An essential aspect of creativity is not being afraid to fail.

Edwin Land

Course: 95794 Tech Startup: Market Discovery – A1

Location: Pittsburgh

Time: Friday, 9:00 AM – 11:50 AM

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Please call to arrange for office hours.

Course Description:

The first three years of a technology start-up are the most critical; when the company's DNA or trajectory is set. Too few entrepreneurs appreciate this fact and, as a result, many start without the essential skills talents and capabilities needed to set the company on a successful path. Some of these entrepreneurial skills can only be learned through starting and growing a business while others can be learned. This course attempts to bridge the challenging gap between learning and doing entrepreneurship.

We introduce you to an essential skill of market discovery or learning to create, develop and evaluate your concept of your business. Is my idea a real innovation? Is it also a business or a product or neither? How do I know how big the market is for my product? What are the technology market and competitive risks in my idea and how do I assess them? Can I compete? Can I sell it? How? When? Where? Students will have the opportunity to apply their newfound practical skills gathered in part from lectures from experienced entrepreneurs and investors to case studies role-playing and solving actual problems of local tech businesses.

The best way to learn entrepreneurship is by doing, which is why this course will use two ‘true-to-life’ scenarios as the anchor for the course. The class will be divided into 4 teams, with 2 teams will focus on a company that is either (1) a student idea for new start-up, (2) an existing start-up (ideally local) or (3) a hypothetical start-up proposed/conceived by the students, the professor or both.
The 2 other will teams will work with an established going concern, ideally a large Fortune 1000 company that has an internal project. This second project would work as a ‘intrapreneurial’ enterprise.

The students will apply the core learning of this class to their respective start-up. The start-ups will all focus cognitive computing-driven companies. Cognitive learning companies typically have all of the following characteristics (Examples are found in the back of the syllabus):

- **Self-learning**, which is a system receives initial instructions and then learns on its own based on the data you continue to feed it.

- **Machine-learning techniques**, which automate model building to iteratively learn from data and to find hidden insights without being explicitly programmed where to look.

- **Specific, human-like tasks** means the system can classify and understand objects and recognize human languages, but the tasks it performs are highly specialized.

- **In an intelligent way** describes how the system is able not only to understand input such as text, voice or video, but also to reason and create output consumable by humans.

**Course Learning Objectives:**

Each student will be better able to do the following by the end of the course:

- Understand how new information and data about the concept of the business, financing and the team can be quickly integrated into the company’s ongoing strategy and tactics.
- Think of tech startup planning, not as an occasional activity, but as a continuous, daily process.
- Fuller understanding creating and evaluating the concept of your business, financing that business and building a team to support it.

**Course Requirements:**

Teams will take their respective cognitive learning-driven start-ups through customer discovery. Specifically, each team will be required to make a presentation and produce a final report:

Each presentation will come at the end of each course section, roughly equally spaced throughout the semester. Each team will make a ~25 minute presentation followed by ~15 minutes of discussion between fellow students, faculty and invited guest. Students are, of course, encouraged to draw on resources beyond the assigned reading and lectures.
Presentations will be judged on the quality and depth of the analysis and clarity of presentations (see attached presentation assessment forms). Students can expect not only to develop and provide recommendations.

Grade weighting is as follows:

- Customer Discovery Presentation: 20%
- Customer Discovery Report: 70%
- Class Participation: 10%
- Course Grade: 100%

Team presentations will be collectively evaluated the quality, depth and usefulness of the recommendations of their peers for that session. Grades are assigned by the professor with consideration to the quality of the discussion in final grade.

**Required Readings:**


*Venture Deals: Be Smarter Than Your Lawyer and Venture Capitalist* by Brad Feld.

*Building Great Software Engineering Teams: Recruiting, Hiring, and Managing Your Team from Startup to Success* by Joshua Tyler

*The Hard Thing About Hard Things: Building a Business When There Are No Easy Answers* by Ben Horowitz

*Rich versus King: The Entrepreneur’s Dilemma* by Noam Wasserman

*The Four Steps to the Epiphany* by Steven Blank

*Cognitive Computing and Big Data Analytics* by Judith Hurwitz, Marcia Kaufman & Adrian Bowles

*Minimum Viable Product and the Importance of Experimentation in Technology Startups* by Dobrila Rancic Moogk
Course Schedule

Class 1 – What is ‘integrative’ tech start-up planning?

Learning Objectives: Introduce basic concepts such as customer discovery, product discovery, minimum viable product (MVP), innovative funding tools/strategies and building/sustaining a start-up team. Introduce the core course concept of integrative planning and thinking.

To Do: Students are asked to form teams. The professor will encourage as much diversity in team makeup as possible to ensure students get the most out of their team experience.

Class 2 – Who is My Customer: Having Lots of Conversations

Learning Objectives: Understand how, why, when and where the process of ‘customer discovery’ works (and doesn’t work) best. What does customer discovery process look like? How does my concept of my business integrate with an effective customer discovery process?

To Do: Student teams are asked to either propose their own cognitive learning startup, find a start-up (Local ideally) or ask to be assigned a hypothetical one. The professor will work with the teams to ensure they’re confident and comfortable with their start-up.

Required Readings/Viewings:

- Read The Four Steps to the Epiphany by Steven Blank.
- Watch Steve Blank presentation: https://www.youtube.com/watch?v=1RTcXwJuCaU

Guest Lecturer: A serial tech entrepreneur will discuss her challenges in identifying her company’s ultimate customer opportunity.

Class 3 – Is This a Business Part 1: How Would I Judge?

Learning Objectives: Understanding how, why, when and where the process of ‘product discovery’ works (and doesn’t work) best. Understanding the difference between customer and product discovery and how the two complement one another.

Required Readings/Viewings:
- Watch Steve Blank presentation: [https://www.youtube.com/watch?v=V3syNbgSkwE](https://www.youtube.com/watch?v=V3syNbgSkwE)

**Class 4 – Is This a Business Part 2: How Would I Judge?**

**Learning Objectives:** Understand and apply the concept of Minimum Viable Product (MVP) to help you find product-market fit along with its challenges and limitations.

**To Do:** Students teams are given further guidance on the Customer Discovery Analysis Presentations

**Required Readings/Viewings:**

- *Lean Startup How Constant Innovation Creates Radically Successful Businesses* by Eric Ries. Read chapters 1-3
- Read *Minimum Viable Product and the Importance of Experimentation in Technology Startups* by Dobrila Rancic Moogk.
- Watch Eric Ries presentation: [https://www.youtube.com/watch?v=fEvKo90qBns](https://www.youtube.com/watch?v=fEvKo90qBns)

**Class 5 – Fundraising & Team Building**

**Learning Objectives:** Teams will learn the essential aspects of equity financing of their start-up and building and incenting a start-up team

**Required Readings:**

- *Venture Deals: Be Smarter Than Your Lawyer and Venture Capitalist* by Brad Feld. Read chapters. 1-6
- *Building Great Software Engineering Teams: Recruiting, Hiring, and Managing Your Team from Startup to Success* by Joshua Tyler. Read chapters 1-9

**Class 6 – The Mental Game: How to Learn and Lead a Tech Start-up**

**Learning Objectives:** Learn what to expect in the rollercoaster that is being a tech entrepreneur including understanding and managing the difference between: (1) failure and learning, (2) uncertainty and risk and (3) busy and progress.

**To Do:** Students are given guidance on integrating their customer discovery and funding analysis with their building team analysis.
Required Readings/Viewings:

- *The Hard Thing About Hard Things: Building a Business When There Are No Easy Answers* by Ben Horowitz. Read chapters 7-8
- Read *Rich versus King: The Entrepreneur's Dilemma* by Noam Wasserman (Chapter 1).
- Watch Eric Lunt team building presentation: [https://www.youtube.com/watch?v=IMDyTwkkl-0](https://www.youtube.com/watch?v=IMDyTwkkl-0)
- Watch Ben Horowitz ‘Hard Truths’ presentation: [https://www.youtube.com/watch?v=F2e3RqL4VWs](https://www.youtube.com/watch?v=F2e3RqL4VWs)

**Guest Lecturer:** A serial entrepreneur will discuss his personal challenges in building, managing and leading a tech start-up team.

**Class 7 – Customer Discovery Analysis Presentations**

**Learning Objectives:** Teams share their respective challenges, ideas and approaches.

**To Do:** Student teams present their customer discovery analysis results to a panel that includes the professor, teaching assistant, outside observers and fellow students. Students are given feedback on areas that need further analysis and potential opportunities. Students receive team grades for this round of presentations.
What Can Watson Do for Your Company?

COMPANIES ARE USING IBM Watson to grow and transform their businesses in huge ways that are making a lot of professionals nervous. Instead of writing it off as “another new supercomputer,” let’s take a look at what actually makes Watson unique. Watson is a cognitive technology that processes information much more like a smart human than a smart computer. Rather than thinking humans will be replaced by a computer, you should realize that this is, in fact, a huge opportunity.

In 2011, you may recall, Watson summarily bested its human competitors on Jeopardy. It was able to accomplish that because it doesn’t just use conventional computing; it also combines three additional capabilities: natural language processing, hypothesis generation and evaluation, and dynamic learning. No other technology on the market today possesses these combined capabilities. It’s this synergy that has the potential to make Watson your business’s new best friend.

Unlike typical computers, Watson can unlock the vast world of unstructured data that makes up as much as 80 percent of existing information today. Watson knows that all data is not created equal. It’s able to distinguish between different kinds of information. It culls relevant data from disparate sources, and it creates hypotheses and continually tests them in order to narrow in on the most reliable and accurate results. Because Watson can read, analyze, and learn from natural language, just as humans can, it can make the sorts of informed, context-specific decisions we would expect from a person, as opposed to a search engine.

Such as…what to cook for dinner? Yes, in fact, when Bon Appétit invited Watson to plumb the magazine’s database of some 9000 recipes, Watson effectively taught itself how to cook. Once it understood the principles of taste and cuisine style, as well as the intricate mechanics of flavor combinations — it was able to generate new, creative dishes. And since Watson is capable of dynamic learning, it literally gets smarter by tracking feedback from its users and learning from both failures and successes.

IBM is betting big on Watson’s ability to transform the world of business. It recently opened a $1 billion dollar Watson Headquarters in New York to provide support for entrepreneurs and developers interested in the technology. We’re beginning to see the tech applied to the fields of education, retail, and medicine. If the success of this rollout indicates anything, it’s that Watson is going to be here for a very long time, and if you think your field is somehow immune to disruption from Watson, it’s time to wake up.

IT’S ELEMENTARY
Imagine if your employees and customers had the ability to receive help from the most knowledgeable expert in your field at a moment’s notice. You may begin to understand the implications of Watson as a potent disruptive technology and why it’s currently poised to revolutionize a huge array of industries.

A majority of online shoppers don’t end up buying because, without a great sales associate, they lack confidence in their selection. To solve this problem, retail clothing and supply company, The North Face, is now using an app developed by Fluid Inc., which draws on Watson technology to provide customers with an infinitely patient and expert personal salesperson who can intuitively and conversationally answer questions like “What do I need for a two-week hiking trip in the mountains?”

This retail expertise extends into the realms of travel, banking, real estate, and finance. Watson-based technologies are able to replace many of the current services of human travel agents, bank officers, real estate agents, and financial advisors by drawing upon comprehensive knowledge of existing information to provide detailed answers to questions traditionally posed only to fellow humans, such as: “Given our interests, what’s a low-key and romantic beach I could travel to with my wife this summer?” “Given my age and goals, how should I diversify my retirement portfolio?” and “Given our family dynamics and income, which neighborhood in my city offers both great schools and affordable homes?”

Even more disruptive is the way Watson is already altering the medical industry. Imagine your ideal human doctor: you know, the one with the top-notch education and impeccable track record who makes it his mission to keep up with the very latest research. As Watson takes over the role of an expert diagnosing diseases and prescribing the most cost effective treatment, the human doctor’s role will change to focus on what humans do best.

Last July, MIT Technology Review reported that Watson is poised to overtake human doctors in oncology expertise. With some tweaking to its current knowledge base, Watson will soon be able to stay informed of all the cutting-edge research data and provide up-to-the-minute treatment recommendations, exceeding what even the most focused human doctor is able to provide.

At this point, it’s important to understand that there is a science and an art to every profession. Soon, Watson will know the science better than a human. Humans will need to focus on the art of their profession — the creative elements only they can provide.

Now you may begin to understand why so many professionals are beginning to worry that they’ll soon be replaced by Watson. As a forward-thinking strategist, though, it’s obvious that Watson provides you with an unparalleled opportunity to leverage information, to both grow your profits and provide amazing services.

The question isn’t “What can Watson do?” It’s: “How will you put Watson to work for you?”
Daniel Burrus is the founder and CEO of Burrus Research. He is the author of six books including the New York Times best seller “Flash Foresight.”
More Real-world Cognitive Computing Examples

Cooking - RECIPES

While Watson is learning about the world as it is, its next step is creativity. Florian Pinel, a senior software engineer with IBM, is working on an application that tries to create novel and tasty recipes built around a knowledge base of food.

Watson already knows the molecular makeup of foods and its nutrition. Pinel is creating an application that allows a user to choose a type of cuisine, such as Thai or vegetarian, and other characteristics, such as manner of cooking (like sautéed), and then an algorithm can walk you through possible ingredients, proportions and more. Watson can create trillions of combinations of ingredients based on your preferences, like novelty, aroma and pairing abilities. Watson, for example, knows that bay leaf is a common ingredient in Thai cuisine, Pinel explained.

Medical - MD BUYLINE INC.

Watson’s first prominent application was in the field of health, with its first commercial use case with WellPoint in Aug. 2011. Watson helps reduce the time for treatment authorization and provides relevant information to allow doctors to begin treatment sooner. In March 2012, Watson began partnering with Memorial Sloan Kettering Cancer Center in New York to provide oncologists with the growing amount of health data and research around the world.

MD Buyline Inc., which has provided hospitals with evidence-based information for purchase decisions for the last 30 years, is now developing what it calls the Hippocrates Procurement Advisor powered by IBM Watson, to give medical equipment buyers access to cross-referenced recommendations, device research and "semi-automated" medical device reports.

Travel – KAYAK.COM

Terry Jones, chairman of Kayak.com and founder and former CEO of Travelocity.com, said that travel purchase websites have created transparency in pricing and given greater power to consumers, but many sites lack advice that can help create a memorable travel experience.

"I want an experience when I go on vacation," Jones said, admitting that he will use live travel agents for leisure travel. In asking questions, such as, "Where should I go for a romantic vacation that includes the beach with my wife in January?" a traveler can have a dialogue with Watson in which it clarifies that he wants to also spend time on land, so Punta Cana in the Dominican Republic, may be a better option than Bali, Indonesia, with a 97 percent level of confidence.
Banking – DBS BANK

On Thursday, IBM announced an agreement with DBS Bank in Singapore, in which one of the biggest banks in Asia will use IBM Watson for its "next-generation" client experience.

Targeted for a roll-out in the second half of this year, the IBM cloud-based Watson Engagement Advisor will improve the guidance DBS Bank provides to its clients.

Finance – TRADING

IBM also says Watson can assist traders with "up-to-the -minute" financial, economic, product and client data for more personalized recommendations.

Home buying – CUSTOMER SERVICE

Besides retail and digital life applications of Watson, High said a third consumer application for Watson is customer service.

For a home buyer, Watson can help understand a location, provide information about mortgage rates, or "the kinds of questions you have that go well beyond the product," High said. Watson could help you with questions like, "Do I have enough income?" and other ways a business could help personalize their "engagement scenario" with a customer, High said.

Health – WELLTOK: CATEWELL CONCIERGE

Welltok Inc., based in Denver, is another business that has created a product line with an add-on plug-in powered by Watson. Its CafeWell Concierge service is an app that is like a health concierge in your back pocket. A new mom can register through her health provider under an anonymous user name and get awarded for healthy behavior, such as lower healthcare premiums, and receive tips about exercise and nutrition.

A business executive could land in Austin airport and find restaurant and menu options that fit her diabetic restrictions. Though Welltok is available to certain health plan participants under providers like Aetna, she can invite her friends who are not under the health plan to participate with her.

Job Search

Jeanne Sullivan, general partner with StarVest Partners, said the commercial and social applications of Watson have the potential to make "great, profound" changes.
She said one application could help the unemployed find the right opportunities, helping solve joblessness. "So many people don't have an idea of the array of opportunities," she said. She added, "Why don't we go further and fix world hunger?"