



Stanford University - Continuing Studies Program

BUS45 – Understanding and Leading Market Disruption

Stanford Lecturer: Tony Seba

Course Overview – Fall 2013

Course Objectives:

- Provide you an overview of key advanced / exponentially improving technologies that are expected to help disrupt many industries in the near future.
- Provide you with tools and frameworks to help you build products and services as well as business models to create new markets or disrupt existing ones – now or in the near future.
- Provide you with the opportunity to apply the material learned in this course by creating your own class project and by hearing from entrepreneurs, executives, and investors who are leading disruptive waves.

Class Date/time:

- Mondays **September 23 - November 11th** from 7:00pm to 9:15pm.

Textbook & Resources

- Reading: There is no textbook for this class. Most of the reading material will be available from web sources. You may need to purchase or register to access some of this content. Where I ask you to read content from one of my books, I will provide that PDF for free.
- LinkedIn: We will have a class LinkedIn group for you to connect with classmates.

Class Design

- Most class sessions will cover
 - An overview of an advanced / exponentially improving **technology**.
 - An **industry** (or two) that might be disrupted by these technologies.
 - Business planning concepts, tools, and frameworks.
- The industries presented in class will be used for illustration purposes only. That is, we will explore how our frameworks/business planning concepts could be used to disrupt these industries.
- Many exponential technologies presented in class are general-purpose or horizontal, and as such, could be used to disrupt several industries. For instance, autonomous/self-driving cars will obviously disrupt the auto industry. We will explore what other industries they might disrupt. How could they disrupt public and private transportation: car rental, taxi, bus services, trucking, logistics, agriculture, etc.
- **Class Exploration**: the main objective of the class is to help you understand the disruption process in rapidly changing markets and to apply these concepts for your own business. This is an exploratory process, whether you're an entrepreneur looking to disrupt an existing market or an incumbent looking to anticipate and lead the disruption process. For the technologies above we'll explore and iterate through the following:
 - **Products and Services**: what products and services could be created with these technologies? As the technology cost curve goes down and quality improves, can we anticipate what products could be created 5, 10, or 15 years from now?
 - **Market Segments**: What are the potential new usage/applications? For what customer segment? What new markets could they create? What markets/industries would be disrupted?

- **Business Models**: What new and disruptive business models might be enabled by these technologies?

Note: while we will present and discuss many technologies, please notice that **this is a business course – not a technology development course**. The emphasis of this course will be on building products and business models to create value for customers and create new markets or disrupt existing ones.

Course Grade

There are three grade options:

1. Letter Grade: A Class Project will account for **100% of the letter grade** (see below).
2. Credit/No Credit: You need to attend 6 sessions to get CR.
3. No Grade Requested (NGR). Just sit back and enjoy the show – but no credit or grade will be given.

Course Project

- A Class Project will account for **100% of the letter grade**
- You will use the frameworks in this course to build a business plan that:
 - Combines advanced / exponentially improving **technologies** shown in this course to
 - Build a new **product** or service that
 - **Creates** a new **market** or **disrupts** an existing one,
 - Using a **business model** enabled by the above technologies

I will provide a template for the class project.

- This is a group project. Teams will consist of 3-4 members. Please start building your team now.
- Deadline for team rosters: Tuesday Oct 21st at 11:59pm. If you're not a member of a team then I'll assign you to one.
- Please don't disclose any confidential information – yours or someone else's.
- **Due date: Saturday, November 9th at 11:59 PM** No late submissions please.
- In-class Group Project Presentations: November 11th

Legal Stuff - Video / Audio Consent / Copyright

- I will videotape and possibly publish most class sessions. By staying in this class you give your **consent to be audio and videotaped, authorize the release of voice and likeness and release and hold harmless** Mr. Tony Seba and Stanford University.
- Please sign the Photo/Video Release form and return it to me today.
- Please *note that the lectures are my copyrighted material – please don't do your own recording (audio, video or otherwise) of the lectures or any aspect of this class.*

Miscellaneous

- Please write 'BUS45' in the subject line whenever you email me.

BUS45 – Tentative Class Schedule**Session 1 – Sept 23 – Disruption Models, Frameworks / Definitions, Solar****Lecture Topics**

- Course Overview / Frameworks
- Disruption Models: Classic, Big-Bang Disruption, Waves of Disruption, Permanent Disruption
- Exponential technologies & exponential markets
- Tony Seba's Rules of Disruption

- Technologies: Solar
- Industries: Energy
- Business Planning Concepts: Designing the Whole Product

Reading:

- "Big-Bang Disruption", Larry Downes and Paul Nunes, Harvard Business Review, March 2013, available from Accenture 'The Big Idea':
<http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Big-bang-Disruption.pdf>
- "[Stop 'Disrupting' Everything – How a once-useful concept became a meaningless buzzword](http://www.slate.com/articles/business/moneybox/2013/05/disrupting_disruption_a_once_useful_concept_has_become_a_lame_catchphrase.html)", Slate, May 1, 2013,
http://www.slate.com/articles/business/moneybox/2013/05/disrupting_disruption_a_once_useful_concept_has_become_a_lame_catchphrase.html
- "Scientists Discover Tiny Solar Panels that Create Themselves", Dvice, Sept 7, 2010,
https://www.dvice.com/archives/2010/09/scientists_disc.php

Session 2 – Sept 30 – Strategic Choices, Value, Product/Market Fit**Lecture Topics**

- Technologies: Digital Imaging, mobile Internet
- Business Planning Concepts: Waves of Disruption, Value Creation & Value Capture; Finding a Market and a Product/Market Fit, Value Networks

Reading

- "Internet Trends", Meeker and Wu, KPCB, <http://www.kpcb.com/insights/2013-internet-trends>
- "*Winners Take All*" Rule 1 – Feel the Pain, Then Develop Your Product

Videos

- Industrial Robots: "Meet Baxter"
<http://www.youtube.com/watch?v=rjPFqkFyrOY>

Session 3 – Oct 7 – 3D Printing, Business Model Innovation

Guest Speaker

Avi Reichental, CEO, 3DSystems, Inc

Lecture Topics

- Technologies: 3D Printing
- Industries: Manufacturing
- Business Planning Concept: Business Model Innovation, Value Chain

Reading

- “[The Power of Business Models](#)”, Shafer, Smith & Linder, 2005
http://www.meconsultingassignments.com/Docs/E-Business/Shافر_2005_Business-Horizons.pdf
- “The 3D printing Revolution”, Science News, March 9, 2013,
http://www.sciencenews.org/view/feature/id/348429/description/The_3-D_Printing_Revolution
- “3D Printing – the Second Industrial Revolution is underway”, New Scientist special,
<http://www.newscientist.com/special/3D-printing>
- “[3D Printer Buyer’s Guide](#)”, 3DSystems, <http://www.3dsystems.com/landing/3dp-buyers-guide/resources/3D-Printer-Buyers-Guide.pdf>
- *Winners Take All*” Rule 3 – Add Value Not Features

Session 4– Oct 14 – Sensors and the Internet of Things, Profit Engine

Guest Speaker

Steve Nasiri, Founder, (former) CEO & Chair, InvenSense, Inc

Lecture Topics

- Technologies: Sensors, the Internet of Things, Wearable Computing
- Business Planning Concepts: Business Model Innovation, Profit Engine, Revenue Model and Cost Model

Reading

“Notes on Business Model Analysis for the Entrepreneur”, Hamermesh et al, 9-802-048, Harvard Business School Publications, hbsp.harvard.edu

- “[Trillions of Smart Sensors Will Change Life](#)”, Bloomberg, August 4th, 2013
<http://www.bloomberg.com/news/2013-08-05/trillions-of-smart-sensors-will-change-life-as-apps-have.html>

“Awake! Welcome to the Programmable World”, Wired, May 2013
<http://www.wired.com/gadgetlab/2013/05/internet-of-things/>

“Making Sense of The Internet of Things”, TechCrunch, May 25, 2013,
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<http://techcrunch.com/2013/05/25/making-sense-of-the-internet-of-things/>

Video:

“The Future of Design”, SpaceX: http://www.youtube.com/watch?v=xNqs_S-zEBY

Oct 21 – NO CLASS**Session 5 – Oct 28 – Machine Learning/AI, Advanced Robotics, Business Model Innovation****Guest Speaker**

Rich Mahoney, Director, Robotics Program, SRI International

Lecture Topics

- Technologies: Electricity Storage, Electric Vehicles
- Industries: Energy, Automotive
- Business Concepts: Anticipating the Disruption, Generating new Business Models, Existential Threats

Reading

- “[Who’s the Boss? Next-Gen Factory Robots Could Call the Shots](http://www.scientificamerican.com/article.cfm?id=whos-the-boss-next-gen-factory-robots-could-call-shots)”, in Scientific American special report “How to Make the Next Big Thing”, May 2013, <http://www.scientificamerican.com/article.cfm?id=whos-the-boss-next-gen-factory-robots-could-call-shots>
- “Companies Adopting Robots for New Tasks”, Computer World, August 1, 2013, http://www.computerworld.com/s/article/9241118/Businesses_adopting_robots_for_new_tasks
- “Rethink Robotics - Finding a Market”, Duhamel et al, Stanford Case Publisher 204-2013-1. 20 May 2013 <http://www.stanford.edu/class/ee204/Publications/Rethink%20Robotics%202013-204-1.pdf>
- Convergence of Mind, Machine, & Artificial Intelligence: <http://www.youtube.com/watch?v=rpHy-fUyXYk>

Videos

- Industrial Robots: “Meet Baxter” <http://www.youtube.com/watch?v=rjPFqkFyrOY>

Session 6 – Nov 4 – Electric Vehicles, Mobile Internet & Electronic Money, Leading the Disruption**Guest Speaker**

Masato Inoue, Chief Product Designer, Nissan

Lecture Topics

- Technologies: Electricity Storage, Electric Vehicles
- Industries: Energy, Automotive
- Concepts: Leading the disruption, disrupting yourself, putting it all together

Reading

- “Panasonic Begins Mass Production of Energy Storage for European Market”, CleanTechnica, June 6, 2012, <http://cleantechnica.com/2012/06/06/energy-storage-for-homes-panasonic-europ/>
- “[New Materials Promise Better Batteries and Stronger Steel](http://www.scientificamerican.com/article.cfm?id=future-substance-new-materials-promise-better-batteries-stronger-steel)”, Scientific American, April 30, 2013, <http://www.scientificamerican.com/article.cfm?id=future-substance-new-materials-promise-better-batteries-stronger-steel>
- “New Magnetic Graphene May Revolutionize Electronics”, PhysOrg, May 2013: <http://phys.org/news/2013-05-magnetic-graphene-revolutionise-electronics.html>

Video

- “Is The Electric Vehicle Disruptive?”, (watch from 18:32 to 32:40), *League of California Cities Public Works Officers Institute* Keynote Address, March 20, 2012, <http://www.youtube.com/watch?v=vgY1Z8RQ9vM>

Session 7 – Nov 4 – Autonomous (Self-Driving) Vehicles, Mobile Internet, Thinking Exponentially

Guest Speaker

Andrea Raptopoulos, CEO, Matternet

Lecture Topics

- Technologies: Autonomous (Self-Driving) Vehicles
- Technologies: Mobile Internet, electronic money, Big Data, Unmanned Aerial Vehicles/Drones
- Industries: Energy, Agriculture, Transportation, Retail, Finance, Logistics, Insurance
- Business Planning Concepts: Thinking Exponentially - Exponential Technologies, Exponential Markets and Future Disruption. Open Business Models

Reading

- “[Self-Driving Cars – The Next Revolution](https://www.kpmg.com/US/en/IssuesAndInsights/ArticlesPublications/Documents/self-driving-cars-next-revolution.pdf)”, KPMG, 2013, <https://www.kpmg.com/US/en/IssuesAndInsights/ArticlesPublications/Documents/self-driving-cars-next-revolution.pdf>
- “How to Identify New Business Models”, MIT Sloan Management Review, <http://sloanreview.mit.edu/article/how-to-identify-new-business-models/>

“Business Models on the Web”, Prof Michael Rappa, <http://digitalenterprise.org/models/models.html>

- Arduino Products: <http://arduino.cc/en/Main/Products>

- “[Makers Put Affordable, Open Source Airplane in the Works](http://www.digitalmanufacturingreport.com/dmr/2013-07-29/makers_put_affordable_opensource_plane_in_the_works.html)”, Digital Manufacturing Report, July 29, 2013 http://www.digitalmanufacturingreport.com/dmr/2013-07-29/makers_put_affordable_opensource_plane_in_the_works.html

Video:

“Self-Driving Car Test: Steve Mahan”, Google,
<http://www.youtube.com/watch?v=cdgQpa1pUUE>

Session 8 – Nov 11 – Course Project Presentations**Team Business Plan Presentations****Reading**

- Vijay Kumar: “Robots that fly and Cooperate”, TED Talks, Feb 2012
http://www.ted.com/talks/vijay_kumar_robots_that_fly_and_cooperate.html

- “[Tiny Monitoring Satellites](http://www.technologyreview.com/news/516611/startup-plans-constellation-of-tiny-monitoring-satellites/)”, MIT Technology Review, June 2013
<http://www.technologyreview.com/news/516611/startup-plans-constellation-of-tiny-monitoring-satellites/>

- “[Giant Solar-Powered UAVs are Atmospheric Satellites](http://spectrum.ieee.org/automaton/robotics/aerial-robots/giant-solar-powered-uavs-are-atmospheric-satellites)”, IEEE Spectrum, Aug 21, 2013
<http://spectrum.ieee.org/automaton/robotics/aerial-robots/giant-solar-powered-uavs-are-atmospheric-satellites>

- “*Winners Take All*” Rule 9 – You’re Doing Great. Congratulations. Now Change or Die!

Video

- Vijay Kumar: “Robots that fly and Cooperate”, TED Talks, Feb 2012
http://www.ted.com/talks/vijay_kumar_robots_that_fly_and_cooperate.html

- *There’s No Stopping the Rise of E-Money*”, IEEE Spectrum, June 2012,
<http://spectrum.ieee.org/computing/networks/theres-no-stopping-the-rise-of-emoney/1>

- “The Adoption and Impact of Mobile Money in Kenya”, Jack and Suri, 2010,
www.mit.edu/~tavneet/MPESA_Slides2.pdf