

High-Technology Entrepreneurship

B7677 --- Warren 207 --- Spring 2017

Professor Ran Kivetz, Ph.D.

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Session	Session Topic	Date & Time
<i>Module I: INVENT</i>		
1	Course Overview: The RIDE Model	1/19; 6:00 – 7:25 p.m.
2	New Venture Ideation and B-Plan Preparation	1/19; 7:35 – 9:00 p.m.
3	The Nuts and Bolts of High-Tech Entrepreneurship <i>Guests: Dr. Santanu Das & Eli Singer</i>	1/26; 6:00 – 7:25 p.m.
4	Diffusion of Innovations, Crossing the Chasm, & TiVo (HBS Case)	1/26; 7:35 – 9:00 p.m.
5	Segmentation & Virgin America (Columbia CaseWorks Case)	2/2; 6:00 – 7:25 p.m.
6	In-class application	2/2; 7:35 – 9:00 p.m.
7-8	Class cancelled due to snow storm	2/9; 6:00 – 9:00 p.m.
<i>Module II: BUILD</i>		
9-10	New Venture Branding & Value Proposition: lecture & in-class app. <i>Guest: Gary Singer, Partner & Chief Marketing Officer, AT Kearney</i>	2/16; 6:00 – 9:00 p.m.
11	Versioning & Pricing Information Goods using Behavioral Economics	3/2; 6:00 – 7:25 p.m.
12	Customer Lifetime Value (CLV), Revenue Models, & in-class application	3/2; 7:35 – 9:00 p.m.
13	O Brave New World of Apps <i>Guests: Greg Marsh, Founder & CEO, KeyMe; and Richard Smullen, Founder & CEO, Pypestream</i>	3/9; 6:00 – 7:20 p.m.
14	Metcalfe's Law, the Network Economy, & in-class application	3/9; 7:30 – 9:00 p.m.
15-16	Review of New Ventures w/ Prof. Kivetz	Teams meet w. Prof.
<i>Module III: SELL</i>		
17-18	Behavioral Economics of Incentives & Retention – Best Practices	3/23; 6:00 – 9:00 p.m.
19	New Venture Branding & Value Proposition: In-class application <i>Guest: Gary Singer, Partner & Chief Marketing Officer, AT Kearney</i>	3/30; 6:00 – 7:25 p.m.
20	How to Present Your Business Plan	3/30; 7:35 – 9:00 p.m.
21	Building a Compelling Business Model <i>Guest: Dr. Howard L. Morgan, Partner, First Round Capital</i>	4/6; 6:00 – 7:25 p.m.
22	In-class review of Venture Presentations	4/6; 7:35 – 9:00 p.m.
23-24	Presentations of New Venture Ideas to VC Panel VC Panelists: <i>Dr. Philippe Chambon, Malcolm Elvey, & Tiffany Clay</i>	4/27; 6:00 – 9:30 p.m.

1. COURSE PERSPECTIVE

Ongoing dramatic changes in the technology and business environment have fundamental implications for business and marketing strategies, in general, and for the development and commercialization of high-technology products and services, in particular. Furthermore, the world of technology provides exciting new business opportunities. In contrast to mature and more static markets, in which the likelihood that a small new entrant will compete effectively with established leaders is rather low, emerging high-technology markets offer opportunities for innovative entrepreneurial companies, as well as for large established companies, to become market leaders. However, it is usually safe to assume that any promising opportunity is pursued by multiple aspiring entrepreneurs, often with equally promising technologies. Accordingly, in many (perhaps most) cases, the winner is determined based not necessarily on its superior technology but rather on the strength of its *business model*. I use the term “business model” broadly to include the product/service and customer definition, the revenue model, whether and how the company chooses to create partnerships and co-opetitions, customer acquisition and retention engines, and other components of the company’s strategy and marketing.

Although formal knowledge creation may have lagged behind business innovation, this course provides some structure and offers guidelines for the development of strategy and marketing programs for entrepreneurial high-technology firms. While the three C’s and four P’s are important in any type of marketing, high- or low- tech, these traditional frameworks do not highlight the key factors that make high-technology entrepreneurship, strategy, and marketing different. Furthermore, we need to understand the key decisions and challenges faced by companies and individuals starting a new high-tech venture.

Accordingly, there was a need to develop a framework from the ground up. Specifically, the framework for this course has been developed on the basis of (1) durable economics and marketing principles; (2) numerous interviews with technology and business leaders from New York, Silicon Valley and elsewhere, including CEOs of many startups as well as larger, established firms; and (3) books, articles, analyst reviews, and research. The framework is based on an integration and analysis of repeated themes in the issues, market conditions, actions, and outcomes that companies, executives, and entrepreneurs are experiencing in business environments related to high-technology.

Thus, the course provides an analytical framework and tools for developing strategic business models and business plans for new high-technology ventures. The course is highly relevant to start-ups and to students who wish to become high-technology entrepreneurs. The course is also very relevant to an opportunity analysis and new venture formulation and provides students with an opportunity to present their new venture (company or idea) to a panel of senior venture capitalists and angel investors.

The course was developed, and is taught, by Professor Ran Kivetz (see bio in Appendix A).

2. COURSE OBJECTIVES

Some objectives of the course are as follows:

- Understanding the major forces shaping and differentiating high-technology strategy and marketing.
- Acquiring conceptual frameworks and analytical tools needed for developing and changing business models in fast-paced technology markets.
- Gaining practice in looking for and developing opportunities in rapidly changing markets.
- Developing tools for specific functions (“horizontals”) necessary for marketing high-tech products and services, such as new product development processes, market measurement, “versioning” and branding, customer retention, pricing, and more.
- Getting acquainted with some of the particular issues in specific high-tech industries (“verticals”), such as software, Internet, “apps,” hardware, and loyalty marketing.
- Developing habits of orderly, analytical thinking and skill in reporting conclusions and proposals effectively in written and oral form.
- Practicing teamwork.

3. THE STRUCTURE OF THE COURSE

The course’s first module seeks to understand whether and how high-technology strategy and marketing is different from “conventional” strategy and marketing. This module introduces an analytical framework that highlights some of the unique aspects of high-tech entrepreneurship. We discuss such topics as the “open source movement” and the unique challenges of product adoption in a network economy. We also explore the new venture ideation process and the meaning and challenges of being an entrepreneur in the ever-changing high-technology markets.

The next major part of the course takes a closer look at several important themes of the digital economy. As part of this module, we cover topics such as the technology adoption life cycle, externalities and interdependencies in the value chain, and related implications for partnerships and standards. We apply these concepts using a mini-case on console games (written specifically for this course) and structured discussions with successful entrepreneurs and CEOs.

The next part of the course examines the four P’s (and a “new P” --“Experience”) in the context of high-technology marketing. We examine “versioning,” branding, and positioning; pricing information goods; loyalty and incentives; and more. The final section of the course peeks at what may be “your future” by allowing student teams to present their new venture (idea or company) to a panel of senior venture capitalists and investment bankers.

The course uses a combination of current examples, lecture material, readings, “live” as well as written cases (from Columbia and Harvard), discussions with industry leaders, and actual development tasks. Guest speakers who have confirmed their participation include (see bios in Appendix B):

- *Dr. Philippe Chambon, MD, Ph.D., Managing Director, New Leaf Venture Partners, LLC.*
- *Tiffany Clay, Principal, TPG*
- *Dr. Santanu Das, Advisor to Startups; Founder & Former CEO, TranSwitch*
- *Malcolm Elvey, Founder & Principal Partner, The Elvey Partnership, Collaborative Capital I, LP.*
- *Greg Marsh, Founder & CEO, KeyMe*
- *Dr. Howard Morgan, Ph.D., Partner, First Round Capital*
- *Eli Singer, Chief Executive Officer & Co-founder, Jethro*
- *Gary Singer, Partner & Chief Marketing Officer, AT Kearney*
- *Richard Smullen, Founder & CEO, Pypestream*

4. COURSE SCHEDULE AND READINGS

Make sure to prepare the assignments for the first day of class

Module I: INVENT

Session 1: Course Overview --- The Technology Paradox

1/19; 6:00 – 7:25 p.m.

Readings

This course syllabus.

Moriarty, Rowland T. and Thomas J. Kosnik, “High-Tech Marketing: Concepts, Continuity, and Change,” *Sloan Management Review*, Summer 1989, pp. 7-17.

Mendelson, Haim, “Moore’s Law,” *Encyclopedia of Computer Science*, 2000, pp. 960-961.

Gross, Neil and Peter Coy with Otis Port, “The Technology Paradox,” *Business Week*, March 6, 1995, pp. 76-84.

<http://www.npr.org/sections/money/2011/11/16/142310104/why-amazon-loses-money-on-every-kindle-fire>

<http://blogs.wsj.com/digits/2011/01/28/does-amazon-make-money-on-the-kindle/>

Assignment: Prepare the following questions for class discussion:

1. Do you agree with Moriarty and Kosnik’s view of the key differences in *high-tech* marketing?
2. What do the leading high-technology firms have in common?
3. What forces underlie the Technology Paradox? What are the strategic and marketing implications of Moore’s Law and the “new” economics of information?

Session 2: New Venture Ideation and B-Plan Preparation

1/19; 7:35 – 9:00 p.m

Readings

Steve Blank, “Why the Lean Start-up Changes Everything,” *HBR*, May 2013, pp. 1-9.

Skim these sources:

- How To Write A Great Business Plan
- One Pager Executive Summary

Skim these B-plans (past winners of the B-plan competitions of the course and the Lang Fund):

Expert Bee

MobyGames

Assignment: Think about the following questions for class discussion:

1. How could you come up with a great idea for a (profitable) new venture?
2. What are the elements of a great business plan (a B-plan that helps raise capital and launch a profitable new venture)?

Session 3: The Nuts and Bolts of High-Tech Entrepreneurship

1/26; 6:00 – 7:25 p.m.

Guests:

Dr. Santanu Das, Board member; Philanthropist; Founder & Former CEO, TranSwitch

Eli Singer, Chief Executive Officer & Co-founder, Jethro

Session 4: Diffusion of Innovations, Crossing the Chasm, & TiVo (HBS Case)

1/26; 7:35 – 9:00 p.m.

Case

“TiVo in 2002: Consumer Behavior,” *HBS Case*, June 30, 2002, pp. 1-14, [N9-502-062].

Readings

Moore, Geoffrey A., “Crossing the Chasm -- and Beyond,” *Inside the Tornado*, 1995, Chapter 2, pp. 13-26.

Assignment: Prepare the following study questions for class discussion:

1. Formulate a hypothesis about the limited success and adoption of TiVo.
2. What are the underlying assumptions and/or hypotheses of TiVo’s management regarding the diffusion of TiVo? How does this reflect on the research they conduct?
3. Analyze the situation from the consumer’s standpoint. What is TiVo? What factors facilitate its adoption? What factors make adoption difficult? Who is TiVo best suited for?
4. What “crossing the chasm” strategy would you recommend for TiVo? How should TiVo position itself and whom should they target first?

Sessions 5 & 6: Segmentation; Virgin America, & In-class Application

2/2; 6:00 – 9:00 p.m.

Reading:

Columbia CaseWorks: Virgin America Airlines -- Spinning Customer Satisfaction into Gold

Assignment:

Prepare the following study questions for class discussion:

1. Who is Virgin America's target audience and how can they be reached?
2. How would you articulate a position statement and value proposition for the Virgin America brand?
3. Is Virgin America's current strategy sustainable? What should Virgin America do to increase its profitability?
4. What are the arguments for and against Virgin America scaling up its operations?

Sessions 7 & 8: Class cancelled due to snow storm

2/9; 6:00 – 9:00 p.m.

Module II: BUILD

Sessions 9 & 10: New Venture Branding & Value Proposition: Lecture & In-class Application
2/16; 6:00 – 9:00 p.m.

Guest: *Gary Singer, Partner & Chief Marketing Officer, AT Kearney*

In these sessions, we will host a leading branding expert, Gary Singer, Partner & Chief Marketing Officer at A.T. Kearney, Inc. We will discuss the topic of branding and how brands facilitate or impede innovation and marketing strategy. We will also work together on building your venture's value proposition.

Readings: Gary Singer's Bio (*see end of this syllabus*)

Keller, Kevin L. and Donald R. Lehmann, "How do Brands Create Value." This article provides a framework for understanding the development and impact of brand equity.

Strategic Brand Management by Kevin Lane Keller © 1998 by Prentice-Hall, Inc., Chapter Two: "Brand Equity," pp 41 – 83.

Exercise

New Venture Value Proposition

Assignment: This is an assignment that you should complete with your new venture team out of class. Prepare a PowerPoint (5-minute) presentation that will cover the Who, What, Why, and How of your new venture's value proposition. A framework and guideline for preparing this assignment is uploaded on our class website ("New Venture Value Proposition_Exercise.pdf") -- feel free to contact me with any questions or concerns. This exercise should help you advance your new venture.

E-mail my administrative assistant, Mr. Chung Ho, your presentation (including your team members' names) by Wednesday, February 15th no later than 10:00 p.m. Teams will present to Gary Singer, who will provide feedback on your presentations and will discuss the art and science of defining and mobilizing a crisp and impactful value proposition.

Session 11: Versioning & Pricing Information Goods using Behavioral Economics

3/2; 6:00 – 7:25 p.m.

Readings:

Shapiro, Carl and Hal Varian, “Pricing Information,” *Information Rules*, 1999, Chapter 2, pp. 19-51.
Shapiro, Carl and Hal R. Varian, “Versioning: The Smart Way to Sell Information,” *HBR*, November-December 1998, pp. 106-114, [98610].

Assignment: Prepare the following study questions for class discussion:

1. Which segmentation approaches are meaningful in high technology markets?
2. How does *Versioning* relate to the “5 Ps” -- Price, Product, Promotion, Place, & Experience?
3. How should you price at each stage of the technology diffusion cycle?
4. When should a product be free?

Optional Background Readings:

Gershoff, Andrew, Ran Kivetz, and Anat Keinan (2012), “The Effects of Versioning on Perceptions of Fairness: Making Things Better May Make Things Worse,” *Journal of Consumer Research*, 39, August, 382–398.

Kivetz, Ran, Oded Netzer, and V. “Seenu” Srinivasan (2004), “Alternative Models for Capturing the Compromise Effect,” *Journal of Marketing Research*, 41 (3), 237-257. (Lead article) (*Finalist, 2009 William O'Dell Award; Finalist, 2005 Paul Green Award*)

Kivetz, Ran, Oded Netzer, and V. “Seenu” Srinivasan (2004), “Extending Compromise Effect Models to Complex Buying Situations and Other Context Effects,” *Journal of Marketing Research*, 41 (3), 262-268.

Session 12: Customer Lifetime Value (CLV) & Revenue Models; In-class Application

3/2; 7:30 – 9:00 p.m.

In this session, we will discuss customer acquisition and retention with a special emphasis on the important concept of customer lifetime value (CLV), which you will find useful for your new venture.

Optional Background Readings:

<http://www.forentrepreneurs.com/saas-economics-1/>

<http://www.forentrepreneurs.com/saas-economics-2/>

Donald R. Lehmann, “What’s a Customer Worth?” Columbia CaseWorks, Columbia University Business School. This reading provides a framework for understanding and determining the value of a customer to a firm.

Gupta, Sunil and Donald R. Lehmann, “Customers as Assets,” *Journal of Interactive Marketing*, Winter 2002, 9-24. The authors introduce the concepts of customer acquisition and retention and explain how to measure and use lifetime value for managerial decision-making.

Session 13: O Brave New World of Apps

3/9; 6:00 – 7:20 p.m.

Guests:

Greg Marsh, Founder & CEO, KeyMe

Richard Smullen, Founder & CEO, Pypestream

Session 14: Metcalfe's Law, the Network Economy, & in-class Application

3/9; 7:30 – 9:00 p.m.

Readings

Mendelson, Haim, "Metcalfe's Law," *Encyclopedia of Computer Science*, 2000, pp. 961-62.

Shapiro, Carl and Hal R. Varian, "Networks and Positive Feedback," *Information Rules*, 1999, Chapter 7, pp. 173-225.

<http://www.bloomberg.com/bw/articles/2014-11-20/mobile-payment-startup-venmo-is-killing-cash>

<http://www.economist.com/news/business/21654068-taxi-hailing-company-likely-disrupt-delivery-business-driving-hard>

Sessions 15-16: Review of New Ventures: Individual Teams meet with Prof. Kivetz

Location and time: TBD

Session 17 & 18: Behavioral Economics of Incentives & Retention – Best Practices

3/23; 6:00 – 9:00 p.m.

In this session, we will continue to discuss *behavioral economics* and how companies can provide psychological value to customers. Further, we will cover the best practices and behavioral economics principles of customer retention and incentives.

Readings:

Kivetz, Ran, Oleg Urminsky, and Yuhuang Zheng, “The Goal-Gradient Hypothesis Resurrected: Purchase Acceleration, Illusionary Goal Progress, and Customer Retention,” *Journal of Marketing Research*, 43 (1), 39-58, 2006.

“Why Cash Fails,” [SalesForceXP](#).

Optional Background Readings:

Kivetz, Ran (2003), “The Effects of Effort and Intrinsic Motivation on Risky Choice,” *Marketing Science*, 22 (4), 477-502.

Kivetz, Ran and Itamar Simonson (2002), “Earning the Right to Indulge: Effort as a Determinant of Customer Preferences Toward Frequency Program Rewards,” *Journal of Marketing Research*, 39 (2), (May), 155-170.

Session 19: New Venture Branding & Value Proposition: In-class Application

3/30; 6:00 – 7:25 p.m.

Guest: *Gary Singer, Partner & Chief Marketing Officer, AT Kearney*

In this session, we will host a leading branding expert, Gary Singer, Partner & Chief Marketing Officer at A.T. Kearney, Inc. We will work together on continuing to build your venture's value proposition.

Session 20: How to Present your Business Plan

3/30; 7:35 –9:00 p.m.

Lecture, in-class team work, and discussion with Professor Kivetz

Session 21: Building a Compelling Business Model

4/6; 6:00 – 7:25 p.m.

Guest: *Dr. Howard L. Morgan, Partner, First Round Capital*

Session 22: Review of Venture Presentations

4/6; 7:35 – 9:00 p.m.

In-class review and analysis of venture presentations

Sessions 23 - 24: Team Presentations of New Venture Ideas (Last Class)

4/27; 6:00 – 9:30 p.m.

Guests:

1. Philippe Chambon, MD, Ph.D., Managing Director, New Leaf Venture Partners, LLC.
2. Tiffany Clay, Principal, TPG
3. Malcom Elvey, Founder & Principal Partner, The Elvey Partnership, Collaborative Capital 1, LP.

Team presentations of new venture ideas; each group is to give a 10 minute presentation (oral and visual) that will be followed by five minutes of feedback from the panelists. (Note: there may be changes to these timetables)

Further details and a schedule of presentations will be announced on the course website. At the end of the presentations, the class and the panelists will (separately) choose their top three ventures. We will conclude with a 15-minute Q & A with the panel guests.

5. COURSE PERFORMANCE MEASURES AND FEEDBACK

This course is designed to be a challenging and fun course. If you wish to take the course, make sure you have the time to prepare two sessions/cases per week as well as the demanding deliverables below. Performance evaluation will be based on a team new venture proposal (50%) and individual class participation (50%).

5.A. New Venture Proposal

The main group assignment is to propose a new high-technology venture. This assignment should be done in groups of three or more of your own choosing. Although you have freedom to propose any new (high-tech) venture that is currently of interest to you or that you may start after graduation, my approval for the new venture idea is required. Think carefully about your idea; it should be feasible with a clear as possible “path-to-profitability.” You are to write a complete business plan that includes a marketing plan (i.e., situation analysis, objectives and strategy, and marketing programs; additional guidance will be provided in class) and a financial plan, and also analyzes the proposed venture vis-à-vis the frameworks and concepts discussed in class. At the end of the course, each group will pitch its new venture idea to a panel of industry experts, who will provide feedback and suggestions (and, who knows, maybe funding...).

If you are having trouble proposing a new venture, please talk with Professor Kivetz.

5.B. Class Participation

I will come to class each day with a carefully thought out teaching plan. The plan will try to achieve a logical progression through the key issues in the case or reading materials. To this end, specific questions will have been prepared to lead the discussion. However, it is important to appreciate that the students in the class are *co-producers* of the class discussions. You will be expected to have completed the readings prior to each class and prepared the assignment questions. It is also crucial that you listen carefully to the questions that are posed and that the class *collectively* attempt to answer them. For this to happen, class members need to listen carefully to one another and to build on or critique prior comments. Class members should try to resist the temptation to jump to topics that are not specifically open for discussion. When that happens, it is the responsibility of the class and myself to bring the discussion back on track. The discussion should be a conversation in which all participants recognize that they have an obligation to advance our understanding of the issue at hand. Your contribution to this learning *process* will be appraised in addition to the content of what you contribute.

Some of the specific things that have an impact on effective class participation and on which you will be graded include:

1. Is the participant a good listener?
2. Are the points that are made relevant to the discussion? Are they linked to the comments of others and to the themes that the class is exploring together?
3. Does the speaker sustain a line of argument or point of view through a significant part of the class session, or is it an isolated comment?

4. Do the comments add to our understanding of the situation? Are they incisive? Do they cut to the core of the problem? Comments that simply repeat case facts get little credit.
5. Is there a willingness to challenge the ideas that are being expressed?
6. Is there a willingness to test new ideas, or are all comments “safe?” (For example, repetition of case facts without analysis and conclusions, or a comment already made by someone else.)
7. Does the participant interact with other class members?
8. Does the participant integrate material from past classes or the readings where appropriate? Do the comments reflect cumulative learning over the course, or does the participant merely consider each case in isolation?

If you are having any difficulty participating, please discuss this with Professor Kivetz.

6. EXPECTATIONS REGARDING CLASS BEHAVIOR AND COURSE NORMS

1. Because a case- and discussion- oriented course relies on class participation for its success, attendance at every class is considered extremely important. Please schedule other activities (e.g., job interviews) at times other than when High-Technology Marketing and Entrepreneurship meets. Missing classes will adversely affect your grade.
2. If you do miss a class, it is your responsibility to find out from your classmates what materials were covered, what additional assignments were made, and what items may have been distributed in class.
3. *Please arrive on time and stay from beginning to end.* It is extremely disruptive to your classmates if you arrive late or leave while class is in session.
4. I expect you to be prepared for every class. Since I frequently call on students whose hands are not raised, you should let me know before the start of class if some emergency has made it impossible for you to prepare adequately for that class.
5. Given the importance of class participation, I will learn your names as quickly as possible. To facilitate that, please use a name card during every class.
6. It goes without saying that I consider the Columbia Business School Code of Integrity to be an extremely important part of the educational system. Discussion with your classmates is acceptable and encouraged for purposes of general case preparation. Moreover, it is obviously required for group assignments. However, I expect you to present in class only analyses which you participated in preparing. That is, reading from notes simply handed to you by a study group member or anyone else violates the Code of Integrity. Similarly, it is considered to be a violation of the Code of Integrity for students to use analyses of cases posted to electronic bulletin boards, formal or informal “virtual study groups,” and so-forth. The reasons for this are threefold. First, class discussion is enriched if there is variety in points of view. This is diminished if a majority of students come to class with the same case analysis. Second, a great deal of learning occurs in the process of preparing the case and/or study questions. Third, I want to grade *your* class performance.

Appendix A: Professor Bio

Professor Ran Kivetz, Ph.D., Philip H. Geier Professor, Columbia University Business School.

Professor Ran Kivetz is a tenured professor at Columbia University Business School, where he holds the Philip H. Geier endowed chair. Professor Kivetz is a leading expert in the areas of behavioral economics, decision-making, marketing, customer behavior, incentives, and innovation. His experience in these fields includes over twenty years of research, management, consulting, and teaching. His latest research explores political science and political psychology through the lens of behavioral economics and decision research.

Professor Kivetz's research has won many prestigious awards, including multiple "Best Paper" awards, being a recipient of the *New York Times* annual "Best Idea" award, and being ranked as the third most prolific scholar in his field during 1982–2006. Professor Kivetz's research has been covered by major print and broadcast media (e.g., ABC, The Atlantic, BBC, Bloomberg Businessweek, CNN, Chicago Tribune, FOX News, The New York Times, SmartMoney, Time, U.S. News & World Report, & WSJ).

Professor Kivetz's teaching has won the Columbia Business School Dean's Award for Innovation in the Curriculum. Some of the courses that Professor Kivetz has developed and taught include *High-Technology Entrepreneurship*, *Marketing of Nation*, and *Bridging Behavioral Economics and Marketing Science*.

Professor Kivetz has advised Fortune 500 companies, government agencies, and entrepreneurial ventures from a variety of industries. He has worked with organizations on strategy, decision-making, marketing, innovation, branding, customer behavior, incentive systems, marketing research, and intellectual property.

Professor Kivetz earned a Ph.D. in business and an M.A. in psychology from Stanford University and a B.A. in economics and psychology from Tel Aviv University.

Appendix B: Guest Speakers' Bios

Dr. Philippe Chambon, MD, Ph.D., Managing Director, New Leaf Venture Partners, LLC.

Philippe Chambon, MD, PhD, is a Managing Director and founder of New Leaf Venture Partners. He concentrates on Information Convergence and Biopharmaceutical investments. He is currently on the board of Karos Pharmaceuticals, QPID Health, Treato, Ltd., Truveris, Inc. and VaxInnate Corporation. His career in Venture Capital started in 1995 when he joined The Sprout Group. Prior to that, he served as Manager in the Healthcare Practice of The Boston Consulting Group from 1993 to 1995. From 1987 to 1993, he was an executive with Sandoz Pharmaceutical, where he led strategic product development, portfolio management and pre-marketing activities in his capacity as Executive Director of New Product Management. Philippe did graduate research in molecular immunology at The Pasteur Institute and earned a M.D., Ph.D. from the University of Paris. Philippe also has an M.B.A. from Columbia University in New York.

Tiffany Clay, Principal, TPG

Ms. Clay originally joined TPG in 2008. Before joining TPG she was a consultant with McKinsey & Co., serving clients throughout North America and the Middle East. At McKinsey she spent a year as a researcher on the McKinsey Greenhouse Gas Abatement Initiative, a project sponsored by McKinsey, the Natural Resources Defense Council, the Environmental Defense Fund, and a consortium of private sector clients to assess the relative attractiveness of greenhouse gas abatement options and create an abatement cost curve (published in December 2007 as “Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?”). Ms. Clay received her M.B.A. from Harvard Business School where she graduated with high distinction as a George F. Baker Scholar. She received a B.A. from Yale University where she graduated summa cum laude and Phi Beta Kappa. She is a member of the Board of the World Resources Institute as well as a term member at the Council on Foreign Relations.

Dr. Santanu Das, Advisor to Startups; Founder & Former CEO, TranSwitch

Santanu Das is a founder of TranSwitch Corporation in Shelton, Conn., which started operation in 1989, and was the president and CEO of the company.

Prior to TranSwitch Corporation, he held various positions, including president of Spectrum Digital Corporation, a telecommunications equipment company, where he worked from 1986 through August of 1988. Before joining Spectrum, he held various executive positions, including director, Applied Technology Division of ITT Corporation's Advanced Technology Center in Shelton, Conn.

He received his B.E. and M.E. degrees in Electronics and Telecommunications Engineering from Jadavpur University, Calcutta, India, in 1965 and 1968, respectively, and his doctor of science (D.Sc) in electrical engineering from Washington University in St. Louis.

Professional Societies of which Dr. Das is a member are Institute of Electrical and Electronics Engineers (IEEE), and ACM., U.S.A.

He has authored and/or co-authored more than 25 papers in different journals, magazines, and conference proceedings. He is a frequent speaker at industry forums and has been invited to speak at major technical and non-technical functions and conferences. Dr. Das has been granted a number of patents in his field.

On April 5, 2000, Dr. Das received the "Alumni Achievement Award" from Washington University School of Engineering & Applied Science. This award recognized Dr. Das' contributions to the advancement of the telecommunications and data communications industry, his entrepreneurial spirit, and his commitment to help others.

In May of 2001, Dr. Das was elected to the board of trustees of Washington University in St. Louis. In his capacity as trustee, he serves as a member of the Research-Graduate Affairs Committee, as well as the Student Affairs Committee of that institution.

On Oct. 27, 2001, Dr. Das was honored by the Alumni Board of Governors of Washington University when he was presented the "Distinguished Alumni Award," in recognition of outstanding achievements and services that reflect honor upon Washington University.

On June 15, 2000, Dr. Das was awarded the Ernst & Young "Entrepreneur of the Year Award" for the Southwest Connecticut/New York Hudson Valley area for the telecommunications industry. In November of 2000, Dr. Das went on to be named a finalist for the 2000 Ernst & Young "Entrepreneur of the Year" in the Technology/Communications area.

Dr. Das is active in financially supporting as well as fund-raising for a number of non-profit organizations.

He and his family have founded two foundations — one in India, and one in the United States — to support various causes.

Malcolm Elvey, Founder & Principal Partner, The Elvey Partnership, Collaborative Capital 1, LP.

A seasoned entrepreneur with a strong global track record, Malcolm Elvey brings to his clients a rational, results-driven approach in building the fundamentals for success: business strategy, financing and company structure. His pragmatism is the result of nearly four decades of entrepreneurial and academic experience in over 10 countries.

As senior executive of several companies in the U.S. and abroad, Elvey has demonstrated his vision in leveraging technology to gain a competitive advantage. He has used computers and technology to drive the success of numerous pioneering business concepts, including warehouse clubs, off-price retailing and industry consolidations. His strengths are in astute analysis and evaluation of concepts, coupled with the ability to introduce and mentor exceptional management. In his consultancy, Elvey taps a wide network of powerful domestic and international contacts--essential in today's global economy.

Highlights from Elvey's international business career include:

- serving on the Boards of Directors at The Children's Place, Inc. (Nasdaq: PLCE), a leading specialty retailer of high quality, value-priced apparel and accessories for children; and PowerHouse Technologies Group (PWHT), the developer of MIGO software (www.migosoftware.com)
- Founder and Vice-Chairman of QLIMO, a NY ground transportation company.
- Adjudicator of business plans on the "High Technology Marketing and Entrepreneurship" course at Columbia Business School since 1999.
- Founder and former Chairman of Esquire Communications Ltd., the nation's largest court reporting and legal services company.
- Involved with numerous Internet companies as either Founder, Director, or Advisor.
- From 1985-87, Director of ADT Ltd., a publicly traded international service industry conglomerate, that is today part of TYCO.
- Director and a Founder of SACCA (South African Chamber of Commerce in America)
- CEO of Metro Cash and Carry from 1970-75, a publicly held South African company that today is a \$7 billion global company operating 400 warehouses in 13 countries. In 1976 Opened Jetro Cash & Carry in Brooklyn which was the precursor of the warehouse club phenomenon in the US.
- Elvey is a Chartered Accountant and holds an MBA degree from the University of Cape Town, South Africa, where he was also a member of the faculty in finance and business policy.

Elvey has been active in the leadership of The Young President's Organization and the World President's Organization since 1973. He is an active supporter of various philanthropic organizations, Director and former Chairman of the Finance Committee of The Friends of Bezalel, Israel's National Academy of Arts &Design. An avid squash player, Elvey served as Chairman of the US Masters Squash Teams in 1997 at the Maccabiah Games in Israel.

Greg Marsh, Founder & CEO, KeyMe

After seeing his wife get locked out several times, Greg thought the locksmith industry was broken. He dropped out of Columbia Business School to found KeyMe. Before attending business school, Greg served as Director of Finance for Aperia Technologies, an early stage efficiency technology company for the commercial trucking industry. Aperia is currently scaling rapidly. Prior to joining Aperia, Greg was an Associate at CM Capital Advisors where he was responsible investment sourcing, portfolio construction, and risk management for \$1B+ portfolio. Before CM, Greg was an Analyst at Sterling Stamos, an \$8B private investment firm, where he focused on hedge fund analytics. Greg holds a BA in Mathematics and Economics from UC Santa Barbara and is a CFA charterholder.

Dr. Howard Morgan, Ph.D.; Partner, First Round Capital, President of Arca Group

Howard Lee Morgan is a Founding Partner of First Round Capital, established in 2004 as an early stage venture fund based in Philadelphia, PA, New York and San Francisco. He is also President of Arca Group Inc. in Villanova, PA and a Director of Idealab, the Pasadena , CA based creator and operator of internet companies, where he was a founding investor in 1996. He holds a B.S. in Physics from the City College of New York, a Ph.D. in Operations Research from Cornell University, and an M.S.(hc) from the University of Pennsylvania.

Dr. Morgan served as Professor of Decision Sciences at The Wharton School, and Professor of Computer and Information Sciences at The Moore School of the University of Pennsylvania from 1972 through 1985. He started his career as Assistant Professor of Operations Research and Computer Science at Cornell University. He has been a Visiting Professor at the California Institute of Technology and the Harvard Business School. During his academic career he served as an editor of Communications of the ACM, Management Science, Transactions on Office Information Systems and Transactions on Database Systems. His research on user interface technology and on optimization of computer networks led to his bringing the ARPAnet to Philadelphia in 1974.

From 1982 to 1989, he served as President of Renaissance Technologies Corp. in New York, where he supervised venture capital investments in high technology companies. He was a founding board member and technical advisor of Franklin Electronic Publishers, one of the first manufacturers of personal computers, which he now chairs. He has been an active consultant and speaker to users and vendors in the information systems area for more than 30 years, and has worked with many of the Fortune 100 companies and numerous government agencies. He has been on the boards of more than 20 public companies, and on advisory boards for major corporations.

Since 1989, he has been President of the Arca Group, Inc., a consulting and venture capital investment management firm specializing in the area of computer and communications technologies. Arca Group has taken many ventures from seed stage through initial public offerings.

He is currently helping to nurture a number of First Round companies, including Augury, Kentik, Memsql, and DogVacay.com. He worked with numerous Idealab companies, serving on the board of Evolution Robotics (since sold to iRobot) and as Chairman of Internet Brands, the leading internet media company through its public offering and subsequent sale to Hellman Friedman.

Dr. Morgan serves as a Trustee of Cold Spring Harbor Laboratories, a Director and Executive Committee member of Math For America and as a Director of the Mabel Mercer Foundation. He was named Delaware Valley Entrepreneur of the Year in the prestigious Ernst & Young competition.

Eli Singer, Chief Executive Officer & Co-founder, Jethro

Mr. Eli Singer Co-founded and serves as Chief Executive Officer of Jethrodata Inc. Mr. Singer Co-founded Webcollage Inc. in 1999 and served as its Chief Executive Officer. He is a serial entrepreneur with over 20 years' experience leading Israeli high-tech companies in the US. Mr. Singer served as President of Memco Software, Inc. and founded its North American business. He led Memco's growth from a small startup to one of the largest information security software companies in the world until its acquisition by Platinum Technology in 1999. Prior to joining Memco in 1995, Mr. Singer served five years as a senior IT consultant for major Wall Street banks. He started his career in the Israeli Navy, where he served for more than six years as an officer and technology specialist. He was also the co-founder and President of Element Cleantech, a leader in the algae for food and fuel space. His experience and expertise include building high-growth businesses in enterprise software and Internet and launching innovative technology products. He served as Chairman and Director of WebCollage Inc. He served as Member for Advisory Board of Whale Communications Ltd. Mr. Singer has a BS in Computer Science and MIS from Pace University in New York.

Gary Singer, Partner & Chief Marketing Officer, AT Kearney

Gary Singer is a partner, chief marketing officer, and member of A.T. Kearney's Strategy, Marketing & Sales Practice.

Gary has more than 35 years of industry and global consulting experience, with a focus on marketing and branding. Throughout his career, he has worked with numerous Fortune 100 companies and not-for-profit organizations to define and leverage meaningful distinctiveness to accelerate business performance. His areas of expertise include business strategy, organization transformation, and brand valuation and optimization.

Prior to joining A.T. Kearney, he was founder and chief executive officer of Redline Results, an independent management consultancy focused on transforming organizations into more efficient and effective, high-performing enterprises. Gary was also a founding partner and chief executive officer of Buyology, a company focused on delivering quantitative tools to help companies rigorously measure and strengthen their relationships with current and potential customers.

He also served as chief strategy officer for Interbrand, one of the world's leading branding companies, and was a partner with McKinsey & Company, where he co-led the branding center part of the North American sales and marketing practice. Gary also spent more than 20 years at two global advertising agencies, working with clients to create powerful brands and deliver superior shareholder value.

Gary holds a BS from Carnegie Mellon in cognitive psychology and an MBA in marketing and finance from the University of Chicago Booth School of Business. He is a frequent speaker and guest lecturer at the Columbia Business School and Carnegie Mellon.

Richard Smullen, Founder & CEO, Pypestream

Richard's passion for early-stage startups has seen him launch successful businesses since his days at university in South Africa. At just 36, he has over 15 years experience in the technology industry having numerous patents and successful companies under his belt. Prior to launching Pypestream he served as co-founder and CRO of Genesis Media LLC, a multimedia, real-time video advertising platform founded in 2011.

Richard is a member of the Metro Chapter of the Young Presidents' Organization and the founder of New York-based global equity and VC fund, SouthWinston, developing businesses in media, technology and entertainment.

An avid golfer and nature conservationist, when Richard is not messaging, he is playing 'World's Best Uncle' to his six adorable nieces and nephews.