want to use and deploy.

This process of making substantive changes to one or more of your mission model hypotheses – called pivots – before your DOD/IC customers would start an acquisition program for tens or hundreds of millions dollars, helps you avoid huge future costs and potentially unforeseen deadends far down the road of development. (A pivot might mean changing your position in the value chain. For example; your team may realize that you can buy an offtheshelf product and modify it to solve and immediate customer need. Or you can become an OEM supplier to a government contractor providing a critical part of a larger system, rather than selling directly to the government). Other pivots may move your company from a platform technology to becoming a product supplier, or from a systems supplier to a service provider.

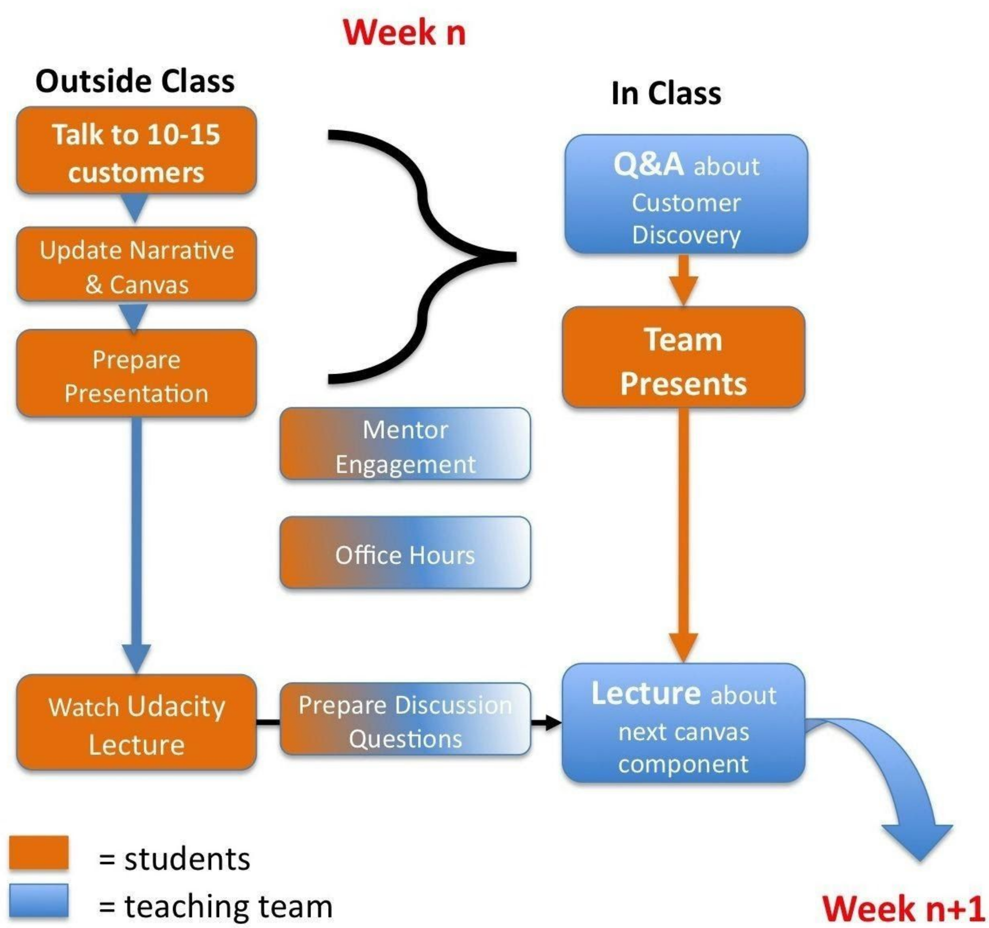
Some teams may make even more radical changes. For example, your team may discover that there are more customers in the DOD than your original DOD/IC sponsor. Or you might discover that the product you're developing is dualuse (it can be used for DOD/IC applications as well as the broader civilian market.)

Syllabus Appendix B: Class Roadmap

Each week, your team will be completing activities outside and inside the classroom:

Outside the classroom

- Doing homework (assigned reading and video lectures)
- Talking to DoD/IC mentor
- Engaging with local mentor
- Completing Customer Discovery with 1015 beneficiaries/users/partners
- Updating your Minimal Viable Product
- Capturing customer discovery progress on team blog; updating their Mission Model Canvas
- Taking what they learned and assembling a 8minute weekly update presentation
- Attending required office hours
- Listening to comments and suggestions from the teaching team & peers on the lessons learned



The flow of the class starts with teams preparing the latest MVP to show DOD/IC beneficiaries. The MVP is used to test a specific hypotheses from the mission model canvas

The team then gets out the building with their MVP and talks to 1015 beneficiaries validating or invalidating hypotheses they were testing. As they talk to beneficiaries during the week, they log their findings on their team blog. They gather all the information they learned during the week, meet with their DOD/IC mentor, have office hours with the teaching team, and prepare a 8minute inclass presentation of what they learned. After class they read the course text to prepare them for the next week's mission model hypothesis testing. They accomplish this by:

In the classroom:

- Teams present and receive instructor critiques in their cohort
- Instructors offer advanced lecture on DOD/IC specific advice on one of the 9 mission model building blocks to help prepare you for next week's discovery

Guidelines for weekly presentations

Each team is expected to speak to at least 1015 beneficiaries every week. The 8minute weekly team presentations should summarize the team's findings of that week.

Each week you're expected to have an updated version of your entire mission model canvas, but your customer discovery efforts should focus primarily on the topic listed on the Mission Model Canvas for the week that was discussed at the end of previous class. This update is required regardless of whether you've pivoted and are reexploring topics from earlier lectures. In the case of a pivot (which can be indicative of successful customer discovery), you will have to work doubly hard to cover earlier class topics and touch on current class topics in your weekly presentation.

Feedback from the teaching team during oral presentations is where the most learning occurs. Due to the pace and tempo of the course, all students will held accountable to have completed the reading and video materials detailed in the syllabus covering the material for each class.

Syllabus Appendix C: Instructional Method

The class uses eight teaching methods, some of which may be new to you. These include: 1. experiential learning, 2. teambased, 3. a “flipped” classroom, 4. advanced topic lectures, 5. weekly team presentations, 6. team teaching, 7. observing other teams and providing constructive feedback, and 8. Team blogs.

1. *Experiential Learning*
This class is not about the lectures. The learning occurs outside of the classroom through conversations with beneficiaries. Each week your team will conduct a *minimum* of 10 beneficiary interviews focused on a specific part of the mission model canvas. This class is a simulation of what startups and entrepreneurship are like in the real world: chaos, uncertainty, impossible deadlines with insufficient time, conflicting inputs, etc.

2. Teambased
This class is teambased**.** Working and studying will be done in teams of four; admission is based on an interview with the teaching team. The commitment of the entire team to the effort and necessary hours is a key criterion of admission.

Each and every team member *should participate in customer discovery activities* (*testing hypotheses outside of the building)* by interviewing beneficiaries and partners. You cannot delegate customer discovery. Teams will selforganize and establish individual roles on their own. There are no formal CEO/VP titles, just the constant parsing and allocating of the tasks that need to be done.

In addition to the instructors and TA, each team will be assigned two mentors: a DOD/IC sponsor who originated your problem, and a local mentor (an experienced entrepreneur, service provider, consultant, or investor) to provide assistance and support.

3. The Flipped Classroom
Unlike a traditional classroom where the instructor presents lecture material, you’ll watch core weekly lectures on your time. These lectures contain the information you will need to complete that week’s cinterviews. Summarizing your weekly team progresssomething traditionally done as homeworkis now done in class, with the teaching team offering personalized guidance to each team.

4. Advanced Topic Lectures
Online lectures will be supplemented by a deepdive, inclass lectures tailored to this week’s topic and the DOD/IC community.

5. You Present Your Progress Weekly
Each week all teams will present a 8minute summary of what you learned testing specific hypotheses. The teaching team will provide advice and guidance.

6. Team Teaching and the Inverted Lecture Hall

Sitting in the *back* of the classroom are experienced instructors and mentors. All have experience with the Lean methods used in the H4D class, some have operational DoD/IC experience and others have built and/or funded startups and have worked with many other entrepreneurial teams. This diverse teaching and mentoring team will be commenting and critiquing each team's progress. While the comments may be specific to each team, the insights are almost always applicable to all teams. Pay attention.

7. Actively Observing Other Teams and Providing Written Feedback
The class is a learning cohort. It is your responsibility to help each other and learn from one another's experiences. This form of collaborative learning will accelerate your team's progress. Each week, when other teams are presenting, you will log feedback, ideas, helpful critiques and suggestions for each team as they present. This feedback is viewable by all members of the class, and may – at the discretion of the instructors – be shared for class discussion.

8. Keeping Track of Your Progress: Team Blogs
Each week as you get of the building and talk to customers we have you summarize what you learned on your team's blog. This allows you to share what you've learned with the teaching team and your industry experts. This, along with your weekly presentations is how we monitor your progress.

Syllabus Appendix D: Class Culture and Workload

This class communicates much differently from the typical university or company culture you may be familiar with. This class pushes many people past their comfort zone. In some ways the course borrows from the culture of the military organizations and sponsors it supports.

At times it may feel harsh and abrupt (we call it relentlessly direct,) but in reality it is focused and designed to create *immediate action* in time, resource, and cashconstrained environments. We have limited time and we push, challenge, and question you in the hope that you'll learn quickly. The pace and the uncertainty accelerate as the class proceeds.

If you believe that the role of your instructors is to praise in public and criticize in private, **do not take this class.** You will be receiving critiques in front of your peers every week.

We will be direct, open, and tough – just like the real world. Your sponsors have real problems that demand viable and timely solutions and we do them a collective disservice d.

This approach may seem harsh or abrupt, but it is a direct reflection of our desire for you to learn to challenge yourselves quickly and objectively, and to appreciate that as entrepreneurs you need to learn and evolve faster than you ever imagined possible.

This class requires a phenomenal amount of work on your part, certainly compared to many other classes. Projects are treated as real startups, so the workload will be **intense**.

Previous H4D student teams have reported an average of 1520 hours of work each week- or more in many cases. Getting out of the classroom and gaining an appreciation for the challenges facing your sponsor's organization and other end users and stake holders is what the effort is about. If you can't commit the time to talk to customers, this class is not for you. Teams are expected to have completed **at least 10 in person or video chat interviews each week** focused in the mission model canvas area of emphasis for that week

This means over the 10week course you will have completed in the range 100 interviews.

Syllabus Appendix E: Frequently Asked Questions (FAQ)

How Do I Apply?

- Download the application form from [insert URL]

Enrollment

- Admission is by teams of 4 students from any school or department
- Teams must interview with the teaching team prior to the class start date.
- Your entire team must attend the first class to be enrolled.
- Teams must submit a mission model canvas and interview with the teaching team prior to the class start date.

Students

- Priority is given to graduate students. Undergraduates can be on teams. Nonstudents can serve as advisors to the teams. Exceptions for team size and external members will be made on a casebycase basis.
- There are no remote options for this course you must take the class on campus.

How Do I Find Teams?

- Visit the class website and find the Google doc with the list of students who are interested in the course. Please add yourself and include your areas of interest.

Team Ideas

Do I have to choose an idea that a sponsor is providing?

No. You can come up with your own idea and find a DOD/IC sponsor yourself. (The sponsor has to commit to provide the resources as outlined in section 2.)

What if I don't have an idea?

Visit the class website and check out the Google doc with the list of students who have posted their ideas. Talk to them or see if any of the DOD/IC proposals are interesting.

What if I want to propose an idea I have to a DOD/IC organization or agency?

Contact the teaching team and we'll connect you to a sponsoring agency.

Attendance and Participation

- *You cannot miss the first class without prior approval*
- This is very intense class with a very high workload. If you cannot commit to 1520 hours a week outside the classroom, this class is not for you.
- The startup culture at times can feel brusque and impersonal, but in reality is focused and oriented to create *immediate action* in time and cashconstrained environments.
- If during the semester you find you cannot continue to commit the time, immediately notify your team members and teaching team and drop the class.
- If you expect to miss a class, please let the TA and your team members know ahead of time via email.
- We expect your attention during our presentations and those of your fellow students. If you're getting bored, tired or inattentive step outside for some air. If we see you reading email or browsing the web we will ask you to leave the class.
- We ask that you use a name card during every session of the quarter.
- During your classmates' presentations you will be required to give feedback the online log. Please bring a laptop to every class and be prepared to give your undivided attention to the team at the front of the room.

Intellectual Property

Who owns the intellectual property tested in the Mission Model?

If you're working with a university relatedtechnology (i.e. either research from one of the team members or University IP), you must check with the Office of Technology, Licensing to understand the university's ownership rights in any resulting IP.

1. *You own* what Intellectual Property (patents, hardware, algorithms, etc.) you brought to class with you. No one (other than the university) has claim to anything you brought to class.
2. You ***all*** own any intellectual property developed for the class (such as code for a webbased project) developed during class. *You are agreeing to opensource your assets developed within the class*. Your DOD/IC sponsor will have access to those materials.
3. You and your team members need to disclose to each other and your DOD/IC sponsor what IP/Licensing rights *any company* you've worked at has to inventions you make at school.
4. If any or you decide to start a company based on the class, *you own only what was written and completed in the class*. <u>You have no claim for work done before or after the</u> <u>class quarter</u>.
5. If a subset of the team decides to start a company they do NOT "owe" anything to any other team members for work done in and during the class. All team members are free to start the same company, without permission of

the others. (We would hope that a modicum of common sense and fairness would apply.)

6. By taking this class you have agreed to these terms with your team. You may decide to modify these terms before the class by having all team members agree in writing **before the team is accepted** in the class.

I feel my idea / Mission Model may become a real company and the "next killer app" and I want to own it *myself* what should I do?

This is more than likely the wrong class to take. Your slides, notes and findings will be publically shared. Your team owns everything done in class. Discuss Intellectual Property rights with your team from the beginning. If you can't come to agreement with the team, join another team, pick another project, or drop the class. Remember anything you do and learn in the class is public.

Will my Intellectual Property rights be protected when I discuss my ideas with the class?

NO. This is an open class. **There are no nondisclosures**. All your presentations and Customer Discovery notes, business model canvas, blogs and slides can, and most likely will, be made public. Some exceptions may be made in the case of select sponsor organizations or problems that require a certain level of privacy but these will be the exception.

- This class is *not an incubator.* At times you will learn by seeing how previous classes solved the same class of problem by looking at their slides, notes and blogs. Keep in mind that successful companies are less about the original idea and more about the learning, discovery and execution. (That's the purpose of this class.) Therefore you must be prepared to share your ideas openly with the class. It is a forum for you to "bounce" your ideas off your peers.

I'm not comfortable sharing what I learn with others what should I do?

Don't take this class.

Help!

- **What kind of support will our team have?**

  The teaching team consists of professors, a TA, at least two mentors and ideally one military liaison *per team*.

  - A mentor is an experienced defense/IC official, investor or consultant assigned to your team. They've *volunteered* to help with the class and your team because they love hard problems and they love startups. Their job is to guide you as you get out of the building. If you are assigned a military liaison, they are available to help you.
  - Where possible, currently serving members of the military or individuals with significant military experience are assigned to student teams as Military Liaisons. These liaisons help student teams interact effectively with their DOD/IC problem sponsors.

- **How often can we/should we meet with our mentor?**
  Your mentor is expecting to meet with you *at least* every week facetoface or video chat. You can email them or meet with them more often if they have time.

- **Can I talk to a mentor or military liaison not assigned to my team?**
  By all means, do so. All the mentors and military liaisons volunteered to support students in the course and are happy to help. However they cannot support your team full time unless your mentor decides to swap places with them.

- **I have a busy schedule and my mentor can't meet when I want them to.**
  Mentors have day jobs. Asking them to meet or reply to you ASAP is not acceptable. So plan ahead to allow for a reasonable amount of time for a reply or meeting. Be concise with your request and be respectful of their time.

- **I need help now.**
  You first stop is your TAs. Email or sit down with them during the week if you have a problem. Professors are available during regularlyscheduled office hours. If you need something resolved sooner, email us.

Team Dynamics

- **What roles are in each team?**
  Traditionally, each team member is part of the "customer development team". You have to figure out how to allocate the work.
- **What if my team becomes dysfunctional?**
  Prepare to work through difficult issues. If the situation continues, approach the teaching team. Do *not* wait until the end of the quarter to raise the issue.
- **What if one of my teammates is not "pulling his/her weight"?**
  Try to resolve it within your team. If the situation continues *longer than a week*, please approach the teaching team. Final grades will also reflect individual participation and contribution.
- **What kind of feedback can I expect?**
  Continual feedback weekly. Substandard quality work will be immediately brought to your attention.