Beyond Entrepreneurship

How Innovation and Entrepreneurship Changes the World

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Forward

"*Beyond Entrepreneurship -How Innovation and Entrepreneurial Behavior Changes the World* ©" is a text (still in draft form) that serves as an introduction to these topics for students majoring in management, engineering, science, technology, health sciences, and any other field interested in changing the world through innovation and new ventures.

Going Beyond Entrepreneurship is intended to be more inclusive than most existing introductory texts in entrepreneurship that often take the "Shark Tank" style of introduction to new venture creation. The text includes many examples of new venture creation and includes topics like the Lean Launchpad, Business Model Canvas, Effectual Entrepreneurship, and Business Planning, but goes beyond those standard topics to show that innovation and entrepreneurial behavior are critical for social entrepreneurship, charitable ventures, and for the survival of long successful enterprises.

Going beyond entrepreneurship also means that the text takes an evidence based critical analysis of topics that endeavors to present the positive and the negative, the proponents and the critics, of various models and issues. The text shows why the countries of the world care about (and should care about) entrepreneurship and innovation and the social challenges that may be perceived as the result of change.

"Beyond Entrepreneurship" is written to be accessible to students with no background in management or entrepreneurship by presenting topics from first principles. It is not intended to make the student an expert on marketing, finances, business development, management strategy or other business topics, but is designed to give the student enough information to know that these topics are important in any innovative project and a basic understanding of how to work with other professionals with expertise in these topics to advance their innovative ideas.

Chapter 1 Introduction to Innovation and Entrepreneurship: What is Entrepreneurship and who are the Entrepreneurs?

Most of you will come to this course with some understanding of what entrepreneurship is, who entrepreneurs are, and what those entrepreneurs do. We develop those understandings because of the things we read and see in the media and the people we meet in our lives. As with so many things, our personal experience is often a small window into the field and may or may not reflect the larger picture that could be developed with more extensive experience.

In order to create that larger picture, we need to draw upon both a larger set of experiences (primary research) and upon the research and study done by others (secondary research) who have taken a systematic look at the field. This research has also shown that there are some widely held misconceptions (often termed "myths") about entrepreneurs and entrepreneurship.

We will consider some example entrepreneurs. We will confront the myths, and we will try to develop a more accurate and evidence driven insight into entrepreneurship, innovation, and entrepreneurs.

Inventions and applications of new technologies often change the world in very profound ways. In 1934 Joseph Schumpeter, a Harvard University economist originally from Austria proposed his theory of **creative destruction**. This simply suggests that new products and technologies make old products and technologies obsolete and completely replace them. Later we will look at many examples of this.

Figure 1 Charlier Chaplin in Modern Times public domain

Creative destruction has occurred throughout history and has both positive and negative effects. Consider the invention of the practical steam engine in 1765 by James Watt. This drove the following industrial revolution and remade transportation systems -eventually creating the steam ship and the steam locomotive.[1] Like all inventors, Watt built on earlier, but less practical work by others like Newcomen and Savery. There was even a crude version of a steam engine created by the Greek scientist Hero of Alexandria in the first century CE.[2] Like all technologies, before and since, there were those who resented and resisted the new ways. The Luddites in England

[1] http://www.history.com/topics/industrial-revolution
[2] http://www.livescience.com/44186-who-invented-the-steam-engine.html

often attacked factories and destroyed equipment. Today we often refer to those who resist new technologies as "Luddites." In 1936, Charlie Chaplin, made a film depicting the challenges of living in "Modern Times" that captured the angst of those who found technological change difficult.

Not all entrepreneurship is driven by technology, but the effects of technology on entrepreneurship and innovation have been profound for the last century and continue to accelerate.

Figure 2 Microsoft Founders (courtesy of Microsoft)

Meeting a few Entrepreneurs

By taking a brief look at a few entrepreneurs, perhaps we can glean some insight into who they are, what motivates them, and how they operate. We will want to build on this insight throughout the text by looking at the research that defines entrepreneurial characteristics, but having some concrete stories will illuminate the dry statistics. The most important thing to begin with is that entrepreneurs are a pretty diverse group of individuals. We will see that they do share some common characteristics, but that these are not defined by race, age, gender, or many other characteristics that some may think of first.

For example: would you invest in the motley crew in Figure 2? Unless you happen to recognize the young Bill Gates in the lower left corner, you may think the group looks a bit inexperienced. Actually, they were. But they built Microsoft.

These two guys in Figure 3 started their collaboration in a basement. They were as different as anyone could imagine, but were united by a vision for creating computers that would be personally owned. They were not the first to do this, but apparently they did it better than anyone else. Steve "Woz" Wozniak was the technical genius who built the Apple I computer and did the technical work to build the Apple II.

Steve Jobs was not as technically oriented, but had a passion and persistence driving him to combine design principles with a personal vision for how he felt that people SHOULD interact with computers. That passion and persistence, perhaps coupled with his lack of deep technical knowledge, led him to push his vision on the engineers –even when the

Figure 3 Apple Founders Steve Jobs and Steve "Woz" Wozniak (courtesy of Apple Computer)

engineers found it difficult to fulfill his vision. In the end they split because Woz felt that personal computers should be open systems in which users could tinker with hardware and software to make the computer do what they wished. Steve Jobs viewed the computer as more of an appliance for people who wanted to use the computer, but had no desire to tinker with it. His vision created Apple computer with its brilliant designs but with closed hardware and operating systems. From that vison, combined with research that he largely adapted from the Xerox Palo Alto Research Center (PARC), he created the Macintosh computer and then the iPod, iPad, and iPhone. To this day they are tightly controlled hardware and software systems that only allow you to do the things that Steve Jobs thought you should do. Given the success of Apple, he must have been very good at figuring that out.

Consider these snapshots of entrepreneurs:

Bill Gates –Gates was a computer software whiz from Seattle who dropped out of Harvard to start his own software business.

Figure 4 Bill Gates (Agency Brazil-Creative Commons License)

When IBM decided to get into the personal computer business, they designed the first IBM PC hardware, but needed an operating system for the PC. An operating system already existed; it was called CPM. Writers argue about whether it was because IBM was too cheap to license CPM or simply because negotiations broke down for other reasons, but the result was that IBM looked around to find someone to write clone of CPM. They contracted with Gates and his fledgling company, Microsoft. To develop that operating system. The built on an existing operating system that they purchased to create MS-DOS which IBM branded as PC-DOS. In what many consider one of the greatest business blunders of the time, IBM left the underlying rights to the operating system with Microsoft. Thus Microsoft was able to work with others who wanted to clone the IBM PC and those others MS-DOS. The rest is history (after long expensive lawsuits that is!)

Bill Gates and Warren Buffet originated "The Giving Pledge[3]," later joined many others, in which these wealthy entrepreneurs pledged to give most of their acquired wealth to charity.

Mother Theresa was born as Agnes Gonxha Bojaxhiu. She is an Albanian who was born in Macedonia. Her father was an entrepreneur in construction and trading. She became a social entrepreneur in India as the Founder of the Order of the Missionaries of Charity

[3] https://givingpledge.org/

Jim O'Keefe, who worked for GE, Image systems, and served as the second ILINC President, visited her during his GE period. O'Keefe called the GE CEO, Jack Welch, to tell him how she had created an incredible charitable enterprise with amazing entrepreneurial skill. "As the ranks of her congregation swelled and donations poured in from around India and across the globe, the scope of Mother Teresa's charitable activities expanded exponentially. Over the course of the 1950s and 1960s, she established a leper colony, an orphanage, a nursing home, a family clinic and a string of mobile health clinics." "By the time of her death in 1997, the Missionaries of Charity numbered over 4,000 -- in addition to thousands more lay volunteers -- with 610 foundations in 123 countries on all seven continents."[4] Mother Teresa is an excellent example of a Social Entrepreneur whose focus is primarily upon solving a social problem rather than making a financial profit. We shall see that other social entrepreneurs, like Muhammad Yunus or Harish Hande, operate for-profit enterprises that are designed to solve important social problems. Social Entrepreneurship can be either non-profit or for-profit.

Figure 5 Mother Teresa
(Photo: © 1986 Túrelio (via Wikimedia-Commons), 1986 / Lizenz: Creative Commons CC-BY-SA-2.0 de)

Nonspec

Nonspec is a student generated company at UMass Lowell. Nonspec (previously known as Developing Nation Prosthetics) provides low cost, high functionality replacement limbs with an acceptable amount of customization for children in other nations.

The team consists of Katherine Cain, Jonathan De Alderete, Brendan Donoghue, Sean Gibson, Olivia Keane and Erin Keaney with majors in plastics and mechanical engineering, as well as minors in business administration and history.[5]


THE SUN
WEDNESDAY
$1.00 June 10, 2015 Lowell, Massachusetts
Two floors, no ceiling on invention
UML business incubator opens in rehabbed canal district building
By Robert Mills
LOWELL — Catharine Pujol-Bailey started on Tuesday about 9 a.m., the first scientist to work in the new research space at UMass Lowell's business incubator in the Hamilton Canal District.
SEE THE VIDEO
The incubator is the first commercial property to open its doors in the Hamilton Canal District, a prominent part of the city at the edge of the downtown, long home to little but abandoned buildings and vacant lots. It makes its home on the top floor of the former Freudenberg Nonwovens mill at 110 Canal St.
Pujol-Bailey is director of research and development for KniZplo, a start-up that is engineering micro-organisms to improve the quality of food raised in aquaculture, also known as fish farming.
UMass Lowell leases the top two floors of the building, with 11,000 square feet of space on each floor meant to help grow start-ups in the biotech and medical-device fields.
The facility is home to two separate but related programs — the UMass Lowell Innovation Hub, on the fourth floor, and an extension of the university's Massachusetts Medical Device Development Center.
Please see INCUBATOR/10
A PLACE TO EXPLORE: Erin Keaney, co-founder and CEO of Nonspec, and Brendan Donoghue, right, a 2015 UML graduate who is an intern at Nonspec, show a prosthetic foot to UMass President Emeritus Jack Wilson at UML's new incubator at 110 Canal St. Below, from left, Steve O'Riordan, UML associate vice chairman for financial services, UML Government Relations Associate Colleen Brady and Director of University Events Rick Sherburne take in the view.

Photo by J.M. Wilson

Nonspec got its start by winning the Difference Maker Competition and went on to win many other awards such as becoming a top 10 semi-finalists in Entrepreneur® Magazine's "College Entrepreneur of 2013 Contest," and the First-Place award in The International Association of Plastics Distribution (IAPD) "Plastics Application Design Competition", held in October 2013 in Miami, Florida.

As they realized that bringing a product like this to market in the United States would be very expensive, they traveled to India and developed a partnership to bring this to market there -with the hope of doing so in the US over time.

[4] http://www.biography.com/people/motherteresa-9504160
[5] https://www.uml.edu/InnovationEntrepreneurship/DifferenceMaker/ Meet-the-DifferenceMakers/DMNonspec.aspx

John Pulichino '67

Figure 7 John Pulichino and Joy Tong
Photo -UML

John Pulichino graduated from Lowell Technological Institute, the pre-cursor to UMass Lowell in 1967 with his degree in industrial management. After graduation he entered Northeastern University to obtain a master's degree in engineering management. John became the director of industrial management at the Polaroid Corporation during the 1970s.
The Polaroid Camera was a huge success and the company grew rapidly. Unfortunately, the Polaroid Company is also a dramatic example of Joseph Schumpeter's principle of "Creative Destruction" -as the new technology of digital cameras quickly made the Polaroid camera obsolete and put Polaroid out of business. John became the CEO of American Tourister until that company was sold. He founded Innovation Luggage in 1993 but was bankrupt by 2001.

Joy Tong had founded Group Three International Limited in 1984. He joined her company and became CEO, and she took the role of Creative Director. They also married. In 2003, he executed a brilliant business and branding move by getting a licensing agreement between Group III and Wenger, maker of the 100-year-old Genuine Swiss Army Knife brand. Together John and Joy have built a company that, since 2003, has done more than $400 million in sales. With offices in Florida, Taiwan and China, Group III now distributes more than 60 products through Target Stores alone. They sold the company to a private equity group, but remained involved with its operations. He recently sold the firm to private equity group, but in 2015 they bought the company back from the private equity group.

They have donated about $5 million to UML for scholarships and the Pulichino-Tong Building which houses the Manning School of Business.

Robert "Rob" Manning '84

Rob is the Chairman and CEO of MFS Securities He is credited with saving a company that nearly expired! "For the rare comeback story among money managers, look to MFS Investment Management, one of the oldest names in the mutual fund business but also one of the most battered after the Internet bubble popped in 2000." – Institutional Investor noted that "*CEO Manning described his approach as the opposite of the star system used by some rivals. Employees are expected to work closely together and sacrifice their egos as necessary;*

Figure 8
Robert "Rob" Manning '84 with Jack M. Wilson, Judi Wilson, and Donna Manning (photo-UML)

even fund managers with terrific performance records will face bonus cuts if they do not treat other employees respectfully, he said."

Rob and Donna (Nursing '84) are $5 million donors to UML

Larry Ellison, the Founder of Oracle, was a dropout of both the University of Illinois and the University of Chicago. He worked at various computing companies in California and then founded Software Development Laboratories which eventually became
Relational software, and then finally became Oracle. He is an avid sailor who participates in the most grueling and competitive races around the world.

Figure 9 Larry Ellison
(Photo Creative Commons Attribution 2.0 Generic license.)

He signed the Giving Pledge along with Bill Gates, Warren Buffet and others. The giving pledge was a promise to donate most of their acquired wealth to charity in some form.[6],[7]

Sir Richard Charles Nicholas Branson was born July 18, 1950 in London, England. Branson is the seventh richest citizen of the United Kingdom, with an estimated net worth of $4.9 billion (U.S.)[8]

He was a severe Dyslexic. (as is the author!) On his last day at school, his headmaster, Robert Drayson, told him he would either end up in prison or become a millionaire.

As Richard Branson himself put it: "At school I was dyslexic and a dunce.[9]",
He founded:

- Virgin Records
- Virgin Megastore
- Virgin Atlantic Airline
- Virgin Trains,
- Virgin Galactic

He helped form and fund "The Elders" with Nelson Mandela and others who were devoted to helping to solve world problems.

Figure 10 Richard Branson
Photo by Freelance photographer Richard Burdett (Website) - Own work, taken at eTalk Festival Party., CC BY 3.0, https://commons.wikimedia.org/w/index.php?curid=4745245

[6] https://givingpledge.org/
[7] http://en.wikipedia.org/wiki/Richard_Branson
[8] http://www.forbes.com/profile/richard-branson/
[9] The Times, London, 11 September 1998, pg. 19

Teresa Mbagaya is an entrepreneur in Zimbabwe. She was born in Kenya and studied in England and the United States. A Graduate of Cambridge and Yale, she worked at Google on Education Services and Emerging Market Outreach teams.[10]

Figure 11
Photo by Teresa Mbgaya via twitter.

In 2013, she left Google and joined Econet Wireless in Africa. Econet Zero targets 5 million Econet Broadband subscribers offering them free access to 50+ education websites including Coursera, EdX, Wikipedia, Codecademy and others.

She launched EcoSchool Academy[11] to serve 9 million subscribers with an interactive mobile learning environment which provides 50 short courses covering a range of topics.[12]

Econet Education has reduced the costs for Medical Students in Zimbabwe, providing tablets on which they can access their text books at significant savings.[13]

For those interested in hearing more about this project considering visiting the Case Study on the JackMWilson.net website:
Case: http://www.jackmwilson.net/Entrepreneurship/Cases/Case-EcoSchool-Africa.pdf

Mark Zuckerberg

Zuckerberg is another one of those Harvard dropouts. He created FaceMash at Harvard and then left school to build Facebook. He was always a computer geek as well as a Gamer. Some would say he was socially inept, but others would disagree He also signed the Giving Pledge, and has already given $100 million to Newark Schools.

Figure 12
Mark Zuckerberg -Flickr: This file is licensed under the Creative Commons Attribution 2.0 Generic license.

A movie purporting to chronicle the rise of Facebook, "The Social Network" was released in 2010. The movie was based upon Ben Mezrich's book "*The Accidental Billionaires*." When many people, including Zuckerberg, objected to the accuracy of the book and movie, Mezrich replied that the book was: "*big juicy fun*" rather than "*reportage*" and the screen writer admitted that "*I don't want my*

[10] http://www.forbes.com/sites/mfonobongnsehe/2015/02/05/30-most-promising-young-entrepreneurs-in-africa-2015/2/
[11] https://www.ecoschool.co.zw/
[12] http://www.techzim.co.zw/2014/10/everything-need-know-econets-ecoschool/
[13] http://www.aworldatschool.org/news/entry/eco-school-pilot-scheme-slashes-cost-of-learning-in-zimbabwe

fidelity to be the truth; I want it to be storytelling…."*what is the big deal about accuracy purely for accuracy's sake, and can we not have the true be the enemy of the good?* It is ironic that social media is now widely perceived as the purveyor of "fake news" and "clickbait."

Andrew Carnegie

Lest you think that entrepreneurship or philanthropy is something new, consider the case of Andrew Carnegie. He was born in Scotland but moved to Pittsburgh, PA in his youth. He began working for what became the Pennsylvania Railroad -selling bonds which were of dubious value. He founded the Carnegie Steel Corporation which eventually became the US Steel Corporation.

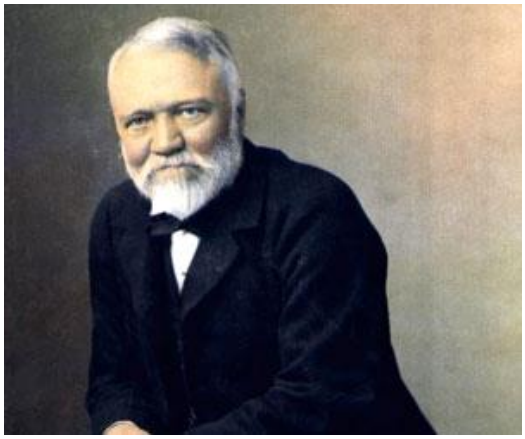


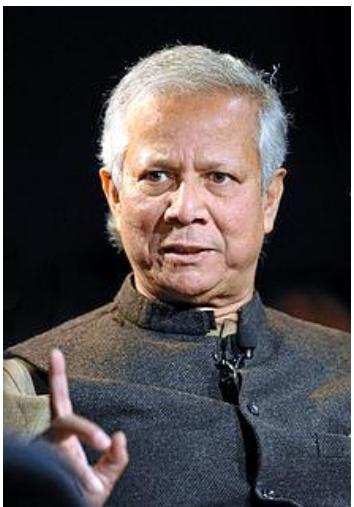
Figure 13 Andrew Carnegie

Astoundingly for that era, he made his wife sign a pre-nuptial agreement in which she acknowledged that he intended to give away his fortune rather than keep it in the family. This is an important insight into his intentions and character, since later legend tried to assert that he was shamed into giving away his fortune because of the violence that occurred in a strike at his steel plant. The existence of the prenuptial agreement makes those later assertions look quite unlikely. Moreover, he was away on a long trip in Europe leaving the management of the company to others when the violence occurred.

He used his fortune to create the Carnegie Libraries in towns and cities all across the country. He founded the Carnegie Museum and the Carnegie Institute of Technology which later merged with the Mellon Institute to become the Carnegie Mellon University. An eminently practical man, legend has it that he insisted that the first University building be built with very high ceilings. In case the University failed it could be repurposed into a factory building. The university succeeded and the high ceiling building was perfect for the large-scale engineering research and teaching programs for which it became known. He worried that university teachers did not have retirement programs so he created the Teachers Insurance and Annuity Association (now TIAA-CREF) to provide retirement programs. He worked for world peace, creating the Carnegie Endowment for International Peace.

Muhammad Yunus

Born in Bangladesh, he attended Chittagong College and Dhaka College and then received his PhD in Economics from Vanderbilt University. He was a Professor of Economics in



Bangladesh. An entrepreneur, he founded a profitable packaging company.

He is credited with creating the system of microcredit and microfinance and was awarded the Nobel Peace Prize for that work. He founded Grameen Bank to make these programs viable, sustainable, and scalable. In the late 1980s, Grameen started to diversify by attending to underutilized fishing ponds and irrigation pumps like deep tube wells. As these project grew and diversified, the fisheries project became Grameen Motsho ("Grameen Fisheries Foundation") and the irrigation project became Grameen Krishi ("Grameen Agriculture Foundation"). In time, the Grameen initiative grew into a multi-faceted group of profitable and non-profit ventures, including major projects like Grameen Trust and Grameen Fund, which runs equity projects like Grameen Software Limited, Grameen CyberNet Limited, and Grameen Knitwear Limited, as well as Grameen Telecom, which has a stake in Grameenphone (GP), the biggest private phone company in Bangladesh. From its start in March 1997 to 2007, GP's Village Phone (Polli Phone) project had brought cell-phone ownership to 260,000 rural poor in over 50,000 villages.[14]

Figure 14 Muhammad Yunus
By World Economic Forum - Flickr: Muhammad Yunus - World Economic Forum Annual Meeting 2012, CC BY-SA 2.0, https://commons.wikimedia.org

The success of the Grameen microfinance model inspired similar efforts in about 100 developing countries and even in developed countries including the United States. Many microcredit projects retain Grameen's emphasis of lending to women.

He focused on women entrepreneurs in particular. More than 94% of Grameen loans have gone to women, who suffer disproportionately from poverty and who are more likely than men to devote their earnings to their families. Since this example of social entrepreneurship is also a network of for-profit companies, he has taken his share of criticism as well as praise. Because the micro-loans are quite risky, he charges a very high interest rate in order to recoup his capital, make his companies sustainable, and reinvest in more loans to women. Not everyone agrees with his business model.

He is an example of *social entrepreneurship* which is operated as a for-profit enterprise to solve social problems. The profits are re-invested to help additional clients.

Mary Kay Ash

Mary Kay Ash was born in Texas. She was quite successful in sales, but became angry when men were promoted over her. In 1963 she created a business plan for Mary Kay Cosmetics. From that plan she founded Mary Kay Cosmetics with her two sons. Her business model was built around pyramid models of sales representatives who recruited other sales representative who recruited more sales representatives in an ever-increasing pyramid.

[14] https://en.wikipedia.org/wiki/Muhammad_Yunus

She came up with the idea of giving her top sales people a Pink Cadillac and more than 100,000 Pink Cadillacs have been given out Mary Kay Cosmetics grew into the 6th largest direct sales program with revenues of $3.7 billion in 2015

Figure 15 Mary Kay Ash
https://en.wikipedia.org/wiki/File:Mary_Kay_Ash.jpg

What motivated Mary Kay from the beginning was that she wanted to help women to advance by helping them to help others. This is certainly a for-profit enterprise, but it also advances social enterprise goals.

Steve Jobs

"*Don't let the noise of other's opinions drown out your own inner voice. And most importantly, have the courage to follow your heart and intuition. They somehow already know what you truly want to become. Everything else is secondary*." – Steve Jobs

Figure 16 Steve Jobs
Photo by Mat Yohe
https://commons.wikimedia.org/wiki/File:Steve_Jobs_Headshot_2010-CROP.jpg

The late Steve Jobs is one of the best-known entrepreneurs for his founding of Apple with Steve "Woz" Wozniak in 1976 to sell the Apple I and then II computers. They were hugely successful and were followed up by the Macintosh.

Jobs was fired from his job as CEO of Apple in 1986 and went on to found another computer company, NeXT, as well as Pixar It is not unusual for a founder to be fired, and is also common for the fired founder to go on and found other companies.

In 1997, Apple invited Jobs back as CEO in order to revitalize a lethargic company. Returns like this are far less common, but it turned out to be one of the most brilliant business moves in history. He led Apple to create the iPod, iPhone, iPad, iTunes, and other products and built Apple into the most valuable company in the world as of 2018.

Mark and Elisha Saab

Mark and Elisha Saab Mark Saab graduate in Plastic Engineering from UMass Lowell in 1981. He was a specialist in polymers. After some time working in industry, he began to consider launching his own company. In 1988, Mark Saab '81 had a vision for a product that no one in the market was making: an ultra-thin walled medical tubing. Saab believed he could produce it and was confident the market would be there. And his wife Elisha believed in him. In 1989 they launched Advanced Polymers.

Figure 17 Elisha and Mark Saab
(photo J Wilson)

Sacrificing nights and weekends, while working two day jobs, she helped Mark turn his vision into one of the most respected companies in its field. After a couple of decades of success, he merged the company with the MedTech Group in New Jersey. Saab suggests that the merger "provides substantial growth opportunities for the combined company,"

Mark and Elisha are donors of over $ 1 million to UML Scholarships.

Harish Hande '98 '00
Harish Hande graduated from UML in 1998 with an MS in renewable energy engineering. He received his UML PhD in 2000 in mechanical engineering (energy). He co-founded Solar Electric Light Co. (SELCO) India in 1995.

Figure 18 Harish Hande '98 '00
Photo © World Economic Forum
https://commons.wikimedia.org/wiki/File:Harish_Hande_-_India_Economic_Summit_2011.jpg

As SELCO's managing director, he has pioneered access to solar electricity for more than half a million people in India, where more than half the population does not have electricity, through customized home lighting systems and innovative financing.

Hande received the 2011 Magsaysay Award, widely considered Asia's equivalent of the Nobel Prize. He was selected as one of 21 Young Leaders for India's 21st Century by Business Today, and as Social Entrepreneur of the Year for 2007 by the Schwab Foundation for Social Entrepreneurship and the Nand and Jeep Khemkha Foundation. He is another who took the "for-profit" approach to social entrepreneurship.

Jim Dandeneau '80 (Photo by Jim Dandeneau)
Jim Dandeneau is the CEO & Owner of Putnam Plastics. He graduated from UMass Lowell in 1980 in Plastics Engineering. He was a hockey player as a student.

Figure 19 Jim Dandeneau

Jim founded Putnam Plastics in 1984 and serves as President and CEO. Under Jim's guidance, Putnam Plastics has established itself as the leading source for complex extrusions and co-extrusions for the medical device industry He and his wife Deb are Co-owners of the Connecticut National Golf Course. They are donors of over a $ 1 million to UML scholarships.

Gururaj "Desh" Deshpande
Desh was born in India and studied at the Indian Institute of Technology. He came to Canada to obtain his PhD at Queens

University in Ontario and then went to work for Motorola.

He came to the US to work and, in 1990, he founded Cascade Communications (networking devices). He sold Cascade to Ascend Comm. for $3.7 billion in 1997

Then he founded Sycamore Networks in 1998 which reached a value of $18 B in 1999. He also founded Tejas Networks and A123 Systems

Figure 20
Left to right: Desh Deshpande, Jaishree, Jack Wilson, Judi Wilson Photo by Judi Wilson

He founded the MIT Deshpande Center with $20 million donation, and created the Deshpande Education Trust (DET). He also funded the Master of Social Entrepreneurship program (MSE), a two-year residential program affiliated with Karnatak University in Dharwad India

In 2010, he and his wife Jaishree founded the Merrimac Valley Sandbox at UML and they later changed the name to eForAll. He founded the Deshpande Symposium for Innovation & Entrepreneurship in Higher Education at UML which brings hundreds of university-based leaders to discuss the characteristics of the entrepreneurial university.[15]

Charles Hoff '66
Charlie and Josephine Hoff are shown (right) with $23 million donors Jack and Shelly Blais and the author. Hoff received a bachelor's degree in industrial management at UMass Lowell and a master's degree from Northeastern University. He has been a senior vice president of operations for Bausch & Lomb and held senior management positions with Wang Laboratories, Polaroid and Gillette.

Figure 21
Charlie and Josephine Hoff (right) with Jack M. Wilson and Jack and Shelly Blais (photo UML)

From 1983 to 1986, he was president, CEO and owner of ARL Analytical Instruments Co., which generated more than $100 million in worldwide sales. He then became owner, chairman and CEO of Universal/Univis, Inc., a group of designer eyewear companies. He and Josephine have donated over $5.5 million to scholarships at UMass Lowell.

Jack Blais
Jack and Shelly Blais – With Nobel Prize winner Craig Mello, Chancellor Lazare, and

[15] http://www.deshpandesymposium.org/

President Wilson. He is a private Investor in Precision Optics, and has founded 15 companies, –many of which he has since sold. He focused on optical and optical-interference technologies for military, medical and commercial applications. In 2001 Corning paid $2.1 Billion to acquire NetOptix from him. He now serves as the founder and president of Blais Co. of Framingham, a holding company specializing in high-technology firms, and an active partner in Capital Risk Management Inc., a management consulting firm. He founded a bank in Florida. He is an active Philanthropist who keeps a low profile. He gave $23 million to UMass Medical School for the Aaron Lazare Building and Blais Chair of Molecular Medicine for Nobel Prize winner Craig Mello. He also donated $21 million to Dana Farber by buying the naming rights for the Patriots Training Facility and donating them to Dana Farber.

John F. Kennedy

John F. Kennedy (UMass Lowell, BS, 1970 UMass Amherst, MBA, 1976) is the retired President and Chief Financial Officer of Nova Ventures Corporation the management company for Nova Analytics Corporation a manufacturer and marketer of analytical instruments and Nova Technologies Corporation a manufacturer and marketer of equipment and services to water collection networks. These are companies he was a co-founder of in 2003 and 2005, respectively with revenues in excess of $170 million for 2007.

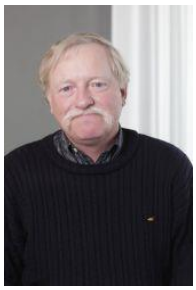


Figure 23
John Kennedy

He has over 30 years of financial and technology management experience. He was formerly Sr. Vice President Operations and Chief Financial Officer of RSA Security Inc, a NASDAQ security software company. He served as the Chief Financial Officer and Vice President, Finance of déCalog NV, an international investment management software company and as Chief Financial Officer of Natural MicroSystems Corporation, a NASDAQ telecommunications hardware and software company.

He is a member of the advisory boards for the Isenberg School of Management at UMass Amherst, the College of Sciences and the Center for High-rate Nanomanufacturing both at UMass Lowell. He is a donor for Scholarships to both UMass Amherst and UMass Lowell

Manijeh Nazari Goldberg

Manijeh has three degrees from UMass Lowell: a BS in Engineering, an MS Computer Science, and a PhD in Biomedical Engineering She also has an MIT MBA. Working with Professor Robert Langer, she created a company called

Figure 24

Manijeh Nazari Goldberg with MIT Professor Robert Langer and her team. (photo -M. Goldberg

Privo Technologies. It got off to a good start as an MIT 100 K Business Plan Award winner. They proposed to do Nano delivery of insulin by chewing gum by encapsulating the insulin with specially designed nano-molecules.

Since that time, they have pivoted the target to delivering nano-encapsulated cancer drugs through oral administration. They found that the market for insulin delivery was much too crowded and expensive to enter. They have been quite successful in getting grants from the NIH and the NSF as well as SBIR (small business innovation research) grants. Nevertheless, they are in a very tough area of raising money to commercialize. It often takes a billion dollars to bring a drug to market.

Who ARE these people?

Think back for a moment about the entrepreneurs that you just read about. What did you notice? What do they have in common? How are they different?

Compare this group to the image that you previously had in your mind of an entrepreneur based upon your past experiences. What kinds of differences did you see? Which of your previous impressions were changed and which remained the same or were reinforced.

Consider your own ideas of what "wealth" and "profit" means to you. Did this mean the same thing to all of these entrepreneurs? If you had to guess, based upon what little you know of these individuals, do you think that they were all motivated by the same things?

Is there any way you could describe their motivations that might fit all of them?

Did they all want to

- Make money?
- Change the world?
- Make a difference?
- Do their own thing?
- Be their own boss?
- Be a widely recognized public figure?
- Take tremendous risks?

They are a very diverse group with diverse motives.

Now you can see that Entrepreneurs are a very diverse group. You can see that they are all motivated by a passion for changing something in the world. Some appear to be financially motivated and others seem to be socially motivated. Some were both! Even the most socially motivated entrepreneurs sometimes took the non-profit route and sometimes took the for-profit path. In both cases, if there is no revenue coming in to support the mission then there is a failure: "*No margin – no mission*."

Many graduates of UMass Lowell have gone on to be successful entrepreneurs in a variety of fields.

Entrepreneurship is often a global phenomenon. All of the entrepreneurs have done something innovative: Some were driven by technology. – Some created different ways of doing business –different business models. Some approached important social problems with innovative approaches. All faced and overcame obstacles as they followed their passion. They took, and are taking, calculated risks (not wild gambles) in an effort to change the world.

Chapter 2 Why do Entrepreneurship and Innovation Matter?

Innovation and Entrepreneurship have proven to be the most successful way to address problems and create both economic and social opportunity. It is also about survival: organizations that fail to innovate often disappear.

Digital Equipment and Wang Computer, both born and operated right here in this New England region, were once two of the largest and most important computer companies on the globe. They did not see the microcomputer (PC) coming, and today they do not exist. Apple and Microsoft, two companies that did not exist when Digital and Wang were at their peak are now two of the largest companies in the world.

Figure 25
Adapt or disappear (http://chainimage.com/image/dinosaurs-3)

Borders once operated 659 bookstores across the county. They never saw Amazon.com coming, and by the time they did it was too late. Gone.

Blockbuster dominated the video rental business, but now they are gone and videos are delivered on demand by Netflix and others.

Companies that do innovate can succeed wildly. Google, Amazon, Facebook, Twitter, Instagram, and so many others are major companies that are younger than many of our university students!

Geographic regions that foster and support innovation –often around great research universities -are flourishing economically. Innovation and Entrepreneurship create jobs for our citizens, cures for our diseases, and new ways for human beings to interact.

Two Key Concepts in Innovation and Entrepreneurship: Creative Destruction and Disruptive Innovation

Joseph Schumpeter, a Harvard University economist from Austria asserted the principle of creative destruction.

Creative Destruction – 1934- new products and technologies make old products and technologies obsolete.

Disruptive Innovation[16] Clayton Christensen[17] –Harvard University Management professor, much later, around 1997, took this a bit further with his concept of disruptive innovation.[18] He found that new products often begin in new and often unprofitable markets but grow in quality and capability to displace older more profitable markets. One example was the way that mini-computers disrupted mainframes and were in turn disrupted by PC's. In both cases, the more established market viewed the new entrants as not serious competitors for their main market. After the entrants took over the low end of the market, they proceeded to move into the more profitable portions of the market.

Steel mini-mills provide a good example in an industrial area. They began by creating poor quality steel at low prices to take the least profitable part of the steel market. They made poor quality rebar, or reinforcing bars, to go into poured concrete. The big steel companies did not pay much attention because that part of the markets was the least profitable. They focused on the higher quality and higher priced market. The mini-mill kept getting better and better and slowly devoured the big companies markets from the bottom. They then grew to displace the old-line steel companies.

Clayton Christensen defined the concept as:

> *"Disruptive Innovation describes a process by which a product or service initially takes root in simple applications at the bottom of a market—typically by being less expensive and more accessible and then relentlessly moves up market, eventually displacing established competitors.[19]"*

I cannot over-emphasize how important these two topics are in understanding entrepreneurship. Creative destruction and disruptive innovation are indeed closely related. Disruptive innovation is a very special case when a company enters into a very low end of a market at a place where the dominant players are not so interested because it is not profitable or not able to satisfy their largest customers. However, the company doing the disruption gets a foothold in the market, establishes itself, and then learns how to do the things it needs to do to enter the more profitable and sophisticated portions of the market.

Often the established companies never see it coming.

Sadly, many business writers misuse this term. Here is what Christensen has to say about that:

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[16] http://www.claytonchristensen.com/key-concepts/

[17] http://en.wikipedia.org/wiki/Clayton_M._Christensen

[18] http://en.wikipedia.org/wiki/Disruptive_innovation

[19] https://www.christenseninstitute.org/disruptive-innovations/

> *"Coined in the early 1990s by Harvard Business School professor Clayton Christensen, the term has become virtually ubiquitous from Wall Street to Silicon Valley. Consequently, it's also one of the most misunderstood and misapplied terms in the business lexicon. Disruptive Innovations are NOT breakthrough technologies that make good products better; rather they are innovations that make products and services more accessible and affordable, thereby making them available to a larger population.[20]"*

To be a "Disruptive Innovation" a product must begin as a less expensive and more accessible product that first enters the marketplace at the bottom, but IS NOT VIEWED as competitive in the main market. Then the product begins to improve until it IS COMPETITIVE and often takes over the market.

Innovation is what makes enterprises sustainable. In the immortal words of Andy Grove – the former Intel Corporation CEO: "*Only the Paranoid survive!*"

Steve Jobs said it more gently "*Innovation is what distinguishes between a leader and a follower*."

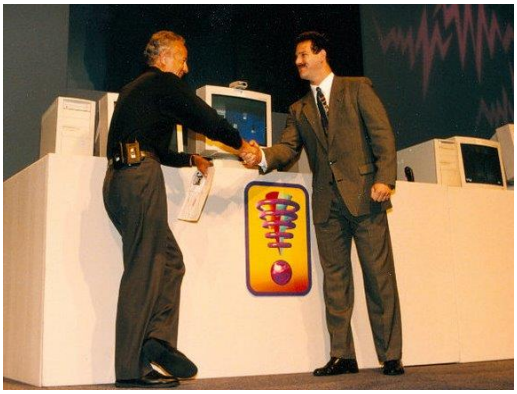

Figure 26
Andy Grove, then CEO of Intel, shakes the hand of Mark Bernstein of ILinc (photo-J Wilson)

What is Entrepreneurship?

Now that we have learned about some entrepreneurs and why innovation is important, we should take a moment to define what we mean by entrepreneurship when we use the term. We shall look at the definition given by three key thinkers on the subject.

> ***Joseph Schumpeter****: Entrepreneurship is seen as new combinations, which include the introduction of new goods, new methods of production, opening of new markets, new sources of supply, or a new organization. Joseph Schumpeter was an Austrian Economist who became a Harvard Professor[21]*

> ***Peter Drucker****: Entrepreneurship is an act of innovation that involves endowing existing resources with new wealth producing capacity. Peter*

[20] https://www.christenseninstitute.org/disruptive-innovations/
[21] http://en.wikipedia.org/wiki/Joseph_Schumpeter

> *Drucker, Professor and Management Consultant, was called the "Founder of modern management" by Forbes Magazine*[22]

Aside: start thinking about how you and others might define "wealth."

> ***Jeff Timmons**: Entrepreneurship is a way of thinking, reasoning and acting that is opportunity obsessed, holistic in approach and leadership based. Jeff Timmons, late Professor at Harvard and Babson, was the author of: "New Venture Creation*[23]*," The Entrepreneurial Mind," and others.*[24]

These three definitions help fill out an evolving perspective on who entrepreneurs are how they operate. Schumpeter and Drucker focus on the process while Timmons focuses on the characteristics of the entrepreneur herself or himself.

Who is an entrepreneur? An entrepreneur is a person

- who spots an opportunity (sees a problem)
- has New Idea (finds a solution)
- Is an Innovator
- Takes Well Thought Out Risks, Calculated risks and not gamblers risks
- Finds the resources to implement the innovation.
- Creates and builds a business or other enterprise
- Makes change in the world

The ability to spot opportunities and create new ways to exploit them is at the heart of the entrepreneurial process. The **desire to change the world** is what drives most entrepreneurs.

Types of New Ventures

There are several different kinds of new ventures that one might get involved with. They include:

- *Salary Substitute Firms* – In this kind of entrepreneurship, the entrepreneur is seeking to create a career for themselves. They generally want to create a business at which they intend to work for many years. They may not intend to sell the business unless they are planning to retire and do not have a family member to hand this down to. Examples include: Restaurants, convenience stores, dry cleaners, doctor's offices, service stations, etc.
- *Life Style Firms* – These kinds of firms are created when a person wants to indulge their passion, their hobby, or their desire for a particular lifestyle. Examples might

[22] http://www.forbes.com/sites/stevedenning/2014/07/29/the-best-of-peter-drucker/
[23] http://uir.unisa.ac.za/bitstream/handle/10500/2050/01dissertation.pdf?sequence=2
[24] http://www.inc.com/mike-hofman/2008/04/remembering_an_entrepreneurial.html

include: artists and galleries, custom jewelry makers, pet services, sporting goods and services, and others. A marina owner I met in Tortola was a former Wall Street Executive

- *Entrepreneurial Firms* -These kinds of firms are generally created by individuals that feel that they have a potential business from which they can profit handsomely. In many cases, the entrepreneur is planning to start the firm, and then find a way to sell the firm, go public, or otherwise profit from the value that their hard work has created.

Many of our best-known examples of recent entrepreneurship fall into this category. Examples we might know include Facebook, Amazon, Google (Now Alphabet), Instagram, Tinder, Wayfair, and many others.

Growth and Exit Strategy

Often, the entrepreneurial firms begin as private firms, but eventually most of them "*go public*" through some kind of "*exit strategy*." Going public refers to being able to sell shares of the company in one of the public market places or stock exchanges. An exit strategy is some way that the founders and early investors are able to cash out on the value they have created.

One exit strategy is to sell the company to a larger company. The early investors are then paid for their shares and take the profit. This is termed "being acquired." Another way to exit is to do an **Initial Public Offering (IPO**). In an IPO, the company registers their shares on a stock exchange and offers them for sale to the public. This is a very formal and highly regulated process.

Some entrepreneurial firms grow quickly and other disappear. Some of these Entrepreneurial firms grow so fast that we call them "**Gazelles**![25]"

Some of these firms grow to a value of over $1 Billion in market capitalization. We call them "**Unicorn**s." A Unicorn is very rare in entrepreneurship –but it is not mythical!

Sadly, some firms grow so rapidly that they become Unicorns and then flame out and become "**Unicorpses**." Theranos provides a sad, but interesting story of how one firm followed the path from founding to Unicorn to Unicorpse.

For those interested in how Theranos grew so rapidly and fell so dramatically you might consider reading the case: Theranos at:
http://www.jackmwilson.net/Entrepreneurship/Cases/Case-Theranos-ElizabethHolmes.pdf

[25] The Gazelle Theory: https://www.inc.com/magazine/20010515/22613.html

Business model innovation

Not all innovations are technology driven or new product focused. Some are simply new ways of organizing old businesses.

Southwest Airlines in the US and Ryan Air in Europe found new (and very large) markets simply by giving passengers no-frills lower cost travel options.

Dell Computer is one of the best examples. Rather than build computers and then send them to retail stores for sale, like other computer makers of the time, Dell computer offered an online service that would allow the buyer to customize a computer and have it delivered directly. This gave the customer the computer they wanted at a lower cost by cutting out the cost of inventory and the retailer's markup! Cutting out the companies that do wholesaling or retailing is often termed "disintermediation."

Two important types of business model innovation are termed:

- **Disintermediation** is an important technique for developing new business models and for reducing expenses –potentially allowing lower prices and better service to the end user.
- **Mass Customization:** Another key point here is that new business models are enabling products and services to be individually tailored to the needs of users. Mass customization is a polar opposite of Henry Ford's old maxim for the Model T: "*You can have any color that you want as long as its black*." Interestingly, advances in genomics are allowing even medicines to be customized to single individuals.

Invention is not necessarily innovation.

Long ago it was said that "if one could build a better mousetrap, the world would beat a path to your door." That is ridiculous. Invention can be a nice place to start, but unless you do the work necessary to bring the product to market, the world will NEVER find your door.

Xerox was one of the most famous and horrendous cases of a company that did a great job of inventing new things and then failed to bring them to market. Xerox, in their famed Palo Alto Research Center (PARC), invented many of the key technologies that characterize computers today: The graphical user interface, windows, the mouse, object oriented programming, laser printers, and many others. They never really implemented the technologies and got them to market. Steve Jobs visited PARC, saw these incredible (but unexploited) ideas and used their ideas to create the next generation of computing at APPLE -first with a computer called "Lisa" and then with the Macintosh.

Once Apple had implemented the Xerox technologies, Microsoft Windows was not far behind in imitating them. Later Apple had the courage to sue Microsoft for imitating the Apple technologies, but the courts pointed out the obvious fact that Apple had "borrowed" those technologies from Xerox.

Thomas Edison is known as an inventor, but he really did not invent the light bulb, the phonograph, or the movie projector. Instead he improved them enough to bring them to market. Albert Einstein once said, "*first we have to make all the mistakes*." Edison felt exactly the same way.

Openness and the "Not Invented Here" (NIH) syndrome.

Innovation is something that flourishes in the right climate and cannot take root in the wrong climate. Sometimes organizations cannot recognize a good idea even if it is laid in front of them.

Western Union, the largest communication company of the 19th century was offered the telephone by its inventor, Alexander Graham Bell. They declined saying "we have concluded that it has no commercial possibilities. Yeah, right!

The founder and CEO of Digital Equipment Company (DEC), Ken Olsen, declined to get involved in personal computing. In 1977, he famously asserted that "*There is no reason for any individual to have a computer in his home*." Yeah, right! Today DEC is gone and the PC is in every home with IBM, Microsoft, Apple and others reaping the benefits that DEC (from Maynard Massachusdtts) could have had.

Thousands of Massachusetts employees lost their jobs, and California came to lead the computer market. Innovation can keep existing companies from disappearing and can create whole new industries. Regions that invest in innovation often prosper, and those that do not often struggle.

Making an organization sustainable.

Some firms, IBM and GE are two examples, have survived for over a century by constantly being open to innovation. IBM began by marketing timeclocks, tabulators, scales and other items. They kept adapting and in 1961 released the IBM Selectric typewriter. That soon swept the market. They had essentially become a "typewriter company." By the end of the decade they were selling IBM 360 computers to businesses and had become a "Computer Company." By the 1980's, they were selling the IBM PC and dominating personal computing. As the 21st century arrived, they were converting themselves into a consulting and services company and eventually sold off the entire PC business. Today they are trying to convert themselves into a big data and artificial intelligence company –with accompanying services. Their Watson supercomputer is renowned for being the first machine to beat a world chess champion. Will they succeed once again?

Similar stories could be told about General Electric (GE), Proctor and Gamble, and other long-lived firms that found a way to innovate and change –even when the change almost killed their former businesses. There is no guarantee that any of these will survive in the

long term. The fact that they changed themselves through innovation successfully several times does not mean that they will be successful in the next change.

Types of Innovation
The types of innovation are often referred to as

- **Product**: changes in the products or services that an organization offers.
- **Process**: Changes in the ways these offerings are created and delivered.
- **Position**: Changes in the context into which the products or service are introduced
- **Paradigm or Business model innovation)** Changing the underlying mental models or *business models* will define what an organization does.

Some authors wanted to create a catchy "4 Ps" mnemonic, but please take note that "*business model innovation*" is the generally accepted term for this. Yes, business model innovations can often be seen as "paradigm shifts," but I prefer the term business model innovation to the use of paradigm innovation. Most authors, professors, and researchers agree.

It is sometimes difficult to put an innovation in any one category. Any innovation may overlap several categories.

Here are some examples of these Innovation Types

Examples of Product/Service innovations might include: A new model car, a new computer, Facebook, discount brokerages, or self-driving cars.

Process innovations include: Just in time manufacturing. Six sigma quality control, Robotic assembly of cars, Mass customization, or delivery by drone.

Position: Viagra (sildenafil) was originally developed to treat hypertension and angina pectoris. In the trials they noticed some interesting side effects. The rest is history. Post It Notes is another great example. A 3M scientist was trying to develop a super strong adhesive. He failed miserably by creating a very weak low tack adhesive. After ten years of trying to figure out a use for it, they tried post-it notes. The rest is history. These are examples of re-positioning an invention.

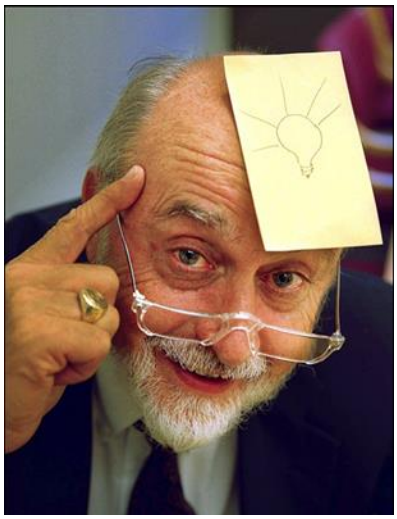

Figure 27
(public domain)

Business model innovation: (Paradigm) – Dell started direct customization and sales of PC's and cut out the wholesale and retail middlemen (disintermediation). Henry Ford changed auto manufacturing from custom crafting to mass production -allowing cars to be produced inexpensively for the first time. His famous quote, which we have heard before was: "You

can have any color you want as along as its black." Apple transformed the music business with: iPod, iPhone, and then iTunes. Spotify "rents" rather than sells music. Nintendo created Pokemon Go to be played on your phone! No more need to make hardware! Netflix delivered digital video on media to the home and then Netflix replaced media with network digital delivery. These business model innovations changed the world dramatically.

Intensity of Innovation

Incremental ----------Radical

Innovations are often described as either incremental innovations or radical innovations. It is best to view these classifications as a spectrum and not simply a binary choice. Innovations will fit somewhere on the spectrum. Some are more or less in the middle, while others are easier to place toward the two end categories.

Incremental Innovation examples include:

- Automobiles introduce LED lighting
- GM saves fuel in their trucks by shutting down four of the eight cylinders during light duty driving.
- Gillette decided to market their razors with more blades.
- Netflix decided to mail out Videotapes and DVDs rather than make the user go to a store (Blockbuster) to pick it up. (Bye bye Blockbuster).
- Borders and Barns and Noble add cafes to bookstores and make them neighborhood destinations.
- "Smart" Television sets enable access to network based resources.

Radical Innovation examples include:

- Tesla markets an all-electric high-performance car.
- Toyota creates the first mass market hybrid cars.
- Google creates a self-driving car.
- Netflix decides to deliver video over the network rather than on some media.
- Amazon sells book directly to consumers over the network.
- Tinder creates a cheap widely available app that dispenses with the usual (older?) social conventions around dating.
- Uber (Lyft, Sidecar, Didi Chuxing: China, BlaBlaCr:India) organizes private citizens and their cars to provide an alternative to taxi service.
- Airbnb (FlipKey, HomeAway, VRBO, Wimdu: Germany, 9Flats: Europe, Tujia: China) lets individuals rent out their homes or rooms in their homes to others in competition with hotels and motels.

Potential Models of Entrepreneurship Traditional, Effectual, Lean Launchpad

Over the last few decades three models of entrepreneurship have emerged. The oldest model is the traditional or causal model which is a step by step linear approach and is best characterized by the business plan. Sara Sarasvathy, interviewed entrepreneurs and came up with somewhat different insights. Most recently Steve Blank has built upon her work and created a very robust model called the Lean Launchpad which has been adopted by the National Science Foundation for use in commercializing research that they sponsor.

The Traditional or Causal Model

Until recently, entrepreneurship was viewed as a traditional (causal or serial) model of entrepreneurship. In this model an entrepreneur:

1. Spots an Opportunity (see a problem)
2. Has New Idea (finds a solution)
3. Is an Innovator
4. Takes Well Thought Out Risks, -Calculated risks and not gamblers' risks
5. Finds the resources to implement the innovation.
6. Creates and builds a business or other enterprise
7. Develops the idea
8. Makes change and captures the value -(can be financial value or social value.)

Recent research has shown flaws in the causal model, and we will explore how both Effectual Entrepreneurship and the Lean Launchpad try to address those flaws.

Effectual Entrepreneurship is one alternative viewpoint.[26],[27] There are those who have studied entrepreneurship carefully who have criticized the causal process as much too deterministic. Life is simply not that orderly! Saras Sarasvathy (U. Virginia) has proposed an alternative formulation that she and others term "the effectual entrepreneur." In their formulation there are five major principles[28],[29]:

- Bird in Hand – Who are you? What do you know? Who do you know? What do you have?
- Affordable Loss –Limit risk by focusing on the downside and knowing what you can afford to lose when you go after the upside.
- Lemonade – Use your lemons to make lemonade. Use the bad news as a clue to what might work in new markets.
- Patchwork Quilt – Form partnerships. Working together can increase the probability of success through co-creation of new markets.
- Pilot in the Plane –Control rather than predict. The future is created rather than found or predicted.

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[26] Effectual Entrepreneurship", by Stuart Read, Saras Sarasvathy, Nick Dew, Robert Wiltbank and Anne-Valérie Ohlsson Routledge Publishing; NY, NY (2010).

[27] http://www.entrepreneur.com/article/219772

[28] http://www.effectuation.org/sites/default/files/documents/effectuation-3-pager.pdf •

[29] http://www.imd.org/news/Creating-entrepreneurs-that-create-opportunities-the-Effectual-Entrepreneurship-textbook.cfm

We will look at this more closely in a later chapter.

The LeanLaunchpad[30]

Steve Blank, Stanford, became the leading apostle of business plan rejection about five years ago.[31] In 2009 he wrote that "In the real world, most business plans don't survive the first few months of customer contact. And even if they did, customers don't ask to see your business plan. Steve advocated for the supremacy of business models and he enshrined the concept of the pivot as part of his mantra of the "Customer Development Process" with the concepts of

- "minimum viable product (MVP),"
- "iterate and pivot"
- "get out of the building,"
- "no business plan survives first contact with customers.[32]"

Figure 28 Steve Blank

For those who want to take a full course in the Lean Launchpad, Udacity offers this course online at:
https://www.udacity.com/course/how-to-build-a-startup--ep245

In a future chapter we will explore the concept of the lean launchpad, as it is used in the National Science Foundation iCorps Program[33] to encourage scientists and engineers to move their research into the market place through entrepreneurship.[34] You will no doubt notice the similarities to the approach of Effectual Entrepreneurship and the conclusions that Steve Blank reached in the development of the lean launchpad. Sarasvathy is a scholar who has done a careful study and published her work in peer reviewed journals to be evaluated and perhaps substantiated (or refuted) by her peers. Blank is a serial entrepreneur of some success, who draws on his personal experiences and is a consumer of research rather than a producer. His formidable marketing skills have made the lean launchpad a hot topic around the world.

Characteristics of Successful Entrepreneurs

Research has identified some common characteristics of entrepreneurs. Among those are:

- *Passion for the Business*: As we have seen most entrepreneurs possess a desire to change the world

[30] http://www.forbes.com/sites/steveblank/2013/06/18/the-lean-launchpad-educators-course/#df15d0d43a74
[31] http://steveblank.com/about/
[32] http://steveblank.com/2009/05/07/business-plan-competitions-2/
[33] http://nciia.org/sites/default/files/u7/Educators%20Guide%20Jan%202014.pdf
[34] http://www.businessinsider.com/the-lean-launchpad--teaching-entrepreneurship-as-a-management-science-2011-3

- *A Product/Customer Focus*: Steve Jobs was perhaps the epitome –although he did say that "*A lot of times, people don't know what they want until you show it to them*." -BusinessWeek (25 May 1998) In spite of that quote, Jobs had an intense focus on the customer.
- *Tenacity Despite Failure*: Failure is a part of entrepreneurship. Many venture capitalists view prior failures as good experience for project leaders.
- *Execution Intelligence*: Great ideas, great business plans and great business models are useless without great execution.

Why does the World Care about Innovation and Entrepreneurship? It comes down to Innovation as a component of economic development and job creation. There is also the very important motivation or the "Change the World" imperative that might help solve social problems or develop treatments for devastating diseases along with the economic incentive.

Not all countries and regions create a good climate for innovation and entrepreneurship. The rate of starting new ventures depends upon need, culture, and governmental environment. Need is often a key driver -individuals in areas where good jobs are not plentiful often must create their own. Thus, both Peru (27.2%) and Brazil (17.5%) have very high rates of entrepreneurship because of the high need.

Culture is another dimension. Some cultures are more supportive of new venture formation. California is generally considered to be more supportive than Massachusetts –although that has improved a lot! The US (7.6%) is more supportive than Russia (3.9%)

Governmental issues can encourage or restrict entrepreneurial activity. Entrepreneurship relies on certain economic freedoms as well as a well-structured legal and financial infrastructure.

It is sometimes said that 9 out of 10 new ventures fail, but that is overstated. The data shows that the odds are better than that. According to the US Small Business Administration (SBA), after four years 50% are open, 17% are closed but considered successful, and 33% have failed.

Passion drives Key actions and some of those key actions include:

- The ability to learn and iterate
- A willingness to work hard for an extended time
- Ability to overcome setbacks and "nos."
- Ability to listen to feedback on the limitations of the organization and yourself.
- Perseverance and persistence when the going gets tough

There are some commonly believed **myths** about entrepreneurs

- they are born -not made
- they are gamblers

- they are motivated primarily by money.
- they should be young and energetic
- they love the spotlight

It is not true that all entrepreneurs share these characteristics! Of course, some entrepreneurs do exhibit these characteristics, but they are not typical. They are indeed myths.

Those who do research on entrepreneurship have identified some common traits. Entrepreneurs tend to be:

- Moderate risk taker
- Networker
- Achievement motivated
- Alert to Opportunities
- Creative
- Decisive
- Energetic,
- Strong work ethic
- Long attention span
- Optimistic
- Persuasive
- Promoter
- Resource Assembler/leverager
- Self-confident
- Self-starter
- Tenacious
- Tolerant of Ambiguity
- Visionary

That is quite a list.

What are the skills required to be a successful Entrepreneur? Here are a few skills that have been identified. Entrepreneurs need to possess these skills:

- Ability to identify what kind of product/service they will offer and what value it creates for people.
- Idea generation and opportunity identification
- Execution of the development of the product or service
- Identification of the customer and the target market?
- Marketing Skills
- Market Research
- Raising funding for the business and making money
- Business Finance
- Networking
- How to manage and grow a business
- HR management, operational management, strategic management, etc.

We will end this section by considering the trait of Persistence –Keep on smiling and moving forward

"*When I was young, I thought it was about being brilliant. Now I know that brilliance is good, but persistence wins the day*!" – Jack Wilson

Satchel Paige was one of the greatest baseball pitchers to play the game. Most of his career was at a time when African Americans were barred from major league baseball. They played in the "Negro Leagues." When Jackie Robinson finally broke the color line in baseball and blacks entered the major leagues, Paige was 42 when he was able to enter the major leagues and he played until he was 47. He played in two all-star games at an age when most major league players were retired. He never looked back, he was always looking forward to the next challenge.

When he was asked how he managed to do this at his age and after all the obstacles that he had to overcome he replied: *"Don't Look back, something might be gaining on y*ou." – Satchel Paige

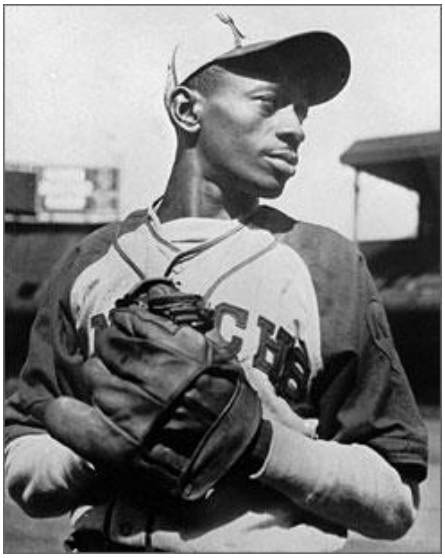


Figure 29
Satchel Paige (in public domain)

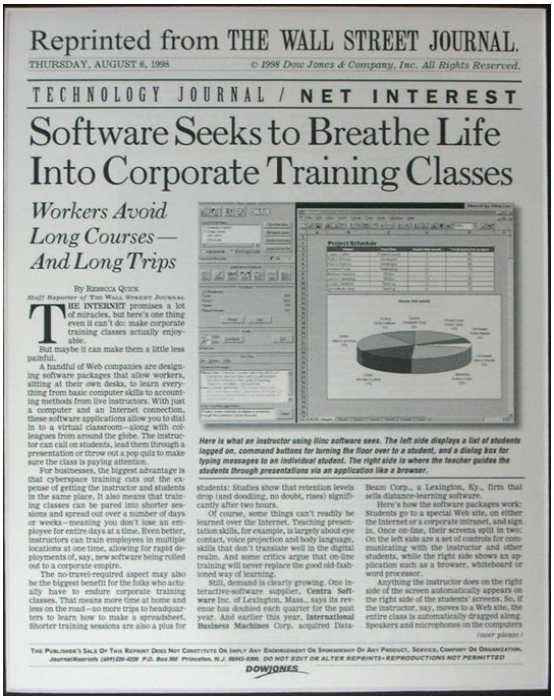
Chapter 3 ILinc: An Example of Technological Entrepreneurship

ILinc

The founding, growth and eventual acquisition of the ILINC Corporation is a typical small example of technological entrepreneurship. ILINC was founded in 1993 by a professor (the author) and two students, Degerhan Usluel and Mark Bernstein, at Rensselaer Polytechnic Institute. Later the name was changed to LearnLinc to match the name of its popular product and eventually LearnLinc entered a triple merger in early 2000 with Gilat Communications and Allen Communications to form the Mentergy Corporation (NASDAQ).

The Research:

It all began with an idea, and that idea eventually became a research project. In the late 80's and early 90's, my scientific colleagues and I were working on the application of computing and communication technologies to science and engineering education. After producing several multimedia projects, I turned my attention to the management of large quantities of educational materials on networks. The early focus was on the modularization of materials and the ability to store and retrieve those modules in an object-oriented fashion.



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TECHNOLOGY JOURNAL / NET INTEREST

Software Seeks to Breathe Life Into Corporate Training Classes

Workers Avoid Long Courses— And Long Trips

By Rebecca Quick
Staff Reporter of The Wall Street Journal

THE INTERNET promises a lot of miracles, but here's one thing even it can't do: make corporate training classes actually enjoyable.

But maybe it can make them a little less painful.

A handful of Web companies are designing software packages that allow workers, sitting at their own desks, to learn everything from basic computer skills to accounting methods from live instructors. With just a computer and an Internet connection, these software applications allow you to dial in to a virtual classroom—along with colleagues from around the globe. The instructor can call on students, lead them through a presentation or throw out a pop quiz to make sure the class is paying attention.

For businesses, the biggest advantage is that cyberspace training cuts out the expense of getting the instructor and students in the same place. It also means that training classes can be pared into shorter sessions and spread out over a number of days or weeks—meaning you don't lose an employee for entire days at a time. Even better, instructors can train employees in multiple locations at one time, allowing for rapid deployments of, say, new software being rolled out to a corporate empire.

The no-travel-required aspect may also be the biggest benefit for the folks who actually have to endure corporate training classes. That means more time at home and less on the road—no more trips to headquarters to learn how to make a spreadsheet. Shorter training sessions are also a plus for students: Studies show that retention levels drop (and doodling, no doubt, rises) significantly after two hours.

Of course, some things can't readily be learned over the Internet. Teaching presentation skills, for example, is largely about eye contact, voice projection and body language, skills that don't translate well in the digital realm. And some critics argue that on-line training will never replace the good old-fashioned way of learning.

Still, demand is clearly growing. One interactive-software supplier, Centra Software Inc. of Lexington, Mass., says its revenue has doubled each quarter for the past year. And earlier this year, International Business Machines Corp. acquired Data-Beam Corp., a Lexington, Ky., firm that sells distance-learning software.

Here's how the software packages work: Students go to a special Web site, on either the Internet or a corporate intranet, and sign in. Once on-line, their screens split in two: On the left side are a set of controls for communicating with the instructor and other students, while the right side shows an application such as a browser, whiteboard or word processor.

Anything the instructor does on the right side of the screen automatically appears on the right side of the students' screens. So, if the instructor, say, moves to a Web site, the entire class is automatically dragged along. Speakers and microphones on the computers

Here is what an instructor using Ilinc software sees. The left side displays a list of students logged on, command buttons for turning the floor over to a student, and a dialog box for typing messages to an individual student. The right side is where the teacher guides the students through presentations via an application like a browser.

Figure 30 Wall Street Journal article featuring ILinc; Aug. 6 1996.

I had served as an IBM Consulting Scholar and was a frequent speaker at conferences on multimedia on networks. At one point I was invited to present my vision of the future of networked multimedia education to a group of executives that included several key executives from AT&T. That speech led to an invitation to Bell Laboratories to discuss potential cooperation and to present my vision to a broader and more technical audience.

Apparently, the speech was a great hit with the audience, because the AT&T Executives asked me to create a prototype of the vision -in partial collaboration with scientists from Bell Laboratories. The negotiation of the contract for this work took longer than most since I felt I had a significant interest in the pre-existing intellectual property and also wanted to maintain the rights to derivative work from the earlier work. This required some careful legal negotiations. Eventually an agreement was reached which granted rights to AT&T for all software newly created for this project, but it protected the earlier work I had done and allowed me to make further developments based upon it. The contract was written as a

contract with deliverables and due dates rather than as a “best efforts” grant. The contract and deliverables caused several faculty members I invited to decline to participate because of the difficulty of working under the pressure of deadlines in an academic environment. Nevertheless, Rensselaer and I entered the contract with AT&T and began work on the project. The resulting prototype would allow distant learning on networks by using ISDN video conferencing and by using the same ISDN lines to network the distant learning sites. My team of students and staff and I also managed to make several of the pre-existing multimedia education projects work in this environment.

I was pressed into service for presentation after presentation to AT&T executives, engineers, and customers over the next few months. At the same time, the Bell laboratory engineers began to port the code into potential AT&T products including the WorldWorx project. Later the WorldWorx product was released in a global introduction, but (as we shall see) the product never caught on since the technologies were moving so quickly that it was out dated upon its release.

The Opportunity:

No technical person is ever satisfied with the first version of any software product, and I was no exception. So much had happened in computing and communications over the course of the project and the ensuing months, that I became convinced that it needed to be done quite differently in order to take advantage in the advances in object communication and multicasting -just to name two items.

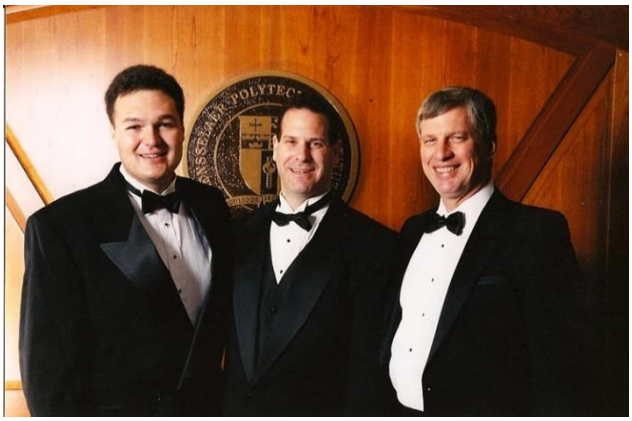


Figure 31 D. Usluel-M. Bernstein-J. Wilson

I went back to my colleagues at AT&T and proposed that we start all over from scratch to create a different kind of prototype that would take advantage of all the new things. I was easily able to get the technical staff at Bell labs excited. They could see exactly what I was talking about, but the proposal went absolutely nowhere with the business units. They wanted to focus on getting out product, and (in their opinion) they had what they needed. The Rensselaer and Bell Laboratories technical staffs commiserated and schemed, but no further options presented themselves, and I moved on into other projects while continuing to work on the preliminary design - adding new features with each advance in computing.

One of the other projects in my laboratory, The Design and Manufacturing Learning Environment (DMLE), had a bright young graduate student, Degerhan Usluel, working on it, and he became fascinated with my plan for a network of educational objects -all communicating across the internet and distributing voice, video, and data to every site. Degerhan Usluel had been an undergraduate electrical engineering student who decided to

come back for an MBA in entrepreneurship. As a student he had already founded one computing company that he turned over to his father before leaving for graduate school. Young, brilliant, naïve, and fearless, Degerhan was the ideal person for discussions about the future of collaboration on networks.

One day, Degerhan showed up in my office to announce that he was beginning to plan for his upcoming graduation and that he wanted to share that plan with me. He explained that he did not want to go to work for a large company and that he wanted to start a business in software and that he wanted to do that in collaboration with me. It came as a bit of a surprise when he told me that he wanted to start up his own company rather than go to work for one of the big companies recruiting him. When I asked him what kind of company he wanted to start he told me "Something in the computer and network field, but I am not sure exactly what, but I want you to be the President."

Moreover, he had recruited one of his classmates, Mark Bernstein to join him in the venture. Mark had been a “Top Gun” salesperson for Computer Associates prior to joining some friends in a startup computer disaster recovery firm called CPR. The firm had been a reasonable success, and Mark’s sales skills were certainly a factor.

After discussing several different possibilities, I pulled out a file that I had been keeping with the details of the design for a distributed learning environment that would run on the internet and utilize communicating objects on students and faculty machines in a peer – to peer architecture. I also pointed out that we could use multicasting to distribute the video and audio while using the multi-casting and agent technology to manage the bandwidth on the network. This was needed to keep bandwidth requirements from getting out of hand as more and more sites were added. I did not point out to Usluel that no one had really been able to make multicasting work reliably and that most of the Internet did not support it anyway. I was confident (foolishly) that these were all solvable problems. The fact that several major computing companies had tried and failed did not dissuade us.

The Team:

Thus ended the opportunity recognition portion of the formation of LearnLinc. The team building portion began immediately thereafter. Usluel, Bernstein, and I vowed to start a company and began meeting regularly in my basement and sunroom. Usluel’s assignment was to build the software from scratch. Bernstein took the lead in the opportunity evaluation phase as he looked at the market and identified competitors and potential competitors. Fortunately, there were no actual competitors using the technology they envisioned! Unfortunately, no one had ever made the underlying technology work reliably!

I served as President and mentor while Usluel became Vice-President for Technology and Bernstein became Vice President for Sales, Marketing, and Business Development. I began serving as a part time President and full time Chairman of the Board using my 20% consulting time from Rensselaer, my weekends, my evenings, and my holidays. It was agreed upon, up front, that at the end of 1-1.5 years, I would either quit Rensselaer and join ILINC LearnLinc or step down as President and CEO, recruit a replacement and serve on the board. The decision would be a joint decision of the Founders.

Figure 32
Mark Bernstein, Jack Wilson, and Degerhan Usluel accept one of the many awards given to ILinc

Working with local attorneys, they created a Founder's agreement that granted 40% of the founder's stock to me and 30% each to Usluel and Bernstein. The agreement provided for potential future situations -such as a founder leaving. They also incorporated as the ILINC Corporation, obtained a Federal Tax ID, registered with the State, obtained the ILINC.com domain name, and opened bank accounts.

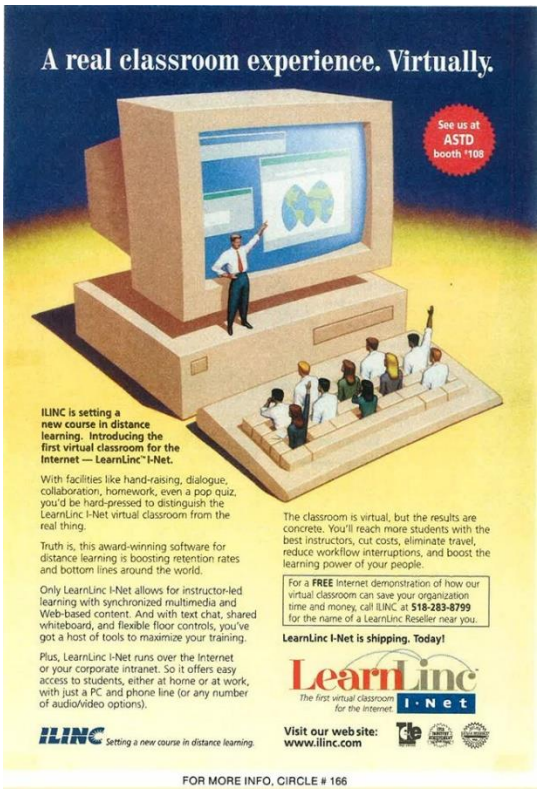
The Exit Agreement:

Deciding what their exit strategy would be was one of the easiest tasks that they had to accomplish. It took about ten minutes to decide that all three founders wanted to create a successful public company, that would define a new category of software and change the world. They were not interested in creating a "lifestyle" or a "hobby" company and did not think they wanted to keep it as a privately-owned company. They wanted to build a company, go public or be acquired, and then go on to doing other things. If only the other tasks were as easy. Now they had to create a prototype, develop the pitch, and raise the money.

The Prototype:

The prototype was created out of bits and pieces of my work augmented by some new materials prepared by both Wilson and Usluel. Bernstein worked on the pitch with lots of kibitzing from Wilson and Usluel.

Start-Up Funding –A Bootstrapping Process:



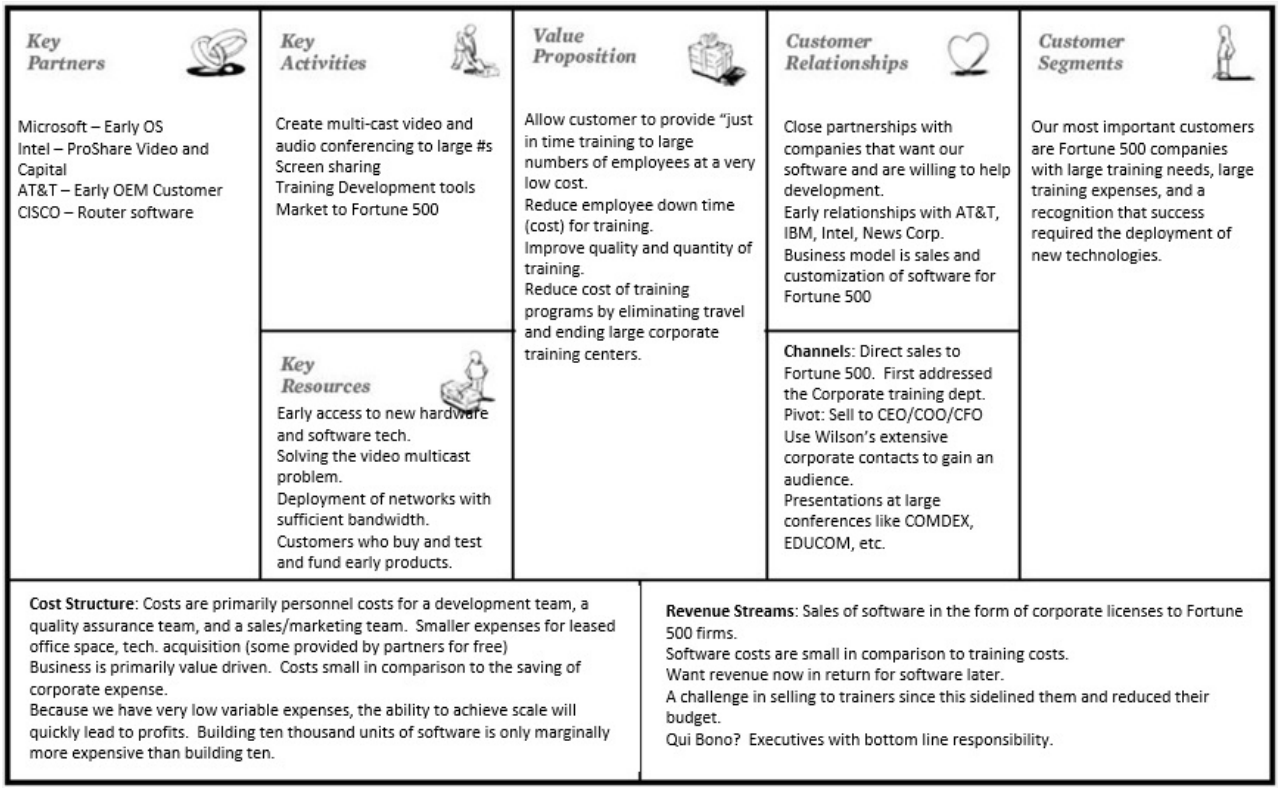
Funding was a tougher problem. After discussion with a number of other successful entrepreneurs, such as William Mow, founder of Bugle boy industries and Mike Marvin, co-founder and Chairman of MapInfo corporation, Paul Severino , founder of Bay Networks, industry executives (especially from GE and IBM), and with lots of encouragement from Mark Rice, then Assistant Professor and Director of the Center for Technological Entrepreneurship, the founders decided to try to fund the company by bootstrapping the company through the sales of software for future delivery. With Wilson's contacts and Bernstein's passion and sales experience, they felt that they had a chance to do this without having to go to venture capitalists at an early stage. Wiser and more experienced executives (such as Warren Bruggeman, GE Executive and Chairman and primary investor in MapInfo) counseled them on the futility of this approach, but they decided to give it a try anyway.

Bernstein's passion and Wilson's persistence carried the day. They obtained enough contracts for future delivery of software to fund the company in the early days of growth. First customers included IBM, AT&T, GTE, Sprint, Office Depot, and Harper Collins Publishing (News Corp.).

An article in Success magazine later described our improbable success story as a variation on the old story of Pop-eye the Sailor Man's friend Wimpy. Wimpy would wonder around asking folks for hamburgers while promising them that he would "gladly pay you Tuesday for a hamburger today." In our case we promised that we would gladly give them software next year for a $300,000 (give or take) payment today. Although that does not sound like a compelling offer, we had many takers. Early customers included IBM, AT&T, GTE, Sprint, Office Depot, Aetna-United Healthcare, and Harper Collins Publishing (News Corp.).

The Business Model Canvas

The early Business Model Canvas (which we will explore further in Chapter 7) looked like this:



Key Partners

Microsoft – Early OS
Intel – ProShare Video and Capital
AT&T – Early OEM Customer
CISCO – Router software

Key Activities

Create multi-cast video and audio conferencing to large #s
Screen sharing
Training Development tools
Market to Fortune 500

Key Resources

Early access to new hardware and software tech.
Solving the video multicast problem.
Deployment of networks with sufficient bandwidth.
Customers who buy and test and fund early products.

Value Proposition

Allow customer to provide "just in time training to large numbers of employees at a very low cost.
Reduce employee down time (cost) for training.
Improve quality and quantity of training.
Reduce cost of training programs by eliminating travel and ending large corporate training centers.

Customer Relationships

Close partnerships with companies that want our software and are willing to help development.
Early relationships with AT&T, IBM, Intel, News Corp.
Business model is sales and customization of software for Fortune 500

Channels: Direct sales to Fortune 500. First addressed the Corporate training dept.
Pivot: Sell to CEO/COO/CFO
Use Wilson's extensive corporate contacts to gain an audience.
Presentations at large conferences like COMDEX, EDUCOM, etc.

Customer Segments

Our most important customers are Fortune 500 companies with large training needs, large training expenses, and a recognition that success required the deployment of new technologies.

Cost Structure: Costs are primarily personnel costs for a development team, a quality assurance team, and a sales/marketing team. Smaller expenses for leased office space, tech. acquisition (some provided by partners for free)
Business is primarily value driven. Costs small in comparison to the saving of corporate expense.
Because we have very low variable expenses, the ability to achieve scale will quickly lead to profits. Building ten thousand units of software is only marginally more expensive than building ten.

Revenue Streams: Sales of software in the form of corporate licenses to Fortune 500 firms.
Software costs are small in comparison to training costs.
Want revenue now in return for software later.
A challenge in selling to trainers since this sidelined them and reduced their budget.
Qui Bono? Executives with bottom line responsibility.

Building the Product:

They were now to step eight of the entrepreneurship path. They had to do it. For that they turned to Usluel, because he had to build the product that I envisioned and Bernstein promised. And he did.

When the software was delivered, it managed to satisfy all but one of the early customers and eventually even that customer grudgingly conceded that ILINC LearnLinc had delivered what they had promised, if not quite exactly what the company wanted.

First Round of Venture Capital:

ILINC then entered a rapid growth phase with very little working capital -depending upon cash flow to finance each new step. When the monthly "burn rate" (the amount of cash spent each month) reached about $100,000 per month, the founders decided that it was finally time to visit the venture capitalists. Because the company had no track record, the founders were financing the shortfalls in the cash flow with bridge loans against receivables, but these had to be personally guaranteed by the founders. Signing monthly personal guarantees of $40,000 or so began to make them all a bit nervous, because none of them had the income to really handle this and only I had any assets!

They went to a local venture capital firm called Exponential Investors who helped to arrange several hundred thousand dollars of financing in cooperation with some New York State business development funds. It was also time for me to decide. My partners encouraged me to come in full time, but I decided that it would be better to go back to Rensselaer and recruit a more experienced CEO for the company. I felt that I would be able to continue to help with the vision and direction, but that the company would benefit from someone with past experience in creating new ventures. A new CEO, Jim O'Keefe, was recruited who had just completed another start-up that had been acquired.

The Next Two Rounds of Venture Funding:

The next few years saw ILINC grow substantially, if not painlessly, and two more rounds of financing in single digit millions brought investments from GeoCapital Investors and the Intel Corporation.

The multi-million-dollar investment from Intel was one of the turning points for ILinc. Intel had a video card, the ProShare card, that could be inserted into micro-computers to allow one to play live video and do video conferencing. They also partnered with Microsoft to create a software/hardware solution for video-conferencing on networks. They were building servers that would receive the video streams from several computers in a conference setting and then compose that video and send it to all participants. The problem was the factorial increase in bandwidth as additional computers were added. (Bandwidth scaled as n! or n*(n-1)*(n-2)*(n-3)*(n-4).....). Thus, if one went from two participants in conference to ten, the bandwidth scaled from 2x to 3,628,800x. This essentially made it impossible to serve more than a few computers in a conference. The ILinc architecture, which I had developed and Degerhan Usluel implemented and perfected, managed all this video bandwidth by keeping unused video off the network and introducing concepts now common in all conferencing systems - such as the ability to "Raise a hand" to request attention from the leader and the server.

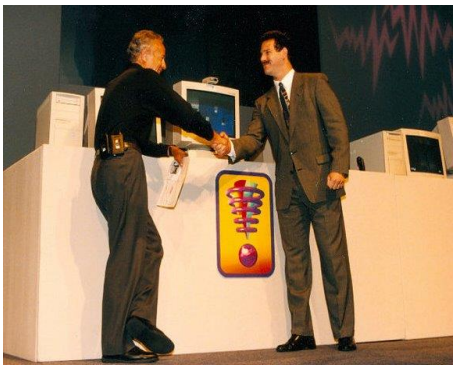


Figure 33 Andy Grove, CEO of Intel, and Mark Bernstein when Andy presented LearnLinc to thousands of attendees at a major national

Intel heard that ILinc had solved the scaling problem, but perhaps did not believe it fully. They sent a representative to our office for a confidential demonstration covered by non-disclosure agreements. I asked them how many simultaneous participants they were able to serve, and they suggested that it was less than ten. At one point an Intel representative asked me how many simultaneous sites ILinc could link up with video, audio, and screen-sharing. Since we did not have the resources to equip many sites, we really did not know for certain. The mathematics told us that we should be able to do a very large number of

sites, but we had not done it. The Intel representative then asked whether we could do more than 50 sites, and I said "sure." Under my breath I added – "probably."

Intel then cobbled together a large number of sites, which was less than the 50 but more than 20, and we were asked to do a demonstration. It worked! At that point Intel told us that they were willing to invest, but that we had to have a side-by-side venture capital partner that would make a matching investment –which we quickly (but not easily) accomplished.

We were also invited to develop a presentation for then CEO, Andy Grove, to do at a major software conference. According to many of my friends, Andy Grove was even more difficult and demanding to work with than Steve Jobs. Having worked with Jobs earlier in my career, I knew this was a high bar. They asked that I fly out to Santa Clara and meet with Grove to do a demonstration and answer his questions. I took the trip with some trepidation, but also knowing that the investment was already a done deal. His staff set me up in a demonstration room in which we had several computers simulating multiple remote locations. I was told that "Dr. Grove will come in at 11:15 am and then you will do the demonstration for precisely 15 minutes. At 11:30 he will begin to ask you questions. At 11:45 he will promptly depart for another meeting." They sternly instructed me not to depart from the script and not to engage in small talk. The instructions were consistent with everything I expected.

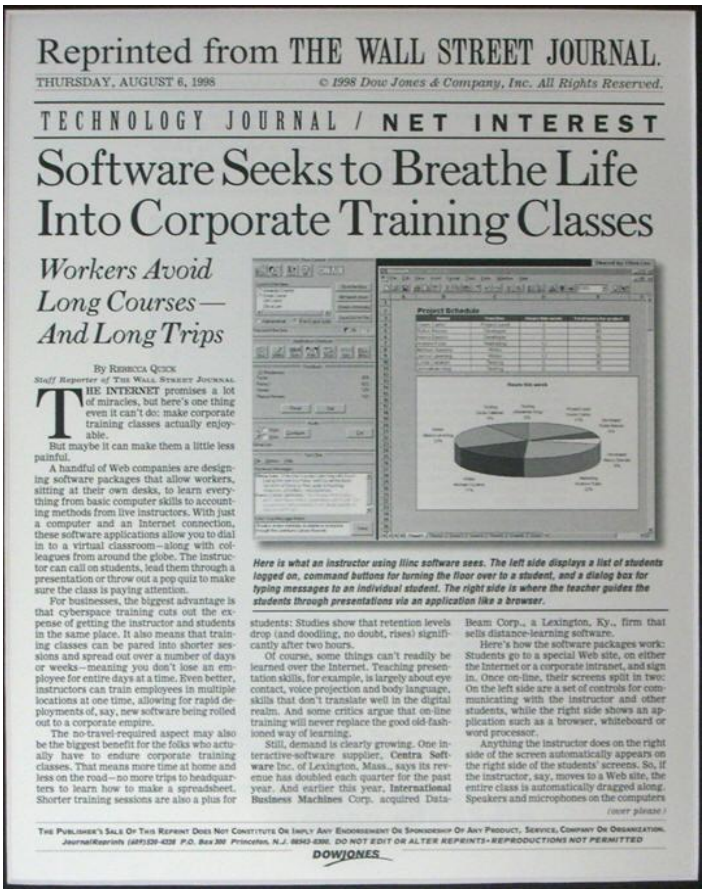
Sure enough, at precisely 11:15 Andy Grove came in and introduced himself. We sat down together at a computer, and I began to demonstrate the product. I did not get too far until he asked his first question about our screen sharing protocol. Then he followed up by asking how we had been able to do so many simultaneous video sites when his folks only were able to do eight or so –and that took a big fast server to pull off! I explained that it was not really all that hard. We simply recognized that only two video streams at any time were necessary and we used agent technologies to shut off those streams that were not going to be used. We shut off those streams at the source, while standard multipoint video conferencing solutions dealt with them all at the video-conferencing server level. We set up a simple protocol of hand-raising that would allow any participant to ask for the floor – much as legislators ask for the floor in congress. That prompted another question and then another. 11:45 came and went but Andy Grove was still sitting at the computer asking me to demonstrate one point after another and firing off questions like he was giving a doctoral candidate an examination. That put him on my turf, and I was enjoying myself immensely. His staff got more and more nervous, but they were quite careful not to interrupt him. They kept giving me dirty looks, but Andy Grove just kept on asking questions and clicking on buttons. It was nearly 1 pm when he left with a smile and a big handshake. I could not have found him to be a nicer or more interesting guy.

When he delivered his speech, my partner Mark Bernstein was there to provide his support. It was one of the highpoints of our early years.

As noted above product development and financing went through several cycles as ILINC released new versions of LearnLinc and arranged new rounds of financing.

Fortune described ILINC as: "*Interactive Learning International Corp. (ILINC), a two-year-old company in Troy, New York, has shown what's possible in today's world of limited telecommunications bandwidth. ILINC's interactive training programs can be transmitted to users' PCs over local- and wide-area networks, as well as high-speed communications links such as ISDN (integrated services digital networks). A live instructor can appear in a window on the screen and address students in dozens of locations. He can launch video and audio clips for all the "class" to see and hear. And at discussion time, a student can click on a "raise hand" icon to get the floor.*" [35]

In 1998, the Wall Street Journal said: "*'It's great -- by using it, we've cut our travel expenses substantially,' says Gary Schweikhart, a spokesman for Office Depot, an office-supply company in Delray Beach, Fla. Office Depot first took its corporate training sessions on-line in May 1996. It was one of the first customers of Interactive Learning International Inc., or ILINC, a Troy, N.Y., maker of distance-learning software. Since then, about 1,500 Office Depot employees have completed on-line training, on everything from how to write a business letter to how to use the company's proprietary order-taking system. 'We were in a situation where we were doing a lot of training of trainers' in order to have enough qualified instructors to teach employees at 629 stores and 68 sales offices across the country, says Doug Kendig, the company's manager of training technology. 'We had to deputize a lot of people [to train employees], and you don't always get the best results that way.' But now Office Depot uses the ILINC software for about 20% of its training, with classes in Florida, California and Texas using just six instructors. 'I think it's fantastic,' says Jeannette Perez,*



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(over please)

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Figure 34 Wall Street Journal; Aug. 6 1996.

[35] REPORTER ASSOCIATE Alicia Hills Moore Copyright © 1996, Time Inc., all rights reserved

*who works in Office Depot's commercial credit-card department. 'It just holds my attention more, because you're interacting with the compute*r.' [36]

The Plot Thickens:

The company was becoming successful but experiencing growing pains and pinched financing. Moreover, they now had some very significant competitors. Without patents on the underlying technology, the fast followers were able to reverse engineer the LearnLinc product. Although their earliest efforts were crude and unreliable, there was no reason to believe that they would not get steadily more powerful. These competitors were also much better funded. ILinc was founded in 1993 by people who knew the "old rules" of entrepreneurship. They focused on revenues, tried to achieve positive cash flow, and minimized the acquisition of venture capital. Their competitors were living in a "new-new world:" the dot-com era of the tech boom. They raised ten times the venture capital and thus had a far more powerful sales and marketing enterprise.

There were times that the LearnLinc product was only being discovered after one of its competitors had gone into a company and sold them on the concept. For big companies like Aetna-United Health Care, there was a process to evaluate competitors for big purchases. After Centra had sold them a pilot, LearnLinc was chosen as the corporate provider. In general, it is difficult to rely on your competitors to sell your product.

Going Public:

By the summer of 1999, the founders felt that it was time for LearnLinc to raise much more funding and to grow substantially. The new CEO had been replaced by an interim CEO, Mike Marvin, and then by Degerhan Usluel. I continued to serve as Chairman. The Board decided to hire an investment banker (Michael Kane and Associates of California) and met with a selection of other entrepreneurs to decide how to best go forward. They identified three potential paths:

- Do an IPO.
- Get acquired by a complementary company
- Enter a partnership with (and receive an investment from) a complementary company that would build upon their joint strengths and allow them to grow faster.

From the beginning, the group leaned toward some kind of business alliance or acquisition. Although the excitement and financial reward of the IPO was attractive, they felt that the glory might be short lived. They knew that LearnLinc needed a much larger sales force and needed to be much larger financially to crack the very large enterprise accounts that could allow them to reach the next level of development. Although they had sold product to IBM, AT&T, Lucent, MCI, Computer Associates, Aetna, United Health Care, Boeing, Flight Safety, and many other large accounts, these tended to top out at less than million-dollar accounts.

[36] Wall Street Journal –Thursday August 6, 1998.

In order to grow and dominate the market, they needed to be able to crack that barrier. An IPO could bring them the funds necessary to grow, but it would take time and management attention to hire the people and create the systems needed to handle the growth.

The company's advisors suggested that an IPO would likely value the company at $100 million to $200 million. Perhaps it could be more, but that would depend upon timing and market excitement. They also suggested that an acquisition would probably only bring about $50 million, but that the acquisition might leave the company better positioned to grow over the coming years. Given the anticipated lock-up periods for founder's stock, the founders tried to evaluate the options as they would look one year into the future, rather than at the transaction date.

The Triple Merger - LearnLinc becomes Mentergy:

Eventually we decided to agree to be acquired by Gilat Communications. The deal closed on February 29, 2000. Gilat paid 1.5 million shares (gross before commissions) for LearnLinc. On February 29, Gilat closed at $35 per share making the value of the deal $ 52.5 million at closing. Because of the use of bootstrap start-up funding, venture capitalists held less than 50% of the company at the close.
During the same period, Gilat acquired Allen Communications from the Times Mirror group for $23 million in cash.

Figure 35 Mentergy

Over the next six months, the three companies were blended into one company - known as Mentergy. The companies had a complementary set of strengths. LearnLinc was the market leader in live-on-line eLearning. Allen Communications had an impressive established customer base, a large skilled sales force and specialized in web and CD-ROM based CBT. Gilat brought expertise in satellite communications and interactive learning over satellites. The plan was to create a blended learning approach that was "technology agnostic" and could provide the best eLearning solutions for a variety of different learning needs. The target market continued to be corporations and corporate training.

At first the market loved the combination. By March of 2000, Mentergy had a market capitalization of over $500 million. Plans were developed for a secondary offering both to cover the expenses of the triple merger and to provide additional development and marketing resources, but the declining stock market made that a difficult task. The situation was complicated further by a misguided effort to create a headquarters for Mentergy in Atlanta, Georgia (when most of the employees were in New York, Utah, and Israel) and by management confusion caused by the difficult communication process with

key management personnel and the Board Chair in Israel. Wilson, Usluel, and Bernstein had agreed to remain involved for at least six months after the merger. I severed my ties in frustration as soon as allowable. Usluel and Bernstein persisted longer in a futile attempt to get the company back on track. By 2002, Mentergy was in bankruptcy.

The company was broken back into several pieces. The ILinc portion was purchased by EDT Learning from Arizona. They renamed themselves ILinc in honor of their successful product, which continues to be used in many major American corporations.

In hindsight, there would be many things that might be done differently if we had to do them over again, but I hope that the reader can see how we were thinking as we made each decision.

Questions:

Questions for the student on research commercialization:

1. How did ILinc use research funding to develop potential technologies for commercialization?
2. What were some of the key technologies that ILinc had to develop to give themselves a competitive advantage?
3. What are the key differences in the funding given by the National Science Foundation and the SBIR program?
4. What advantages does a large business have in investing in new technology start-ups?

Questions for the student on opportunity recognition:

1. A new venture is expected to be attractive, timely, durable, and anchored in a product or service that creates or adds value for the buyer. How did ILINC fit with this description?
2. What was the "opportunity gap" that ILINC addressed?
3. Was ILINC a disruptive innovation? What did it disrupt?
4. How did ILINC fit with trends in economic forces, social forces, technological advances, and political and regulatory changes?
5. How did the personal characteristics of the entrepreneurs help and hurt?

Questions for the student on the positioning and type of the innovation:

1. Where would you place LearnLinc on the spectrum of types of innovations? Product or process; radical or incremental; architectural or component, competence enhancing or destroying?
2. How would you place LearnLinc on the S curve of technology? What does this imply for its adoption?
3. LearnLinc offered a low cost universal way to bring learning to learners in a corporate training environment. Were they operating in segment zero? If so, what was the market they were disrupting?

4. If you were advising ILINC as to how to manage its LearnLinc product just prior to its acquisition, what would you identify as major challenges they would need to face quickly?

Questions for the student on the protection of intellectual property

1. Why is it that the founders decided not to patent the product?
2. What were the obstacles to patenting the software?
3. What other forms of intellectual property protection might have been available to the founders, and what do you see as the advantages and disadvantages of each?
4. What was the consequence of not doing the patent?
5. If you were one of the founders, would you have pursued a patent?
6. Do you see any other strategies that they might have used?

Questions for the student on the exit strategy

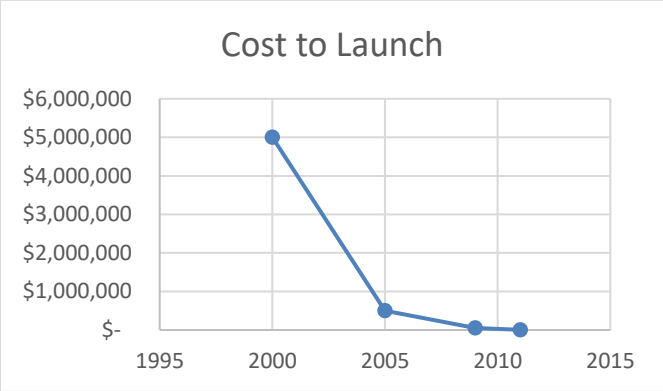
1. What were the apparent advantages to doing an IPO?
2. What were the advantages to being acquired instead?
3. What drove the founders to consider these two alternatives instead of continuing organic growth?
4. If you were the founder, what strategy would you have selected and why?

Chapter 4 Recognizing Opportunities to Change the World

It may be that future historians will look back at the 90's and early 2000's as a time of unprecedented opportunities. The rapid deployment of the internet world-wide has enabled new companies, many of which, like Google (Alphabet), Facebook, Amazon and others, were born and flourished in that era. It also fueled the growth of two companies born in the microcomputer era: Apple and Microsoft. Not only did the microcomputer and internet incubate these giant companies, it also enabled countless smaller companies. In the life sciences, technology was also a driver and the computer and internet played a role, but the university and industry-based research breakthroughs were the primary forces moving new ventures.

By the time we were ten years into this Millennium, it became easier and easier to launch new companies -prompting many observers to exclaim that "The Cost to Launch is approaching zero.[37]" This is particularly true for internet and communication technology startups, but it is not as true for Biotech startups. These can be quite expensive. Back in the dot-com boom era of the 90's companies often needed to raise millions of dollars to buy equipment to get started. Today, with more and more web based services, the cost to launch can be quite low.

CB Insights has suggested that the cost of doing a startup has fallen from $5 million in 2000 to $500,000 in 2005, to $50,000 in 2009, and finally to $5000 in 2011[38]. Many others agree that the cost has fallen dramatically for some kinds of new ventures, but they tend to be a little less dramatic[39]:



There are so many more tools available to innovators these days. In the past, new ventures had to set up their own servers, websites, payments systems, financial systems, ecommerce systems, marketing programs, and so on. Today Google provides a platform to attract users to a new venture. PayPal will allow the startup to collect payments and make payments without expensive financial systems. There are now a plethora of new Cloud based services like Amazon Web Services (AWS), Google, Microsoft, etc.. All of these can provide cloud-based hosting for your services. Similarly, there is a long list of services to help you build an e-commerce store.

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[37] "Startup Opportunities" by Sean Wise and Brad Feld; John Wiley NY; (2017); p 7.

[38] https://abdoriani.com/startup-infographics/how-much-has-the-cost-of-launching-a-startup-time-to-reach-100-million-users-changed-from-2000-2011/

[39] http://bankinnovation.net/2015/10/is-the-cost-of-fintech-startups-really-falling/

Others disagree that the cost to launch has dramatically decreased. Ben Brown of First Annapolis, another consultancy, claims that Bill Gurley, a general partner at Benchmark Capital, the venture capital firm, has said that the cost of launching a startup "*has largely stayed the same, just shifted from servers to salaries*."

The truth is probably somewhere in between. There is now quite an array of tools to help the enthusiastic innovator, but one should be cautioned that nothing is as easy as it appears. The creation of a global market place is the other thing that has made innovation more attractive. The trend from the end of World War II until recently was to break down the barriers of trade and movement of good and people. Since 2016, we are seeing that reverse a bit. Countries are tightening both trade and immigration barriers. The trend is not yet clear, but it could begin to constrain the entrepreneurial opportunities that we have seen in past decades.

In the Chapter 2 we saw that there are (at least) three models of entrepreneurship that can help anyone who is interested in starting a new venture.

- The Causal/Traditional Model
- Effectual Entrepreneurship
- The Lean Launchpad

We encourage potential entrepreneurs to understand each of these. The Lean Launchpad has come to dominate most approaches, but one is likely to encounter Business Plan Competitions and other programs that draw on the other models.

Access to capital is one of the most important things facing anyone launching any kind of new venture –whether it is a for-profit business or a social enterprise or a charity. The entrepreneur can usually count on spending quite a bit of time raising money.

We will consider this in more detail in a future chapter, and only consider this in broad terms now. For those interested in more details you might have a look at: http://www.jackmwilson.net/Entrepreneurship/Principles/FinancingOrFunding.pdf

There are many sources of capital that new ventures might be able to draw upon. Among the most common are:

- Venture Capital
- Angel Investors

- Accelerator Programs
  There are several great local examples of accelerator programs like Mass Challenge[40] and eFor All[41].

- Crowdfunding
  - Kickstarter is one of the most famous examples of crowdfunding sites and we will consider this case later:
    http://www.jackmwilson.net/Entrepreneurship/Cases/Case-KickStarter.pdf

Sean Wise and Brad Feld point out that "*The lack of barriers to entry allows terrible ideas to be pursued*.[42]"

Recognizing Good Ideas and making them happen.

If you want to change the world, then you need to see a problem and recognize it as an opportunity. We often say that those that can see a problem as an opportunity have **entrepreneurial alertness** or **entrepreneurial awareness**. But what exactly IS an opportunity?

An opportunity is a favorable set of circumstances that creates a need for a new product, service, or business. At times one can see that there is some kind of product or service that seems to be missing. We call this an **opportunity gap**. The entrepreneur identifies a missing piece, a NEED, and a new way to fill that gap. One of the classic examples of an opportunity gap was when Planet Fitness noticed that many individuals were intimidated by going to the gym and being surrounded by fit and strong looking people. So they decreed that they were the gym for the rest of us. The claimed they had a "no lunks" policy and a "judgement free zone." Many successful new ventures are the result of finding that opportunity gap.

An opportunity is NOT driven by a desire to make and sell. It is driven by a need. An opportunity is NOT an IDEA –unless that idea is directed at solving a problem that people will pay for. An opportunity is driven by filling a markets need to (and ability to) buy. This is a common error of inventors who assume that their latest greatest invention is going to be something that everyone needs. The old saying was that "if you invent a new mousetrap the world will beat a path to your door." Probably not.

We often categorize innovations on a spectrum -ranging from incremental to radical. Some innovations are **radical**, and represent an entirely new way to solve a problem or an entirely new product. Other innovations are **incremental**, or **sustaining**, and are extensions of existing solutions that are somewhat better than the existing solutions.

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[40] http://boston.masschallenge.org/
[41] eForAll: https://eforall.org/
[42] "Startup Opportunities" by Sean Wise and Brad Feld.

Incremental innovation rarely works for new businesses, but is often the hallmark of established businesses. Incremental innovations are hard to introduce to the market that is used to something almost as good. Why change what you know how to do for a small improvement? If the improvement is 10 times better, then perhaps they will change.

Building a better mousetrap rarely leads to the market beating a path to the inventor's door –unless it visibly and significantly changes the game for mouse catching!

Some inventions are introduced to the market before the customer is ready for them. Others come to market long after other products or services have already established themselves. There is a **Window of Opportunity**. The innovation needs to be timely, not too early or too late. Opportunities depend upon acting at the right time. Too early and too late are sure ways to fail.

Here are three questions that often lead to innovations[43]:
These are ways to look for opportunity gaps –if many people share the same concern.

1. *If only there was a business that….*
2. *I wish I could buy a product or service that…*
3. *There has to be a better way to…*

Here are some specific examples of such questions that led to new concepts and companies.

- I wish I could find a gym that was not full of health nuts that intimidate me. => Planet Fitness
- I wish I could find a tee shirt that did not come untucked so often => Tommy John Underwear
- I wish I could carry my music with me everywhere => iPod
- I'm tired of carrying a phone, camera, laptop computer, and music player around with me => iPhone and other smart phones.
- I wish I did not have to transfer my files among my various computers => cloud computing
- I wish that I could better keep in touch with my friends and family => social media- Facebook, Twitter, Snapchat, LinkedIn, etc.
- I wish I could find a date in this new town. => Tinder
- There has to be a better way to shop than going to the mall. => Amazon.com

When we think about opportunities, we need to ask whether the opportunity possesses four qualities:

- **Durable**: Does the product or service have staying power? Is that enough staying power to allow it to be monetized? How can I get revenue?

[43] Extraordinary Entrepreneurship, Stephen C. Harper, John Wiley.

- **Timely**: Is the idea not too early nor too late, and is the market is ready to buy. Has the market already settled on an alternative?
- **Attractive**: Do the rewards (financial, social, or personal) exceed the cost. That cost needs to provide your return on investment (ROI) and also the return on your time (ROIT). There are direct costs but there is also an opportunity cost in time and money.
- **Adds Value**: Is it a product or service that your target market would find valuable? Why do they care? What pain do they have that this takes away? How badly do they want it? Do they need to have it or only want to have it?

If your innovation meets ALL of these criteria, then perhaps it is a useful innovation and not just another "great idea."

A new Rabies Vaccine from UMass.

Consider the example of the Rabies Mono-clonal antibody which was invented a few years ago at the UMass Biologics Lab of the University of Massachusetts Medical School. These research scientists. It is spectacularly more effective than the then current treatment regimen of a 30 day series of rabies vaccine shots. (My son and I went through this process together and it is not pleasant.) The Rabies Mono-clonal antibody reduces the cost of treatment dramatically from current treatments as well as reducing the suffering of the person being treated.

Now, THIS is a great **IDEA**! However, is it a great **OPPORTUNITY**?

For an idea to become an opportunity it needs to meet the criteria of being durable, timely, attractive, and adding value. It also needs a market ready and willing to pay for the alternative treatment.

Is this a great opportunity? Ask yourself: Is there a huge need and demand for this product by a group that is willing to BUY it? Does that identified market represent enough economic incentive to create a business and justify the investment? What investment would be needed to bring this to market?

The market in the U.S. is very small. Thankfully, very few persons are treated for rabies each year. Those few patients are generally treated by public health organizations. The customers for the vaccine are government health departments and not individuals. For them there is no great pain that this product would solve. Changing procedures and products is always confusing and expensive. They spend very little on treatments in any case. The pain is felt by the patient and not the health department. This product does not solve any great pain that they (the Health Department leaders) have.

Consider now how much money and time it would take to bring this to market. The cost of doing animal and human clinical trials is huge. There are four phases: Pre-clinical, Phase 1,

2, and 3. The cost of bringing a drug to market in the United States is estimated at $1.2 Billion (Tufts -1990-2003) Even worse, it takes an average of over 8 years to bring that drug to market.

The conclusion is inevitable: there is no viable US market to justify the investment. There is **NO** (immediate) U.S. opportunity. It is too expensive and takes too long to reach a very small market. That is agonizingly sad, but it is absolutely true. It is a great IDEA, but it is not a great Opportunity.

It is also not that unusual in the medical field for great ideas to be unable to be converted into opportunities. You can get a Lyme vaccine for your dog, but not for you.

Is there an alternate strategy to convert this IDEA into an OPPORTUNITY? Not every place in the world has the same conditions as we do in the United States. In this case, rabies is endemic in India and tens of thousands die each year. The cost and duration of the treatment is unsustainable for so many victims in the most poverty stricken regions of India. The cost (and regulatory burdens) of clinical trials and development in India is much lower than it is in the U.S.

There may be an opportunity in India that does not exist in the US. Solution: license the mono-clonal antibody to an Indian company for development. Perhaps in the future, we may be able to bring it back to the US after it is established in the market in India and other regions with more patients. Time will tell.

From Trends and Forces to Opportunity

An opportunity takes advantage of the pressures exerted by economic forces, social forces, technology, and political forces:

- **Economic Forces:** economy; income; spending
- **Social Forces:** social-cultural; demographic; trendiness
- **Technology:** new; emerging; or a new use for old technology
- **Political Forces:** political arena; regulatory

These forces can create an opportunity gap through which new products and services can come to life.

Here are some examples of **economic forces**:

- A rising economy – more discretionary income
    - Until recently the growing China market has been one of the key factors driving the world economy.
- A falling economy – products that cut costs or expenses

- Increasing or decreasing energy prices
    - Gas prices are falling. Hybrid sales are down and truck sales are up.
- Increasing income disparity between groups.
- Interest rates are rising or falling, are low or high.
- Access to less expensive labor for products
- There are many others. Can you think of some?

Social forces include:

- This is the biggie for the last four decades: the **baby boomers** have changed every part of society as they have gone through the many stages of life from birth to retirement!
- The increasing diversity in the workforce has created many new opportunities.
- The formation of online communities and popularity of social networks
- The change from wired phones to mobile phones as the dominant communication device.
- An interest in healthy living (see boomers above!)
- Increasing use of alternative energy –especially "clean" energy.
- Popularity fluctuates wildly with variation in energy cost.
- As oil and gas prices decrease –alternative energy is less economical
- Educational need –continuing education. We are living in a learning economy in which a large premium is paid for education and skills.
- Income disparity is also a social force as well as an economic force

Here a few **technology** advances that have helped to define the economy we live in today:

- Personal computing
- The Internet
- Mobile phones.
- Medical Imaging
- Pharmacology
- Biologics
- RNAi – microRNA- gene silencing
- Genomics –personal medicine
-

Take a few moments to reflect and consider some of the new products, services, and companies that have been enabled by these advances.

Three technology advances that defined our present. The incredible advances that we have seen in computing, communication, and cognition have been driven by three rules:

- **Moore's Law**: The number of components on a chip, and hence the computing power, doubles every 18 months.
- **Metcalfe's Law (Network Economics)**: The Value of a network scales as the square of the number of those connected to it. Value: economic, personal, societal,.... If you double the network you create four times the value! This is often called

"network economics" or "network externalities" Social media depends upon capturing the largest network. If you double your network, you quadruple the desirability of your social media network. This is why Facebook dominated Mysapce, and Google dominates Yahoo.

- **Gilder's Law** (Bandwidth deployment): Bandwidth deployment doubles every 6 months (three times as fast as computing power doubles. This has provided us all with ample bandwidth to our homes.

More details on these three can be found at:
http://www.jackmwilson.net/Entrepreneurship/Cases/Moores-Meltcalfes-Gilders-Law.pdf

Political and Regulatory changes that have created opportunity gaps for new ventures

- Tax policy –gasoline, cigarettes, oil depletion allowances. Taxes do 2 things: 1. raise revenue and 2. decrease the use of the thing being taxed
- Health and safety regulation –OSHA, EPA
- Energy policies –alternative energy tax credits etc. Solar energy credits. Net metering –forcing utilities to buy energy back from homeowners solar panels.
- Cyber-security
- National Health Policy –Medicare, Medicaid, Obamacare, Drug coverage, etc.
- Education policies –financial aid, standards, compliance, Clery Act, FERPA, Deemed Exports,

Each of these changes has created challenges and opportunities.

Tesla: An example.

Tesla is an all-electric high-performance automobile introduced in 2003 to a market that was probably not yet ready for it.

Figure 36 The first Tesla Electric Roadster -photo by Jack M. Wilson

Tesla took advantage of all four of the forces and trends:

- Economic Trend – increasing gas prices
- Social Trend –desire to be green
- Technology Advances –Battery and motor improvements
- Political Regulatory Trend – favorable treatment and support for alternative energy systems.

Executing Rationally on an Opportunity

A great opportunity is the right start but making good decisions in implementation is an absolute requirement. Execution always trumps opportunity. No matter how good the opportunity, it requires excellent execution to become a success. As Tim Ferris in the opening essay in Wise and Feld suggests "*Trust me, your idea is worthless*." Mary Kay Ash of Mary Kay Cosmetics says it a bit more nicely: "*Ideas are a dime a dozen. People who implement them are priceless*."

Economists have long liked to model human beings as rational creatures who do rational things, but recent research has shown that premise to be false. Research on why smart people do (and say) dumb things has produced much better insights into the way the world works. That work has garnered three Nobel Prizes in recent years. Daniel Kahneman won in 2002 and has written a terrific book called "*Thinking Fast and Slow*." Robert Schiller won in 2013, and Richard Thaler won in 2017. These three are considered the founders of a field of **behavioral economics** which does indeed show that human beings do not always make rational choices. Understanding how we make these irrational choices can help us to avoid them

This extensive research has documented the sources of biases that catch many smart people in mistakes. The research also shows that those smart people do not even recognize they are doing it –but others often do.

This is a most important reason to have advisors and to take them seriously. All new ventures should have a board of advisors. You should also encourage argument. Aircraft co-pilots are now trained to criticize the captain, after research showed that some co-pilots were so deferential to the captains that they never said a word as they flew the plan into a crash.

Here are a few of the sources of irrational decision making:

- **Confirmation bias**- Confirms an existing bias. If you already believe something, you will notice evidence to support the belief and ignore that which contradicts the belief.
- **Overconfidence** –Research says that we all think we are above average. Sometimes we call that the "Lake Woebegone" effect. (Where all of our children are above average.)
- **Availability bias** –if it is easy to imagine than it must be common! You have seen news stories on shark attacks (or terrorists) so you think they must be common. They are not.
- And the reverse (black swans –I've never seen a **Black Swan** so they do not exist.) Look for evidence and not just for what we expect.
- **Prospect theory**: Too much importance is given with too small differences. A 1% chance appears much better than zero. It is not A 99% chance appears much worse that 100%. Again, it is not.
- **Priming and the Anchor point**: We can have our expectations set by being given an anchor point. Marketing professionals use the anchor point to set your expectations! It works on even the smartest and most trained people. Research also shows that those smart people vehemently deny that it works on them.

The 2017 Nobel Prize winner was Richard Thaler of the University of Chicago for his work in behavioral economics.[44] His particular contribution, for which he is best known, was in the area of "nudging." He wrote a book with Cass Sunstein of Harvard entitled "Nudge." This work builds on the biases revealed in earlier work to nudge people in the direction of a desired decision. Marketing departments use his work to nudge you toward a decision to buy their product. Governments use his work to nudge you toward making better decisions (quit smoking, drive slower, eat less sugar, etc.) –at least from their perspective!

It is critically important for any leader to recognize these sources of potential error and take steps to avoid the disasters that have often ensued when other leaders failed to take them into account. You can begin by understanding the sources of error and then consciously reflecting upon them when you are making decisions. Ask yourself: Am I making this decision based upon information that confirms my existing biases, or have I sought out contrary opinions? Am I overconfident in my ability to do what I intend to do? Am I

[44] https://www.economist.com/blogs/freeexchange/2017/10/2017-nobel-prizes

assuming a result is likely simply because I have heard it often, or do I have evidence that it is statistically likely? Am I assigning too much importance to small differences? Am I being fooled by being attached to some anchor point when I should really question the anchor point.

This latter point can be clarified by considering the case of a car dealer who suggests that "the retail value of this car is $50,000." Later, after beginning the sales process, the salesperson suggests that "I think I can get this car for you only $45,000." Check the anchor point and do not be fooled. Look at the internet sales prices and you might find that the car usually sells for $45,000. Most of us think that we are immune to such manipulation, but research indicates that anchor points work with even the smartest and most skeptical of us.

You should also recognize that you probably cannot do this yourself (Avoid the over-confidence bias). You need to create a team around you that is not afraid to question you and argue with you. Those who do not like to be argued with often make the worst leaders. Have employees and advisors that will help you avoid these Nobel Prize winning mistakes of behavioral economics.

Chapter 5 Social Entrepreneurship

In the first chapter we explored many different examples of entrepreneurship and heard a bit about the characteristics of a diverse set of entrepreneurs. We found that these individuals defined "wealth" and "profit" in broad and different terms. Some entrepreneurs were indeed driven by a desire for wealth, fame, and profit in the most commonly accepted views. We found that others were more focused on social good and "profited" by solving important problems rather than amassing financial rewards.

For most of the entrepreneurs that we met, the motivation was a combination of a search for financial success and a desire to change the world in some significant fashion. It is not a black and white situation in which individuals are driven by either financial or social goals. The drivers exist on a spectrum in which some, like Mother Teresa for example, are driven almost solely by social goals and others appear to be driven more by financial goals. Many social entrepreneurs, like Muhammad Yunus and Harish Hande, are driven by both social and financial goals. We will discover that even the most socially conscious individuals must pay some attention to finances if they wish to solve social problems and change the world.

Social Entrepreneurs use many of the same techniques as the other forms. The key difference is that their primary goal is to meet social needs rather than financial profit. However, they do need to make the enterprise financially sustainable and thus they must attend to revenues, expenses and profits like anyone else. **If there is no margin (profit or surplus), then there is no mission.**

A social entrepreneur can organize as a non-profit and support the enterprise, at least in part, through charitable donations to the mission. Mother Teresa organized her enterprise in this way. They can also organize as a for-profit as did Harish Hande, Muhammad Yunas, and d-Light. In this case, the profits from the venture can be used to address the social mission.

There are those who will dispute whether a for profit company can be an example of social entrepreneurship, but there are also scholars who think that ONLY a for-profit venture can properly termed "social entrepreneurship." The preponderance of opinion among those who study social ventures is that both types of ventures can be called social entrepreneurship. We will consider this more closely later in the chapter.

Corporate Social Responsibility (CSR)

Large Corporations will often become involved in some kinds of Social Enterprise. They often do this through a sense of corporate responsibility toward the communities in which they operate. This **Corporate Social Responsibility (CSR)** has become an important part of their operation and is often required by communities as part of their license to operate.

The **triple bottom line** encourages companies to focus on more than the bottom line of profits. It includes

1. Social,
2. Environmental, and
3. Financial results.

Engaging with the community can sometimes be challenging. In many cases the company may be engaging with individuals who are leading bitter protests towards the company. It still needs to be done.

All of this is a part of creating sustainable enterprises and sustainable communities. They are linked.

Public Sector -Governments and Quasi-publics

There is also a need for entrepreneurship in the public sector. How can the government deliver better services and do so economically? Each year the University Of Massachusetts Lowell host and co-sponsors the Deshpande Symposium on Innovation & Entrepreneurship in Higher Education which brings hundreds of academic government, and industry leaders from around the world to Massachusetts to discuss ways to incorporate entrepreneurial thinking into academic and governmental institutions everywhere. The goal is to teach the university to be more entrepreneurial, and to provide educational opportunities for the students to encourage them to be more entrepreneurial in whatever career path they follow.

Motivation

The primary motivation for most entrepreneurs is "to change the world" or to "make a difference." Even entrepreneurs who are motivated financially demonstrate strong desires to do these things. People feel more satisfied when they are "making a difference." Some research has shown that motivations can be organized in three categories:

- Darwinians –focused on competition and business success.
- Communitarians focused on social identity and the community, and
- Missionaries –who have the strongest desire to change the world.
    - http://www.bsl-lausanne.ch/wp-content/uploads/FauchartGruberAMJ_Oct2011.pdf

Organizational motivations can be a powerful incentive and should not be ignored. While many leaders are internally driven to be socially responsible, many others benefit from incentives created by government to encourage them to focus on social responsibility. For many businesses, there is a need to obtain a license to operate, and many communities make certain kinds of social responsibility a part of securing a license to operate. Even when this is not governmentally mandated, there can be community and government

pressure to be socially responsible. Many corporations have realized that social responsibility can be an asset to their operation. It can help in aligning values for an organization. For the employees, it creates an esprit d 'corps and excitement around the mission. It may also offer an opportunity to create a learning laboratory for some aspect of the enterprise's mission. Involvement in social challenges can yield insights into innovative ways of doing things in difficult conditions.

Nevertheless, the challenges of the Social Enterprise can be similar to those of a commercial enterprise and can even exceed those. Among those challenges are a lack of resources and conflicts with stakeholders with very different needs. Particularly in non-profit institutions, compliance and participation is often voluntary and is generally mediated by volunteers - who do what they want to do and are not easily organized or motivated. Funding can often come in lumps, with big grants and then long periods without. Many of the problems that the ventures are addressing have huge scale or may indeed by unsolvable. One can make improvements, but the underlying problem is only being managed –not fixed.

Who are the social entrepreneurs?

In the first chapter we introduced Muhammad Yunus of Bangladesh who won the Nobel Peace prize for the development of the concept of microcredit for women entrepreneurs in the region. Yunus graduated from Chittagong College and Dhaka College and then obtained his PhD in Economics from Vanderbilt. He became a Professor of Economics in Bangladesh and then founded profitable packaging company.

He came up with the idea of microcredit and microfinance in which small loans were given at high interest rates to small business founders. When the loans were paid back, the proceeds were then used to make new loans. More than 94% of Grameen loans have gone to women, who suffer disproportionately from poverty and who are more likely than men to devote their earnings to their families[45]. Eventually he founded Grameen Bank with this as its mission. The success of the Grameen microfinance model inspired similar efforts in about 100 developing countries and even in developed countries including the United States. Many microcredit projects retain Grameen's emphasis of lending to women. In 2006 he was recognized with the Nobel Peace Prize.

In the late 1980s, Grameen started to diversify by attending to underutilized fishing ponds and irrigation pumps like deep tube wells. In 1989, these diversified interests started growing into separate organizations. The fisheries project became Grameen Motsho ("Grameen Fisheries Foundation") and the irrigation project became Grameen Krishi ("Grameen Agriculture Foundation"). In time, the Grameen initiative grew into a multi-faceted group of profitable and non-profit ventures, including major projects like Grameen Trust and Grameen Fund, which runs equity projects like Grameen Software Limited, Grameen CyberNet Limited, and Grameen Knitwear Limited, as well as Grameen Telecom,

[45] https://en.wikipedia.org/wiki/Muhammad_Yunus

which has a stake in Grameenphone (GP), the biggest private phone company in Bangladesh. From its start in March 1997 to 2007, GP's Village Phone (Polli Phone) project had brought cell-phone ownership to 260,000 rural poor in over 50,000 villages[46].

The business models that he used were both for-profit and non-profit, and for many critics, this was not acceptable. In spite of winning the Nobel Prize and changing the world in a spectacular fashion, there are many who remain critical of his efforts. As they say, "no good deed goes unpunished." This is not unusual at all in social ventures. The problems addressed are often large, almost intractable, and with political and social implications that can be divisive. Not everyone will think that the social entrepreneur is doing a good thing. Even Mother Teresa had her critics!

In the first chapter, you got to know something about a wider range of entrepreneurs. Perhaps you found some of the stories surprising? Had you ever thought of Mother Teresa as an entrepreneur before? My friend and colleague Jim O'Keefe certainly never had –until he went to visit her and work with her. Jim grew up in Pittsfield Massachusetts. In his teen years, Jim caddied at the local golf course where Jack Welch, who was then an executive with GE Plastics, often played. Soon Jim became Jack Welch's (UMass Amherst '57) favorite caddie. When Jim headed off to college, Jack told him to come back and see him after college, and he would get him a job at the GE plant in Pittsfield.

After Jim finished his undergraduate degree, and then did an MBA in Wharton, he decided to take Jack up on the offer. By now Jack was the CEO of General Electric -headquartered in Fairfield Connecticut. Undaunted, Jim went to the CEO's office and told the receptionist that he had an appointment with Jack Welch. You will not be surprised that the receptionist was not buying the story –even when Jim told her the whole story. But she took his name and passed it on up the chain of command.

A few days later, Jim O'Keefe got a call from someone who said that he was Jack Welch's Chief of Staff. "*So, Mr. O'Keefe I guess I had better find out who you are and what you can do because Mr. Welch says I need to find you a job*," he offered.

Over the years, Jim rose through the ranks to head all of GE's Latin American holdings. At one point he took a short sabbatical to go to India and work with Mother Teresa. Jim was ready to be impressed to the point of awe by her charitable work, but something that he had never considered just blew him away. He called Jack Welch to say something like: "*Jack, you have got to come over here and see the amazing thing that Mother Teresa is doing*." "*I know all about her Charity work*" Jack replied in his gruff manner. "*No! Not that*," Jim retorted. "*She is running a world-wide enterprise with the smallest and most efficient management team I have ever met*.

[46] https://en.wikipedia.org/wiki/Muhammad_Yunus

In the first chapter we learned that she ran an enterprise, the Missionaries of Charity, with over 4,000 missionaries -- in addition to thousands more lay volunteers – and with 610 foundations in 123 countries.

Jim learned what every leader of a charity or a non-profit organization quickly learns: **No margin – no mission.** Being a non-profit does not mean non-expense and certainly cannot mean non-revenue. Mother Teresa was a very effective entrepreneur. Her enterprise was non-profit, but even non-profits need money to operate and need to spend that money efficiently. She saw "wealth" differently than many entrepreneurs. The wealth that she created could be seen in the health and welfare of the people whose lives she helped – directly or indirectly. Her profit was the lives she saved, the diseases she cured, and the afflicted that she comforted.

The technical term for what she did is "**Social Entrepreneurship**," but even that seems so inadequate in her case.

Although Mother Teresa organized her enterprise as a non-profit enterprise, most examples of Social Entrepreneurship are organized as for-profit enterprises. Muhammad Yunus, Harish Hande, and perhaps Teresa Mbagaya are all considered social entrepreneurs and they all have founded for-profit enterprises.

The problem that Harish Hande saw was that an estimated 1.2 billion people, or 17% of the global population, – did not have access to electricity in2013. This was 84 million fewer than in the previous year. Many more suffer from electricity supply that is of poor quality. More than 95% of those living without electricity are in countries in sub-Saharan Africa and developing Asia, and they are predominantly in rural areas (around 80% of the world total). While still far from complete, progress in providing electrification in urban areas has outpaced that in rural areas two to one since 2000[47]. Of those about 400 million are in India alone.

Harish Hande, after graduating from UMass Lowell with his PhD in Mechanical Engineering, decided to address this social problem, but to do it with a social enterprise organized as a for-profit enterprise. In 1995, he created a company, SELCO Solar Pvt. Ltd, as a social enterprise to provide "sustainable energy solutions and services to under-served households and businesses."

Their website[48] goes on to say:

> *It was conceived in an effort to dispel three myths associated with sustainable technology and the rural sector as a target customer base:*

[47] International Energy Agency
http://www.worldenergyoutlook.org/resources/energydevelopment/energyaccessdatabase/
[48] http://www.selco-india.com/about_us.html

- *Poor people cannot afford sustainable technologies;*
- *Poor people cannot maintain sustainable technologies;*
- *Social ventures cannot be run as commercial entities.*

"SELCO aims to empower its customer by providing a complete package of product, service and consumer financing through grameena banks, cooperative societies, commercial banks and micro-finance institutions."

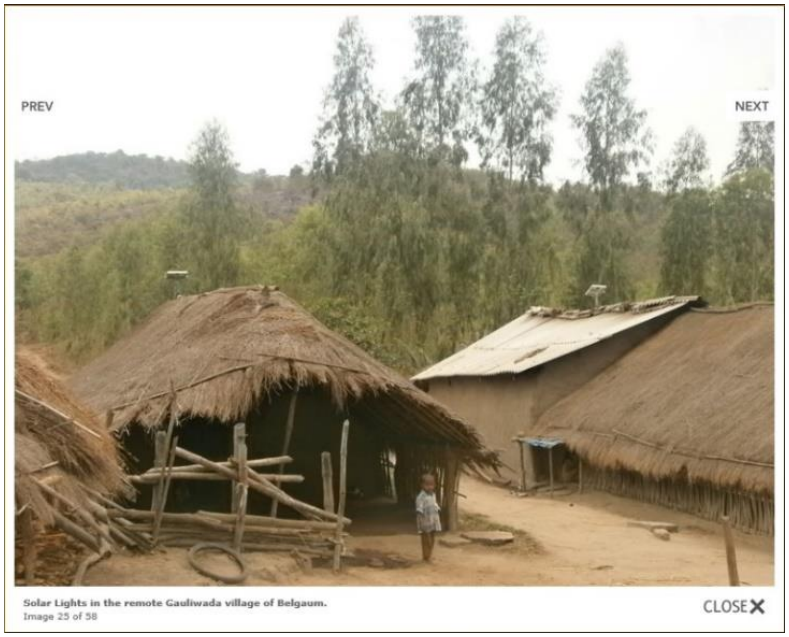
SELCO's key features:
Creating products based on end user needs: going beyond just being a technology supplier but customizing our products based on individual needs.
Installation and after-sales service: dedicating regional energy service centers to ensure prompt maintenance and service.
Standardized financing packages: creating channels for end users to afford systems based on their cash flow.

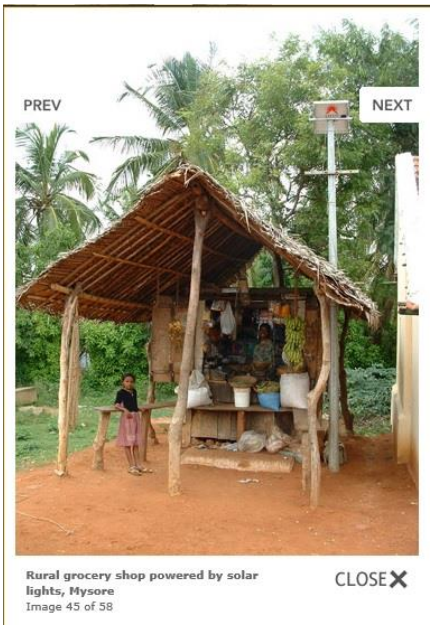
SELCO currently employs about 375 employees in in Karnataka, Gujarat, Maharashtra, Bihar and Tamil Nadu spread across 45 energy service centers. Since 1995, we have sold, serviced and financed over 2,00,000 solar systems to our customers.

"Our team is uniquely qualified to operate and grow a company focused on providing sustainable technologies and energy services to rural markets in India and other developing countries. Our leadership has the skills demanded of their positions, significant experience working as a team together, and the blend of passion and commitment required for this business."

"Collectively, our management has over 44 years of grassroots experience in the field of providing sustainable energy services to the under-served. The team along with other staff has proven the fact that there are strong linkages between ***poverty alleviation, sustainable energy, social business and micro-finance****: linkages that are not easily proven to be commercially viable.* [49]*"*

[49] http://www.selco-india.com/management.html





Fund need-based innovation to tackle climate change, says Harish Hande

E. Kumar Sharma Last Updated: September 15, 2014 | 20:21 IST

Harish Hande, Managing Director of solar lighting solutions company SELCO-India and a Ramon Magsaysay Award winner.

Business Today in India quotes Hande[50]:

"There is need to invest in building human resources in rural areas in the field of sustainable energy. For instance, we need to have energy technicians in rural areas. Then, there has to be focus on end-user financing. To top it all, money is needed to fund need-based innovation as against a want-based innovation."

"Giving an example, he said: "We could, for instance, encourage innovations that look at the motors that run rice mills. Today, they use diesel. How can there be innovation to make motors that run efficiently on sustainable energy."

Another magazine, LiveMint says[51]*:*

[50] http://www.businesstoday.in/current/economy-politics/innovation-climate-change-selco-india-narendra-modi/story/210359.html

[51] http://www.livemint.com/Leisure/dLJtbPdbJeHgXmC6Qo2gWN/Harish-Hande--Here-comes-the-sun.html

> *"Hande, 47, won the Ramon Magsaysay Award in 2011 because the ideas at Selco (Solar Electric Light Company—India), the solar energy equipment supplier company he co-founded in 1994, shine brighter than the lights it sells to the poor."*
>
> *"Take, for instance, Selco's Light For Education project whose participants include around 30,000 children in Karnataka. Solar panels are installed on school premises and the battery, about the weight of a lunch box, is given to children. Children charge the batteries when they come to school. If they don't come to school, there's no light at home. "We stole the idea from the midday meals scheme," says Hande. Stole and innovated."*
>
> *"Hande sees the poor as asset creators, and not as a bottom of the pyramid sales opportunity. "**Don't sell to the poor. That's our fundamental rule. And if you're selling to the poor, make sure that the value you're giving to the poor is much more than the monetary value they give you back**,(*emphasis added*)" he says. "*
>
> *"So when Selco representatives found that 32 Sidi families in rural Karnataka spent more money annually on candles, kerosene and to charge their mobile phones than it would cost to set up a simple solar system, they had to fix this. No bank was willing to lend the money to these families, so Selco offered a 100% guarantee on their behalf. Six months later, the bank reduced this guarantee to 20% as the payments were regular. "The best response was from the Sidis," says Hande. "They said, light is great but once the solar loan is done, I will take a loan for a sewing machine." They had become bankable."*

In many ways Harish Hande adapted the Grameen Bank Model of the Nobel Prize winning Muhammad Yunus. Both entrepreneurs had served an unmet need in a poor population. Both extended credit to individuals that had previously been seen as "un-bankable." The result was to make the un-bankable bankable!

Is the primary motive financial profit or solving a social problem?

The key aspect is whether the driving force is the profit or the social problem being addressed. One of the best expositions of this comes in a paper published by Stanford University entitled "*Social Entrepreneurship: The Case for Definition*[52];" The money quote here is "*This does not mean that social entrepreneurs as a hard-and-fast rule shun profitmaking value propositions. Ventures created by social entrepreneurs can certainly generate income, and they can be organized as either not for-profits or for-profits. What distinguishes social entrepreneurship is the primacy of social benefit, what Duke University professor Greg Dees, in his seminal work on the field, characterizes as the pursuit of "mission-related impact."*

[52] Social Entrepreneurship: The Case for Definition;" Roger L. Martin & Sally Osberg; Stanford Social Innovation Review Spring 2007. http://www.ngobiz.org/picture/File/Social%20Enterpeuneur-The%20Case%20of%20Definition.pdf

Their cover story on social entrepreneurship features Muhammad Yunus[53].

> *"Social entrepreneurship is the attempt to draw upon business techniques to find solutions to social problems. This concept may be applied to a variety of organizations with different sizes, aims, and beliefs. Conventional entrepreneurs typically measure performance in profit and return, but social entrepreneurs also take into account a positive return to society. Social entrepreneurship typically attempts to further broad social, cultural, and environmental goals often associated with the voluntary sector. At times, profit also may be a consideration for certain companies or other social enterprises."*

Note that Wikipedia also says: "*Some have advocated restricting the term to founders of organizations that primarily rely on earned income–meaning income earned directly from paying consumers. Others have extended this to include contracted work for public authorities, while still others include grants and donations*."

In other words, some scholars feel that to be an example of a social entrepreneurship the organization essentially must be a for-profit organization or at least a non-profit that operates like a for-profit with revenues and expenses and net margins. (But may **not** distribute those profits to owners.) I side with most scholars who take the definition more inclusively as defined by the previous page.

Thus, Muhammad Yunus is considered a social entrepreneur even though his enterprises are often for-profit. I am sure that you can think of many others including -Harish Hande and Teresa Mbagaya.

Questions:

What does SELCO see as their main purpose for existing, and specifically what do they focus on to implement that purpose?

Do you see SELCO as an example of Social Entrepreneurship? Why or why not?

Why do they keep referring to developing "sustainable technologies?" What is that?

How does the fact that they are a commercial enterprise affect their ability to conduct their mission?

[53] https://entrepreneurship.duke.edu/news-item/the-meaning-of-social-entrepreneurship/

Chapter 6 Business Models

Alexander Osterwalder: "*A business model describes the rationale of how an organization creates, delivers, and captures value*"

Steve Blank: "*Unless you have tested the assumptions in your business model first, outside the building, your business plan is just creative writing.*"

The Business Model

This chapter will take a more detailed look at how a company develops a business model. The business model reveals how a company uses its resources, structures its relationships, interfaces with customers, creates value, and returns revenues and profits. It illustrates the core logic of the business.

Looking at the business model tells you how an enterprise can become self-sustaining. This is true for every kind of enterprise –whether it is for-profit or not for profit. A social enterprise has to find a way to be self-sustaining -just as do entrepreneurial firms, life style firms, or salary substitute firms.

The business model helps one to know whether a business make sense? How does it make money? How does it create value? In many ways it provides an ongoing feasibility analysis for the business.

It can also help you understand how the pieces fit together to make a compelling whole. It provides the rationale for why the various stakeholders (customers, suppliers, employees, investors, etc.) want to, and need, to work together. It articulates a company's "**core logic**" to all stakeholders, including the employees and potential investors.

The core logic articulates the mission and business model of the new venture.

To understand business models, it is best to look at specific examples of business models. It is particularly useful to compare business models of companies in similar businesses to see how **business model innovation** may create opportunities for new ventures and provide a competitive advantage to existing ventures. We will consider two examples first. One of them, Uber, is a more recent business model innovation and the story continues to evolve each day in the news. The other, Dell Computer, is one of the older and most successful examples of technology driven business model innovation, but the company has needed to continue to innovate as circumstance change.

Uber

Uber was founded in 2009 by Garrett Camp and Travis Kalanick as "UberCab." They met at LeWeb in Paris, France in 2008. Camp was annoyed by, wanted to solve, the Taxi problem in San Francisco. They came up with a plan to recruit drivers with private cars and then pair them up with people who needed a ride. The original pitch split the cost of a driver, a Mercedes S Class car, and a parking spot and organized this with an iPhone app.

Figure 37 Uber (Photo via Business of Apps)

In January 2010, the service was first tested in New York, and then launched in July 2010 in San Francisco. From May 2011 to February 2012, Uber expanded into Seattle, Boston, New York, Chicago, and Washington D.C.. It proved instantly popular with customer and drivers.

They did their first international expansion into Paris, France in December 2011.

Garrett Camp was a graduate from University of Calgary with a Bachelors in Electrical Engineering and a Masters degree in Software Engineering. He had already been a successful entrepreneur who was the founder of StumbleUpon, a web-discovery engine which he sold to eBay for $75 million in 2007.
He also founded Expa in 2013 as a startup studio that worked to develop and launch new products.

Travis Kalanick was another one of those university dropouts who become entrepreneurs. He dropped out of UCLA in 1998 to found Scour Inc. with some classmates. Later he became the founder of Red Swoosh. Both were peer-to-peer file-sharing companies. Scour filed for bankruptcy in 2000 to protect itself from a major lawsuit. Until 2017, Kalanick was serving as the CEO of Uber, but he was fired following some controversy over employee treatment and diversity.

They were quite successful in raising money and had early investments from Lowercase Capital, First Round, Menlo, Benchmark, Goldman Sachs, and Google Ventures.

Let us now examine the business model as it was in the early years. Over the years the business model has evolved and may have even changed since this writing.

Uber acts as a middleman between drivers and their clients and took 20 percent of each driver's earnings. Uber controls the rate and can raise or lower rates as they please reacting to market conditions or other changes in circumstance. Drivers are responsible for gas and repairs to their own cars. Until March 2014 they were also responsible for insurance, but

now Uber does that. Clients rate the drivers and those ratings encourage competition between drivers. Better ratings lead to more clients -resulting in more money. Drivers also rate the clients, which has led to unfriendly clients being shunned. As you can imagine this has led to some contention.

Uber's presence has resulted in protests and unionization by drivers in many cities -both by their own drivers and by competing taxi drivers. Uber did not require drivers to have a commercial license, which became another item of contention with local governments.

Uber also aggressively sought out partners. In a partnership with AT&T, the Uber app was built into the AT&T android phones and the AT&T users would also get discounts. They created a partnership with the NFL Players Association in which players get $200 worth of credits in an effort by the NFL to market Uber as a safe alternative to driving home. With GM and Toyota, they organized financing and leasing deals for Uber drivers. In an effort to appear more charitable they partnered with the American Red Cross and donated 20% of total fare to the Red Cross Disaster Relief Fund.

Uber expanded rapidly over the early years and was in over 100 cities and 45 countries after the first four years. It has been constantly looking to expand to places like Las Vegas, Daytona, or even Jakarta. Due to this growth, competition has grown, and Uber does not have patents protecting their service. Lyft and Sidecar are almost identical services, just with different apps and prices.

Because Uber is a strong and well-established brand they seem to maintain a solid competitive advantage over other entrants into the industry.

Uber has certainly faced some challenges. In particular, Uber has faced scrutiny over taxi regulation worldwide. Among those places where they were challenged were Australia, Belgian, Germany, Poland, Republic of Korea, the United Kingdom, India and the USA.

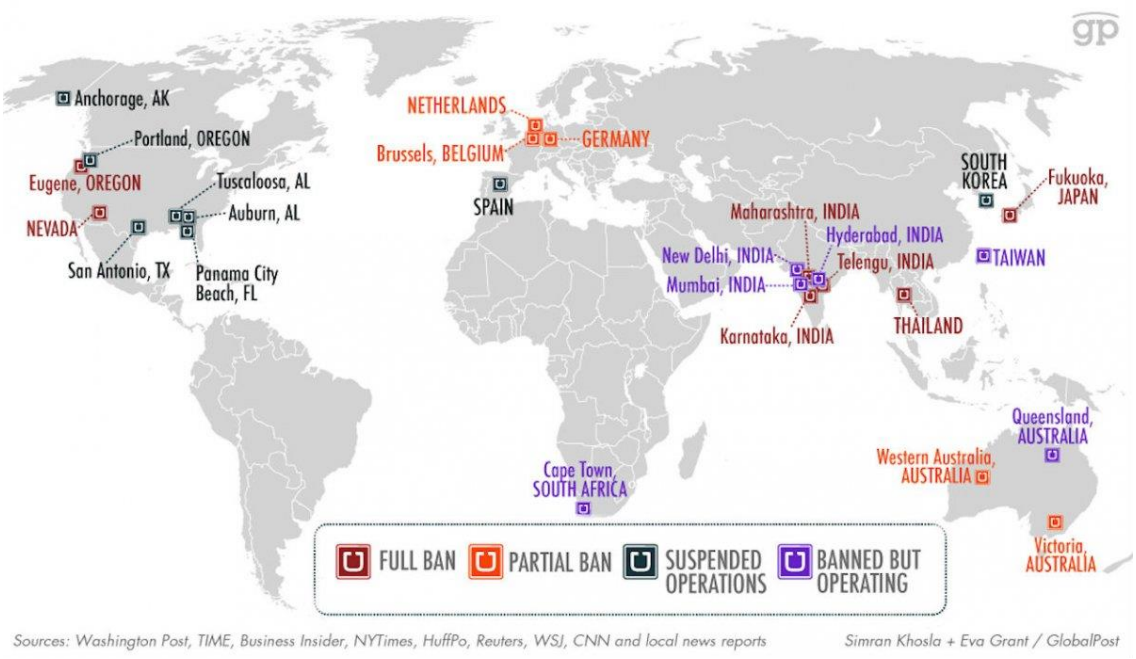


Figure 38 Uber Map of Challenges

Taxi service is a highly regulated industry that usually requires licenses and inspections for the cars as well as for the drivers. They also often require special insurance, which Uber originally did not, but now does carry. Taxi commissions, drivers, and owners, in many cities have protested because Uber did not have to play by the same rules they did.

Many states and municipalities have sent Uber cease-and-desist letters including Massachusetts, Virginia, and San Francisco, but those efforts are often beaten back by both Uber and determined customer base. These efforts have led to governmental and legal scrutiny. Many localities accuse Uber of using unauthorized measurement methods to charge fares as well as other violations of the Taxi regulations. San Francisco and Massachusetts have since reversed those actions, as national standards were changing, and public pressure was put upon officials by Uber users and operators as well as by other entrepreneurial leaders who saw this as an attempt to stifle innovation.

Uber has also suffered from some adverse public relations including employing drivers with criminal records, drivers denying service to the disabled, and car accidents including those involving pedestrians. Most dramatically Uber was accused of creating a culture of sexism and saw many of its highest ranked employees depart. Eventually Kalanick was forced out.

In this chapter, we are most interested in how they found and executed their business model. Consider this side by side comparison:

Uber	Taxis
• Company not licensed as taxi company	• Company licensed by government
• Drivers do not need commercial license	• Drivers specially licensed by government
• Drivers own cars	• Company owns cabs
• Drivers provide gas and maintenance	• Company provides gas and maintenance
• Cars are called with a mobile app	• Cars are called by phone.
• Company provides insurance –since 2014	• Company provides insurance
• Rates are unregulated	• Rates are government regulated
• Drivers can refuse clients	• Drivers cannot (legally) refuse clients
• Clients rate drivers online	• Nobody rates anybody
• Drivers rate clients online	

It reveals the profound differences between the business models of the two businesses and does articulate the core logic of each. It makes quite apparent the competitive advantage Uber enjoys. They don't worry about licensing. They do not have to make large capital investments to buy taxis. They don't worry about gas and insurance expenses. Calling an Uber is both easier and more reliable. They can charge pretty much whatever they want and this means they charge a lot more at times when lots of people are trying to find a ride. They provide a better quality of ride since the cars are newer and the drivers are being rated! Of course, all of these advantages are under counter attack all over the world.

Now you can see how this articulation of the core logic can help all of the stakeholders understand the mission and operation of the business.

Components of the Business Model

What are the components of a business model? Can we make this more formal? Here are the accepted components:

1. The value proposition: what innovation, service, or feature makes the enterprise valuable and attractive to the customer?
2. The target market: what market, and segment of that market, is willing to pay for this? (Market segmentation)
3. Who would be the suppliers to the enterprise?
4. What activities would the organization engage in and how would they conduct those activities?
5. What kind of value and how much value might be created by the organization?

These also address:

1. Core Strategy –how a firm competes
2. Strategic Resources –how it acquires and uses resources
3. Partnership Network
4. Customer interface

It is worth noting that the business model does NOT consider competitors at this point. The competition is not part of the model. Yes, the business model will later be compared to competitors, just was we did with Uber and taxis.

Dell Computer

Consider now a business model comparison for Dell Computer shortly after it was founded by Michael Dell in his dorm room at the University of Texas.

Dell

- Customer Places Order by phone or web
- Suppliers see order and ship components
- Dell assembles computer
- Maintains Customer relationship
- Ship to customer via UPS/FedEx

Existing computer companies (HP, IBM..)

- Forecast demand
- Obtain subcomponents from suppliers
- Make basic components
- Assemble Complete PC
- Inventory
- Ship to retailer
- Retail inventory/display
- Consumer

Once again, the business model shows why this example of business model innovation gave Dell a huge competitive advantage. They did not have to maintain expensive inventories of supplies. They did not have to sell through wholesalers and retailers. They did not have to maintain expensive inventory on retailer's shelves. They also did not have to take back unsold inventory. Dell had a relationship directly with the customer. The other companies may not even have known who the customer was –unless they convinced them to register.

Dell was one of the earliest pioneers of a business model innovation called **disintermediation**, and it is a very powerful innovation. Amazon later used this to blow away bookstores. Netflix used this to destroy blockbuster. The Apple iTunes store crushed the music business model for record stores, music publishers, and even the musicians. Today musicians earn so little money from music sales that they must be on tour constantly to earn much.

Other examples of business model innovation

- *Warby Parker* does direct internet sales of eyewear to customers -bypassing eyewear stores or optometrists. This is another example of disintermediation.
- *Shopkick* gives customers credit for visiting brick and mortar stores with an iPhone app recognizes when user enters a partner retail establishment. The shopper is given kickbucks, discounts, ads, and so on. Shopkick then gets a commission on sales.
- *Solar City* installs solar electric collectors on customer's roofs and shares in the savings and in sales and tax credits. Usually the company receives tax credits which they may use or sell, and many locations mandate that utilities buy the power generated from the customer. In Massachusetts, the utilities must purchase the electricity produced at retail prices and they do not like this one bit. When regulations do not allow power purchase agreements, the company may do it with lease payments instead.
- *Spotify* pioneered the RENTAL of music instead of the purchase.
- *Skype* provided FREE voice and video calls with voice over IP (VoIP). They use the Freemium model in which the basic service is free, but they earn revenue from premium services. They also license software to others for resale as part of their products, and sell advertising, and strike up hardware partnerships.

One of the most important parts of any business model is how you plan to earn your revenue. Surprisingly, that is often neglected in some new ventures. The internet has made revenue models more difficult to develop but here are examples of six distinct ways (business models) to make money online

1. Affiliate Programs –commissions from merchant to web site
2. Pay-per-click –Advertiser places ad on website and pays for each click-thru
3. Direct Ads –banner ads, skyscraper ads, pop-up ads, interrupting ads
4. E-Commerce –direct online sales from the merchant (ie Amazon or Dell)
5. Subscription Services ask the customer to pay a regular fee for access.
6. Freemium Models- Basic web service is free, but a fee based premium service offers far more functionality.

The fatal flaws in business models

There are at least two fatal flaws that will ruin any business model.

The first is when the venture does a **complete misread of the customer**. This is one of the reasons why the Lean Launchpad emphasizes the customer discovery process.

Iridium by Motorola provided a painful example of a misread of the customer. Motorola concluded that everyone needed a satellite phone useable everywhere in the world. Motorola invested about $5 billion dollars to build and launch at least 66 low earth orbit

satellites ready to relay your satellite phone calls anywhere in the world.[54] Not really. Very few people really wanted a satellite phone with all of the expenses and the poor quality of calls. The rise of a ubiquitous cellular system in most countries relegated Iridium to an expensive and rare device. - Iridium failed to attract the large customer base that they expected.

Apple Newton: Apple thought that customers were ready for a clunky tablet computer in 1993.
No, they were not. Only a hard-core group of early adopters bought the Newton. This is an example of a product that was not timely. They were simply too early for the market. When Apple later brought out the iPad in 2010, customers were ready and bought in droves. There is a window of opportunity. Windows of opportunity open at some time and then they close. If you are too early, the customer is not ready, and if you are too late, the customer has already committed to other alternatives.

The second fatal flaw is when there is **utterly unsound economics**. There is an old joke about the entrepreneur explaining to an investor that "We lose money on every item but make it up in volume." Enough said.

The Core Strategy

The Core strategy include the components:

- Mission statement-
- Product/market scope –Defines the product and markets which the company will address, and this can evolve. Amazon began as online bookseller and now it sells everything. Google began as search engine, then added maps, navigation, books, etc.
- Market segments –Dell Computer chose to target business and government, and HP targeted individuals, small business, and first-time computer buyers. Both evolved into the others space over time.
- Differentiation basis –How are you different than existing products. You could try a cost leadership strategy, but this often requires economies of scale that are hard for new companies. Most execute a differentiation strategy around unique products or capabilities. Walmart and Target compete on a cost leadership strategy while Abercrombie and Fitch tries to differentiate itself on the basis of quality, timeliness, and service. It is amusing that Target tries to use a little of the differentiation strategy by differentiating itself by positioning Target as a little more upscale that Walmart!

[54] https://www.airspacemag.com/space/the-rise-and-fall-and-rise-of-iridium-5615034/

The Business Concept Blind Spot

Many companies have failed because they had a business concept blind spot. How many railroads became airlines? How many horse and buggy manufacturers became automobile companies? Blockbuster was destroyed by Netflix. Digital equipment missed the PC revolution.

Here are a few recent examples that have been fatal or near fatal.

- Xerox considered itself "The Document Company." Its focus was on reproduction (old stuff!), and it missed the creation and printing of digital documents. HP now dominates this market.
- Kodak and Polaroid were in the photography business, but they were mainly chemistry companies and very good ones. They each saw digital photography coming but their core expertise meant that they could not accommodate to digital photography.
- Wang, Digital, Data General, Prime, and other computer companies were all created in northeastern Massachusetts! They felt that computing was professional and not personal. Computers were to be controlled by operators and not end users. These minicomputer makers failed to see how the microcomputer would make computing ubiquitous.

Product and Market Scope.

We have seen how Amazon and Google both started in one target market with limited market scope, but then expanded into others. A similar thing happened for Dell and HP. Getting the right product and market scope is critical for a new venture and is another reason that customer discovery is so important –along with the ability to iterate and pivot as required.

It is important for a venture to figure out how to use its **strategic resources** to find a **sustainable competitive advantage**. A company may have core competencies, things the company does better than others, to create that competitive advantage. They may leverage resources using their core competencies to target new markets, and this is important in the longer term.

A new venture may also have **strategic assets** to create that sustainable competitive advantage which is the absolute key to success. These strategic assets need to be unique and not easy to imitate. Examples of strategic assets include plant and equipment, location, brands, patents, customer data, highly qualified staff, or distinctive partnerships

Partnerships

Every new venture has a **partnership network** of suppliers and most have a supply chain with a network of all the suppliers from raw materials to finished product. When Apple was

creating its iPhone, it locked up aluminum CNC supplies so that others could not imitate their product because they could not get access to the needed equipment. Supply chain management is an important skill. There are some strategies available when considering partnership in the business model. Some do insourcing in which a partner moves inside the company! Others do outsourcing by getting external partners or suppliers to do things that the company does not do well or profitably. There are always dangers here - partnerships do founder at times.

Key types of business partnerships include:

- Joint Ventures (JV) -two organizations join to create a new JV
  - Sony-Ericsson was a joint venture by the Japanese consumer electronics company Sony Corporation and the Swedish telecommunications company Ericsson to make mobile phones. The stated reason for this venture is to combine Sony's consumer electronics expertise with Ericsson's technological leadership in the communications sector. Sony later bought out Ericsson.
- Network- Hub and spoke coordinated group of peers
- Consortia-Peer network of similar groups similar to a network but more formal.
- Strategic Alliance – not a joint venture but a win-win business relationship
  - Starbucks and Barnes and Noble in the early days had a strategic alliance.
  - Microsoft and many smaller software creators have one today.
  - Sprint and Microsoft provide business and consumer applications delivered via Sprint's wireless services as well as solutions that provide network security and reliability.
  - Trade Associations are often important for government relations and general public relations
    - Example- API –The American Petroleum Institute deals with contentious issues in fossil fuels and addresses both public concerns and lobbies governments.

Customer Interface

The customer interface is a critical part of the business model. It is how the firm interacts with its customers. One need to segment the market and find your target market. You also need to discover how to get to the customer (Fulfillment and Support). We will focus on marketing more intently in a later chapter. For example, pricing -one of the famous “4Ps” of marketing is a critical factor. The four Ps are: Product, Price, Place, and Promotion, (more in later chapter).

All of these factors are brought together on the Business Model Canvas (BMC) which we will explore in the next chapter. The Business Model Canvas was proposed by Alexander Osterwalder in 2008 as a concise graphical description of the business model. Steve Blank adopted it as part of his Lean Launchpad approach.

Here are the BMC sections[55]:

- *Value Proposition* – What value does the company bring to the customers?
- *Customer Segments* – What market segment(s) are being targeted by the company?
- *Channels* – How do they reach the customers –go to market (market, deliver, and support)?
- *Customer Relationships* – How does the business develop and retain the customer relationships?
- *Key Activities* – What activities need to occur to make the company successful?
- *Key Resources* – How does the company get its resources?
- *Key Partners* – Who are the key partners?
- *Revenue Streams* – How does the company generate its revenues?
- *Cost Structure* – What costs does the business incur?

[55] http://en.wikipedia.org/wiki/Business_Model_Canvas

Each of these sections is then recorded on one sheet of paper.

<table>
<tr>
<td rowspan="2">Key Partners
Who are our Key partners?
Who are our key suppliers?
Which Key Resources are we getting from suppliers?
What key activities do partners perform?</td>
<td>Key Activities
What key activities are required by
1. our value propositions?
2. our distribution channels?
3. our customer relationships?
4. our revenue streams?</td>
<td rowspan="2">Value Proposition
What value do we deliver to the customer?
What problem(s) are we solving for our customers?
What bundles of products and services are we offering to each customer segment?
What customer needs are we satisfying?</td>
<td>Customer Relationships
What type of relationships do customers expect?
Which ones are already established?
How do those relationships fit with our business model?
What is the cost of maintaining those relationships?</td>
<td rowspan="2">Customer Segments
What customers do we create value for?
Who are our most important customers?</td>
</tr>
<tr>
<td>Key Resources
What key resources do we need for:
1. our value propositions?
2. our distribution channels?
3. our customer relationships?
4. our revenue streams?</td>
<td>Channels
Through which channels do our customers wish to be reached?
How do we reach them now?
How do those channels fit together?
Which work best?
Which are most cost efficient?
How do we fit them</td>
</tr>
<tr>
<td colspan="3">Cost Structure
What are the most important costs in our business model?
What key resources are most expensive?
What key activities are most expensive?
Is this business more cost driven or value driven?
Fixed versus variable expenses?
Are there economies of scale?</td>
<td colspan="2">Revenue Streams
What value are our customers ready to pay for?
For what do they currently pay?
How are they currently paying?
How would they prefer to pay?
How much does each revenue stream contribute to the overall revenue?</td>
</tr>
</table>

The Customer Discovery Process

We have seen that a complete misread of the customer is a fatal flaw in any business model. It is only a small extrapolation then to suggest that discovering the customer and what their needs might be and what they are actually willing to pay for should be a key step in building a business model. We shall see that the Lean Launchpad enshrines this as part of a formal process. Failure to take this most essential step is a great way to fail.

Segway: or How to fail at Customer Discovery

Let us consider the case of the Segway, invented by the successful inventor and entrepreneur, Dean Kamen.

(Segway Case Study: http://www.jackmwilson.net/Entrepreneurship/Cases/Case-Segway%20Case.pdf).

In mid 2001, there began many months of hints from Kamen and speculation in the press about what he was up to. There were a few weeks of intense hype and mystery. He had given the project the code name "Ginger," and speculation about what it was ranged from a personal helicopter to an anti-gravity machine. The fact that the latter is impossible under elementary physics did not stop some from suggesting this.

On Dec. 3, 2001 the inventor Dean Kamen unveiled it on Good Morning America and demonstrated that it was a self-balancing two wheel transport device. Some observers were underwhelmed, while others, perhaps blinded by Kamen's many previous brilliant successes, hailed it as a world changing technology. To the latter, this heralded a new form of personal transport.[56]

John Doerr, one of the most famous venture capitalists in the US said it was: "As important as the internet" Steve Jobs, the brilliant Apple co-founder, claimed: "Cities will be built around it." They set up a factory that could produce 40,000 Segways per month. They were certain that the market was huge and ready and willing to pay for this new new thing.

Investors are fond of saying that they would rather invest in an "A" team even if it was a "B" product, rather than investing in a "B" team with an "A" product. There was no doubt that this was an "A" team with an "A" product. What could possibly go wrong?

Dean Kamen attended Worcester Polytechnic Institute but dropped out to invent a variety of products. He invented the first drug infusion pump and started a company, AutoSyringe, to market and manufacture the pump. His company DEKAResearch (NH) patents various products including: technology used in portable dialysis machines, an insulin pump (based on drug infusion pump technology), and an all-terrain electric wheelchair known as the iBOT. In total he was awarded over 440 total patents in his name. He was also very active a supporter of engineering and science education. He Founded **FIRST** in 1989 -which is an acronym: **F**or **I**nspiration and **R**ecognition of **S**cience and **T**echnology.

The product could easily be seen as an "A' product as well. The Segway technology was adapted from his brilliant gyroscopic all-terrain wheelchair. Segway was a technological tour de force. The technology worked perfectly and exactly as designed and advertised. It passed extensive field testing and environmental stress testing. What happened?

[56] https://www.wired.com/2009/12/1203segway-unveiled

We can do our own feasibility analysis on Segway:

- We can begin by noting that the founder is both brilliant and experienced. (JMW-BE-Chapter 9: Building your team)
- We have seen that the product worked exactly as intended and was proven reliable and innovative. (JMW BE-Chapter 11: New Product Development)
- The company had excellent patent protection for its Intellectual Property. (JMW-BE-Chapter 12: Intellectual Property
- The product had outstanding public relations and free advertising. (JMW-BE-Chapter 13: Marketing)
- The company had more than adequate resources to launch the product. (JMW-BE-Chapter 14: Finding the Financing)
- The company had no competitors.

This new venture sounds like a slam dunk. If the greatest Silicon Valley venture capitalist, John Doerr, invested in it, it must be a no-brainer.

Instead it failed miserably. Instead of selling 40,000 per month, it sold 300 per month. In 2010 Segway was sold to a British Millionaire –Jimi Heselden. Unfortunately, he died in a Segway accident on September 27, 2010. He apparently fell off a 30-foot cliff into a river while riding a Segway near his home in West Yorkshire, UK. Police found Heselden's body and a Segway personal transporter in the river.

In April 2014 Segway was purchased by Beijing-based Ninebot, which makes a range of short-distance motorized transport devices. It may be that they wish to combine the Segway's patented gyroscopic two wheel balance system with robotics that they already produce.[57]

In 2016, Ninebot and Google launched a joint venture to create a robot to self-drive the Segway.[58]

To the present, police and security organizations have become the major purchasers. Compared to the exalted expectations, this was one of the greatest failures of all time. Given all the great things going in Segway's favor, what was the missing piece?

The customer was the missing piece. Who was the customer and how would that customer want to use this device? It was also important to consider some of the political and regulatory obstacles. Segway really needed to do a Customer Development process as described in JMW-BE-Chapter 7: The Lean Launchpad.

[57] https://www.usatoday.com/story/money/business/2015/04/15/segway-china/25810851/
[58] https://techcrunch.com/2016/01/07/segway-has-created-a-robot-that-connects-to-your-two-wheeled-scooter/

Consider some of the political, logistical, and regulatory issues facing Segway:

- Is this a motor vehicle?
- May it travel on roadways?
- May it travel on sidewalks?
- Where do you park it?
- How do you get it from place to place over longer distances? – Car? Train? Bus?
- Are cities designed to accommodate this? – (Did Steve Jobs REALLY believe that cities would be redesigned for this?)
- Who represents the potential market and how large is it?
- Who do you target first?
- What happens when you run out of charge?
- Will you build re-charging stations?

There were also some safety issues to be considered;

- Driver safety and training?
- Pedestrians in the area.
- Would you rather try to drive this in New York City traffic or on a crowded New York City sidewalk?
- What about an LA Freeway?
- On a snowy Massachusetts street?
- In a rainy Portland road?
- Segway requires two hands and thus cannot be used by anyone that needs to have a free hand.

Some cities, San Francisco for example, outlawed it immediately!

The Customer Discovery Process could have answered many of these questions. Markets probably exist but were not targeted. Instead they targeted everybody and nobody. The price was too high at $4950. Did financing pressure force the broad target?

They might have avoided the push back from cities if they had done a competition to pick a first city -as Google and others have done with their self-driving cars. This could get the leaders on your side and build publicity and excitement. It could even create envy in other cities. Then Segway could have ramped up slowly and potentially created an artificial shortage.

Most importantly, they could have segmented the market and found an appropriate first target group. Perhaps it might have included police, tourists, and the military.

Segway presents a case that demonstrates the importance of the issues that we will raise throughout the course. In the next chapter, we will look more deeply into the customer discovery process as it is developed in the Lean Launchpad model and as used in the National Science Foundation iCorps program.

What is certain, however, is that failure to do a proper feasibility analysis and customer discovery process doomed the Segway to disappointment.

Chapter 7 Lean Launchpad and Business Model Canvas

Master Yoda: "The greatest teacher failure is," in Star Wars-The Last Jedi

Entrepreneurship is always a work in progress –from business plan competitions to the lean launch pad.

Entrepreneurship today is in a state of flux as the field has recoiled from the prescriptive approach of the last few decades in which the business plan, and business plan competitions, defined the science of entrepreneurship. We will refer to this model of entrepreneurship, which tends to be a bit more linear and serial as the "causal" or "traditional" model. The annoying fact that many, if not most, new businesses simply did not use business plans was viewed as something undesirable and needing to be corrected. That was then and this is now.

As scholars looked at start-ups in a systematic fashion, they observed that even those that did have business plans rarely executed those business plans in a linear fashion. In fact, most successful new businesses ended up on a trajectory that was not envisioned in the original plan. The ability of a new venture to change its business model dramatically in mid-course has come to be known as a pivot. This has led to many scholars abandoning the idea of the business plan altogether.

An Alternative Viewpoint-Effectual Entrepreneurship[59]

Earlier, we introduced the concept of effectual entrepreneurship as developed by Saras Sarasvathy, a Professor in the Darden School of Business at the University of Virginia.[60] She studied entrepreneurship carefully by interviewing successful entrepreneurs and has criticized the causal or traditional process as much too deterministic.[61] Life is simply not that orderly! She has proposed an alternative formulation that she terms "the effectual entrepreneur." In her formulation there are five major principles:

- **Bird in Hand** – Who are you? What do you know? Who do you know? What do you have?
- **Affordable Loss** –Limit risk by focusing on the downside and knowing what you can afford to lose when you go after the upside.
- **Lemonade** – Use your lemons to make lemonade. Use the bad news as a clue to what might work in new markets.
- **Patchwork Quilt** – Form partnerships. Working together can increase the probability of success through co-creation of new markets.
- **Pilot in the Plane** –Control rather than predict. The future is created rather than found or predicted.

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[59] Effectual Entrepreneurship", by Stuart Read, Saras Sarasvathy, Nick Dew, Robert Wiltbank and Anne-Valérie Ohlsson Routledge Publishing; NY, NT (2010).

[60] http://www.effectuation.org/sites/default/files/documents/what-makes-entrepreneurs-entrepreneurial-sarasvathy.pdf

[61] http://www.effectuation.org/sites/default/files/documents/effectuation-3-pager.pdf

The Lean Launchpad

In this chapter we will introduce the concept of the Lean Launchpad, as it is used in the National Science Foundation iCorps Program to encourage scientists and engineers to move their research into the market place through entrepreneurship.[62] The originator of this model, Stanford University's Steve Blank, bills his model as the "*evidence-based model of entrepreneurship*.[63]"

You will no doubt notice the similarities to the approach of Effectual Entrepreneurship and the conclusions that Steve Blank reached in the development of the lean launchpad.

Sarasvathy is a scholar who has done a careful study and published her work in peer reviewed journals to be evaluated and perhaps substantiated (or refuted) by her peers. She refers to her model as "Effectual Entrepreneurship."

Blank is a serial entrepreneur of some success who draws on his personal experiences and is primarily a consumer of research rather than a producer. His formidable marketing skills have made the lean launchpad a hot topic around the world.[64]

Steve Blank became the leading apostle of business plan rejection several years ago[65],[66],[67]. In 2009 he wrote that "*In the real world, most business plans don't survive the first few months of customer contact. And even if they did – customers don't ask to see your business plan[68]*". Steve advocated for the supremacy of business models and he enshrined the concept of the pivot as part of his mantra of the "Customer Development Process" with the concepts of

- "minimum viable product (MVP),"
- "iterate and pivot",
- "get out of the building," and
- "no business plan survives first contact with customers."

Blank claims that[69]

> "*after decades of watching thousands of startups follow this standard regimen, we've now learned at least three things:*

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[62] http://www.nsf.gov/news/special_reports/i-corps/resources.jsp
[63] http://www.forbes.com/sites/steveblank/2013/06/18/the-lean-launchpad-educators-course/#df15d0d43a74
[64] http://steveblank.com/about/
[65] http://www.businessinsider.com/the-lean-launchpad--teaching-entrepreneurship-as-a-management-science-2011-3
[66] https://www.udacity.com/course/how-to-build-a-startup--ep245
[67] http://www.entrepreneur.com/article/219772
[68] http://steveblank.com/2009/05/07/business-plan-competitions-2/
[69] http://nciia.org/sites/default/files/u7/Educators%20Guide%20Jan%202014.pdf

- *As business plans are full of untested assumptions, they rarely survive first contact with customers.*
- *As the boxer Mike Tyson once said about his opponents' prefight strategies: "Everybody has a plan until they get punched in the mouth."*
- *No one, aside from venture capitalists and the former Soviet Union, requires five-year plans to forecast a series of unknowns. These plans are generally fiction, and conceiving them is almost always a waste of time.*

Startups are not smaller versions of large companies. They do not unfold in accordance with master plans. Those that ultimately succeed go quickly from failure to failure, all the while adapting, pivoting, testing new iterations, and improving their initial ideas as they continually learn from customers.

Existing companies execute a business model, startups search for one. This distinction is at the heart of the Lean Startup approach. It shapes the lean definition of a startup:
a temporary organization designed to search for a repeatable and scalable business model.

Blank sees new ventures as something entirely different than existing ventures.

- Existing ventures EXECUTE a business model.
- New ventures SEARCH FOR a scalable and sustainable business model.

According to Steve Blank:

- A startup is a temporary organization
- It either goes out of business or finds a solution that customers are willing to pay for.
- It is created to search, explore, and validate an unmet need
- The search requires making and testing assumptions and **pivotin**g as you learn. Cycling through the assumptions and the testing is known as **iterating**.
- for a repeatable and scalable business model
- Once a sustainable business model is found, the venture is not a startup.

To be fair to many others in the field, his insights into the shortcomings of the business plan were not entirely new and were probably more a reaction to the way the business plan had become unexamined and enshrined dogma that hampered development rather than helped. The problem was not that doing a business plan was bad, but that too many people actually believed that the business plan was an actual "plan" in the sense that large companies create plans. Most of those who taught entrepreneurship already knew that the business plan was something that required regular testing and revision.

I often told my students that the last step in the development of ANY plan was to step back and ask yourself what you were going to do when the plan did not go as planned.

Blank made the significant contribution of pulling together the alternate approaches, rebranding it, and then marketing it into key constituencies –working with one of his students, Eric Reis. Their Lean-Launchpad model of entrepreneurship now bills itself as the "*evidence-based entrepreneurship*" model and Blank has even trademarked the latter term.

Blank was trying to take a more scientific approach to entrepreneurship –one that was based upon the traditional "scientific method." Karl Popper claimed that only an assumption that could be falsified could be claimed to be scientific.[70] This means that an assumption should be stated clearly and in writing. It must be possible to prove that assumption wrong. If it is not, then it is not scientific. No assumption can be proven "correct." You can only say that you have not been able to prove it wrong after lots of effort. In other words, it must be a "testable" assumption. These testable assumptions can be part of the business model.

As Blank puts it the business model contains "*a series of hypotheses about all the pieces of the business model: Who are the customers/users? What's the distribution channel? How do we price and position the product? How do we create end user demand? Who are our partners? Where/how do we build the product? How do we finance the company, etc*.?[71]"

If you were Steve jobs in contemplating creating the iTunes store you might offer this assumption: People really want to carry their music around with them on their phone and would buy inexpensive recordings online. This is a testable hypothesis. He built the store and the hypothesis was not falsified. (I may claim in the future that a hypothesis is "proven," but you will know that I mean it has not been falsified!)

Motorola, in 1998, made an assumption that a large number of the general public would want to own a phone that would communicate by satellite to and from anywhere in the world. Under that assumption, they launched a company called Iridium that launched satellite to allow communication anywhere in the world. That assumption was tested and found to be FALSE.[72] They went bankrupt but were eventually relaunched after a pivot to a smaller and richer market.

The enormously successful New Hampshire entrepreneur, Dean Kamen, made the assumption that many people would want to have a two-wheel personal transporter and that cities and building owners would embrace this as a major breakthrough. He built and launched the Segway and proved that the assumption was FALSE. He then pivoted to use the Segway for certain special purposes, often security, in small markets.

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[70] https://en.wikipedia.org/wiki/Karl_Popper
[71] https://steveblank.com/2010/01/25/whats-a-startup-first-principles/
[72] https://en.wikipedia.org/wiki/Iridium_Communications

The keys to the Lean Launchpad are to listen to the customers, to make assumptions, build a **minimum viable product** to test those assumptions, minimize the risk, learn from the market reaction, pivot based upon what you learn, and then repeat the process –**iterate**!

Or as Master Yoda explains to a depressed Luke Skywalker in the *Star Wars –Last Jedi* film: "*Heeded my words not, did you? Pass on what you have learned. Strength, mastery. But weakness, folly, failure also. Yes, failure most of all.* ***The greatest teacher, failure is*****.**

NSF and the iCorps Program

The National Science Foundation embraced Blank's and Reis' formulation of new venture development when they launched their iCorps program a several years ago.[73] In many ways they viewed it as a more scientific approach to venture creation that used the method of hypothesis formation, quick testing, revision, further testing, and continuous refinement. Fields as disparate as science and creative writing would perceive this process as the continuous refinement of drafts while writing. It is indeed the way the world works. We build new models of anything we study as we find out more and more detail through research. And so it is with entrepreneurship.

In the new model, the business model canvas, originally proposed by Alexander Osterwalder becomes the starting point.[74] (See an example below)

This transition continues to play out in entrepreneurship education programs across the country –as well as at UMass. The most used textbooks are built under the old paradigm. Business plan competitions continue to be held in spite of Steve Blank's pronouncement that "I hate business plan competitions."

Just as physicists teach Newton's Laws and the Einstein Theory of Relativity –which extends and alters Newton's laws, entrepreneurship education needs to introduce students to the process of business planning as well as the limitations and the alternative formulations, like Blank's, that have emerged.

We also need to alert students to the danger of allowing any model (including Blank's) to morph into a dogma that could constrain innovation.

Customer Discovery -Customer versus Product Development

Steve Blank articulated a detailed customer discovery process[75]:

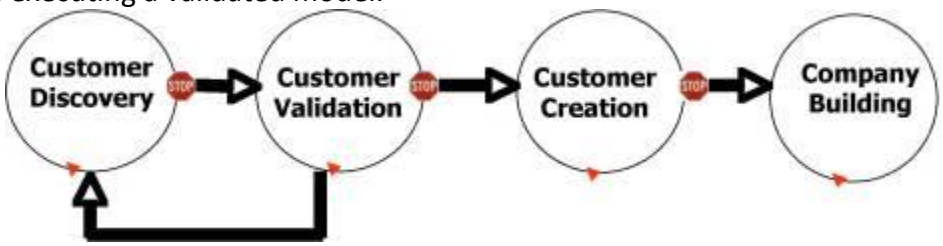
- Get out of the building (physically or virtually)
- Talk to customers, ask them questions, and listen.

[73] http://www.nsf.gov/news/special_reports/i-corps/
[74] http://businessmodelgeneration.com/canvas
[75] http://steveblank.com/tag/customer-discovery

- Sales calls aren't your IQ test or PhD defense
- Stop talking and listen to the customers problem
- Hire a sales team at the Customer Validation step
- Match the sales team to market type

The process then extends from customer discovery into building a viable venture in a few distinct steps.

- **Customer Discovery** first captures the founders' vision and turns it into a series of business model hypotheses. Then it develops a plan to test customer reactions to those hypotheses and turn them into facts.
- **Customer Validation** tests whether the resulting business model is repeatable and scalable. If not, the team returns to Customer Discovery.
- **Customer Creation** is the beginning of execution. It builds end-user demand and drives it into the sales channel to scale the business.
- **Company-building** transitions the organization from a startup to a company focused on executing a validated model.



MVP- Minimum Viable Product[76]

In product development, the minimum viable product (MVP) is the product with the highest return on investment versus risk. The term was coined and defined by Frank Robinson, and popularized by Steve Blank, and Eric Ries.

An MVP is not a minimal product; it is a strategy and process directed toward making and selling a product to customers. It is an iterative process of idea generation, prototyping, presentation, data collection, analysis and learning. One seeks to minimize the total time spent on iteration.

The process is iterated until a desirable product/market fit is obtained, or until the product is deemed to be non-viable.

The Pivot

What you learn in the customer development process or in the build-measure-learn process will OFTEN cause you to change direction. This change of direction is termed The Pivot. It is not a sign of failure. It is a sign of success through learning something new.

[76] http://steveblank.com/2013/07/22/an-mvp-is-not-a-cheaper-product-its-about-smart-learning/

Many teams, particularly technology-based teams, believe "a company is all about my invention." Steve Blank's goal and the iCorps goal is to teach them "it's all about the business model."

The three components (MVP, Pivots, and Customer Development) conserve cash during the time that they are searching for a viable business model. It can also accelerate the process and reduce the time it takes to discover a viable product-market fit.

Relationship between Effectual Entrepreneurship, Causal Entrepreneurship, and the Lean Launchpad

Professor Li Sun and others have studied the relationship between Causal Entrepreneurship and Effectual Entrepreneurship and the Lean Launchpad. Sun focuses particularly on the differences between the search and execution phases of a ventures development.

He suggests that

> *"According to the practice wisdom of the lean startup, a startup is defined as a temporary organization designed to search for a repeatable, sustainable, and scalable business model (Blank 2013). Existing companies have developed successful business models while new ventures can only struggle with a series of untested hypotheses. By testing these hypotheses within markets and with customers, new ventures continuously revise or pivot into new hypotheses. Once all of the hypotheses are tested and verified, new ventures start to build a complete business model and formal organization. From this point on, the startup starts to make predictions and devise a plan accordingly77."*

He summarized the differences between search and execution in Table 1.

[77] Yang, X., Sun, S. L., & Zhao, X. 2017; "Search and execution: Examining the entrepreneurial cognitions behind the lean startup model;" Small Business Economics; Forthcoming (doi: 10.1007/s11187-017-9978-z).

Table 1:
A comparison of entrepreneurial activities between search and execution adapter from the work of Li Sun[78]:

	Search	Execution
Main activities	Experimentation, risk taking, variation, discovery, survive	Implementation, selection, production, efficiency, refinement, growth
Strategy	Hypothesis driven, exploration	Implementation driven, exploitation
Attitude toward failure	Expected and fail fast	Avoid
Management	team Founders	Professional executives
Product	Minimum variable product, service, interaction with customers	Product for the real product, quality, brand, customer demand
Competition	Avoid	Confront
Pricing policy	Flexible, high, by contingency	Fixed, low, based on cost and profitability
Promotion	Word of mouth, low-cost method	Advertisement, high-cost method
Channels	Wholesale, agency	Direct sale
Customers	Early adopters	Majority users
Market positioning	Niche market	Primary market
Business model	Unknown	Known
Profitability	Survive	Profitable
Stage in firm growth	More in early stage	More in late stage

What are the differences between causation and effectuation? There are mainly five differences between effectual and causal logics in terms of views of the future, bases for taking action, predisposition toward risk and resources, attitudes toward outsiders, and attitudes toward unexpected contingencies.

Causal logic (adapted from Li Sun):

1. *views the future as a continuation of the past, while effectual logic views the future as shaped by people.*
2. *is goal-oriented and actions are determined by goals, while effectual logic is means-oriented, and goals come into being based on given means.*
3. *focuses on the upside potential (expected return) while effectual logic focuses on limiting the downside potential (affordable loss).*
4. *poses a competitive attitude toward outsiders while effectual logic advocates a partnership view of other players.*

.[78] Yang, X., Sun, S. L., & Zhao, X. 2017. "Search and execution: Examining the entrepreneurial cognitions behind the lean startup model;" Small Business Economics; Forthcoming (doi: 10.1007/s11187-017-9978-z).

5. *avoids contingencies by accurate predictions and careful planning while effectual logic leverages contingencies by eschewing predictions.*

Li Sun suggests that entrepreneurs could follow effectual logic to engage in search activities[79].

1. *When entrepreneurs have a creative view toward the future, their search activities will be more productive. Under effectual logic, entrepreneurs frame the future as a result of co-creation by different stakeholders who are "stitched together". Effectual logic assumes that entrepreneurs have particular means available, which is a starting point to take action under uncertainty. Since entrepreneurs are less likely to predict the future and more inclined to modify their initial goals and visions of the future, they engage in more search activities that result in more serendipity.*
2. *Effectual logic increases the depth and breadth of search. Effectual logic focuses on affordable loss and encourages entrepreneurs to experiment with different strategies with all the means given. Rather than maximizing present returns, the effectuation mindset prefers options that can create more options for the future. Such a preference for additional future options leads to more explorative activities such as experimentation, trial attempts, risk taking, testing, and searching….. According to effectual logic, the affordable loss principle will make firms keep searching for a certain option rather than stop at any point if the return reaches the expected level. Similarly, to create more options for the future, firms following effectual logic need to search extensively rather than focusing on a few options.*
3. *Effectual logic leads entrepreneurs to configure different resources in search activities. An effectuation mindset emphasizes strategic alliances and a pre-commitment by stakeholders in order to reduce uncertainty and build entry barriers. During such an alliance and pre-commitment process, entrepreneurs commit the physical resources (who they are), human resources (what they know), and organizational resources (whom they know) to search for a repeatable, scalable, and profitable business model. Under the affordable loss principle, they take uncertainty, risk, and failure for granted and make small bets to ensure that their failure is not catastrophic.*
4. *Effectual logic leads entrepreneurs to leverage a partner's advantage. Effectual logic emphasizes strategic alliances and the pre-commitments of stakeholders rather than competitive analyses. Under effectual logic, entrepreneurs tend to proactively look for partners such as suppliers, customers, or even competitors with complementary skills or assets to create opportunities with them.*

[79] Yang, X., Sun, S. L., & Zhao, X. ;. "Search and execution: Examining the entrepreneurial cognitions behind the lean startup model;" Small Business Economics; Forthcoming (2017).

5. *Effectual logic leads entrepreneurs to leverage the opportunity in contingency. Effectual logic is also in favor of unexpected events, using contingencies as opportunities for novel creation and leveraging these events by shifting action to take advantage of them. Search literature shows that firms conduct two types of search activities: problem-driven search and opportunity motivated search. ……. When contingencies arise unexpectedly, effectual logic will enable entrepreneurs to better exploit such opportunities by conducting an opportunity-motivated search.*

The above has been adapted from Sun. The references may be found in the original footnoted article.

Business Model Canvas

Let's look at the Business model canvas as it is used in the LeanLaunchpad.

Key Partners Who are our Key partners? Who are our key suppliers? Which Key Resources are we getting from suppliers? What key activities do partners perform?	Key Activities What key activities are required by 1. our value propositions? 2. our distribution channels? 3. our customer relationships? 4. our **revenue streams**?	Value Proposition What value do we deliver to the customer? What problem(s) are we solving for our customers? What bundles of products and services are we offering to each customer segment? What customer needs are we satisfying?	Customer Relationships What type of relationships do customers expect? Which ones are already established? How do those relationships fit with our business model? What is the cost of maintaining those relationships?	Customer Segments What customers do we create value for? Who are our most important customers?
	Key Resources What key resources do we need for: 1. our value propositions? 2. our distribution channels? 3. our customer relationships? 4. our **revenue streams**?		Channels Through which channels do our customers wish to be reached? How do we reach them now? How do those channels fit together? Which work best? Which are most cost efficient? How do we fit them into customer routines	
Cost Structure What are the most important costs in our business model? What key resources are most expensive? What key activities are most expensive? Is this business more cost driven or value driven? Fixed versus variable expenses? Are there economies of scale?			Revenue Streams What value are our customers ready to pay for? For what do they currently pay? How are they currently paying? How would they prefer to pay? How much does each revenue stream contribute to the overall revenue?	

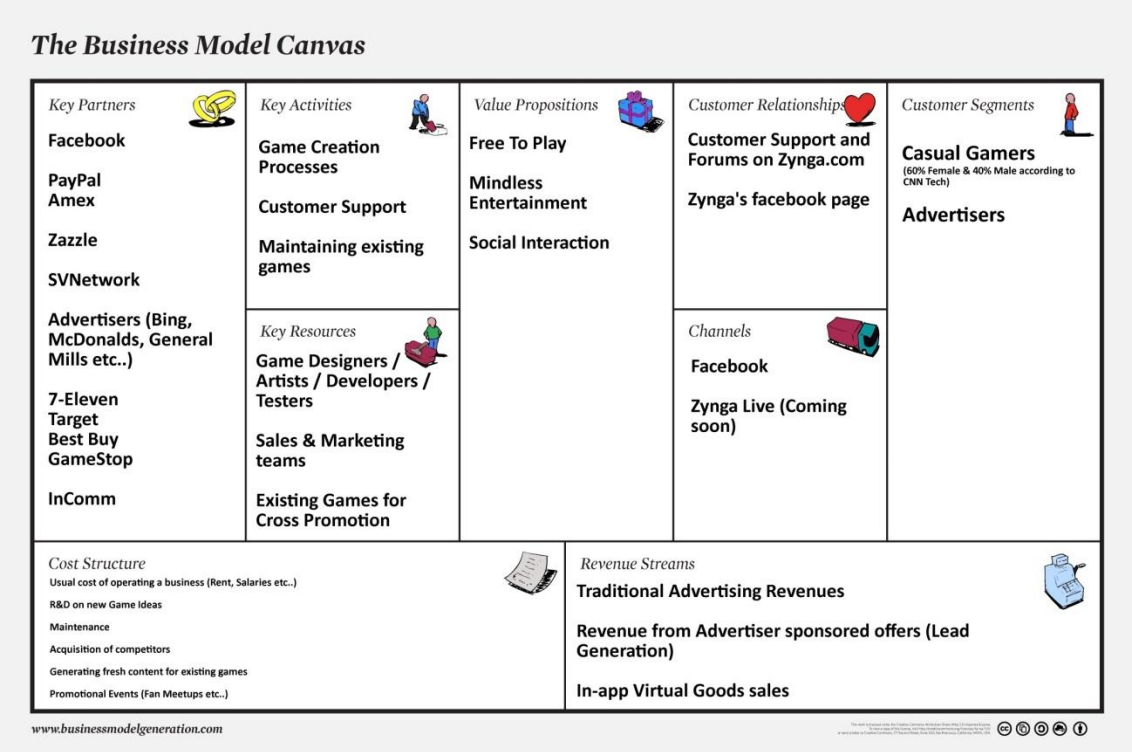
The business model canvas has nine sections[80]:

- Value Proposition – What value does the company bring to the customers?
- Customer Segments – What market segment(s) are being targeted by the company?
- Channels – How do they reach the customers –go to market (market, deliver, support)?

[80] http://en.wikipedia.org/wiki/Business_Model_Canvas

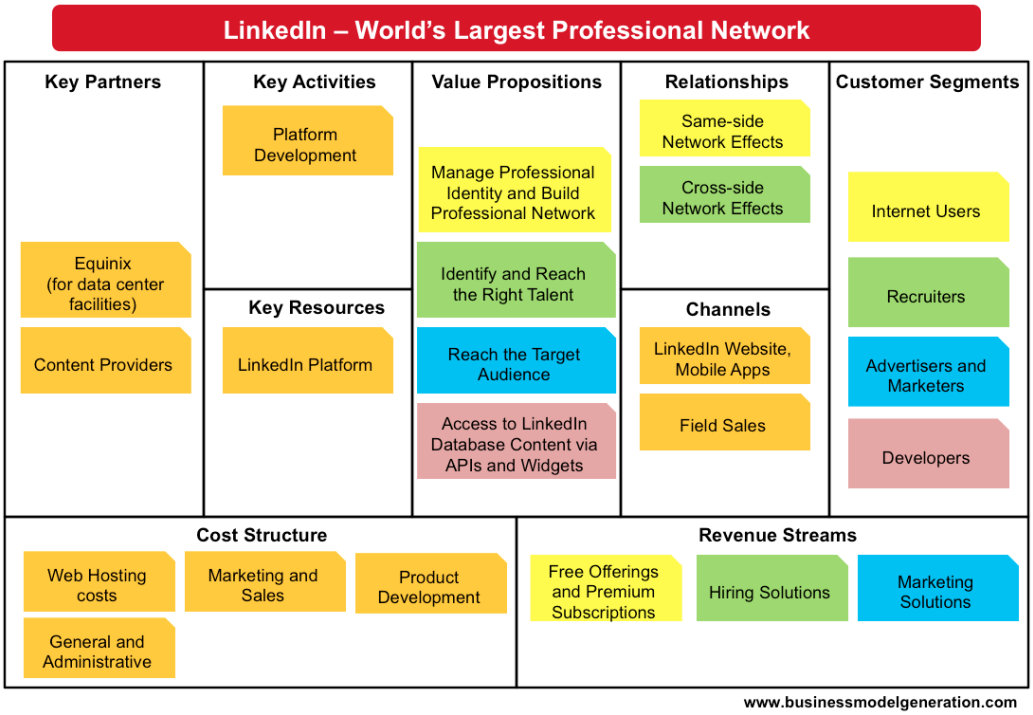
- Customer Relationships – How does the business develop and retain the customer relationships?
- Key Activities – What activities need to occur to make the company successful?
- Key Resources – How does the company get its resources?
- Key Partners – Who are the key partners?
- Revenue Streams – How does the company generate its revenues?
- Cost Structure – What costs does the business incur?

Here are a few examples of Business Model Canvases
The first is from Zynga.[81]

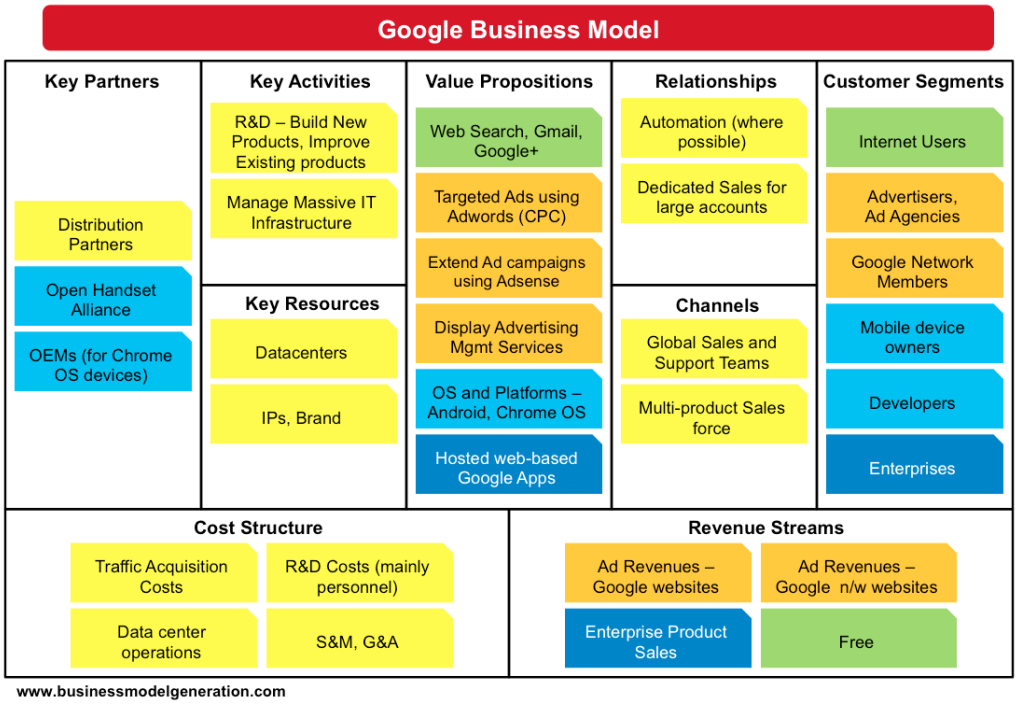


[81] http://freethinkingbrian.files.wordpress.com/2013/09/zynga_business_model_canvas.jpg

The next example is LinkedIn[82]



Google Business Model Canvas[83]



[82] http://bmimatters.com/
[83] http://bmimatters.com/

Privo Technologies

Privo Technologies provides an example of a new startup co-founded by an UMass Lowell Graduate and an MIT Professor. Now let us take a look at a company that was founded and is led by Manijeh Nazari Goldberg, who took two degrees (engineering and computer science) from Umass Lowell and then one each from Harvard and MIT. She then returned to UMass Lowell an obtained her PhD.

Privo Technologies was formed to commercialize a discovery made in Robert Langer's laboratory at MIT that allowed the delivery of various drugs through encapsulation of the drug using nano-technology. Privo was a winner of the MIT 100 K Business Plan Competition. Their original idea was Nano delivery of insulin by chewing gum

They are working in very tough area of raising money to commercialize -Biotechnology. It can take a billion dollars to bring a new drug to market.

The original Privo Technologies Business Model Canvas:

<table>
<tr><td rowspan="2">Key Partners
• NSF and NIH
• Mass Life Sciences
• Universities (MIT, Harvard, UML,etc
• Academic Centers
• Venture Capital
• Philanthropy</td><td>Key Activities
• Diabetes Research
• Trans-Mucosal Delivery development
• Fund raising
• Grant Writing</td><td rowspan="2">Value Proposition
• Oral Mucosal Drug Delivery
• Improve patient quality of life.
• Improve compliance relative to injections
• Minimize side effects
• Reduce Hospital Stay
• -Reduce overall cost of healthcare.</td><td rowspan="2">Customer Relationships
• Endocrinologists as advisors</td><td rowspan="2">Customer Segments
Type II diabetic patients who need to inject insulin</td></tr>
<tr><td>Key Resources
Scientists
Mass Life Science Center</td></tr>
<tr><td colspan="3">Cost Structure
• Salaries
• Lab space
• Lab equipment
• Materials and supplies
• Fund raising
• IP license and development
• Legal</td><td colspan="2">Revenue Streams
• Commercial Licensing
• Sale of the company
• Royalties</td></tr>
</table>

Steve Blank likes to say that the entrepreneur needs to "get out of the office and speak with customers." Privo took this advice very seriously. As they moved forward they learned both from their successes and their mistakes –and got lots of advice along the way. They interviewed 20 Physicians, 40 Scientists, 12 Attorneys, and 6 Multinational Pharmaceutical Co.

They wrote many Grants (that were peer reviewed) for

- NCI (National Cancer Institute)
- NIH (National Institute of Health
- MLSC (Mass Life Science Center)
- NSF (National Science Foundation)
- Next (Rare Disease services)
- NCL (Nano Characterization)
- Deshpande Center –MIT

They met with the governments of 7 other countries. From these experiences they **learned** and **pivoted**.

When an entrepreneurial venture learns from their customers, experience, mistakes, and other sources that they need to take a significantly new direction it is critical that they listen to that learning. At that point we say they Pivot. Research shows that this is very typical of a new venture and is not actually either rare or a fatal flaw. You have learned something new about the market -from the market. If you are walking down a hall looking for the exit door and you open a door and find that it is a closet, what would you do? Close the closet door and open another door!

When we compared Effectual Entrepreneurship (EE) to Causal Entrepreneurship (CE) we saw that they (EE) rejected set goals in favor of constant iteration. This is also an element of the Lean Launchpad.

This led to a new Business Model Canvas by 2014:

<table>
<tr>
<td rowspan="2">Key Partners
• NSF and NIH and NCI
• Mass Life Sciences
• Universities (MIT, Harvard, UML,etc
• Academic Centers
• Venture Capital
• Philanthropy
• New England Hospitals
• Global Hospitals
•</td>
<td>Key Activities
• ~~Diabetes Research~~
• ~~Trans-Mucosal~~ Delivery development
• Fund raising
• Grant Writing
• Optimize Formulation
• Build partnerships
• Manufacturing nanoparticles (NP's)
• Pre-clinical trials
• Phase 1 clinical trials</td>
<td rowspan="2">Value Proposition
• Oral Mucosal Drug Delivery for oral cancer chemotherapy
• Improve patient quality of life.
• ~~Improve compliance relative to injections~~
• Minimize side effects
• Vastly lower toxicity
• Ease of use
• ~~Reduce Hospital Stay~~
• Reduce overall cost of healthcare.</td>
<td rowspan="2">Customer Relationships
• ~~Endocrinologists as advisors~~
• Oncologists as advisors
• Pharma as advisors/mentors
• Oncology radiologists</td>
<td rowspan="2">Customer Segments
• ~~Type II diabetic patients who need to inject insulin~~
• Chemo-wafer cancer patients
• Age 62+ at diagnosis
• Early stage oral cancer (OC) patients.
• Later stage OC patients.
• HPV patients (male 40-59)
• Oncology surgery patients
• Head and neck oncologists and surgeons
•</td>
</tr>
<tr>
<td>• Chief Research Officers (CRO) for manufacturing and pre-clinical.</td>
<td>Key Resources
• Scientists
• Mass Life Science Center</td>
<td>• other applications
• Deliver other drugs through buccal tissue using NP permeation
• Using NP loaded chemo-wafer to deliver drugs to other targets.</td>
<td>Channels
• Large Pharma as partners or purchasers for Global Marketing Sales and Distribution</td>
</tr>
<tr>
<td colspan="3">Cost Structure
• Salaries
• Lab space
• Lab equipment
• Materials and supplies
• Fund raising
• IP license and development
• Legal</td>
<td colspan="3">Revenue Streams
• Commercial Licensing
• Sale of the company
• Royalties</td>
</tr>
</table>

Now that is quite a pivot. When they won the MIT Business Plan contest, their value proposition was to provide oral delivery of insulin for the treatment of diabetes. After an extensive customer discovery process, they realized that the market for diabetes treatments was much too crowded and there did not seem to be customers ready to purchase such a product. After that discovery they decided to use the drug delivery platform that they developed through nano-encapsulation and use it to deliver drugs to fight oral cancer instead.

You can now see why effectual entrepreneurship focuses on the iterative relationship between means, goals, interactions, and commitments.

EE is far less goal-oriented and far more interested in how one can use the resources at hand to create something of value.

The Lean Launchpad de-emphasizes detailed planning and emphasizes speed, flexibility, responsiveness (to the market), learning, and pivoting when you learn something important. They want you to "iterate and pivot." The Privo Technology experience is an excellent example of the process of "**Customer Discovery**" and of the "**Pivot**."

Many investors will still ask entrepreneurs to see their business plan, but the work of Sarasvathy, Blank, and many others has led to a better model and a realization that an inflexible approach to business planning is not appropriate for new ventures. A new venture is a fundamentally different creature than an established venture. The new venture is devoted to a search for a viable and sustainable business model and does that through a relentless focus on the customer and finding the right market-fit. Once a viable business model is found, then the more established venture begins to focus on executing that model efficiently.

Chapter 8 The Traditional Business Plan and Elevator Pitch

Alexander Osterwalder: "Telling a story that illustrates how your business model solves a customer problem is a clear way to introduce listeners to the idea. Stories give you the "buy-in" needed to subsequently explain your model in detail."

The traditional approach to the business plan is changing

Until 2010, most new ventures were expected to create a business plan that they could share with potential investors, partners, and even customers. Not all new ventures created a business plan, but it was a fixture of many "business plan competitions" in which entrepreneurs could win some seed money to advance their venture. These competitions served as third party endorsements as well as providing small investment dollars. Many universities launched business plan competitions, with MIT's 100K competition being one of the best known. As we have seen, research on entrepreneurship by Saras Sarasvathy Steve Blank, Eric Reis, and many others have demonstrated some shortcomings and moved the entrepreneurship community away from the business plan approach in many cases.

Steve Blank became the leading apostle of business plan rejection after 2010. His quote, which we introduced earlier in the text, has come to typify his approach: "*In the real world, most business plans don't survive the first few months of customer contact. And even if they did – customers don't ask to see your business plan*." Steve advocated for the supremacy of business models and he enshrined the concept of the pivot as part of his mantra of the "Customer Development Process." We explored the Lean Launchpad in Chapter 7.

We learned that the Lean Launchpad and Effectual Entrepreneurship, developed by Sara Sarasvathy, provided alternative approaches to the causal model that is typified by the business plan. These alternative models have their advocates and advantages, but many investors demand a traditional business plan and many institutions continue to hold "business plan competitions." For that reason, I will present each of these models to equip the reader with whatever tools might be most useful.

I chair a venture group called the Riverhawk venture fund, and that group provided an interesting learning experience for us. The Riverhawk Venture fund is operated by a group of successful business persons, entrepreneurs, and investors who are willing to donate money toward seed funding for university spin-offs. At the first investment meeting of the group, several university related entrepreneurs presented their ideas to the group. A few of the ventures were selected to receive serious consideration for an investment. At that point, some of the investors asked to see the business plans of the proposed ventures. One staffer made the mistake of asserting that "nobody does business plans anymore" and then repeated the Blank quote. The investors did not seem to appreciate the response, and it was at that point that I realized that our students and faculty, as well as most potential entrepreneurs, need to know something about traditional business planning even as that approach appears to be losing proponents.

We will examine the structure of a business plan that incorporates the Business Model Canvas and takes advantage of some of the other aspects of the Lean Launchpad. The complete business plan consists of both a written plan and a prepared pitch. A written narrative of 25-35 pages tells how the founder expects the business to develop over time using the work done in the customer development process and/or feasibility analysis and further work. It is also possible to do a summary business plan that can be about 10-15 pages –this is the kind of business plan that is due later in the course. You will also create a PowerPoint of about a dozen slides that will be described in more detail later in the chapter. Using some of these slides, you will prepare an Elevator speech or Rocket Pitch of one to three minutes. A person pitching a new venture needs to be prepared to present their plan in pitches of a variety of lengths. Not every investor will want the same kind of pitch.

The business plan is written for two different audiences. There is an **inside audience** of founders and early employees. For them the plan provides guidance in execution, a road map, and forces founders to think through plans systematically. It is also prepared for an **outside audience** of investors, potential partners and other stakeholders.

Many companies do not write a business plan, but it is often useful. At ILinc we did write a business plan –which helped tremendously. As Steve Blank loved to say, "*no business plan survives first contact with a customer*", but investors may want to see your business plan and you may want to use it to enter business planning competitions. It is important to recognize that you will likely need to change the plan, to pivot the business, and to adapt to market feedback. Sometimes this kind of document is described as an "evergreen" document, since it is always subject to growth, learning, and revision.

There are several variations to business plans. Earlier we described the Summary Business plan of 10-15 pages which is useful in early stage and preliminary discussions. The full business plan is the mainstay of 25-35 pages with significant detail to allow investors to invest with confidence. As the company develops, you may wish to expand the plan into an operational business plan. This expansion of the plan is to provide an internal operational guide –or blueprint for operations. The operational plan is approximately double the size of the full business plan, but can be much larger.

In most companies, business plans change dramatically as things develop. Don't get stuck in a rut.

The best approach seems to be to:

1. Plan, plan, plan, and then plan some more.
2. Celebrate and rejoice when the plan is done.
3. Now sit down and think about how this plan will fail and what you are going to do when it does.

No whining. As the bumper sticker says, "Stuff Happens."

The Structure of the Business Plan

Here is more detail on the structure of the business plan.

1. Cover Page: company name, address, phone number, date, contact person, web site, Facebook, Twitter, etc. Confidentiality statement
2. Table of Contents
3. Executive Summary of 1-2 pages (critically important)
4. Industry analysis
5. Company Description (mission statement, tagline, position, milestones)
6. Business Model Canvas. (This was not part of the traditional business plan in the past.)
7. Market Analysis (market segmentation, target market, competitor analysis)
8. Economics (financial analysis, COGS, contribution/gross margin, fixed costs, variable costs, operating leverage
9. Marketing Plan (marketing strategy)
10. Product/Service Design and Development Plan (product, service, or virtual prototype)
11. Operations Plan
12. Management Team and Company Structure (B of Directors, B of Advisors, Org Chart)
13. Overall Schedule
14. Financial Projections (sources and uses of funds, assumptions, pro-forma or projected financial statements, ratios –ROI, ROA, ROS, etc.)
15. Summary and Appendix

The Executive Summary

The executive summary is the most important portion of the business plan. It is also probably the last portion of the business plan that you will finish! I recommend that you write one to start, but then go to work on the main portions of the plan. That will undoubtedly lead you to make some changes and/or additions to the business plan.

The executive summary MUST tell a compelling story about the entrepreneurial plan that you are developing. It must also tell the reader what you are asking them to do. Are you asking for investors? Partners? In some respects, it is similar to the elevator pitch that is described later. Just like the elevator pitch, you, the entrepreneur, need to know what the most important points are that you need to make and which you can save for the longer narrative. It summarizes the main point and key features but does not provide detail. The executive summary is most likely the only part of the business plan that most investors will read! Make it good and compelling. The goal is to let the reader know what it is that you

are doing, as concisely as possible and in a manner that is so engaging that they simply must read the rest of the plan.

It is possible to combine many of the features of Effectual Entrepreneurship and the Lean Launchpad into a hybrid version of the business plan. In that approach, the business model canvas becomes the organizing principle. This leads to a form that looks like this:

The hybrid business plan:

1. Cover Page: company name, address, phone number, date, contact person, web site, Facebook, Twitter, etc. Confidentiality statement
2. Table of Contents
3. Executive Summary of 1-2 pages (critically important with key points and "the ask.")
4. Business Model Canvas.
5. Value proposition: What problem(s) are we solving for our customers? What customer needs are we satisfying? What value do we deliver to the customer? What bundles of products and services are we offering to each customer segment?
6. Key activities of the venture:
7. The team: This is not an explicit part of the business model canvas, but it is one of the most important items to investors as we will see in the next chapter.
8. Customer segments:
9. Customer Relationships:
10. Channels to reach the customer:
11. Revenue streams: What value are our customers ready to pay for? For what do they currently pay? How are they currently paying? How would they prefer to pay? How much does each revenue stream contribute to the overall revenue
12. Key Partners:
13. Cost Structure:
14. Key Resources: What key resources do we need for: our value propositions, our distribution channels, our customer relationships, our revenue streams?
15. **The Ask**. What do you need from the reader?

Each of these sections should be very brief. The entire hybrid business plan should be 8-12 pages. You may later want to expand this plan in other ways -both for your own purposes and to recruit investors.

Presentation to Investors: The Elevator Pitch or Rocket Pitch

Figure 40
First Pitch at Red Sox Spring Training

Developing the presentation to investors requires both judgement and flexibility. The judgement is important because you will need to decide what the most important points are, make them concisely, and then be prepared to present more and answer questions if they develop an interest. The flexibility is required because the investors are likely to set the rules and you will need to follow their instructions. If they say to speak 20 minutes, then do it and no more. If they say speak for 3 minutes, then do that. Unless your new venture is incredibly compelling, you will find it hard to set the ground rules for the interaction.

Why do they call it an elevator pitch? Because it puts the speakers in a hypothetical situation in which they get on to an elevator and meet someone who could be an investor, customer, employee, or otherwise become involved in a company or project that the speaker is leading. You have 60 seconds (more generally 1-3 minutes) to get his or her attention before the elevator doors open and your prospect leaves. The idea is to be able to present the most important (the key) information quickly and persuasively in order to interest the prospect in learning more. That could be having them read the executive summary of the business plan, the business plan itself, a business model canvas, or something else that presents the idea concisely and cogently.

Figure 41 -A pitch well received.

In real life, the elevator pitch is not usually delivered in an elevator but is often delivered in boardroom or at a "pitch contest." In such a case, having a few slides can be helpful, but you do not want to overwhelm the listener. In any real business plan competition, some of these slides are more important than others. Your job is to think about these topics and then figure out how to address the key issues in 60 seconds with the correct emphasis on the most important points. In many cases you may not use ANY slides, but you had still better be able to present your idea persuasively and understandably in sixty seconds or whatever time is given to you.

Slides should be clear and uncluttered with not too much info, but it is good to have other slides ready to help answer further questions. The presentation should be well rehearsed and smooth. You should avoid jargon. It is a good idea to check on AV availability before and either BYO (bring your own) or adapt.

As Alexander Osterwalder, the creator of the Business Model Canvas points out: "*Telling a story that illustrates how your business model solves a customer problem is a clear way to introduce listeners to the idea. Stories give you the "buy-in" needed to subsequently explain your model in detail*.[84]"

Professor Li Sun, UMass Lowell, likes to tell students that the story should be told in three acts:

- Act I: The storm (What Problem? Pain?)
- Act II: The rainbow (Your solution）
- Act III: The pot of gold (Market Potential)

Here are twelve *potential* slides.

1. Title
2. Problem
3. Solution
4. Opportunity and Target market
5. Technology
6. Competition
7. Marketing and Sales
8. Management Team
9. Financial Projections
10. Current Status
11. **The ask: what do you want from them and how will you use it?**
12. Summary of key points, the ask, and request questions.

The most important slide is "**The Ask**." If there is nothing that you are asking the audience to do, then why are you bothering to speak to them? You do not use all twelve slides. You need to select those that are the most important and useful to you. Keep it crisp and clear.

[84] "Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers;" A. Osterwalder; John Wiley and Sons; (July 13, 2010)

The Rocket Pitch is a variation on the elevator speech which is used by the UMass Lowell Difference Maker Program. The Rocket Pitch consists of three slides delivered in three minutes. The three key points to be covered include:

- The Opportunity
- The Market -
- The Business Model –how do you make money and why do your customers value the product or service?
-

This format originated at Babson College and is well described in this Inc. Magazine article entitled: "*How to Sell Your Idea in Less Than 3 Minutes*[85]." You can also view examples at: UMass Lowell Rocket Pitch –Steve Tello –a slideshow.

The Difference Maker Rocket Pitch

- Title Slide: Project/Team name and team member names
- Slide 1: The Problem
  - What is the specific problem that your project is going to solve?
  - What is the Customer/User pain?
  - Who is affected by the problem? Be specific!
- Slide 2: The Opportunity
  - Be sure to show your market opportunity and analysis on this slide. The judges want to see this.
  - Demonstrate your knowledge regarding the opportunity associated with solving this problem.
  - Include research, numbers, estimates, databases, articles, surveys and other data regarding the opportunity associated with your project. Utilize graphs/charts to showcase the data.
  - State the number of people affected by the problem.
  - Demonstrate data on real-life people/customers that you have talked to who could benefit from your solution.
  - Is there another business or organization doing something similar to you? If so, who are they? What are they doing that is similar? (Competitor Analysis)
  - Why is your solution/project better/different than theirs?
- Slide 3: The Solution
  - Clearly describe your proposed solution.
  - How does your specific solution solve the problem you stated in slide 1?
  - What value does your solution provide? How is it new, innovative or unique? (Value Proposition)
  - How will your solution/project be sustained over time? Provide details in this area.
- Slide 4: Resources
  - If you won DifferenceMaker funding (resource), how would you use the money over time to further your project?

[85] http://www.inc.com/peter-cohan/sell-your-idea-in-under-3-minutes.html

    - Provide a 1-year budget May 2016 – May 2017 of how these funds will be used. The judges want to see this.
- Slide 5:
    - Thank you/Questions slide
- Slide 6+:
    - Feel free to have appendix slides for judge Q&A

There are some things that set off **red flags and warning bells** to an investor audience. Here are a few:

- Founders with no skin in the game –they have no money at risk
- A poorly documented plan with little citation of evidence supporting the assertions and assumptions in the plan. The best evidence is that from a third party. The very best evidence is when a customer buys or an investor invests time and/or money. The customer purchase is a key aspect of the Lean Launchpad customer discovery process.
- Broadly defined markets rather than carefully targeted markets. For example, if you say that you are targeting the $550 billion/yr. pharmaceuticals market rather than the $230 million/yr. ALS treatment market.
- Wildly optimistic financials. One example was when Segway was projecting sales of 40,000 /mo. and then was selling 300/mo.
- Sloppy, poorly written, mistakes in math, and typos,

Expect that investors will challenge you with sharp questions and blunt feedback. When we were seeking our first round of venture investment at ILinc, we settled on three companies who shared in the first round. One of them was GeoCapital Partners, and I told their CEO that one of the reasons that we picked them was that I liked working with him and that he was a nice guy. Stephen J. Clearman, the GeoCapital Partners CEO and Venture Capitalist in ILinc retorted sharply, "I am not a 'nice guy' Jack, I am an investor." Expect investors to ask tough and probing questions. Asking tough questions generally means they are interested. If they are not interested, then they will not waste their time. If you are viewed as a VERY attractive investment, then they will still ask the questions, but do it more diplomatically! Perhaps that's why I called Steve a 'nice guy'!

The absolutely non-negotiable part of the elevator pitch is "the ASK." If there is nothing that you are asking for, then don't bother to give the pitch! What do you want and need of the listener?

Forecasting Innovation is never an easy task. As Yogi Berra liked to say, "It's tough to make predictions, especially about the future." Here are a few techniques that planners use:

- Trend Extrapolation,
- Time Series
- Regression analysis
- Modeling

- Customer and market research
- Benchmarking
- Delphi and Experts
- Scenarios-descriptions of alternative potential futures.

Some things are easy to predict such as the relentless improvement in computing described by Moore's Law -in which computing power doubled and the cost halved every year (later that slowed to two years). Many companies took advantage of this easily forecasted trend. Many other kinds of predictions, like family helicopters and anti-gravity machines, were far wrong.

Business planning requires you to make some predictions about where your new venture is going and how it will perform. Making those prediction is a very good exercise for the entrepreneur. Believing those predictions to be accurate would be a serious error. Using the Lean Launchpad approach is probably a better way to plan your new venture, but being able to create a business plan continues to be a useful skill.

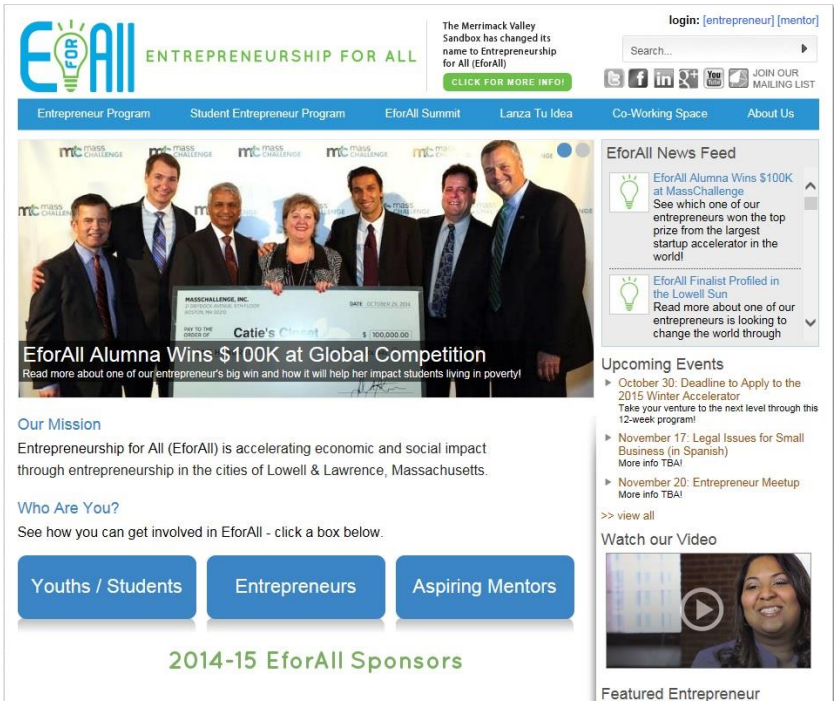
Here are a few scenes from local pitch contests and business plan contests.

The UMass Lowell Difference Maker Competition

Beyond Entrepreneurship – J. M. Wilson

M2D2-Mass Medical Device Development at UML Business Plan Competition.
http://www.uml.edu/Research/Centers/M2D2/medicalchallenge.aspx

eForAll was formerly known as the Merrimac Valley Sandbox



Mass Challenge- http://masschallenge.org/accelerator/awards

The MIT $100 K Competition - http://www.mit100k.org/

Appendix 1

Some further references on Elevator Pitches:
This website has some very good points. I highly recommend that your read this for further context:

- http://www.salisbury.edu/careerservices/students/Interviews/60secondElevator.html

Watch the video on the following sites to see the winning pitches given at the Difference Makers contest at UMass Lowell: The master site is here:

  - http://www.uml.edu/Innovation-Entrepreneurship/DifferenceMaker/Meet-the-DifferenceMakers/default.aspx
- Selected videos include:
  - http://www.uml.edu/Innovation-Entrepreneurship/DifferenceMaker/Meet-the-DifferenceMakers/DM-Nonspec.aspx
  - http://www.uml.edu/Innovation-Entrepreneurship/DifferenceMaker/Meet-the-DifferenceMakers/DM-Robotic-Feeding-Arm.aspx
  - http://www.uml.edu/Innovation-Entrepreneurship/DifferenceMaker/Meet-the-DifferenceMakers/DM-Lowell-Sprouts.aspx
  - and lastly, it may not be the most exciting product, but it had one of the best pitches that we saw –and it used only a couple of slides -but had a live demo!
  - http://www.uml.edu/Innovation-Entrepreneurship/DifferenceMaker/Meet-the-DifferenceMakers/DM-Point-Stick.aspx

At this link you can view pictures of students doing their pitches live and winning money in the UMass Lowell Difference Makers Contest.

- http://www.uml.edu/Innovation-Entrepreneurship/DifferenceMaker/Meet-the-DifferenceMakers/default.aspx

These sites are also helpful:

- http://www.inc.com/kevin-daum/give-the-perfect-elevator-pitch.html
- http://sbinformation.about.com/od/marketingsales/a/How-To-Write-An-Elevator-Pitch.htm
- Here is an alternative formation of the elevator pitch that has most of the same points we make above but combines them a bit differently.
  - http://www.slideshare.net/fullscreen/Bplans/the-7-key-components-of-a-perfect-elevator-pitch-4/1
- I like this pitch winner with no slides:
  - https://www.youtube.com/watch?v=dqIEE-g_-Uc
  - The site below has some examples of elevator pitches that have no slides:
  - https://www.youtube.com/watch?v=eHbpbGi7keg
- This site has a pitch for a particular store.
  - https://www.youtube.com/watch?v=phyU2BThK4Q
- The following site has some ideas for how artists might pitch themselves!
  - https://www.youtube.com/watch?v=GqsWKaR9Q6M

Chapter 9 Building your team: Characteristics of Innovative Organizations and Leaders

The importance of the team

Building an entrepreneurial team is one of the most difficult and important tasks that you will face. Venture capitalists and others have a strong respect of experienced and successful teams. There are many "rules of thumb" quotes for evaluating teams.

The famous author, Helen Keller, who was blind, said that "*Alone, we can do so little; together we can do so much*."

Andrew Carnegie, an entrepreneur that we met in the first chapter, liked to say "*Teamwork is the ability to work together toward a common vision, the ability to direct individual accomplishments toward organizational objectives. It is the fuel that allows common people to attain uncommon results*."

Michael Jordan, one of the greatest basketball players of all times, said "*Talent wins games, but teamwork and intelligence win championships*."

Wise and Feld offer three investor quotes:

- *Bet on the jockey and not the horse.*
- *An A team with a B idea beats a B team with an A idea.*
- *People is to opportunity as location is to real estate".*
  (The real estate quote is that "there are only three things that are important in real estate: location, location, and location.)

There is obviously truth in these perspectives, but later we will see that research tends to indicate that the people are very important, but perhaps not everything.

Characteristics of successful teams

There are a number of key factors in building a successful team. The size is important. Investors like to a see a team of 2-4 persons. Too many team members can introduce complexity, and too few team members do not provide a diversity of skills and experiences.

Teams seem to perform best if they contain some complementary skills and experience. In building the ILinc team, we began with a team of three persons. Wilson provided the "gray hair" as a senior person with extensive business contacts and computer experience. Degerhan Usluel was an electrical engineer who had tremendous electrical and computer engineering skills and was also a good manager who had been involved in a family venture in Turkey. Mark Bernstein was a former top gun sales person in industry and had been a co-founder in a computer process recovery startup. Usluel had worked in Wilson's laboratory

helping to build applications for the then new Microsoft Windows networking system. He met Bernstein in their MBA program and recruited him to the team.

Diverse abilities and talents fill out good teams. Consider the skills needed to build the company and the skill present on the team. If you find something missing, then you need to recruit that skill to your team.

The text suggests that you generally avoid friends and family as team members. Business dispute become more profound when family relationships are present. Potential conflicts can arise which spill over into other areas. Although this is good advice, many startups do involve family members, and the best advice is to be cautious.

In all cases, be sure that you write a clear job description for each team member and do a written business agreement setting out the roles and responsibility of each team member. This agreement might also include a vesting period for stock ownership and perhaps even how you might resolve the departure of team members.

For most investors it would be a red flag if none of the team members are **devoting full time** to the venture. The **Catch-22** is that you may need the investment before you can quit your job, but if you are not full time, then investors are reluctant to commit.

The best advice is to plan a lot and then plan for what happens when your plan does not work.

Investors are also looking for those who have **been there and done that**. Experience is valuable. Failure in a previous venture may actually help you to learn how to be successful in the next.

Passion
Passion is a key aspect of entrepreneurship, BUT you need to balance your passion with being realistic and grounded. You have to have passion, but you cannot let it blind you.
Coachability
As we saw earlier, over-confidence is one of the frequent sources of disastrous errors. Team members need to be coachable and open to learning. If asked where you see yourself in three years say "wherever the company needs me." and not "I'm the only CEO we will ever need." Avoid answers that appear egotistical. Show that you value others.

According to Noam Wasserman, Harvard writing in "*The Founder's Dilemma: Anticipating and Avoiding Pitfalls That Can Sink a Startup*," there are a few things that one must consider in forming the team.

- Bring in co-founders who have the technical expertise, sales background, or social connections that you lack.

- Creating a more diverse team give you access to a wider, more diverse network. i.e. similar people tend to have similar networks
- Avoiding co-founding with friends and family. The eventual conflict far outweighs the value
- Creating a clear division of labor helps accountability and creativity to flourish.
- Having a plan to address problems
- Don't avoid conflict; plan for it.

There are three key factors needed in a team. The ability to attract a team with these three factors can make a difference. These are:

- Business Acumen
- Domain Knowledge –remember effectual entrepreneurship and the principle of the bird in the hand.
- Operational Experience
-

This is sometimes called the Talent Triangle

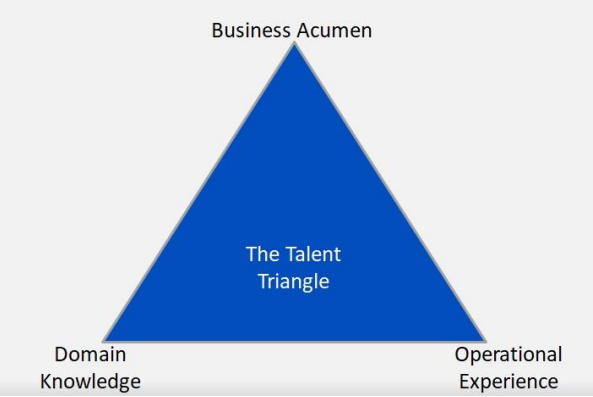


Figure 42 The Talent Triangle

Behavioral Economics also tells us that we need to have strategies to avoid the confirmation bias and the availability bias. One of the best ways to do this is to have great mentors and advisors who can help you. They also bring a network that can be helpful to you in working with other and finding resources.

Mentors were hugely helpful to me when I started ILinc –even when I did not take their advice! At least I knew what the obstacles were. You will also want to have a **Board of Advisors** and many forms of enterprises require a **Board of Directors**. The former has no governance responsibility and very little legal liability. They just give advice. The latter, the Board of Directors, has governance responsibility for the venture. They set overarching policy and can hire and fire the CEO and perhaps approve other officers. They also take on potential legal liability and in a later chapter we will see how various business structures can be used to limit liability.

These advisors can help the founders overcome the psychological sources of bias we have discussed. They can also fill expertise gaps and may even provide pro-bono services.

Customers can also be a great source of advice. The Lean Launchpad insists you get out of the office and talk with customers for exactly this reason. You are to listen instead of selling. Customer acquisition is sometimes termed **growth hacking**.
Advisors can also bring social capital. Remember **Metcalfe's Law**! The value of a network goes up as the square of the number of nodes/computers/people in the network. This is

often referred to as **network economics**. Metcalfe's Law explains why Google is more valuable than Yahoo and why Facebook crushed MySpace and other social network sites.

We should also revisit the term **Entrepreneurial Awareness** -opportunities need to be recognized. Some are good at it. Others?

Here are some characteristics you should look for in team members –characteristics that seem to help

- Prior Experience
- Cognitive Factors –entrepreneurial alertness
    - A major key factor is market awareness and sensitivity.
- Social Networks –solo entrepreneurs and network entrepreneurs
    - Strong tie relationships frequent interaction -often tend to see problems in the same way
    - Weak tie relationships –in-frequent. Weak ties are shown to lead to more ideas –different perspectives.
- Creativity – the process of generating new, often unique, and useful, ideas.

Components of **innovation organizations** from Bessant and Tidd[86]

- *Shared vision, leadership and the will to innovate*
    - *Clearly articulated and shared sense of purpose*
    - *Stretching strategic intent*
    - *A fully committed top management.*
- *Appropriate structures*
    - *Organization design which enables creativity, learning and interaction.*
    - *Sometimes, but not always a loose "skunk works" model.*
    - *Find appropriate balance between organic and mechanistic approaches.*
- *Key Individuals*
    - *Champions, promoters, gatekeepers and other roles which energize or facilitate innovation*
- *Effective Team working*
    - *Good use of teams (local, cross-functional, inter-organizational) to solve problems.*
- *High involvement in Innovation*
    - *Organization-wide continuous improvement activity*
- *Creative Climate*
    - *Positive reinforcement of creative ideas, supported by relevant motivation systems.*
- *External Focus*
    - *Internal and external customer orientation*

Bessant and Tidd also suggest that great entrepreneurs demonstrate the following traits[87]:

[86] *Innovation and Entrepreneurship*, 3rd ed., by John Bessant and Joe Tidd.

- **Passionately seek** to identify new opportunities and ways to profit from change and disruption.
- Pursue opportunities with **discipline and focus** on a limited number of projects, rather than opportunistically chasing every option.
- Focus on **action and execution**, rather than endless analysis.
- Involve and energize **networks of relationships**, exploiting the expertise and resources of others, while helping others to achieve their own goals.

Research shows certain Cognitive Characteristics of Innovators. Innovators are good at:

- Information acquisition and dissemination.
  - Including the ability to capture information from a wide range of sources, requiring attention and perception.
- Intelligence.
  - The ability and capability to interpret, process and manipulate information.
- Sense making.
  - Giving meaning to information.
- Unlearning.
  - The process of reducing or eliminating existing routines or behaviors, including discarding information.
- Implementation and improvisation.
  - Autonomous behavior, experimentation, reflection and action.
  - Using information to solve problems, for example during new product development or process improvement.

We often characterize innovators on a scale originated by M.J. Kirton –the Kirton Adaptation Index[88]. The two ends of the scale are defined by the titles

- **Adaptors** characteristically produce a sufficiency of ideas based closely on existing agreed definitions of a problem and its likely solutions -but stretching the solutions. These ideas help to improve and 'do better'.
- **Innovators** are more likely to reconstruct the problem, challenge the assumptions and to emerge with a much less expected solution which very probably is also at first less acceptable. Innovators are less concerned with doing things better than with doing things differently.

Leadership –Characteristics and a Cautionary Note.

What does research tell us about leadership?

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[87] *Innovation and Entrepreneurship*, 3rd ed., by John Bessant and Joe Tidd.

[88] http://www.kaicentre.com/initiatives.htm

Reviews of research on leadership and performance suggest leadership directly influences about 15% of the differences found in performance of businesses and contributes around an additional 35% through the choice of business strategy. So directly and indirectly leadership can account for half of the variance in performance observed across organizations. [89]

Although research has identified many characteristics that are associated with good leaders it does not appear that having those characteristics is very well correlated with or predictive of being a good leader! As a silly example (reduction to the absurd): leaders tend to be taller than the average population. That does not mean that a tall person will be a good leader.

At a higher level, one can say that good leaders can be a diverse group.

Good leaders are often bright, alert and intelligent -similar to what is known as entrepreneurial awareness (or alertness). They seek responsibility and take charge and are skillful in their task domain. They are administratively and socially competent, and are energetic, active and resilient. They are usually good communicators.

The innovation then tends to follow this path:

- Preparation -most business ideas stem from previous experience –often at work. Malcolm Gladwell, in his book "Outliers" postulates a "10,000-hour rule." Most individuals that are particularly good at something have devoted at least 10,000 to preparation.[90]
- Incubation -Pondering or ruminating an idea just below the surface.
- Insight –"Eureka" -"Aha!"
- Evaluation -Viability –find the weak spots. Don't be blinded by a dream
- Elaboration - Working out all the details –doing the business plan

Creating Effective High-Performance Teams

Can we then take this group of great leaders and mold it into a great team? These seem to be the requirements:

- Clearly defined tasks and objectives;
- Effective team leadership;
- Good balance of team roles and match to individual behavioral style;
- Effective conflict resolution mechanisms within the group;
- Continuing liaison with external organization.

As we have seen research has shown that diversity leads to more effective teams.

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[89] http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.466.1272&rep=rep1&type=pdf

[90] "*Outliers*;" Malcom Gladwell; Little, Brown, and Co.; 2008.

Tuckman and Jensen[91] suggest that the stages of team formation are:

- Forming -
- Storming – resolving conflicts and leadership and exploring alternatives
- Norming – finding shared values
- Performing
- (Adjourning) –added later -but expressing the need to compete the task.

All teams are groups, but not all groups are teams. The difference is how well they work together.

What obstacles keep teams from being as successful as they should be?

- Lack of actual team work: -group versus team;
- Too much structure. Don't over specify HOW to do the task (the means) –even when the endpoint might be fairly specific. –focus on the ends versus the means
- Not enough structure. On the other hand, a lack of structure tends to allow teams to wander too far afield and use too much time on the task. Some structure is necessary. -structured freedom;
- Teams need to have support, access to the needed information, and even some training. - support structures and systems;
- While teams are formed with specific expertise and experiences, they may need explicit coaching in some areas. - assumed competence.

[91] https://en.wikipedia.org/wiki/Tuckman%27s_stages_of_group_development

Chapter 10 Needs, Pains and Solutions

Finding the pain

How do you know whether you have a product or service that will meet someone's needs? You may think it will, but in the end, it needs to be a specific hypothesis which you take to the customers to test. It is always a good start to first ask whether the product is one that people *need to have* or one that they *like to have*?

Your product or service should address someone's pain. The more acute the pain and the more your solution can relieve the pain, the more likely it is that someone will buy your product. Josh Linker of Detroit Venture Partners (who attended Berklee College of Music to study jazz guitar) likes to ask, "*Are you selling vitamins or aspirin*?" Vitamins are nice to have. Aspirin for a headache or other severe pain is a *"need to have*." He asserts that "*businesses that service burning demands and visceral human needs tend to accelerate faster and require far less marketing push that those that offer stuff customers can easily live without."*

Consider a few examples of products that were created to solve a problem and assuage someone's pain.

Owning an automobile in an urban area is a difficult and expensive proposition. Zipcar will provide a rapid rental in many convenient locations for the urban dweller.

Some of us absolutely hate to go shopping (yep, that would be me) but we still want to buy things. Amazon.com or eBay was created for us. Others of us want to sell things. The solution is eBay.

Meeting potential dates in a new place can be awkward and time consuming. Tinder provides one antidote to our loneliness.

We all like to tell others our opinions on everything, but no one listens. Twitter gives us the audience we dream of.

We want to share a picture but only for an instant. SnapChat and Instagram were created to let us take pictures, send them to friends, and then have them disappear. Many users were embarrassed to discover that users could save their pictures!

I want my music and I want it now! iPod, iPhone. Spotify, Pandora, and others are there to sell or rent music to you.

The traffic is terrible! Waze will alert you to the traffic and calculate an alternative route for you.

Notice that many of these need driven innovations were enabled by technology.

How much pain relief can you afford?

The law of supply and demand suggests that when the price goes up the demand goes down, but the more interesting insight is to ask just how fast the demand goes down as the price goes up. We refer to this as the **price elasticity of demand**.

If price greatly influences demand for a product or service, then we say there is **high price elasticity**.
If demand does not change much with changing price, then this is called "**inelastic**."

Demand for water, air, basic food, or aspirin is inelastic. Most people would pay whatever is required to get these things that are necessary for life itself. On the other hand, demand for designer clothing, jewelry, real estate, and automobiles is quite elastic. A high price quickly reduces demand.

Supply and demand works both ways. An inexhaustible supply (the air we breathe) keeps the price down. Shortages of supply keep the price high.

Netflix shows that it can be both. For casual viewers, it is "Nice to have" access to videos when they want to watch. For regular avid video watchers it removed the severe pain of trips to Blockbuster and paying late fees when returns are inconvenient. It was a "need to have."

Drivers of Innovation

When developing innovative solutions to solve a customer's pain, one is often calling upon a group of drivers of innovation. Those innovations that are directly driven by a need are often called "**need pull innovations**." This is the clearest path to success. However, many innovations are driven by changes in technology or "**technology/knowledge push**." These kinds of innovations can often be deceiving since the invention might look so good but does not really address someone's pain better than other alternatives. Frequently a new technology enables a previously unfulfilled need to be fulfilled so these two approaches can be related.

Crisis Driven innovation is essentially **need pull** on steroids. One good example of this was the development of the Zika Virus vaccine. Some innovations are **pure accidents.** The discovery of penicillin when mold on a bacterial culture killed the bacteria is one of the best examples. Post-it notes were invented when an effort to make a stronger adhesive product failed and instead a very weak adhesive was created –enabling the creation of easily torn off notes. Viagra was a drug originally developed for heart conditions, but someone

noticed that there were often unusual side effects. Teflon happened when there was accidental polymerization of TFE.

Discovering customers at "The **Base of the Pyramid**" as Prahalad described provided a new area of entrepreneurship. We cover this in the chapter on Globalization.

Some other kinds of innovation include:

- **Process Innovation** – making an existing process work better. Examples include: Total quality management, business process re-engineering, Six Sigma, Lean Management, etc.
- **Mass Customization**: Have it your way. Dell Computer, in 80s and 90s built PCs to order and shipped direct to customer. Converse allows customers to order personalized athletic shoes.
- **User Innovation** – New approaches can often be fund by crowd sourcing and by consulting extreme users.
- **Imitation** –imitation is often the first source of innovation in emerging economies.
- **Recombinant Innovation** –New combinations of existing things.
- Changes in **regulatory and legal** processes.
- **Design driven innovation** – Apple always focused on design even when releasing products that were not that much different than existing products.

As we discussed in the chapter on opportunity recognition, opportunities can often stem from the four pressures exerted by economic forces, social forces, technology, and political forces. Many innovations take advantage of these forces to solve problems that might not have previously been solved or even new problems that are created by these forces.

- Economic Forces: economy; income; spending
- Social Forces: social-cultural; demographic; trendiness
- Technology: new; emerging; or a new use for old technology
- Political Forces: political arena; regulatory

These forces can create an opportunity gap through which new products and services can come to life.

Is there a compelling unmet need?

Identifying the pain –a clear unmet need – is a great start for any new venture. As we have seen in our discussion of Effectual Entrepreneurship, many entrepreneurs start with what they know. We call this the *bird in the hand* principle. Perhaps they have experienced some personal pain that they feel others have experienced and would pay to solve.

Tommy John undershirts were created because Tom Patterson was tired of having his undershirts come untucked. Micro-lending came into being when Muhammad Yunus saw that he could lend to women and both get a good return and help them establish small

businesses. Zipcar was founded because the founders saw that owning a car in the city was too expensive, but that there were few alternatives. Facebook was an effort to meet new people. It was hard to meet prospective dates at Harvard. Snapchat made it fun to communicate quickly and graphically with friends, but you may not want those pictures to go too far.

Here are some questions that you can ask yourself to help identify that compelling unmet need.

Size: how many people suffer from the pain you are addressing? Clearly a larger market is preferable. If your solution does not impact enough people, it will probably have a hard time getting market share. Other less effective alternatives may just be good enough. The number of people feeling the pain that you are addressing is called the "**total addressable market**." (TAM).

What is the intensity of the pain each user feels? The greater the pain, the more inelastic the price demand is.

Is this pain felt once, or over and over again? Pharmaceutical companies find that drugs taken for chronic diseases like diabetes, high blood pressure, HIV, depression, and others are more profitable than "one and done" treatments like vaccines for tetanus, whooping cough, small pox, etc. This has introduced some perverse incentives into the markets which even prompted the Commonwealth of Massachusetts to create the Mass Biologics Labs under the University of Massachusetts to manufacture vaccines that private firms did not want to make due to the one-time markets. This latter has been important in the moral and ethical issues around drug discovery, drug production, and drug pricing. Two more mundane examples are that Gillette makes far more money selling blades than it does by selling razors, and HP makes more by selling ink than it does by selling printers.

In our Chapter on Opportunity Recognition we told the sad story of the invention of a better Rabies treatment by the University of Massachusetts Mass Biologics labs. It was a much better treatment –far better than the ten times that investors look for. However, there was not a large enough market to be able to support the enormous cost of bringing this drug to market. By licensing the technology to a vaccine manufacturer in India the total addressable market (the need and the pain) is much larger and the cost to bring the product to market is lower.

Durability and timeliness are two key points for any innovation. Enter a market too early and the market is not ready. Enter a market too late, and the market has moved past you. In the movie "Back to the Future" Marty McFly plays Johnny B. Good on the guitar, but his dramatic moves were a little ahead of his audience!

Some trends do not last. They do not possess **durability.** Examples of products that did not have durability include Y2K programming, the Blackberry smartphone, the Motorola Fliphone, and the dreaded Fanny packs (which are now making a comeback!).

Case: DailyWorth and Amanda Steinberg

A successful computer programmer, Amanda Steinberg was earning six figures, but she had built such an expensive lifestyle that even her best attempts at saving and investing were wiped out by life's unexpected complications. Frustrated by her inability to build net worth, she launched DailyWorth from an attic office in Philadelphia with a newborn in her arms.

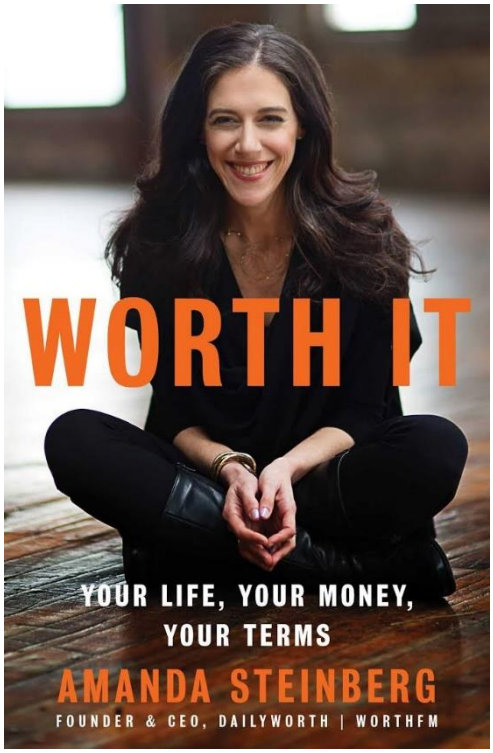

Figure 43 Amanda Steinberg

Today, DailyWorth's newsletter reaches more than 1 million subscribers and growing.

In 2015, she started digital investing service, WorthFM, which received front-page coverage in The New York Times Business section. Oprah selected her for the inaugural SuperSoul 100, and Forbes named her one of 21 New American Money Masters. Amanda has also appeared on GMA, Today, CNN, and MSNBC.
She's also the author of Worth It: Your Life, Your Money, Your Terms released in February 2017. Financial planning, budgeting, and goal-setting only work for a small percentage of people. "Worth It" flips the paradigm on "financial advice" for women and delivers it in fresh, unexpected ways.[92]

Steinberg saw a pain being experienced by successful women and developed a set of products that were intended to address that pain and need. From the perspective of the Lean Launchpad, she made the assumption that *successful working women would want to get, and be willing to pay for, advice and support from other successful women*. To test that assumption she launched her first product. The ONLY answer to testing such an assumption comes directly from the customer –are they willing to pay for the product? They were.

[92] https://www.dailyworth.com/meet-our-founder-amanda-steinberg

MGHPCC -The Massachusetts Green High Performance Computing Center

The large research universities in Massachusetts were operating at a disadvantage because they did not have a high performance or supercomputing center in the region. MIT and the University of Massachusetts decided to team up to try to find a way to build one. They invited in Harvard and Boston University and then added Northeastern to the consortium. This meant that they had the five largest research universities in Massachusetts and 5 of the six largest in New England.

The Need and the Pain was that there was no High-Performance Computing Center or Super Computing Center in the Northeast. This put us at a disadvantage in attracting research and faculty compared to those who did have one nearby. Illinois was the first supercomputer center followed by San Diego, the Research Triangle North Carolina, and Pittsburgh.

The Pain: To be great research universities you need access to high performance computing. Massachusetts had five great research universities, but they had to use outside centers for their research and had to provide expensive local facilities run with a lot of expensive electricity. There were significant problems with high cost of electricity and providing suitable facilities to host computers.

Their solution was to team up and raise $100 million to build this jointly. You can read more about this in the Case of MGHPCC Case: MGHPCC

Tesla Motors

Finally consider Tesla Motors' development of-all electric high-performance cars. They took advantage of all four of the trends:

- Economic Trend – increasing gas prices
- Social Trend –desire to be green
- Technology Advances –Battery and motor improvements
- Political Regulatory Trend – favorable treatment and support for alternative energy systems.

Figure 44 -Tesla (J. M. Wilson)

Elon Musk made the assumption that *the public was ready to buy an all-electric car*. This was an audacious assumption. The Goliaths in the automotive industry had decided that the public was not ready. Musk felt that an attractive product and a support structure of charging facilities could change the answer from "not ready" to "ready." His first product, perhaps his "minimum viable product," was the roadster shown above. He specifically targeted the early adopter market that was unlikely to purchase the econobox electrics that some of the Goliaths were testing. His roadster had outrageous performance that rivaled some of the Porsches and a range that outdid the electric econoboxes. With better battery technology and a political trend that favored and subsidized electrics, he was able to get a tentative "yes" to his assumption. The public was interested enough to buy his MVP and he quickly followed up with another larger car and launched his first mass market car at the end of 2017. Success is far from assured for Musk, but he has gone farther than most experts ever felt that he could.

Chapter 11 Developing your Product or Service

Start with the Customer

Steve Jobs seemed to have conflicting points of view when he said "*You've got to start with the customer experience and work back toward the technology - not the other way around*," and then suggested that "*A lot of times, people don't know what they want until you show it to them*." Jobs, who was the Cofounder of Apple, NeXT, and Pixar and the visionary developer of the iPod, iPhone, iPad, iTunes, Macintosh, Apple II, and other new products, had a relentless focus on the customer experience, but he did not let current fashions dictate his new products. Instead he tried to look ahead and discover what customers truly wanted, even if they did not know they might be able to have it one day. In a time of rapidly changing technology, products that could barely be imagined in one year, became readily created in the next.

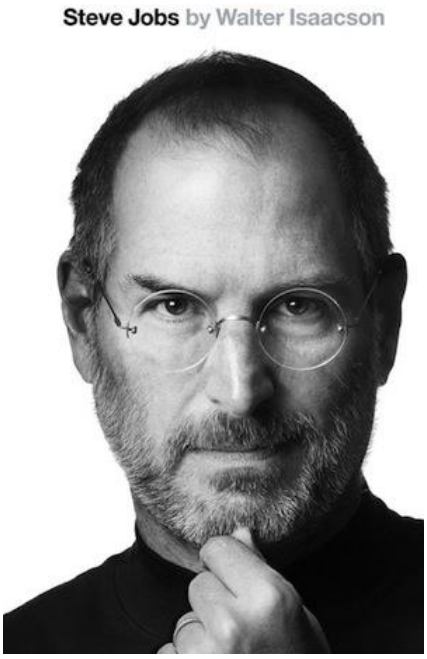

Figure 45 Steve Jobs by Walter Isaacson

He also had a superb confidence in his own instincts. He told a group of graduates in his Stanford Commencement Address "*Don't let the noise of other's opinions drown out your own inner voice. And most importantly, have the courage to follow your heart and intuition. They somehow already know what you truly want to become. Everything else is secondary*.[93]"

A more complete version of the Job's quote is "*This is what customers pay us for—to sweat all these details so it's easy and pleasant for them to use our computers. We're supposed to be really good at this. That doesn't mean we don't listen to customers, but it's hard for them to tell you what they want when they've never seen anything remotely like it. Take desktop video editing. I never got one request from someone who wanted to edit movies on his computer. Yet now that people see it, they say, 'Oh my God, that's great!'*[94]"

Developing new products and services requires a strong focus on the customer, but it also requires an ability to see where technology is going and to get there first and/or better. As the great former hockey plyer Wayne Gretsky loved to say "*Skate to where the puck is going, not where it has been"*. This has been so overused that it has become a trite business saying. It remains insightful, however.

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[93] http://archive.fortune.com/magazines/fortune/fortune_archive/2000/01/24/272277/index.htm
[94] http://www.simonandschuster.com/books/Steve-Jobs/Walter-Isaacson/9781501127625

The Ten Times Rule – 10x rule

If your solution is ten times better at meeting the customer's needs than current products, then you have a very good chance to succeed.

- Email is 10x better than snail mail
- Wikipedia is 10x better than encyclopedias
- Amazon.com has 10x times the books than the world's largest book star.
- Apple iPod has ten times the songs of a Sony Walkman
- Google is 10x better than competitors
- Facebook got 10x number of members as MySpace

The *ten times rule* is very closely related to Schumpeter's theory of **creative destruction** that we have introduced earlier. Creative destruction occurs when a new technology or a new product comes out that is so clearly better than former technologies or products that it quickly displaces the old product. This certainly occurred when CDs were introduced to replace the old vinyl records. The CDs had much better audio quality, were far more durable, and were much cheaper to manufacture and distribute. It was the end for vinyl records –except for those collectors who love the nostalgia and imperfections of the older technologies. But, those that live by creative destruction, die by creative destruction, and CDs faced their own ten times better product when digital music began to be distributed over the internet –first for free (and illegally) from Napster and then for 99 cents from the Apple iTunes store. Today digital distribution of music dwarfs CD sales and the entire business model of the music industry has been upended.

It is not surprising that venture capitalists would favor finding ten times solutions and write about them as if they are the ultimate prize. Indeed they are, but they are also not the only way to bring new products to markets and we have explored and will explore some of the other paths to markets. If you can find a ten times solution, then, by all means, go for it! Finding investors will be much easier. As Wise and Feld assert: "*Having an idea that someone will pay for is a nice start, but the way to make it that everyone will pay for it is to focus on the 10x rule*." Well yeah, but!

We have already seen one of the most important paths to market comes through disruptive innovation as defined by Clayton Christensen. "*Disruptive innovation, a term of art coined by Clayton Christensen, describes a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors*.[95]" These are NOT ten times better solutions. Focusing on ONLY ten times better solutions is limiting for new ventures and is deadly for innovators and intrapreneurs in established ventures. We have seen countless companies that have been bankrupted or severely cut down to size by having a blind spot to the simple

[95] http://www.claytonchristensen.com/key-concepts/

solution which looks like it could never compete with the established companies. In the 1980s Digital, Wang, Prime, and other computer manufacturers never saw that the PC would finish them off. More recently, Kodak and Polaroid did not take digital photography seriously enough. Xerox felt that their domination of market share would protect them from what were (at first) lower quality competitors. They were all wrong, and now others dominate their old markets.

All this is to say that the 10x rule is a nice to have, but not a need to have. From an investor's perspective, it might be preferable to invest in the 10x solutions that will win by creative destruction, but a sole focus on that would cause the innovator to miss a lot of interesting action.

Remember the Two Key Concepts in Innovation

Creative Destruction: Joseph Schumpeter –Harvard University economist from Austria. Creative Destruction – 1934- new products and technologies make old products and technologies obsolete

Disruptive Innovation[96]: Clayton Christensen[97] –Harvard University Management Professor-1997 – New products begin in new, unexplored markets but grow in quality and capability to displace older markets. Mini-computers disrupted mainframes and were in turn disrupted by PC's. Steel mini-mills created poor quality steel at low prices to take the least profitable part of the steel market. They then grew to displace the old-line steel companies.[98]

I cannot over-emphasize how important these two topics are in understanding entrepreneurship. Creative destruction and disruptive innovation are indeed closely related, disruptive innovation is a very special case when a company enters into a very low end of a market at a place where the dominant players are not so interested because it is not profitable or not able to satisfy their largest customers. But, the company doing the disruption gets a foothold in the market, establishes itself, and then learns how to do the things it needs to do to enter the more profitable and sophisticated portions of the market.

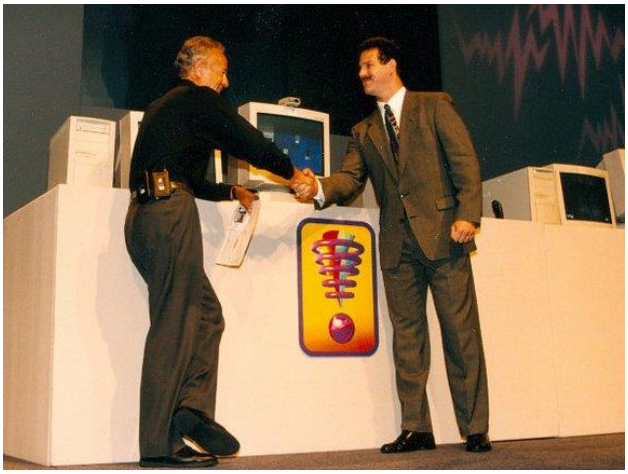

Figure 46 Andy Grove, then Intel CEO, and Mark Bernstein, ILinc co-founder, present the ILinc software at a conference (photo- J. Wilson)

[96] http://www.claytonchristensen.com/key-concepts/
[97] http://en.wikipedia.org/wiki/Clayton_M._Christensen
[98] http://en.wikipedia.org/wiki/Disruptive_innovation

Often the established companies never see it coming.

Innovation is what makes enterprises sustainable. In the immortal words of Andy Grove, the former Intel Corporation CEO, "***Only the Paranoid survive!***"

Netflix and Blockbuster provide a great example of creative destruction. Blockbuster, and other vendors, would rent video tapes to homeowners who would need to return them or incur a late fee. Videotapes were later replaced with DVD's, but the model of rental remained the same. Then Netflix introduced a business model in which DVD's were mailed to subscribers and there were no late fees. Viewers no longer had to go to a store to get the disc and were not worried about late fees. This was a major improvement over the Blockbuster model. The result was that Blockbuster eventually went bankrupt.

But the story was not yet finished, because digital delivery of video then began to displace mailing video discs to consumers and video was delivered over the network directly to the viewer –just in time! Netflix managed to get through this change in business models –at least to this point. That is somewhat rare for a company to manage the transition to a new business model once they are well established in the old model. It is very difficult. As they say: no railroad ever became an airline. The Netflix Case is an interesting study in creative destruction and then avoidance of creative destruction.[99]

Figure 47 -Blockbuster store closing
(wikimedia creative commons license)

There is an enormous literature around the development of new products. One of the most popular models is called the stage gate development model.

[99] http://www.jackmwilson.net/Entrepreneurship/Cases/Case-NetFlix.pdf

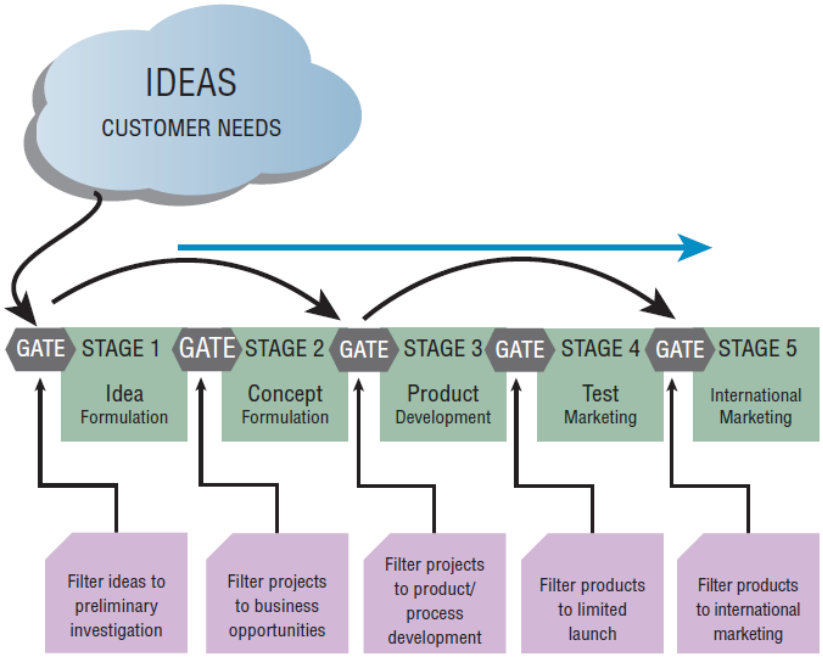

FIGURE 11.1 Stage-gate product development process

Sources: Derived from Cooper, R., *Winning at New Products: Accelerating the Process from Idea to Launch*, 2001, Cambridge, MA: Perseus Books; Doing it right: Winning with new products, 2000, Ivey *Business Journal,* **64**(6), 1–7.

Figure 48 Stage Gate Product Development

In the stage gate model, one starts with an idea to meet customer needs and then proceeds through five stages with gates to each. These five stages and their gates are:

1. Idea formulation –the gate is to filter ideas for preliminary investigation
2. Concept formulation –the gate is to filter the ideas as business opportunities.
3. Product Development – the gate is product/process development
4. Test marketing –gated by filtering to a limited launch group
5. International marketing –filter products for international marketing.

Another approach is called the Development Funnel:

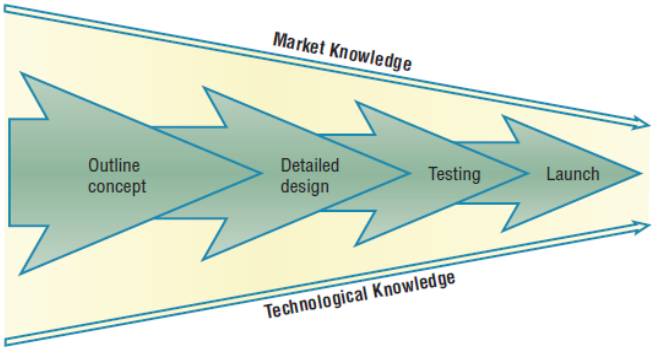

FIGURE 11.2 Product development funnel

Source: Derived from Wheelwright, S. C. and K. B. Clark (1992) *Revolutionizing Product Development*, New York: Free Press.

Figure 49 The Development Funnel

The funnel uses market knowledge and technological knowledge to narrow a concept into a launchable product or service.

Diffusion of Innovations

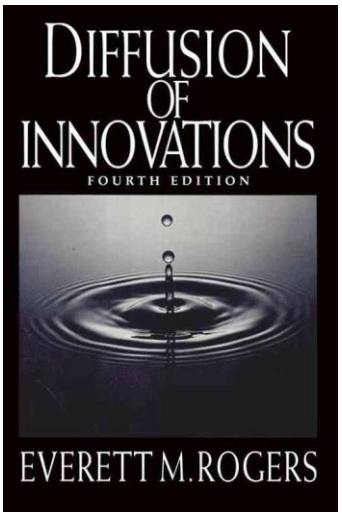

Figure 50

Diffusion is the means by which innovations are translated into social and economic benefits.

We know that the impact of the use of innovations is around four times that of their generation

However, the benefits of innovations can take 10–15 years to be fully effected, and in practice most innovations fail to be adopted widely, and so have limited social or economic impact.

Rogers' definition of diffusion is used widely:
"*the process by which an innovation is communicated through certain channels over time among members of a social system. It is a special type of communication, in that the messages are concerned with new ideas*[100]*"*

Rogers suggests that there are three types of innovation decision making:

- *Individual*, in which the individual is the main decision-maker, independent of peers. Decisions may still be influenced by social norms and interpersonal relationships, but the individual makes the ultimate choice. For example, the purchase of a consumer durable such as a mobile phone.

[100] "Diffusions of Innovations;" Everett Rogers; Simon & Schuster; (1962).

- *Collective*, where choices are made jointly with others in the social system, and there is significant peer pressure or formal requirement to conform. For example, the sorting and recycling of domestic waste.
- *Authoritative*, where decisions to adopt are taken by a few individuals within a social system, owing to their power, status or expertise (e.g. adoption of ERP systems by businesses, or MRI systems by hospitals).

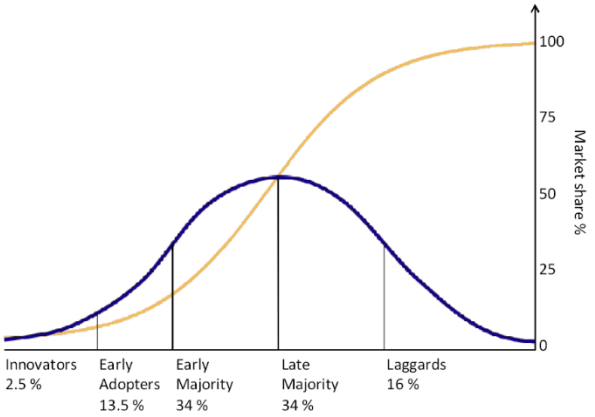

Figure 51
By Tungsten – (self-made based on Rogers, E. (1962) Diffusion of innovations. Free Press, London, NY, USA., Public Domain, https://commons.wikimedia.org/w/index.php?curid=8043923)

Rogers shows that innovations proceed through adoption by various groups at different times and that saturation of the market is achieved after even the slowest groups have adapted the product, service, or technology. The process leads to an s-curve of saturation.

This process starts with a small group of innovators and then moves toward the early adopters. Getting into the early majority is a big step, and then the late majority and laggards come along in due course.

Crossing the chasm: some jargon

The process begins with the innovators and then moves into the early market characterized by the early adopters or visionaries.

The Chasm is in getting from the early adopters to the early majority or the pragmatists.

Once into the early majority one enters a large part of the market knocking down customers like bowling pins.

The adoption may then become a tornado sweeping everything in its

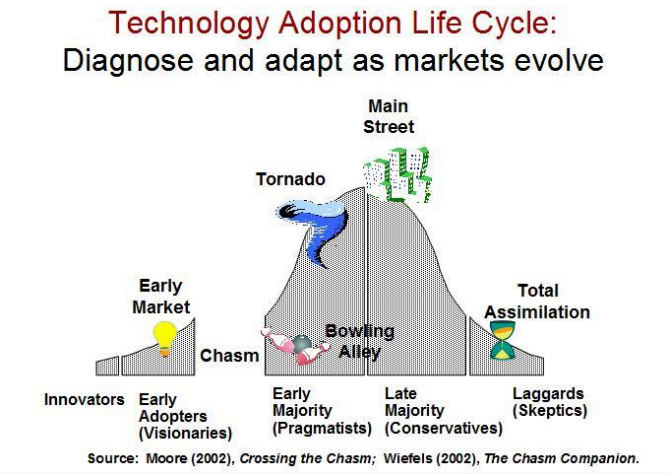

Figure 52 Technology Adoption Life Cycle

path as it heads into the conservatives or late majority.

Now we are on Main Street. We made it! There is total assimilation, and the product is now old news!

Barriers to Adoption

It is not easy or fast to get new technologies products adopted into the market place. There are usually some barriers that must be overcome, and it may take good strategies to overcome those barriers.

Economic barriers are often the most difficult to overcome. For some adoptions, particularly when environmental issues are involved, there may be personal costs versus social benefits. A lack of access to information about costs and benefits can also hamper adoption. For many new products there may be insufficient incentives to make the change.

Behavioral barriers may be even more difficult to overcome. We discussed the sources of irrational behavior as elucidated by the behavior economists, three of who have won the Nobel Prize for their work. We cannot assume that people will make rational choices in making decisions, and we need to understand and address the sources of bias. Characteristics such as personal priorities, motivations, rationality, inertia, and propensity for change or risk, may slow adoption.

Organizational barriers are often substantial. Organizations have goals, routines, power and influence, culture and stakeholders all of whom may oppose change.

Structural barriers may be the hardest to remove. Things like infrastructure, sunk costs, and governance, can hinder change. Elon Musk realized that there were structural barriers to adoption of electric cars. Our highway infrastructure is built to service gasoline cars. He realized that he had to build out an infrastructure of charging stations to have any chance for widespread adoption beyond the innovators and early adopters.

Research on diffusion of innovation has shown that there are five key issues to address to overcome the barriers. In predicting the rate of adoption of an innovation, five factors explain 49–87% of the variance[101]:

1. **Relative advantage**: This is related to the 10x rule. Relative advantage is the degree to which an innovation is perceived as better than the product it supersedes or competing products. Typically, it can be measured in narrow economic terms, for example cost or financial payback. In the example of the Mass Green High-Performance Computing Center we were confident that Harvard would join our group since the payback time for their investment was calculate as about one year. Today, because of this economic advantage, they are the largest user of the facility.

2. **Non-economic factors** such as convenience, satisfaction and social prestige may be equally important.

3. **Compatibility**: How compatible is the innovation to existing systems?

4. **Complexity**: How complex is it to implement?

5. **Trialability**: this refers to the degree to which an innovation can be experimented with on a limited basis. An innovation that is trialable represents less uncertainty to potential adopters, and allows learning by doing. Innovations which can be pust to the test easily will generally be adopted more quickly than those which cannot. Trialability lessens the risk of deployment since you can "try it before you buy it." Sometimes this is called 'divisibility' – how far can the risk of adoption be broken down into small steps rather than requiring a full commitment at the outset.

6. **Observability**: This is the degree to which the results of an innovation are visible to others. The easier it is for others to see the benefits of an innovation, the more likely it will be adopted. The simple epidemic model of diffusion assumes that innovations spread as potential adopters come into contact with existing users of an innovation.

Rate of Technology Adoption

Considerable research indicates that the rate of technology adoption is much faster today than it was decades ago. As Rita Gunther McGrath, a Professor at Columbia Business School, suggests: "*Many people suggest that rates of new product introduction and adoption are speeding up, but is it really, across the board? The answer seems to be yes. An automobile industry trade consultant, for instance, observes that "Today, a typical automotive design cycle is approximately 24 to 36 months, which is much faster than the 60-month life cycle*

[101] Rogers EM, Singhal A: Diffusion of Innovations (5th ed). In An Integrated Approach to Communication Theory and Research. Fifth edition. Edited by Salwen M, Stacks D. Mahwah: NJ:LEA; 2003: 409–419

from five years ago.[102]" Michael Felton, in the New York Times plotted the rate of acceptance of various technologies from the telephone to the internet. The telephone took several decades to reach a penetration of 50% of the US market but the cell phone only took a few years.

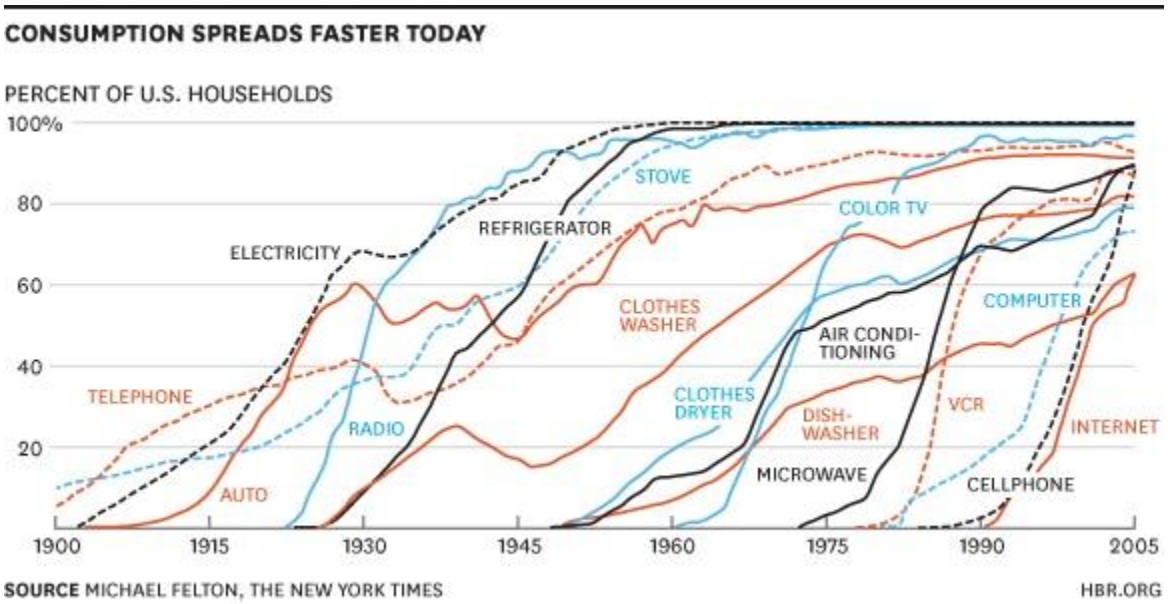

Figure 53 Technology Adoption Rates

This increased rate of adoption has a number of implications for the new venture. The good news is that your new product may be adopted quickly. The bad news is that if you do not move quickly, others may get to the market before you do!

It is also important to consider that all of these technologies that are being shown on this graph relate to electronic advances. For new ventures in the bio-technology areas, the barrier to entry remain very high and the time to market remains very long.

Things you need to be ready to discuss with an investor to show that you are ready to address these issues.

- **Intellectual property**: Do you have a method for protecting an investment in this new product, service, or innovation? We will discuss patents, copyrights, trademarks and trade secrets in the next chapter as a way to protect your intellectual property.
- **Key Asset Access**: what key assets do you have, including intellectual property, that would make it difficult for others to imitate your innovation. Today many companies are dependent upon things like Facebook, Amazon Web Service –the Cloud, or IBM Watson. Losing access to those things would be a challenge.

[102] https://hbr.org/2013/11/the-pace-of-technology-adoption-is-speeding-up

- **Proof of concept** –Selling the product in advance is one way to validate the customer market, demonstrate proof of concept, and raise funding for an expansion of the product development. In software this is often called selling "**vaporware**." In our discussion of the ILinc new venture case, we saw that Success magazine described the way the ILinc took orders for future development of software as the "Wimpy Model," named after the Popeye character who loved to say "I'll gladly pay you Tuesday for a hamburger today.[103]"
- **Scalability**: How do you plan to scale your venture up after you have found your business model using the customer development process? My partner, Mark Bernstein, told his father, a dentist that a dentist could only treat so many patients per day, but that selling software had no limit as to how much he could sell (or make) in a day. Variable costs versus fixed costs: Variable costs do not help in scaling. The amount of steel in every similar car is the same, thus the cost of steel is a variable cost. The cost of the machine used to stamp fenders out of steel is a fixed cost. Stamping more fenders does not raise that machine cost, but the electricity to operate the machine is a variable cost. Fixed costs do not go up with more sales. A machine that stamps steel fenders does not cost any more to stamp 100 per day as it does to stamp one.

There are also some financial terms that you need to be ready for:

- **Gross margins**. How much do you make on each sale after deducting expenses.
- **ARPU**: This is an acronym for Average Revenue per User. Is this a single sale, or do you keep the customer for future sales and how much revenue do you expect per user.
- **COGS**- Cost of Goods Sold
- **CoCA**- Cost of customer acquisition (also CCA). The CoCa is very important. If that is more than the average revenue per user, then there is no hope. This is why customer retention and multiple sales is important. If each sale is a one-time event, then it is difficult to gain sufficient revenue. As discussed earlier, this is why drugs for chronic diseases are more profitable than one time vaccines.

Checklists for elements of adoption[104]

Checklist for Relative Advantage

- How well does my plan show how much better off people will be when they adopt it?
- Why is this plan better than what has been done before?
- What advantages or benefits may there be to accepting the plan?
- Who will gain from the implementation of the plan?
- How will I (or others) be rewarded by adopting the plan?
- How can I emphasize the plan's benefits to all?

[103] http://www.jackmwilson.net/ILinc-TheFullStory.pdf

[104] Innovation & Entrepreneurship 3e by Bessant & Tidd; John Wiley and Sons (2015).

Checklist for Compatibility

- How well does my plan demonstrate that it is compatible with current values, past experiences and needs?
- Is the plan consistent with current practice?
- Does the plan meet the needs of a particular group?
- Does it offer better ways to reach our common goals?
- Who will naturally support and agree with the plan?
- Can it be favorably named, packaged or presented?

Checklist for Trialability

- How well does my plan allow for trialability?
- Can the plan be tried out or tested?
- Can uncertainty be reduced?
- Can we begin with a few parts of the plan?
- How can others be encouraged to try out the plan?
- Can the plan be modified by you or others?

Checklist for complexity

- How well does my plan provide for easy communication, comprehension and use?
- Is the plan easy for others to understand?
- Can it be explained clearly to many different people?
- Will the plan be easily communicated?
- How can the plan be made more simple or easy to understand?
- Is the plan easy to use or follow?

Checklist for Observability (Visibility)

- How well does my plan provide results that are easily observed and visible to others?
- Is the plan easy for others to find or obtain?
- Can the plan be made more visible to others?
- How can I make the plan easier for others to see?
- Will others be able to see the effects of the plan?
- Are there good reasons for not making the entire plan visible?

Viral marketing is a derivative of this issue that is a critical way of bringing your new product to the public's attention.

What other factors do we need to pay attention to?

- What other resources will I need; how can I get them?
- What obstacles exist; how can we prevent or overcome them?
- What new challenges will be created; and dealt with?
- How can I encourage commitment to the plan?
- What feedback about the plan is needed?

Chapter 12 Intellectual Property

Protecting Innovative Ideas

Intellectual property (IP) is one of the most important resources of most new ventures. For ventures in the Life Sciences and in Information Technology, this may be the most important resource. Deciding how to manage that resource can be a make or break issue for any new venture. Failure to protect your intellectual property can allow other to imitate your products and services and enter your market using the intellectual property that you may have created and developed. The process of creating and developing intellectual property can be an enormously expensive endeavor. For information technology based companies this can easily be in the millions of dollars. For companies in pharmaceuticals or biotechnology, this would undoubtedly stretch into the billions of dollars. Imagine how unfortunate it would be if your new venture had developed some kind of intellectual property at great expense and then saw an imitator or "fast follower" bring a new product to market using your ideas without having to pay for them?

As we saw in the ILinc Case, that is exactly what happened to the ILinc Corporation. The founders made the decision not to patent the technology due to the expense and time delay and potential contention with their partners. Instead they tried to protect the technology as a trade secret and attempt to innovate faster than any imitator could follow. It worked for several years, but eventually a number of fast followers entered the market. There is no perfect way to protect your intellectual property.

In this chapter, we will try to provide some of the basics of the acquisition and management of intellectual property to allow founders of new ventures to consider the options and make the trade-offs required for the execution of the best strategy.

To begin, there are four main key forms of Intellectual Property (IP). We will see that each has its own advantages and disadvantages. They are:

- Patents
- Copyright
- Trademarks
- Trade Secrets

Patents

Patents are often the first thing that scientists or engineers think of when dealing with intellectual property. A patent is a grant from the federal government conferring the rights to exclude others from making, selling, or using an invention for the term of the patent as many as 20 years.

To obtain a patent, an invention must:

- Be novel. It must be something that is completely new. If others have done it before and disclosed that, then it cannot be patented.
- Not be obvious to a person of ordinary skill in the field. This is often the point around which patent disputes start. If one can show that an idea would be obvious to anyone skilled in the field, then it cannot be patented. Sometimes that can be in heavy dispute.
- Be useful: You cannot patent something that does not have an obvious immediate use.
- Prior to 2013 you had to be the first to invent. Now you need to be the first to file.

There are three basic forms of patent protection that are each designed to do something a bit different.

- The Utility Patent: The duration is 20 years from the date of the original application. It is awarded for any new or useful process, machine, manufacture, or composition of material or any new and useful improvement thereof.
- The Design Patent: The duration is 14 years from the date the patent is awarded. It is awarded to protect the invention of a new, original, and ornamental design for manufactured products.
- The Plant Patent: The duration is 20 years from the date of the original application. It protects any new varieties of plants than can be reproduced asexually.

You can patent any:

- Process
- Machine
- Manufacture
- Chemical formula
- Design
- Plants

There are some definite **advantages** to having a patent. A patent:

- Provides a monopoly right for the life of the patent
- Raises the cost of imitation
- Helps to raise capital by demonstrating competitive advantage
- Investors like to see that the intellectual property behind a new venture is protected so that someone else cannot come along and easily enter the same market.
- Prevents a second party from using the invention as a trade secret
- Allows cross-licensing of multiple patents (with potential royalties or joint profits)

There are also some **disadvantages** to patents. The patent:

- Requires disclosure of the invention: This means that others can see how you did it.
- Provides only 14-20-year monopoly: When a drug goes off patent, then the generic imitations quickly eliminate the original market.

- Can be circumvented: By looking at your disclosure, a competitor might find a way to invent around your patent.
- Is difficult and costly to defend.
- Is often less effective for most types of technology. It can be irrelevant if technology is fast moving
- Requires world-wide patent application: The rules can be different, and the process is costly, but failure to do so means that you may lose the market in that country. The good news is that the patent changes in 2013 have helped make global patenting easier.

Remember that it is *more costly to defend and enforce a patent* than it is to obtain a patent.

Case: Apple Design Patents: Defending the patent may be more difficult than obtaining it

As an example of how long and expensive defending patents can be, consider the case of certain Apple design patents. Here is the timeline of events, lawsuits, decisions, and actions that began in 2007 and continues today over ten years later. It goes without saying that the legal expenses of this fight are enormous.

- Jan. 5, 2007: Apple files for 4 design patents covering the basic shape of the iPhone a mere four days later, Apple releases the iPhone to the public.
- June 2007: Apple files color design patents covering 193 screen shots of graphical user interfaces for the iPhone.
- April 15, 2011: Apple sues Samsung for infringement based upon these patents, some utility patents, registered trademarks and trade dress rights.
- Samsung counter sued in both Korean and Japanese courts
- Apple sued in German (EU), Dutch, and Australian courts.
- Samsung sued in Italian, British, and French courts.
- There were then quite a few conflicting decisions that barred sales of Apple in some jurisdictions and Samsung in others.
- August 24, 2012: A U.S. Court the jury returned a verdict largely favorable to Apple.
- The jury awarded Apple $1.049 billion in damages and Samsung zero damages in its counter suit
- October 23, 2012, U.S. Patent and Trademark Office invalidated Apple's bounce back patent
- Dénouement Reuters: Andrew Chung; NY; Dec 4, 2015 12:00pm EST: "*Samsung to finally pay Apple $548 million in patent dispute*." http://www.reuters.com/article/us-apple-samsung-payment-idUSKBN0TN20R20151204

This is a long, sad, and expensive story and it has not yet reached the final conclusion.

For those interested in the detailed history please see the Wikipedia entry at: https://en.wikipedia.org/wiki/Apple_Inc._v._Samsung_Electronics

To make a long story short, the two companies continued to spar and try to ban one another's product –with some partial successes over a decade.

The moral of the story: Patents are not that hard to obtain, but they are very difficult to defend. It often costs far more to defend a patent than to obtain a patent. In this case, it was two large companies with very deep pockets doing the fighting. If you are a small company fighting back against a big company, it is usually difficult to do. Large companies sometimes infringe a patent, knowingly or not, and then rely on their extensive legal teams and deep pockets to keep doing what they are doing as the case works its way through court or the smaller company settles to minimize their expenses.

This was one reason that the ILinc founders elected not to spend the money and delay the product to (potentially) obtain a patent that they would likely have to defend in any case. Other observers might retort that if ILinc had obtained the patent and defended it, that they could have had a monopoly in the market place.

How patents became the rocket fuel of technological entrepreneurship

The Bayh-Dole Act in1980 (named for Senators Birch Bayh (D) and Robert Dole (R)) gave the patent rights for intellectual property created in university research funded by the federal government to Universities. Prior to Bayh-Dole, the rights went to the Federal Government.

For a patent to be valuable enough to cause an organization to invest the money to commercialize it, that industry needs to be assured that they have rights to use the IP and that others cannot easily imitate their work. Prior to Bayh-Dole, an enterprise could not be assured that they had protected rights to intellectual property. Prior to the enactment of Bayh-Dole, the U.S. government had accumulated 28,000 patents, but fewer than 5% of those patents were commercially licensed.

After Bayh-Dole, Universities got very good at licensing IP to industries. This gave the industries the protected rights that they needed, and it also created a significant revenue stream for Universities and Government labs.

As the number of patents, many for doubtful products and business methods, proliferated over the last few decades, another form of patent abuse began to arise. Companies with no other mission would simply buy up collections of existing patents and then find companies that they could sue while claiming the company was infringing their patents. Larger companies would often make the business decision that it would be cheaper to pay them off than it would be to fight them in court.

These people are often known as "**Patent Trolls**[105]" and one can debate whether that is fair or not[106].

Recent Supreme Court Decisions appear to be reducing the number of cases being filed.[107]

The dramatic changes of 2013

In 2013 the US patent law was changed dramatically. The US converted from "**First to Invent**" to "**First to file**" in 2013. For this reason, you should be careful not to follow materials written under the old law, since that could invalidate your patent opportunities. Before 2013, there was a lot of effort invested to establish who first invented any particular idea/patent. That was why documentation was so important. Now this is no longer relevant. If you invent something and keep it secret and someone else finds out about it and files the patent, you will find it difficult to stop them. The patent priority will go to the first to file.

The US also agreed to recognize any filing in any WTO country as establishing the same priority as if it was filed in the US.

> *Title 35 USC Section 119 (a) An application for patent for an invention filed in this country by any person who has, or whose legal representatives or assigns have, previously regularly filed an application for a patent for the same invention in a foreign country which affords similar privileges in the case of applications filed in the United States or to citizens of the United States, or in a WTO member country, shall have the same effect as the same application would have if filed in this country on the date on which the application for patent for the same invention was first filed in such foreign country, if the application in this country is filed within twelve months from the earliest date on which such foreign application was filed.*

Prior to 2013 there was a lot of uncertainty in patent protection for natural products. Could naturally occurring genetic sequences be patented? Could a company patent its DNA amplification technique (scientific process)? Could the sequence of events constituting the test be patented?

Things changed in 2013. Before 2013 genes could and were patented in the US. After 2013 naturally occurring DNA could NOT be patented. Synthetic "complementary DNA (cDNA)" however could be patented since cDNA does not occur in nature

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[105] http://en.wikipedia.org/wiki/Patent_troll

[106] https://www.eff.org/issues/resources-patent-troll-victims

[107] http://www.motherjones.com/kevin-drum/2014/10/after-supreme-court-decision-patent-trolls-getting-cold-feet

The Business Method Patent

In 1998, a Federal Court ruling assigned the US Patent and Trademark Office (USPTO) the responsibility of issuing patents for unique automated technologies that process data or generates revenue. This can be business models, methods, or processes—including computer software.

Suddenly, e-commerce features such as subscription-based access, targeted advertising networks, portal sites, online auctions, virtual malls, and even forums were now considered business models, methods, and processes that could be patented.

The Business Method Patent has become a very important form of patent in the eCommerce and other internet mediated business interactions. A business method patent is a patent that protects an invention that is or facilitates a method of doing business. This includes new types of e-commerce, insurance, banking, tax compliance etc. This is a relatively new type of patent and continues to be the subject of controversy and litigation. Here are a few important examples:

- Amazon.com's one-click ordering system,
- Priceline.com's "name-your-price" business model
- Netflix's method for allowing customers to set up a rental list of movies to be mailed to them.

Some areas of Business Method Patents[108]

- Financial - credit and loan processing, point of sale systems, billing, funds transfer, banking clearinghouses, tax processing, and investment planning
- Financial instruments and techniques – derivatives, valuation, index-linking
- Optimization – scheduling and resource allocation
- Marketing - advertising management, catalog systems, incentive programs, and coupon redemption
- Information acquisition, human resource management, accounting, and inventory monitoring
- e-commerce tools and infrastructure – user interface arrangements, auctions, electronic shopping carts, transactions, and affiliate programs
- Voting systems, games, gambling, education and training

Trademark

A trademark is any word, name, symbol, or device used to identify the source or origin of products or services and to distinguish those products or services from others.

[108] http://eml.berkeley.edu/~bhhall/papers/BHH%20on%20BMP%20May03WP.pdf

Figure 54 Example Trademarks

The Trademark Law Protects:

- Words: Excluding: Pure description of a product/service, Deceptive marks, or a mark consisting primarily of a surname.
- Numbers and letters: Designs or logos: Must be distinctive rather than generic
- Sounds – Distinctive
- Fragrances – Cannot enhance the use of the product
- Shapes – No impact on the product's function
- Colors – not functional
- Trade dress. The manner in which a product or a business is "dressed up" to appeal to customers is protectable.

The process is quite simple. Select an appropriate mark, words, design, logo, sound, shape or other legal trademark. Search the Trademark Office files to see if it is already in use. Register the trademark. You can claim a trademark even if you do not register it, but the protection may not be as complete.

Trade Secrets (Coca Cola formula for example)

A trade secret is a piece of knowledge that confers an advantage on a firm and is protected by non-disclosure. This allows a company to protect a competitive advantage without disclosing how an underlying technology works.

There are some disadvantages:

- Must be kept hidden to remain valuable

- Doesn't provide a monopoly right
- To enforce and claim damages in court, must show a loss of competitive advantage

What qualifies for trade secret protection?

- Is not known outside the company
- Is known only inside the company on a "need to know" basis
- Is safeguarded by stringent efforts to keep the information confidential
- Is valuable and provides the company a compelling competitive advantage
- Was developed at great cost, time, and effort
- Cannot be easily duplicated, reverse engineered, or discovered.

If you don't take active steps to protect it, then you lose it.

Copyrights

A copyright is a form of intellectual property protection that grants to the owner of a work of authorship the legal right to determine how the work is used and to obtain economic benefits from the work.

What is Protected by a Copyright?

- Literary works
- Musical compositions (and derivative works)
- Dramatic works
- Pantomimes and choreographic works
- Pictorial, graphic, and sculptural works

Copyright law protects any work of authorship the moment it assumes a tangible form. Technically, it is not necessary to provide a copyright notice or register work with the U.S. Copyright Office. The following steps can be taken, however, to enhance copyright protection. Copyright protection can be enhanced by attaching the copyright notice, or "copyright bug" © to something. Further protection can be obtained by registering the work with the U.S. Copyright Office.

For those interested in more detail on these issues you may wish to consult my text on Technological Entrepreneurship:
http://www.jackmwilson.net/Entrepreneurship/TE/TE-Chap4-IntellectualProperty.pdf

I also have several cases that illustrate these principles

- http://www.jackmwilson.net/Entrepreneurship/Cases/Case-CRISPR-MITvsUC-IP.pdf
- http://www.jackmwilson.net/Entrepreneurship/Cases/Case-Napster-Ethics-Legal.pdf

Chapter 13 Marketing in an Innovative Environment

Mark Andreesen: "*I'll assert that market is the most important factor in a startup's success or failure*."

Marketing is an inexact science.

Entrepreneurship and Innovation is so interesting, at least in part, because it demands involvement of individuals with such diverse backgrounds. A person with a management background and experience bring very different training and experiences to the venture than does someone who comes by way of engineering. We have already seen that economic decision making is not rational and have considered some of the sources of those irrational biases like the confirmation bias, the availability bias, and others. Even before this Nobel Prize winning work was done, other economists realized that decision making in real life, especially in the market place, is not anything like the rational problem solving of the mathematician. Real human beings have limited time (and even limited brainpower) to devote to making a decision. Herbert Simon, Nobel Prize winning economist described this approach as "Bounded rationality."

Problems are often so complex that one cannot expect to find the optimal solution. It may take too much time and analysis and resources. In part, for that reason, human beings often develop "rules of thumb" to help. They often put boundaries on the problem to simplify it.

Starting a new venture or innovating within an existing venture will generally require you to define boundaries and use rules of thumb. Putting boundaries on your startup will help. What will you define as your target market? Is it unbounded, large but bounded, or very narrowly defined?

There is a tradeoff. Large markets are nice to have, but large markets may be difficult to address. Often the startup will pick a smaller target, address that market, and then see if others can be targeted. The creation of the Segway provided a cautionary tale[109]. Segway came to public attention as a mystery. It had a code name: Ginger, and a famous and successful inventor, Dean Kamen, as the founder. There was intense hype and mystery in media discussion – Was it an Anti-gravity machine? – A personal helicopter? On Dec. 3, 2001 the inventor Dean Kamen unveiled it on Good Morning America. John Doerr, one of the most famous venture capitalists in the US said it was: "*As important as the internet*" Steve Jobs claimed: "*Cities will be built around it*." They set up a factory that could produce 40,000 per month but sold less than 300 /mo. -or 6000 in 21 months. This was a venture led by the "A Team." The product was an "A+." And yet, it failed miserably. They did not

[109] http://www.jackmwilson.net/Entrepreneurship/Cases/Case-Segway%20Case.pdf

take the time to discover their market. They were all over the map on targeting every market. If you try to target everyone, you will have actually targeted no one.

Amazon took a different path and started selling books, but now Amazon sells everything! Remember that disruptive innovation, as defined by Clayton Christensen, was a way in which firms targeted a small unimportant part of a larger market, but then grew to take the main market. Small steel mills made rebar while larger firms ignored that market in favor of higher end steel. After establishing themselves in the rebar market the new firms went after the big profitable part and nearly destroyed the larger firms. Similarly, Amazon focused on books and putting bookstores out of business. Once successful, they moved into more general retail and recently bought Whole Foods to target the food stores.

The Goliath paradox

Entering a large market with one dominant provider (Google, Amazon, Microsoft, Apple, etc.) is always interesting. Many refer to this as the Goliath Paradox: "How in the world did little David manage to destroy Goliath." It is indeed a paradox. Launching a frontal assault with conventional tactics is bound to fail, but there is a way.

Clearly there is a large market and that is very good news. Wild and Feld suggest that you need a 10x better solution to get traction in that kind of market. As David (and Goliath) will tell you, it can be done.

The Goliaths can often arrange significant barriers to entry. Among the barriers that they can use are:

- Market regulations
- Dominating distribution agreements (shelf space in grocery stores)
- In elastic demand (they already own the available market)
- Predatory pricing (they drop prices so that you cannot make money)
- Switching costs and sunk costs. (It costs too much for users to switch)
- Microsoft Windows and Office or Apple iPhone
- Locking up resources (Apple locked up suppliers of equipment that might be used by iPhone competitors.)

Any strategy for entering new markets must take into account strategies and tactics for surmounting some of these barriers. We need to examine how others have done this in the past, and how new products and technologies manage to get into the market place.

Strategies for crossing the chasm

Remember the stages of market adoption as defined by Geoffrey Moore in "Crossing the Chasm."

- The Innovators and inventors
- Early market – the early adopters and visionaries
- Chasm –getting from the early adopters to the early majority. Crossing the chasm is considered one of the key times in the adoption of any new product.
- Bowling Alley –once established in the early majority
- Tornado – as the innovation moves from
  early majority to late majority it becomes a tornado of adoption.
- Main Street –we made it!
- Total Assimilation -Now it is old news! Even the laggards are buying it!

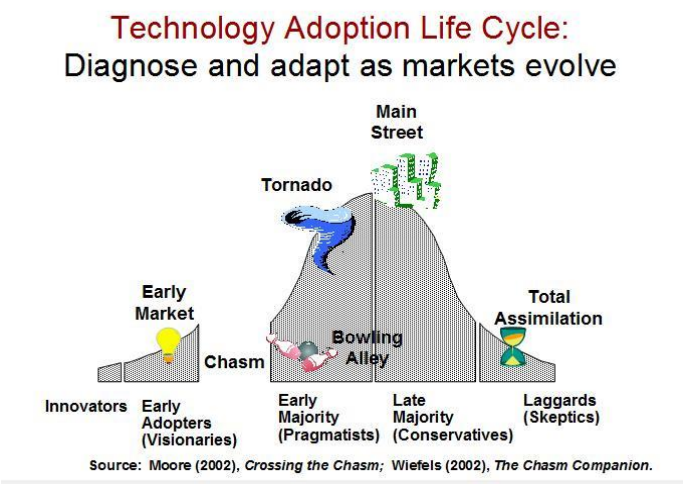

Figure 55 -Crossing the chasm

Geoffrey Moore suggests a few strategies for getting from the early adopters to the early majority –the bowling alley. Here are a few:

- Piggybacking –partner with a company that is selling a complementary product. Software companies often partner with computer companies to distribute trial versions of software that can be activated later.
- Industry Placement –position(ing) is one of the four "p's: of marketing. By changing where a product is positioned, one can address new markets. Viagra was repositioned from being a heart medicine to improving sexual function. Post-it notes was a repositioning of an adhesive from strong to weak!
- Publicity –do something dramatic to call attention to the new product.
- Virgin Mobile launched in Canada with Richard Branson arriving in a model filled convoy of Hummers labeled the "Mobile Revolutionaries."

The Blue Ocean Strategy

The Blue Ocean Strategy[110] is when a company finds a completely unexploited market and can move in uncontested (at least at first) to go after this new (Blue Ocean) market[111].

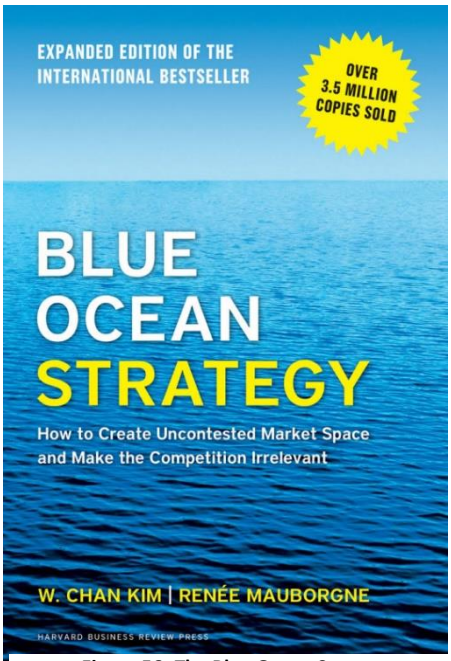

Figure 56 -The Blue Ocean Strategy

Some examples:

- Cirque du Soleil: Blending of opera and ballet with circus format while eliminating star performers and animals;
- Netjets: fractional jet ownership;
- Southwest Airlines: offering flexibility of bus travel at the speed of air travel using secondary airports;
- Curves: redefining market boundaries between health clubs and home exercise programs for women;
- Planet Fitness: Branding their centers as “no lunk” zones where customers could not be intimidated by hyper fit gym rats.
- Home Depot: offering the prices and range of lumberyard, while offering consumers classes to help them with DIY projects;
- Dyson: Cyclonic Vacuum Cleaners.
- China Mobile: China Mobile CEO, Wang Jianzhou, talked about China's hinterland as a classic "blue-ocean market," where the company is casting its net widely without worrying about getting tangled up with the nets of rivals.
- Wii: Rather than releasing a more technologically advanced video game console with more features as in previous generations, Nintendo released a console with innovative controls made to attract populations that are typically excluded from the target demographic for video games, such as the elderly.
- TATA Motors: The Nano car, low cost car for the “bottom of the pyramid”.
- Starbucks: This company entered a historically crowded market place, the coffee shop industry; however, it found its way to success through the blue ocean strategy. Starbucks separated itself from the competition by combining differentiation, low cost and a customer oriented approach from the beginning of its operation. In terms of differentiation, Starbucks offered a variety of products, such as smoothies, teas and a selection of coffees that no other establishment was offering. By training specialized staff, the company was operating on less staff than would usually be needed, whilst maintaining professionalism and excellent customer service, for example, personalized coffee cups.

[110] https://en.wikipedia.org/wiki/Blue_Ocean_Strategy

[111] Blue Ocean Strategy; W.C Kim and R. Mauborgne; Harvard Business Review; 2004.

Product/Market fit

Getting to product/market fit is the goal of every new venture. Sean Ellis, founder and CEO of GrowthHackers.com and a former entrepreneur suggests that: "*If 40% of your early users say they would be very disappointed without your product, then you have reached product/market fit*[112]."

As we have seen, The Customer Discovery Process is meant to be a series of iterations with a lot of customer interviews leading to a minimum viable product. "*Customer Validation proves that you have found a set of customers and a market who react positively to the product*" –Blank (i.e.. they bought it!)

Mark Andreesen, creator of Netscape and a serial entrepreneur, asserts[113]:

> *"If you ask entrepreneurs or VCs which of team, product, or market is most important, many will say team. This is the obvious answer, in part because in the beginning of a startup, you know a lot more about the team than you do the product, which hasn't been built yet, or the market, which hasn't been explored yet.*
>
> *Plus, we've all been raised on slogans like "people are our most important asset" -- at least in the US, pro-people sentiments permeate our culture, ranging from high school self-esteem programs to the Declaration of Independence's inalienable rights to life, liberty, and the pursuit of happiness -- so the answer that team is the most important feels right.*
>
> *And who wants to take the position that people don't matter?*
>
> *On the other hand, if you ask engineers, many will say product. This is a product business, startups invent products, and customers buy and use the products. Apple and Google are the best companies in the industry today because they build the best products. Without the product there is no company. Just try having a great team and no product, or a great market and no product. What's wrong with you? Now let me get back to work on the product.*
>
> *Personally, I'll take the third position -- I'll assert that market is the most important factor in a startup's success or failure."*

Now that is interesting to ponder in the context of the Segway startup which we described as an "A" team with an "A+" product. Andreesen divides the world of startups into two phases:

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[112] http://www.startup-marketing.com/the-startup-pyramid/

[113] http://web.archive.org/web/20070701074943/http://blog.pmarca.com/2007/06/the-pmarca-gu-2.html

> *"I believe that the life of any startup can be divided into two parts: before product/market fit (call this "BPMF") and after product/market fit ("APMF"). When you are BPMF, focus obsessively on getting to product/market fit. Do whatever is required to get to product/market fit. Including changing out people, rewriting your product, moving into a different market, telling customers no when you don't want to, telling customers yes when you don't want to, raising that fourth round of highly dilutive venture capital -- whatever is required."*

Charles Darwin in "Origin of Species" observed that "*It is not the most intellectual of the species that survives; it is not the strongest that survives; but the species that survives is the one that is able to adapt to and to adjust best to the changing environment in which it finds itself*."

And so it is with new ventures.

Finding your product/market fit.

As you think about your new venture ask yourself: Who wants to pay for your product or service and why would they want to (or better yet: have to) pay for what you offer? As we saw in our discussion of the new Rabies Mono-clonal antibody, that question can be the determining question as to whether you have created a marketable product or service –or whether you had just another great idea.

When you begin to think about those questions, you must do so in a very specific and well targeted fashion. The fundamentals of marketing can give you a framework on how you identify that market in the most specific fashion possible and then identifies the many ways that you can connect with that market. Key points in this chapter include: Segmenting the market and finding the target market.

We will also introduce and explore the famous **4 "P's" of marketing**

- Product
- Price
- Promotion
- Place – how do you get to the market?

Segmenting the market and finding your target

When UMass Online was being created in 2001, we began to think about who might want to take our online courses. We knew that there were lots of students in higher education. According to the National Center for Higher Education Statistics there are 17,487,475 students enrolled in the 1440 institutions of higher education in the United States. Now THAT is a good-sized market.

Of course, we did not plan to limit ourselves to the United States, and we knew that there were many people employed who might like to be enrolled but could not do so in a traditional institution. In our more realistic moments we also knew that this last group might be a more interested market and that most traditional students might not consider online education as an alternative.

In order to sort this out, we began to consider the market in segments (we began to segment the market). There were graduate and undergraduate segments. You could segment the market by age –traditional 18-22-year-olds and the older students. You could also consider various domains of expertise: business, engineering, nursing, hospitality management, humanities, criminal justice, and many more.

We eventually settled on a general target market with two pieces. Our target market was employed persons who were 25-45 years old and needed to finish a degree to reach their professional goals in life. The two pieces were:

1. Students who had some college but left to take a job before finishing a degree.
2. Students who already finished their bachelor's degree but were in a job situation where they needed a graduate degree, perhaps in another field, to continue to advance in their career.

Once we had settled on this target market with two pieces, we then began to think about the kinds of degrees that might fit, and the kinds of programs and courses we would have to offer to meet this need. For those who were interested in completing a Bachelor's degree we identified three initial possibilities:

1. a general BA degree,
2. a general BS in Business degree, and
3. an RN to BS degree program.

For those who were interested in the graduate programs we also found a few good initial targets:

- Professional MBA –this could serve needs of those already in businesses but could also help engineers or others who were working in areas in which they were expected to take more of a managerial and leadership role.
- MS in Information Technology –in an era when IT was transforming everybody's job!
- MS in Hospitality and Tourism.

We had many others coming long soon thereafter.

So how did we do at segmenting the market and finding a target market? The numbers tell the story:

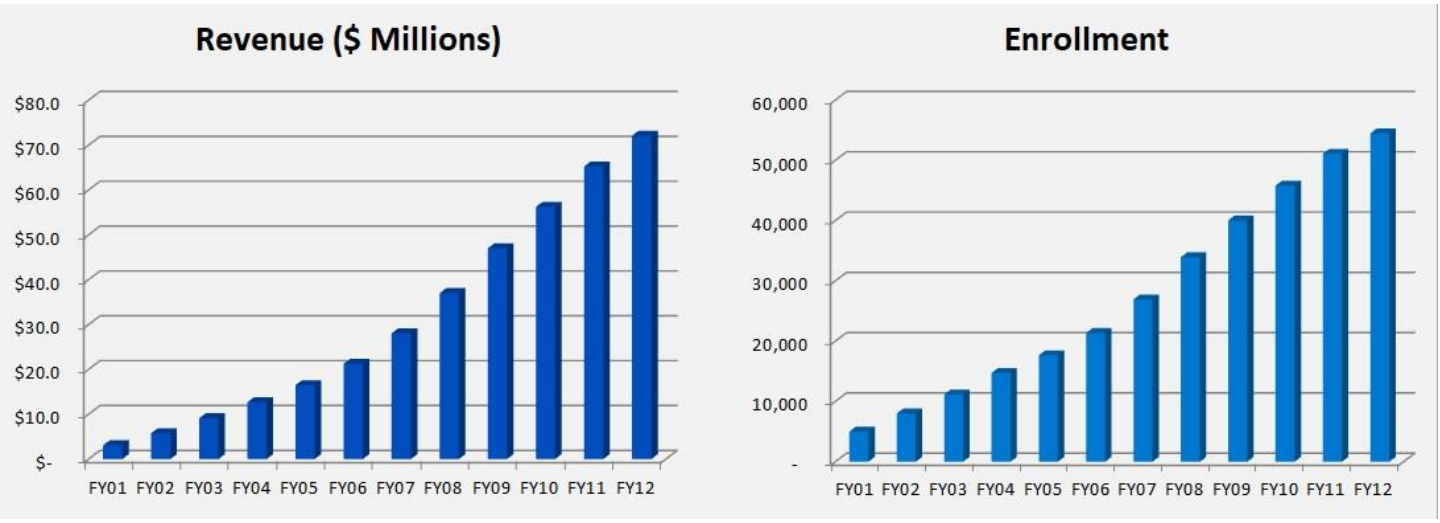


Figure 57 UMass Online Revenue and Enrollment Growth

UMass Online grew very rapidly from almost nothing to revenue of over $70 million in just over a decade. Enrollment grew to over 50,000. That revenue was generating nearly 60% net margins. During the dotcom bust of 2001-2003 it was growing at nearly 40% year on year. The sub-prime bust of 2008-2009 did not even bend the curve of the growth. It was one of the best business outcomes one could imagine. The good news is that this growth has continued to the present.

Selecting a market and establishing a position is a key first step. Let us consider this process in a systematic fashion –step by step:

- Segmenting the market: What subgroups do we find in our desired market and which of those subgroups might find our product most appealing?

- Selecting a target market: Which specific sub-groups do we want to target first?

- Segmenting the Market: Developing the positioning strategy. How do we position our product, company, or service in the minds of our target market that will differentiate ourselves from competitors and substitutes for what we offer?

You begin with a study of the industry in which the firm intends to compete and then determine the different potential target markets (market segments) in that industry. At this point it is important not to be too ambitious. Recall our discussion of the lack of market focus that doomed Segway to a very disappointing start. Segway did not identify a target market. Instead they addressed an overly broad range of potential markets. It is often said that a person with ten priorities has no priorities. Similarly, a new company with ten target markets has no target markets. In general, a new organization does not have sufficient resources to target more than one target market in the beginning.

As we saw earlier in discussing the start-up of UMassOnline, markets can be segmented in terms of

- Characteristics of customers served
- Type of product or service developed
- Price range of product or service

Selecting a Target Market may begin with evaluating the attractiveness of each potential target market. Different markets may be at different stages and rates of growth as well as sizes. UMassOnline picked the age range of 25-45-year-old students since this was the fastest growing and least well served part of the market. We picked the particular group of employed 25-45-year-olds since they had an ability to pay for the experience and they could not easily attend more traditional graduate and undergraduate programs that were offered on campuses.

Establishing a unique position in the market is important. How can the venture be differentiated from its competitors? What are the two or three of a product's attributes that define the essence of what the product is and what separates it from its competitors.

Establishing a brand is another key marketing issue. A brand is the set of attributes that people associated with a company. A brand can have positive attributes like: trustworthy, dependable, or easy to deal with. A brand can also have negative attributes such as: cheap, unreliable, or difficult to deal with.

How can you establish a brand? To start, choose a name that is easy to remember. Create a logo symbolizing your business. Create a brand personality. Communicate your brand to your target market.

And most importantly: ensure that the product and services that you deliver reinforce the positive aspects of your brand. One of the funnier stories in branding is the 1962 car model that General Motors named the "Nova." Unfortunately, this is pronounced almost the same as the Spanish for "no go." That is not a brand you want for any car you are trying to sell.

The point of a brand is to be able to quickly, reliably, and accurately convey to the public the key characteristics of your product and/or service - **Brand Identity**. Some confuse prestige with brand. Prestige is an aspect of brand but is not synonymous with brand. For example: If I am traveling on a long trip auto trip in unfamiliar territory with my children or grandchildren, I may seek out McDonalds (or some other national fast food brand) for dinner to ensure that I get reasonable quality food, served in clean surroundings, and with a menu of items that I know the children will like. If I am in Boston with other adults and planning to have dinner, I have never considered McDonald's but often select Legal Seafood.

In both cases, the brand is an accurate indication to what the customer expects and both brands are very valuable. Most would say that Legal Seafood is the more prestigious brand, but which is the more valuable brand? It is McDonalds with an annual revenue of ~$28

Billion and 440,000 employees. Legal Seafood has annual revenue of ~$200 million with 4,000 employees.

The Four Ps of Marketing for New Ventures

Product, Price, Promotion, and Place make up the marketing mix for any new product or service. These are listed in that order for a reason: This is the path to market. It starts with a product or service that is designed to appeal to a market, and then needs to be priced in order to become a value to the market. Letting the market know about the product through promotion is necessary (but perhaps not sufficient) for early market acceptance. Finding a way to place the product or service into the market is the last piece of the puzzle needed to bring the product, service, or venture to the market.

Figure 58 -4P's

However, the actual path to market is iterative, and each step may provide important information to cause you to go back and re-evaluate aspects of the product, price, promotion, or place.

Product: What are you selling?

A firm's product, in the context of the marketing mix, is the good or service it offers to its target market. In marketing one needs to focus on the actual product more than the core product. If you were to design a video game, then the core product would be the software needed to play the game, but the actual product would include the core product plus the context around that product. This might include packaging (or alternatively how and from where it is digitally delivered), the perceived quality of the game, the brand, and the innovative features.

Making a good first impression on the market is imperative. The initial rollout is one of the most critical times in the marketing of a new product. A flawed product or service introduction can create a negative image in the mind of the market that can be difficult to overcome –even with a lot of later good news.

Marketing is a two-way street. It is a path to bring information about the product to the customers, but it is also a path to bring information back from the customers to the product developers. This point is key to Steve Blanks Lean Launchpad model.

Price: What it says about your products

Price is the amount of money consumers pay to buy a product. Key pricing factors include: Cost; Value; Competition; Market demand; Image. There are two main pricing strategies that one uses. Which are used often depends upon the type of product and the type of market. As price is being determined, you will generally use both strategies before you settle on the final strategy.

Cost based pricing. -In cost-based pricing, the list price is determined by adding a markup percentage to a product's cost. The advantage of this method is that it is straightforward, and it is relatively easy to justify the price of a good or service. The disadvantage is that it is not always easy to estimate what the costs of a product will be.

Value based pricing -In value-based pricing, the list price is determined by estimating what consumers are willing to pay for a product and then backing off a bit to provide a cushion. What a consumer is willing to pay is determined by his or her perceived value of the product and by the number of choices available in the marketplace. Most experts recommend value-based prices because it hinges on the consumer's perception of what a product or service is worth.

Caveat! Beware of **Price Signaling**. One last caveat on value-based pricing: consumers often base part of their decision on the value of something based upon the price being asked. This is particularly true of products for which a customer is lacking other information about the quality of a product. This is called "price signaling."

A customer that is buying wine and is not particularly knowledgeable about the range of wines available, is probably going to avoid the lower priced wines –assuming they are of lower quality. Another customer may have read about the higher ratings of certain modestly priced wines and then select one of the modestly priced wines in the confidence that they are actually getting a greater value at a lower price.

Price is one (but only one) indicator of the value of a product or service. Whether that is a positive or negative factor may depend upon the presence or absence of other information.

Universities provided another example of this effect. Students and families often find it difficult to assess independently the value of any particular college or university, and thus they turn to third party ratings and (not surprisingly) price. For a couple of decades during the 80's and 90's, colleges discovered that if they raised their price, the public would see them (paradoxically) as a greater value. Some who lowered their price learned the hard lesson that the public would lower their value judgment. This led to a price insensitivity that ran up the cost of private colleges to a point when significant price resistance has set in today -now that more information about quality is available.

The kinds of rankings of the salaries of graduates that payscale.com has provided has revealed that paying high tuition is certainly not a guarantee of a better result upon graduation! Thus, students and their families have become more value conscious and enrollments are surging at public research universities while expensive smaller private colleges are fighting to build enrollments. A few have gone out of business or been sold to proprietary universities.

Let us now consider some pricing tactics.
Skimming pricing—high-end products. Introduce a product with a high price and then lower after the initial market is established. This strategy provides early information on what the market will pay, and creates an aura of value and prestige around the product or service. The price can be lowered quickly if price resistance emerges. Later buyers feel good about "getting a deal." It works best when there is a sustainable competitive advantage. There is also some disadvantage –high margins may attract competitors. For example: Apple products are often priced higher than competitors.

Penetration pricing—often (but not always) lower-end products. Introduce a product with a low enough price to lock up a significant share of the market. This strategy makes it difficult for others to enter the market. It is often costly to do the extensive marketing and manufacturing necessary. If the product has complementary products from other suppliers, they may design around your product. Android is an example of penetration pricing.

Sliding pricing—along the demand curve – or sliding scale pricing
This strategy is based upon differential pricing of products or services -which is often based on the consumer's ability to pay. It could be based on individual income or the mean income for a specific market. Example: Prescription drugs are priced much lower in regions with lower per-capita income. Sliding prices can lead to sales that otherwise would not occur and can thus turn out to increase overall revenue as long as there is a recovery of the marginal cost of the product or service.

Odd pricing—psychological pricing. Pricing just below a round number ($9.95 instead of $10.00). Some have taken it one step further: assuming that customers have become resistant to $9.99 style pricing, they may decide to price at $9.88. This kind of pricing is

based upon the research on behavior economics –particularly on **prospect theory** which shows that people overvalue small differences.

Models for internet pricing

The Freemium Model: In the freemium model, the customer is allowed to use a basic version of the product for free. The free product is often limited in capabilities or may have an expiration date or time limit. Limits might include: fewer features, expiration dates, lower capacity, lower bandwidth, fewer simultaneous users, and no user support. Tiered pricing: The freemium model usually uses tiered product pricing which is similar to price lining as discussed later in this chapter. There are various versions of the product that offer enhanced services and more bells and whistles. The company offering the free product then tries to sell the user more advanced (and no longer free) models of the product. LinkedIn offers a free version of its product, but then tries to sell the user additional product and services around the basic service. Malwarebytes is another example of a freemium service.

Subscription pricing offers use (often unlimited use) of a product for a flat subscription fee. This is often used by new sites like the New York Times or Wall Street Journal. Microsoft Office once got most of its revenue from sales, but now is offering an internet based product, Office 365, that is subscription based. Office 365 revenues grew 70% on 18.2 million users in 2015[114].

Marketing professionals have their own set of mathematic metrics that they like to consider. I call this the Mathematics of Customers. Here are a few acronyms

- APRU –Average Revenue per User
- Gross margin –the percentage of revenue that is profit.
- R - Retention rate of customers
- ACL-Customer Lifetime = 1/(1-r)
- CPA- Cost per customer acquisition
- CLV – Customer Lifetime Value: CLV=ARPU X Gross margin X ACL

Obviously, you want the CLV to exceed the CPA! In the beginning you may not get this, but in the long term you must.

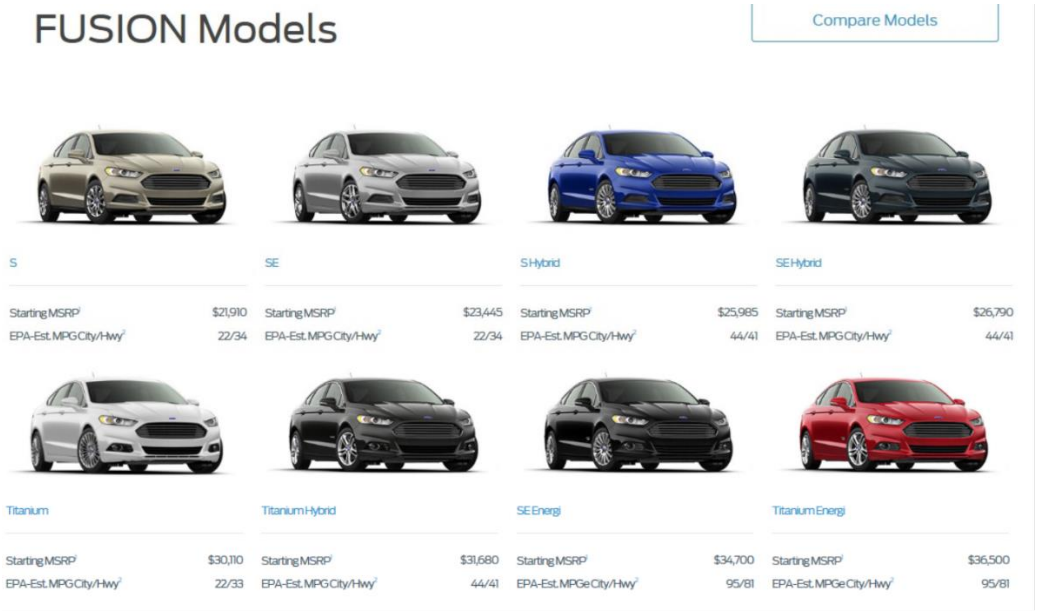
In the end you must convince the investor that your product/service can make money. Shark Tank's Mr. Wonderful (Kevin O'Leary) is always focused on this. They all are, but he is most outspoken! We will do more on this in the Chapter on financing the new venture.

There are five common product line pricing strategies – captive pricing, leader pricing, bait pricing, price lining, and price bundling

[114] https://news.microsoft.com/2015/10/22/strong-execution-drives-microsoft-first-quarter-results/#sm.0000ii7cjn186ieddxbb4h9m5y547

Price lining refers to offering an array of similar products with different options and prices. Automakers may offer a value, standard, and prestige or limited versions of various models. Apple introduced a line of iPhones in late 2014 that ranged from the 5s to the 6 Plus.

Price lining is offering a variety of different models at different prices for different markets. The graphic below displays how the Ford Fusion is offered at a range of prices and models.



Leader pricing –loss leaders are offered to try to get the customer into the store and then upsell them! Bait and switch is a variation which can be illegal in some circumstances.

Captive Pricing –give a product away for free or cheap and then sell necessary accessories at a profit. Gillette sells razors at a very low margin but sells the blades at a much higher margin. Hewlett Packard sells printers at low margins but sells the ink at higher margins. Cellular providers will give you the phone at a deep discount but require a pricey and long-term contract for the cellular services.

Price Bundling – require that the purchaser pay for a bundle of products or services in order to get the product they want. Television cable providers such as Verizon FIOS, ComCast, and others often bundle services such as TV cable, internet access, and phone service into one, often (but not always) discounted, price.
They then bundle the cable channels into bundles that they think will appeal to subscribers –such as sports bundles, movie bundles, and news bundles.

Geographic pricing FOB origin (Free on Board or Freight on Board) – The shipping cost from the factory or warehouse is paid by the purchaser. Ownership of the goods is transferred to the buyer as soon as it leaves the point of origin. It can be either the buyer or seller that arranges for the transportation. Uniform delivery pricing – (also called postage stamp

pricing) – The same price is charged to all. Zone pricing – Prices increases as shipping distances increases

Promotion: Advertising + Publicity

Promotion -Refers to the activities the firm takes to communicate the merits of its product to its target market.

Advertising is a way to raise customer awareness of a product, explain a product's comparative benefits, and create associations between a product and a certain lifestyle. The advantage to the company from advertising is that they control the placement and content of the information. There are two disadvantages: 1. Advertising can be expensive. 2. Readers tend to discount advertising as self-serving.

Public Relations – Publicity is King! Public relations refers to efforts to establish and maintain a company's image with the public. This is one of the most cost-effective ways to increase the awareness of the company's products. Social media has tremendously enabled this conduit to the public –for good and evil. The advantage is that PR is not paid advertising, and that information that goes to the public is not usually discounted as advertising. With the proliferation of false social media, this is changing rapidly. PR often requires an expensive investment in either internal or external PR expertise.

Promotion Methods

Advertising

- Banner Ads
- Billboards
- Broadcast media
- Brochures/flyers
- Business cards
- Catalogs
- Coupons
- Direct mail
- Directories
- Print media
- Promotional clothing
- Samples/demonstrations
- Signs
- Telemarketing

Public Relations

- Press releases
- News conferences
- Media coverage
- Articles in industry press and periodicals
- Monthly newsletter
- Civic, social and community involvement
- Blogging
- Tweeting
- LinkedIin
- Other social media

Internet marketing through social media websites, search engines, and other sites with many visitors is now one of the most important ways to reach the customers. When

working with social network websites and search engine marketing, one often bids on keywords that you want to lead customers to your product. The maximum keyword bid, which keywords to bid on, the keyword frequency, choosing specific terms, bidding on a sufficient number, and tracking results has become a new profession.

Place

What is your new venture's distribution channel –how do you get to market? Do you do direct sales, or do you go through wholesalers or distributors? Do you use exclusive distributors?

Earlier we have discussed disintermediation as an effective strategy and an important source of business model innovation. Place encompasses all the activities that move a firm's product from its place of origin to the consumer. One key decision is whether to sell the firm's products directly to consumers or through intermediaries. As we saw in our discussion of business models, Dell decided to sell directly to consumers rather than through intermediaries. This is referred to as "disintermediation," and is a key strategy found in many innovative business models.

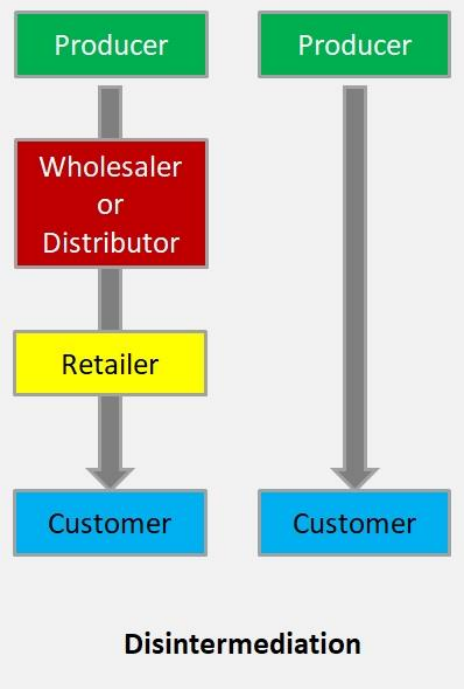


Figure 59

Place – Internet

As with all relatively new technologies, there have been many bad choices made on the internet. There may be more ways to fail than to be successful. In particular there are some Myths of E-Commerce:

- Setting up a business on the web is easy and inexpensive.
- If I launch a site, customers will flock to it.
- Flash makes a web site better.
- It's what's up front that counts.
- The greatest opportunities lie in the retail sector.
- On the web, customer service is not important.

Wrong again!

Lastly, we should consider the role of sales. First, sell benefits not features. When a company tells you that their new smart phone has a 5.5-inch (diagonal) LED-backlit widescreen Multi-Touch display with IPS technology and 1920-by-1080-pixel resolution at 401 ppi with 1300:1 contrast ratio and 64 GB of memory, they are selling you features. If they tell you that this display does the very best job of displaying live video from the internet and high-resolution pictures and can store all of your pictures and music library,

they are selling you the benefits. For very knowledgeable customer, selling them the features may work because they will be able to translate those features into the benefits of the use. For the mass market, the features do not mean much until you can translate those into the benefits that the customer will enjoy by using the new smartphone. Features are nice, but benefits are what sell the product.

Most sales training programs offer seven steps to selling

1. Prospect for leads –use your network and available databases
2. Make the initial (often cold) contact
3. Qualify the lead -Is this potential customer the right decision maker with the capability to complete the sale. Can he or she decide? Do they have access to the adequate resource to make the purchase.?
4. Make the sales presentation
5. Meet objections and concerns -(this is not a setback-only the next step)
6. Close the sale ---NEVER talk past the close. Shut up and stop selling. Just say: "Thank you!"
7. Follow-up

Personal Selling

The ability to sell yourself to others is perhaps the most important sales skill

- First: Make a good personal impression
- Prepare your sales presentation
- Know your product or service
- Know your field
- Know your customers
- Think positively, speak positively, and act positively.
- Treat everyone you sell to like they are the most important thing to you at that time.

You are now ready to take your product or service to market!

Chapter 14 Finding the Financing for your Venture

All ventures, including social ventures, need funding

Gathering the resources for a new venture is one of the most important first steps. The most important of those resources would be a good team and a good initial business model to be tested. Taking the next steps generally requires gathering financial resources to support the effort. For some projects the financial needs may be small. Some have said that the cost to launch is approaching zero. While there is some truth to this, most new ventures require substantial financial investments before the venture can begin to have sufficient revenues to become self-supporting. Startups in information technology areas often require fewer resources, but startups in biotechnology, medical devices, and other life science fields can require much more -billions of dollars in many cases.

You had better have a very good pitch and a business plan and/or a business model canvas that is compelling to investors.

The first step in any effort to fund a startup begins with a careful analysis of the funding that you will need. How much money do you need? For some startups there are substantial capital requirements. You may need funding for capital items, facilities, or equipment. There are also operating requirements. How much funding will you need to have to cover operations until sufficient cash flow begins? Again, if this is a medical related startup, this might require billions, but if it is a food truck sales venture, it may require very little.

A new venture needs to do a **Break-Even Analysis.** At what point, in both time and money, will you begin to break even? Investors will need information to judge the **overall attractiveness** of the investment. Does the investment look like it will return enough profit to make the risk worthwhile? Kevin O'Leary, Mr. Wonderful on Shark Tank, can sometimes seem like a broken record when he hammers away at an entrepreneur asking, "how do I get my money back." All investors are asking the same questions, no matter whether they say it so bluntly or not.

That brings the entrepreneur directly to the next challenge: Where to get the money? Who do I go to who is most likely to want to invest in the venture? Much of the rest of this chapter will focus on that!

Most entrepreneurs do not come to the new venture with a background in finance or accounting, but they will need to learn a little bit about finance, particularly about financial objectives and ratio analysis, because they will rarely want to spend the money to add a financial professional to the team. You will need to learn the jargon of financial analysis to be able to speak to funders. A detailed exposition of new venture finance is beyond the

scope of this course, but those interested in a little more detail may wish to explore some web materials on financial analysis in the Technological Entrepreneurship website[115].

Step one is to determine the resources that you will need. That starts with the sue of the Lean Launchpad model and the development of a business model canvas. You may also want to do a traditional business plan.

The most important first step, as Steve Blank says, is to get out of the office and talk to potential customers. You may want to assemble and use a group of advisors or do brainstorming. This can be very helpful but does not replace the need to go out and interview customers.

Then you estimate your financial needs and very *clearly state the assumptions* that you are using. I promise you that you WILL be using assumptions. In most cases you will prepare a sales forecast and determine your breakeven point.

Finally, project your estimated cash needs for startup and initial operation.

In your narrative you will need to be clear about your assumptions. There needs to be an explanation of the sources of numbers for the forecast and the assumptions used to generate them. Some typical assumptions might include things like:

- The inflation rate is 2.5%.
- The cost of main raw materials will be constant over time (or not).
- You are expecting to hire certain people at assumed salaries.
- The initial sales in the first year will be X.
- The annual growth in the first few years will be Y.
- The growth in expenses is expected to be Z.

You really want to see expenses growing less than revenues grow in order to reach profitability and achieve economies of scale. When you deliver your pitch to potential funders, they will be examining those assumptions very closely. If the assumptions do not sound reasonable, the rest of the pitch is probably going to fall on deaf ears.

Start-up resources include:

- People (founding team, advisors, independent contractors)
- Physical assets (equipment, inventory, office or plant space)
- Financial (operations and emergency fund)

Many startups also draw upon more complex resources:

- Utilitarian Resources (i.e. patents, licenses, other intellectual property)

[115] http://www.jackmwilson.net/Entrepreneurship/TE/TE-Chap14-EvaluatingFinances.pdf

- Instrumental Resources (i.e. industry contacts, networks, partners)
- Intangible Resources (i.e. organizational culture, tacit knowledge)

Begin by estimating expenses and start-up costs -all costs incurred to get the business off the ground. This includes the cost of buying the equipment, the cost of buying (or leasing) the long-term assets (office space, etc.), sufficient working capital (the cost of keeping inventory, account receivable etc.), the operational expenses (telephone, fax, travel, advertising etc.), and any production costs (material costs, labor costs, etc.).

Some expenses are fixed, and some are variable. Typical **fixed expenses** include: equipment, office space, and other overhead. Examples of **variable costs** include: the costs of materials used to make the product, the costs of labor used to make the product, commissions or other compensation based on sales volume, and shipping and handling charges.

Other fixed or semi-fixed costs might include:

- Utilities
- Managers' Salaries
- Advertising
- Insurance
- Interest
- Rent
- Depreciation

Startups need funding for all of the previous reasons. Three categories of need stand out:

1. Money is needed to make the capital investments in equipment and (perhaps) facilities and to purchase material and resources and to pay some employees
2. Many startups have a long period of product development. This can be particularly long for biotechnology startups that may require billions to be invested before sales can begin. Computer software is usually less demanding.
3. All these needs for cash can lead to cash flow problems. In most cases, orders come in in bunches, but expenses like salaries, rents, and materials are a steady outflow. Funding is needed to keep the doors open until the orders are paid for after delivery.

Sources of Capital

Here is a list of potential sources of capital:

- Personal Savings

- Friends and family
- Crowdfunding -Kickstarter, IndieGogo, GoFundMe, etc.
- Bootstrapping
- Business angels: this could be equity, debt, or a combination.
- Venture capitalists: this could be equity, debt, or a combination.
- Corporations often invest in new ventures to later acquire or partner with.
- Loans, Banks will lend, but it is often difficult.
- The Small Business Administration (SBA) Guaranteed Loan Program
- Government grants
- Small Business Innovation research (SBIR) and Small Business Technology Transfer (STTR) government funding programs.

Sources of Personal Financing include savings, family and friends (often called friends, family, and other fools), and bootstrapping. Bootstrapping is finding ways to avoid the need for external financing or funding through creativity, ingenuity, thriftiness, cost-cutting, or any means necessary. Leasing, instead of buying, property or equipment is often one way to conserve funding.

ILINC used bootstrapping to get started by selling **vapor-ware**. Success Magazine described the bootstrapping model employed by ILinc as the "Wimpy" model –named after Popeye the Sailor Man's friend who was always saying "I'll gladly pay you Tuesday for a Hamburger today." ILinc told IBM, Office Depot, News Corp, Sprint, AT&T, Aetna –United Healthcare, and others that they would deliver a software product next year for a $300,000 contract today. This is often called "**selling vapor ware**."

Bootstrapping methods include

- Avoiding unnecessary expenses
- Minimizing personal expenses
- Applying for and obtaining grants
- Obtaining payments in advance from customers
- Sharing office space with other businesses
- Coordinating purchases with other businesses
- Buying used instead of new equipment
- Leasing equipment instead of buying

Crowdfunding

One of the newest ways to raise money is to do it by making an appeal to the general public asking them to contribute to your venture. *Kickstarter* was begun to help raise funding for creative ventures[116]. *GoFundMe* is often used to raise funding in personally difficult times

[116] http://www.jackmwilson.net/Entrepreneurship/Cases/Case-KickStarter.pdf

but is also used to jumpstart some kinds of ventures. I*ndieGoGo* raises funds for an idea, a charity, or a startup business.

These sites fund themselves by charging a commission on the funds raised –often about 5%. They can also raise revenues by charging for financial transactions or advertising.

One decision that you will need to make is whether to go for more debt or equity financing. Debt is a financial obligation to return capital provided plus a scheduled amount of interest, but debt often must be guaranteed by the entrepreneur's personal assets or earning power. This can create a lot of stress. In some cases, you can secure the debt with assets that you own. Sometimes you can get suppliers to provide you credit. Most new ventures have no way to make scheduled interest payments until they have positive cash flow.

Equity is a portion of ownership received in an organization in return for money provided. To raise equity, you must give up a portion of your company. Entrepreneurs find it difficult to give up equity because they naturally think that their new venture is going to be worth a lot and they hate to give up a portion. In some cases, they also fear that giving up equity could cause them to lose control of the company.

A combination of both is often used. This can be **convertible debt**. The investor will loan you the money that you need but will require an ability to convert the debt to equity at a later date.

- Step 1: Determine precisely how much money the company needs
- Step 2: Determine the most appropriate type of financing or funding
    - Equity financing
    - liquidity event
    - Debt financing
- Step 3: Develop a strategy for engaging potential investors or bankers
    - Elevator pitch
    - Identify and contact the best prospects
    - Personal introduction is best
    - Prepare a complete business plan to close the deal

The elevator pitch, defined in the last chapter, is often a 60 second explanation of the company for potential investors.

- 20 seconds: Describe the Opportunity or Problem that needs to be solved.
- 20 seconds: Describe how your product or service addresses the opportunity or problem.
- 10 seconds: Describe the qualifications of the team and yourself
- 10 seconds: Describe your market

Remember: This is a pitch to INVESTORS not customers. End with a simple ask. "We are looking for an investment of (for example) $1 million for 50% of the company." The actual length of the pitch is determined by the audience and not by you, the entrepreneur.

There are three major sources of equity funding. **Angel Investors** are private investors using their own funds and often their own time to help launch a business. **Venture capital providers** who use pooled investment funds that are invested by professionals in anticipation of large returns. Another potential source of equity is not usually able to be accessed until the company has a proven track record. At that point the company can begin to sell stock to the public by registering on a stock exchange. This **Initial Public Offering** (IPO), or offering stock for sale to public investors, allows more established companies to raise equity funding. Before the IPO, the company may only sell stock to accredited (qualified) **professional investors** who can prove that they have a high net worth and understand the risks of investing in unregistered securities. In the United States this means that the investor has a net worth of over $1 million -not including the home. The investor should have an income of over $200,000 per year for the previous two years and an expectation of at least that in the future.

What are investors looking for? An excellent venture team with motivation, passion, honesty, and experience. An excellent business opportunity with a large and desirable market, appropriate growth strategy, compelling product description, competitive advantage, and one that solves a business or social problem (or both!)

Investors are generally looking for an **exit strategy**. This could occur by doing an IPO or by selling the new venture to a larger firm –being acquired.

As discussed earlier, many investors look at the team as more important than the product, others see market-product fit as the most important aspect. Research tends to indicate that the team is about half of the key to success.

Angel Investors

Angel investors or Business Angels are individuals who invest their personal capital directly in start-ups. The prototypical business angel is about 50-70 years old, has high income and wealth, is well educated, has succeeded as an entrepreneur, and is interested in the start-up process. Business angels are valuable because of their willingness to make relatively small investments, and the experience they often bring to the new venture. The Angels tend to fill the gap between friends and family or bootstrapping and access to formal venture capital. Because of this, they often require very high returns on investment –often over 10 times the initial investment in five years.

Venture Capital

Venture capital has been mostly a US phenomenon, but the rest of the globe is quickly catching up to this model. There was a surge in venture capital funds during the dot com boom of the 90's, but that fell precipitously with the dot com bust in 2000 and 2001.

Figure 60 Venture Capital Boom and Bust from the Economist

The dot com boom and bust was followed by a period of relatively flat funding but has tended to rise since the low in 2009 at the end of the subprime bust. The Economist article chronicles these changes and tracks them to other economic indicators[117].

The same article chronicles the rise of the Unicorns. The chart below is compiled from the Economist article and from other listings[118]. It shows the top ten US Unicorns as of July 2015 and their estimated valuations in 2017.

[117] To fly, to fall, to fly again: The tech boom may get bumpy, but it will not end in a repeat of the dotcom crash; The Economist; June 25, 2015 http://www.economist.com/news/briefing/21659722-tech-boom-may-get-bumpy-it-will-not-end-repeat-dotcom-crash-fly

[118] https://www.cbinsights.com/research-unicorn-companies?utm_source=Facebook&utm_medium=Paid&utm_campaign=Unicorn%20Club

Company	Business	$B -Val- July-2015	$B-Val 2017	$ B -VC - 2015	Rev.$M 2014	Employees -1000s
Uber	Car sharing	$ 41.0	$ 68.0	$ 6.0	$ 800	7.5
Airbnb	Roomsharing	$ 26.0	$ 29.3	$ 2.3	$ 450	3.0
Snapchat	Disappearing messages	$ 16.0	$ 16.4	$ 1.2	$ 0	0.4
Palantir	Big data analytics	$ 15.0	$ 20.0	$ 1.1	$ 600	1.5
SpaceX	Space Exploitation	$ 12.0	$ 21.2	$ 1.1	$ 825	3.0
Pinterest	Photo &Craft sharing	$ 11.0	$ 12.3	$ 1.3	$ 15	0.7
Dropbox	Filesharing in the cloud	$ 10.0	$ 10.0	$ 1.1	$ 400	1.5
Wework	Office Space Provision	$ 10.0	$ 20.0	$ 1.0	$ 145	0.4
Theranos	Lab diagnostics	$ 9.0	$ 0.8	$ 0.1	$ 45	0.2
Square	Mobile Payment system	$ 6.0	$ 15.9	$ 0.6	$ 900	1.3

Both Square and Snapchat[119] had gone public by mid-2017, and are no longer considered Unicorns. Theranos had encountered difficult challenges and government scrutiny and had essentially stopped doing business and returned to only research[120]. Its valuation is likely overstated at $800 million in 2017.

Venture Capital is the rocket fuel of economic development and has boosted many of the largest public companies today. This includes the famous **FANG** group (Facebook, Amazon, Neflix, and Google) which are all public corporations today.

Entrepreneurship is increasingly a Global Opportunity, and the venture capital is going global as well. Consider the graph of the number of global unicorns and the total valuation of global and US unicorns. The world is catching up.

Figure 61 Global vs US Unicorns

[119] www.jackmwilson.net/Entrepreneurship/Cases/Case-Snapchat.pdf
[120] www.jackmwilson.net/Entrepreneurship/Cases/Case-Theranos-ElizabethHolmes.pdf

Compare the list of Global Unicorns to the list above of US Unicorns[121]. China is rapidly growing to rival the United States as a producer of Unicorns, and the companies that they are producing are among the largest on the list.

	Name	Value ($ B)	Date Joined	Country
1	Uber	$68.00	8/23/2013	United States
2	Didi Chuxing	$50.00	12/31/2014	China
3	Xiaomi	$46.00	12/21/2011	China
4	Airbnb	$29.30	7/26/2011	United States
5	SpaceX	$21.20	12/1/2012	United States
6	Palantir Technologies	$20.00	5/5/2011	United States
7	WeWork	$20.00	2/3/2014	United States
8	Lu.com	$18.50	12/26/2014	China
9	China Internet Plus Holding	$18.00	12/22/2015	China
10	Pinterest	$12.30	5/19/2012	United States
11	Flipkart	$11.60	8/6/2012	India
12	Toutiao	$11.00	4/7/2017	China
13	DJI Innovations	$10.00	5/6/2015	China
14	Dropbox	$10.00	10/5/2011	United States
15	Infor	$10.00	11/16/2016	United States
16	Stripe	$9.20	1/23/2014	United States
17	Spotify	$8.53	6/17/2011	Sweden
18	Snapdeal	$7.00	5/21/2014	India
19	Lyft	$6.90	3/12/2015	United States
20	Lianjia	$6.20	4/8/2016	China
21	Global Switch	$6.02	12/22/2016	United Kingdom

[121] https://www.cbinsights.com/research-unicorn-companies?utm_source=Facebook&utm_medium=Paid&utm_campaign=Unicorn%20Club

As we saw in the earlier slide, venture capital provides the rocket fuel for most new ventures. Over $48.3 Billion was invested in 2014 in new start-ups[122].

In overall venture capital investments California easily leads all regions. Massachusetts is second and New York is third, but they are virtually tied and only about a third as much as California.

Here are the rankings.

- California $27,151,513,000
- Massachusetts $4,678,599,700
- New York $4,263,917,000
- Texas $1,506,448,000
- Washington $1,246,773,300
- Illinois $1,069,269,700

California leads this dramatically because of the effect that Silicon Valley had on the creation of a cluster in information technology and all of its applications. This has included social media as well as ecommerce applications. Biotechnology is a different case. According to BioPharmaDive.com, Massachusetts led the nation in both venture capital invested in biotech startups and in the employment in the biotech industry[123]. Mass bio reported that there was a $26% increase in venture funding to Massachusetts companies in 2016 to a total of $2.9 billion of venture funding[124].

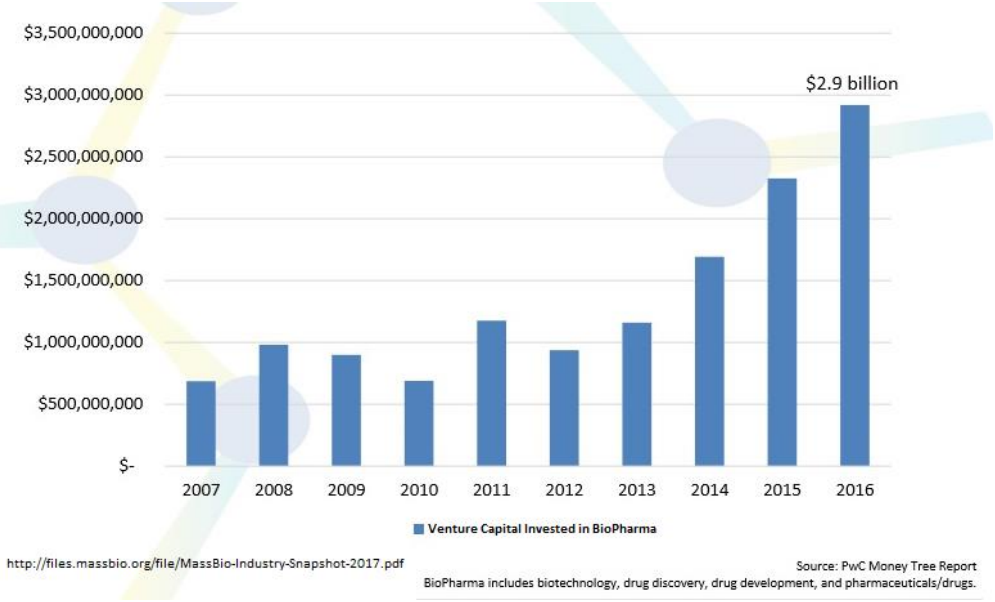


Figure 62 Massachusetts Venture Capital in Biotech

[122] http://ssti.org/blog/useful-stats-venture-capital-investment-dollars-deals-state-2009-2014
[123] https://www.biopharmadive.com/news/massachusetts-biopharma-venture-capital-jobs-research/507466/
[124] https://www.massbio.org/news/recent-news/massbio-s-2017-industry-snapshot-shows-venture-capital-investment-in-massachusetts-biopharma-industry-reached-a-record-2-9-billion-last-year-137592

Staples as an example of venture funding attitudes.

The founding of Staples and the Venture investment that Bain Capital made in Staples provides a good example of the tension and negotiation required between an entrepreneur and a venture capitalist as they try to find a fair valuation for the company but start with very different needs and perspectives.


Business

Area's home prices rise, foreclosures fall

Values in metropolitan Boston advance a fifth consecutive month

STAPLES

AN UNEASY START

Staples revolutionized the office supply business, but its success was far from guaranteed. Mitt Romney's testimony in its founder's divorce case reveals insight into its rocky beginnings.

Figure 63

Boston Globe Article on Staples Funding

The Boston Globe did a nice article on this entitled "*An Uneasy Start: Staples revolutionized the office supply business, but it success was far from guaranteed*[125]." This article on the founding of Staples, features the CEO Tom Stemberg and the Venture Capitalist, Mitt Romney, who later became Governor of Massachusetts and candidate for the Presidency.

The opening line was, "*It was early 1987, and Mitt Romney was shopping. And he was angry. He was walking the aisles of Staples, a little-known retail store his firm had bet $1.5 million on so far, and picking up office supplies. Then he waited in line at the check-out counter -- for far too long. To Romney, then CEO of Bain Capital, a superstore with low prices was a good idea, but there were big problems*."

Venture Capitalists see their job as driving the entrepreneur to greater heights. They are not usually gentle about it!

They also describe the difficulty of setting a value for the company -and how the founder always thinks it is much higher than the venture capitalist does!

> *"It was a very difficult and painful process,'' Romney would recall while testifying on Stemberg's behalf. "We found Tom difficult to deal with from a negotiating standpoint." …….*
> *Stemberg and his lawyer were driving a tough bargain, trying to keep "a very large portion" of the company for the founder, while Bain and the other investors were "of course thinking we should take a large portion of the company."*
>
> *"It was very clearly our intent to [reward] Tom handsomely if the company did spectacularly well. On the other hand, we did not want Tom to receive any reward*

[125] http://www.bostonglobe.com/business/2012/10/30/mitt-romney-testimony-staples-founder-tom-stemberg-divorce-case-reveals-rocky-early-years-company/G4vuYcyxtUGBQeQyO2b4jI/story.html

> *if he were to turn out to be not an effective chief executive officer," Romney said in his testimony.*
>
> *Indeed, such contentious face-offs are common, said Todd Dagres, a Boston venture capitalist whose deals have included Akamai Technologies and Twitter. "The one thing that is an absolute rule is, the most successful entrepreneurs I've dealt with have been the most challenging,'' said Dagres of Spark Capital. "Based on how successful Staples and Stemberg were, and Mitt has been, I would be shocked to learn if it was anything different."*

It always comes down to this point: The entrepreneur thinks he/she has creating something incredibly valuable. The venture capitalist hopes this is correct but approaches the situation with more skepticism. Besides, if the entrepreneur IS correct, then the VCs want to make sure they capture as much of the wealth created as they can! In the end, it comes down to making a deal that fairly recognizes the potential value created while providing adequate reward to the investors taking the risks. The only way to do that is through negotiation. It is not a science.

Venture Capital -Staging of financing

Venture capital usually comes into a new venture at various stages of the ventures development. Some invest early, some later, and others near the end. The stages are often referred to by names:

- Seed Funding -Seed funding occurs very early and often helps to create the prototype or do the feasibility analysis.
- Series A or Start-up funding -If feasibility and prototyping are complete, a business model is adopted, and a management team is in place, one may need funding to begin operation/production even before any, or many, customers have been found.
- Series B or First Stage Funding -In the first stage the company is operating and has customers but needs to expand its operations or production.
- Series C or Second Stage Funding -In the second stage the company is further along in production and operation, but needs further expansion of capability.
- Mezzanine Funding -This is often the final stage in bringing the company to the point of doing an IPO or being acquired. Mezzanine funding is often a combination of debt and equity and is sometimes used to displace earlier equity investors.
- Buyout funding -Funding that allows the acquisition of one company by another.

Investopedia provides a nice description of the stages of venture funding[126].

[126] https://www.investopedia.com/articles/personal-finance/102015/series-b-c-funding-what-it-all-means-and-how-it-works.asp

Specialization-

Venture Capitalists often specialize

- By industry
- By development stage
- By Geographically localized investing
- Syndication –Venture Capitalists often team up with other firms to
- Share the risk on investments that are inherently risky.
- Better investment decision
- Diversify portfolio

Debt Financing

Historically, commercial banks have not been viewed as practical sources of financing for start-up firms. Banks are interested in firms that have a strong cash flow, low leverage, audited financials, good management, and a healthy balance sheet. When banks do provide loans to new ventures they often demand that the founders provide personal guarantees –exposing their families and personal finances to potential liability.

Banks like to say "No." Can one get a Bank to Say "Yes"?

Things a bank will say:

- Our bank doesn't make small business loans
- I don't know enough about you or your business
- You haven't told me why you need the money
- Your numbers don't support your loan request
- You don't have enough collateral
- Your business does not support the loan on its own

You will need to provide good answers to these questions to convince the bank to make the loan. You are also likely to have to secure the loan with your own personal property or other personal guarantees.

When I founded ILinc, I was indeed able to convince a bank to give us loans, but I had to make personal guarantees. I was living dangerously!

A personal story of the funding of ILinc

When I became President of the University of Massachusetts it was in the aftermath of a battle between my predecessor, William Bulger and Governor Mitt Romney. The Governor invited me over to his office for a meeting to establish a good initial working relationship. The meeting was very cordial and went quite well. Near the end of the meeting, he asked me "*Jack, I think this is a very high stress job. Do you think you are up to enduring that kind of stress*?" "*Well Governor, when I was CEO of ILinc in the early years, we were*

bootstrapping the company with no venture capital. We had orders come in and those took time to collect. In the meantime, I had salaries and other expenses that had to be paid. I took my accounts receivable to the bank and negotiated a loan against those in order to pay our bills. As long as the receivables were paid, I would be able to pay off the loans, but if they were not, I would never have been able to pay the loans and my personal possessions would have been in jeopardy. I don't think my wife and four children understood that if I could not pay the loans we were going to lose everything –including our kid's college funds." "*That is stress! The stress of being President cannot compare to that*" I said.

SBA Guaranteed Loans

One of the best places to get loans as a small business is from the federal government through the Small Business Administration (SBA) and the SBA Guaranteed Loan Program – (https://www.sba.gov/). Approximately 50% of the 9,000 banks in the U.S. participate in the SBA Guaranteed Loan Program. The program operates through these private-sector lenders who provide loans that are guaranteed by the SBA. The SBA can guarantee as much as 85% on loans up to $150,000 and 75% on loans over $150,000. The most notable SBA program available to small businesses is titled the 7(A) Loan Guaranty Program[127].

Government Grants: SBIR and STTR Programs

https://www.sba.gov/blogs/getting-know-sbirsttr-programs-11-agencies-one-playlist
The Small Business Innovation Research (SBIR)[128] and the Small Business Technology Transfer (STTR)[129] programs are two important sources of early-stage funding for technology firms[130].

These programs provide cash grants to entrepreneurs who are working on projects in specific areas. The main difference between the SBIR and the STTR programs is that the STTR program requires the participation of researchers working at universities or other research institutions.

"*The Small Business Innovation Research (SBIR) program is a highly competitive program that encourages domestic small businesses to engage in Federal Research/Research and Development (R/R&D) that has the potential for commercialization. Through a competitive awards-based program, SBIR enables small businesses to explore their technological potential and provides the incentive to profit from its commercialization. By including qualified small businesses in the nation's R&D arena, high-tech innovation is stimulated and*

[127] https://www.sba.gov/7a-loan-program
[128] SBIR: http://sbir.gov/about/about-sbir
[129] STTR: http://sbir.gov/about/about-sttr
[130] https://www.sba.gov/blogs/getting-know-sbirsttr-programs-11-agencies-one-playlist

the United States gains entrepreneurial spirit as it meets its specific research and development needs[131]."

"The mission of the SBIR program is to support scientific excellence and technological innovation through the investment of Federal research funds in critical American priorities to build a strong national economy.
The program's goals are four-fold:

- Stimulate technological innovation
- Meet Federal research and development needs.
- Foster and encourage participation in innovation and entrepreneurship by socially and economically disadvantaged persons.
- Increase private-sector commercialization of innovations derived from Federal research and development funding."

The SBIR Program is structured in three phases:

1. Phase I. The objective of Phase I is to establish the technical merit, feasibility, and commercial potential of the proposed R/R&D efforts and to determine the quality of performance of the small business awardee organization prior to providing further Federal support in Phase II. SBIR Phase I awards normally do not exceed $150,000 total costs for 6 months.
2. Phase II. The objective of Phase II is to continue the R/R&D efforts initiated in Phase I. Funding is based on the results achieved in Phase I and the scientific and technical merit and commercial potential of the project proposed in Phase II. Only Phase I awardees are eligible for a Phase II award. SBIR Phase II awards normally do not exceed $1,000,000 total costs for 2 years.
3. Phase III. The objective of Phase III, where appropriate, is for the small business to pursue commercialization objectives resulting from the Phase I/II R/R&D activities. The SBIR program does not fund Phase III. Some Federal agencies, Phase III may involve follow-on non-SBIR funded R&D or production contracts for products, processes or services intended for use by the U.S. Government.

"Small Business Technology Transfer (STTR) is another program that expands funding opportunities in the federal innovation research and development (R&D) arena. Central to the program is expansion of the public/private sector partnership to include the joint venture opportunities for small businesses and nonprofit research institutions. The unique feature of the STTR program is the requirement for the small business to formally collaborate with a research institution in Phase I and Phase II. STTR's most important role is to bridge the gap between performance of basic science and commercialization of resulting innovations." "*The mission of the STTR program is to support scientific excellence and technological innovation through the investment of Federal research funds in critical American priorities to build a strong national economy*."

[131] http://sbir.gov/about/about-sbir

The programs' goals are to:

- Stimulate technological innovation
- Foster technology transfer through cooperative R&D between small businesses and research institutions;
- Increase private sector commercialization of innovations derived from federal R&D.

The STTR Program is structured in three phases

1. Phase I. The objective of Phase I is to establish the technical merit, feasibility, and commercial potential of the proposed R/R&D efforts and to determine the quality of performance of the small businesses prior to providing further Federal support in Phase II. STTR Phase I awards normally do not exceed $100,000 total costs for 1 year.
2. Phase II. The objective of Phase II is to continue the R/R&D efforts initiated in Phase I. Funding is based on the results achieved in Phase I and the scientific and technical merit and commercial potential of the Phase II project proposed. Only Phase I awardees are eligible for a Phase II award. STTR Phase II awards normally do not exceed $750,000 total costs for 2 years.
3. Phase III. The objective of Phase III, where appropriate, is for the small business to pursue commercialization objectives resulting from the Phase I/II R/R&D activities. The STTR program does not fund Phase III. In some Federal agencies, Phase III may involve follow-on non-STTR funded R&D or production contracts for products, processes or services intended for use by the U.S. Government.

Raising funding by doing an IPO

Exiting through an IPO or being acquired is often the way a new venture allows the investors to exit the investment while raising funding for the company by selling equity to the public. Doing an initial public offer (IPO) is often the most desired way to profit from starting a new venture –often called 'going public.". If the company desires to raise capital in another round of stock sales this is termed a secondary offering.

A new venture will hire an investment bank to help with the enormously complicated process of either an IPO or acquisition. In 2002, in the aftermath of the collapse of the technology stock markets, the Sarbanes-Oxley Act was passed that set stringent (and expensive) requirements for public corporations. For an IPO the investment bank will act as an underwriter or agent for the proposed stock offering. The next step is the creation of a preliminary prospectus while the Securities and Exchange Commission (SEC) is investigating the offering. Once the SEC approves, then a final prospectus is issued. The new venture's leaders will usually then launch a series of presentations, often called the "**road show**" to

potential investors in various locations. The road show must be available as a video to anyone with an interest.

You can see many example roadshows at http://www.retailroadshow.com/wp/index.asp

The Facebook IPO

The Facebook IPO[132] on May 18 2012 was a case study in large IPO offerings and what can go wrong[133]! A share price of $38 valued the company at $104 billion, the largest valuation ever (at that date) for a newly public company. During the roadshow, the leaders had to confess that Facebook was suffering from pressure on earnings due to the mobile platform, and this spooked investors and reduced the demand. The price fell precipitously over the following year but has since recovered to more than twice the offering price. Although the IPO was a failure, the long-term progress of the company has been good.

Two other interesting IPOs had opposite results. Twitter has struggled, and the stock has fallen steadily. Alibaba, on the other hand, has continued to advance.

Twitter –November 7, 2013 -http://www.forbes.com/sites/hershshefrin/2013/11/08/why-twitters-ipo-was-really-a-failure/

Alibaba –Chinese Internet Sales–September 22, 2014 - http://www.forbes.com/sites/ryanmac/2014/09/22/alibaba-claims-title-for-largest-global-ipo-ever-with-extra-share-sales/

The case of Snap, the company that operates SnapChat, continues to be an interesting IPO to follow.
SnapChat - http://www.jackmwilson.net/Entrepreneurship/Cases/Case-Snapchat.pdf

Funding the non-profit organization

Those who are creating a new venture in social entrepreneurship may be considering forming a 501 c(3) non-profit organization as we describe in Chapter 13 on the legal structures for new ventures. In a non-profit organization, there is no way to reward investors or distribute profits. That is termed “self-inurement” and is prohibited. Thus, those who contribute funds to the social enterprise need to take their “profit” in different ways –often by enjoying the feeling of simply contributing to something that they think is important to the world.

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[132] http://en.wikipedia.org/wiki/Initial_public_offering_of_Facebook
[133] http://www.theatlantic.com/business/archive/2013/05/facebook-one-year-later-what-really-happened-in-the-biggest-ipo-flop-ever/275987/

Raising funds for a non-profit organization is thus done quite differently than for a for-profit corporation –although some techniques are similar. Usually the largest source of funding is from donations that are given freely because the donor wants to support the organization with no expectation of financial return. Other sources of revenue can include subscription to journals that must relate to the non-profit purpose or fees for attendance at meetings. In some ways starting a non-profit is much like starting a for-profit venture. For the organization to be sustainable, it MUST obtain revenues (donations, subscriptions, fees, sales) that exceed its expenses. Non-Profit organizations always need to remember the axiom: "*No margin - no mission*." Many founders of new social ventures do not like this or understand it. For that reason, many such ventures fail to fulfill their mission. I have often been told: "I'm not interested in finances and money, I am only interested in the mission." I then reply that it is very wonderful to be focused on the mission and not to be driven by finances, but if no attention is paid to finances, then there will be no way to sustain the mission.

Because of this need to sustain the mission, many leaders of non-profits spend much of their time helping the organization to raise money. For example: the presidents of universities are often described as "living in a big house and begging for money." The President of the University of Massachusetts does not have any university provided house – let alone a big one. But, like most Presidents, public and private, he or she spends a large share of time in meeting donors and asking for donations.

Many larger non-profits have professional fund-raising personnel working full time to help fund the mission. The Boston Globe article "'*Shark Tank'-style contest may give nonprofits capital*" (March 17, 2015) describes a creative approach[134]. It demonstrates one venture capitalist's idea for funding non-profits though a "Shark Tank" like pitch contest. It also uses the usual venture capital approach of putting the VC on the board or advisory committee to the organizations in which they invest.

In recent years, there have been a variety of innovative ways to raise money for non-profits. Perhaps the most innovative is crowdfunding -of which Kickstarter is a nice example[135]. Kickstarter began with a focus on creative projects such as films, games, music, art, design, and technology. It is an all or nothing approach. You either reach your goal or get nothing.

There are a number of other similar organizations which may have somewhat different programs to focus on:

- Indiegogo –similar to Kickstarter but allows project to receive funds even if the goal is not met.
- PeopleFund.it -British
- SmallKnot –invest in community businesses

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[134] http://www.bostonglobe.com/business/2015/03/17/boston-venture-capitalist-plans-shark-tank-style-competition-for-nonprofits/fbm31tNPXEuqWui5ZckXLN/story.html?p1=Article_InThisSection_Bottom

[135] http://www.jackmwilson.net/Entrepreneurship/Cases/Case-KickStarter.pdf

- RocketHub –similar to KickStarter
- Gambitious –video gaming
- MedStartr -medical/healthcare
- Spot.us -Journalism supporter
- GigFunder – support musicians on tour!

Figure 64 Red Sox 2004 World Series Trophy with J. Wilson

Happy Ending!

This is the World Series trophy won by the Red Sox in 2004 after 86 years of trying and failing. When your new venture gets funding, you may not get a trophy, but you will feel like you won the world series!

Chapter 15 Entrepreneurship and Innovation are Global

Entrepreneurship is Global by Nature

Two generations ago, a potential entrepreneur might simply ignore the rest of the world and focus on their little corner. While that might still be possible for smaller salary substitute ventures or family businesses, it is a foolish strategy for those who want to build larger public entrepreneurial firms.

World markets are larger and faster growing then domestic ones, and many new ventures have taken advantage of that opportunity to grow their venture.

Changes in technology, transportation, and trade liberalization have made international trade more accessible to companies, especially new entrepreneurial firms. Things that were difficult to do a couple of generations ago are now much easier and done routinely.

Furthermore, in a global economy, consumers worldwide choose from a wide variety of goods and services. They are no longer restricted to good and services that are produced locally. Like so many things about globalization, there are those who see mostly positives in that change, and there are others who see it as being negative. If you had walked into the shopping districts of Boston, London, Munich, Moscow, Beijing, and Tokyo in 1980, you would have seen radically different stores, goods, and services. If you do that today, you will notice that many of the same stores are selling many of the same products in all of those places. In older shopping districts at least the architecture is different, but in the newer ones, even the architecture is starting to look similar.

Collectively, the movement of goods, labor and capital across national borders is part of a growing trend toward globalization—the creation of an integrated interdependent world economy. This has been the primary trend for the last half a decade, although we are now seeing growing nationalist movements in many countries that are pushing back against the free movement of people, goods, and ideas. Only time will tell how much this will change the climate for entrepreneurship.

Entrepreneurs are on the cutting edge in creating international businesses; they are often the first movers into new markets, new products, and new services. They often cross national borders themselves to follow their dreams of building new ventures.

Firms that choose to remain domestic may miss great opportunities and often face increased risks.

For example, a company that has achieved the enviable position of having one-third of the US consumer market for its products has only a 1.5% share of the global market, 98.5% of the market is still available[136].

Why do countries care about these things? It is because the evidence is overwhelming that those countries that do entrepreneurship best tend to be the countries that have the highest Gross Domestic Product per person (per capita GDP). The more innovative and entrepreneurial that a country is the larger is their GDP per person.

The economic development of countries is very dependent upon innovation. For the countries this means jobs for their citizens, global influence for their institutions, and a better standard of living in the country.

Consider this graph which shows the global innovation index as a function of the per capita GDP (adjusted for the purchasing power in the region)[137].

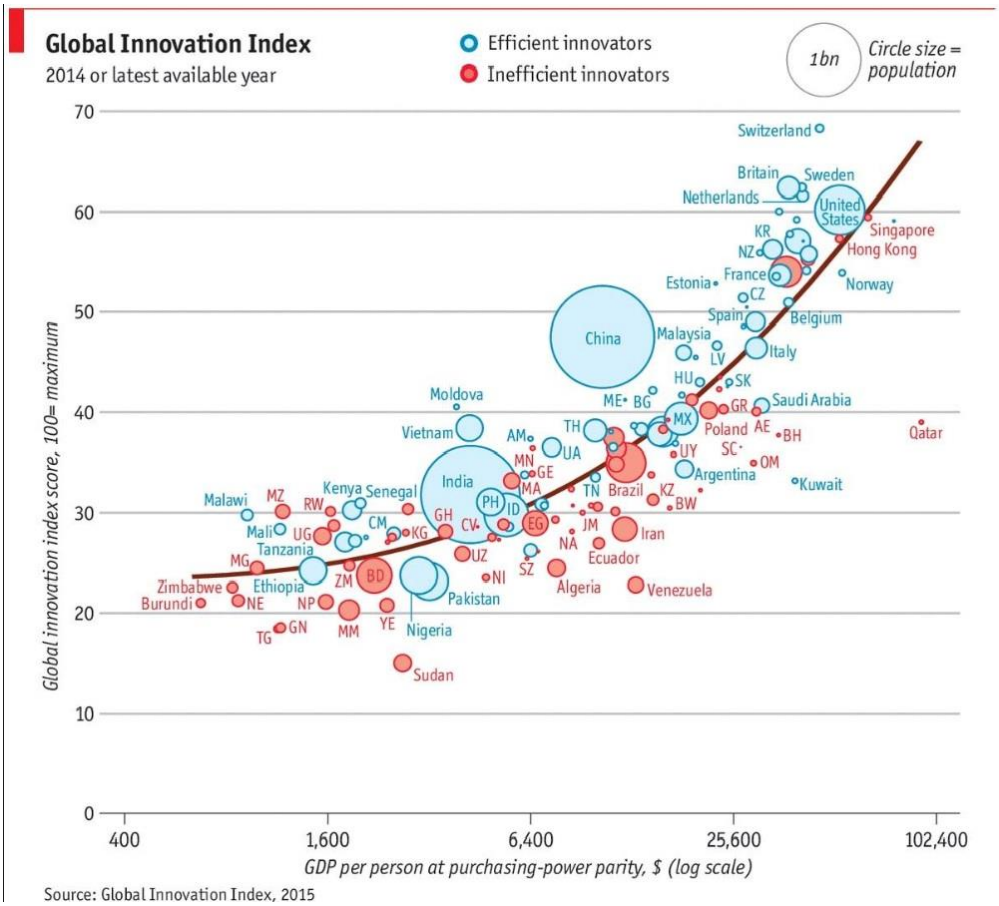

Figure 65 Global Innovation versus per capita GDP

[136] http://data.worldbank.org/indicator/IC.BUS.NREG/countries

[137] http://www.economist.com/blogs/graphicdetail/2015/09/global-innovation-rankings?fsrc=scn%2Ffb%2Fte%2Fpe%2Fed%2Ftheinnovationgame

As the Economist notes:

> *"Which is the world's most innovative country? Answering this question is the aim of the annual Global Innovation Index and a related report, which were published this morning by Cornell University, INSEAD, a business school, and the World Intellectual Property Organisation[138]. The ranking of 140 countries and economies around the world, which are scored using 79 indicators, is not surprising: Switzerland, Britain, Sweden, the Netherlands and America lead the pack. But the authors also look at their data from other angles, for instance how countries do relative to their economic development and the quality of innovation (measured by indicators such as university rankings)."*

The leaders of the pack and those that fall near the bottom left on the graph appear to come in where one might expect them to do so. It is also interesting to look at some of the outliers. For example, Qatar, Kuwait, and Venezuela fall far below the trend lines.[139] Each of these countries has substantial resources in petroleum that provide a higher per capita income without the need to be as innovative. It is beyond the scope of this course, but worth noting, that economists have long studied economies that rely on a single resource and have identified many problems and future challenges with this kind of economy. For this reason, many of these kinds of economies are working hard to diversify their economies, build great universities, and foster a more innovative culture. The overall trend is quite clear. Innovation and per capita GDP are correlated.

[138] http://www.wipo.int/publications/en/details.jsp?id=4193

[139] Economist; https://www.economist.com/graphic-detail/2018/07/12/arab-states-are-losing-the-race-for-technological-development

The group has also created an index of "Innovation Quality" and use universities, patents, and citations to the literature as metrics to measure innovation quality.

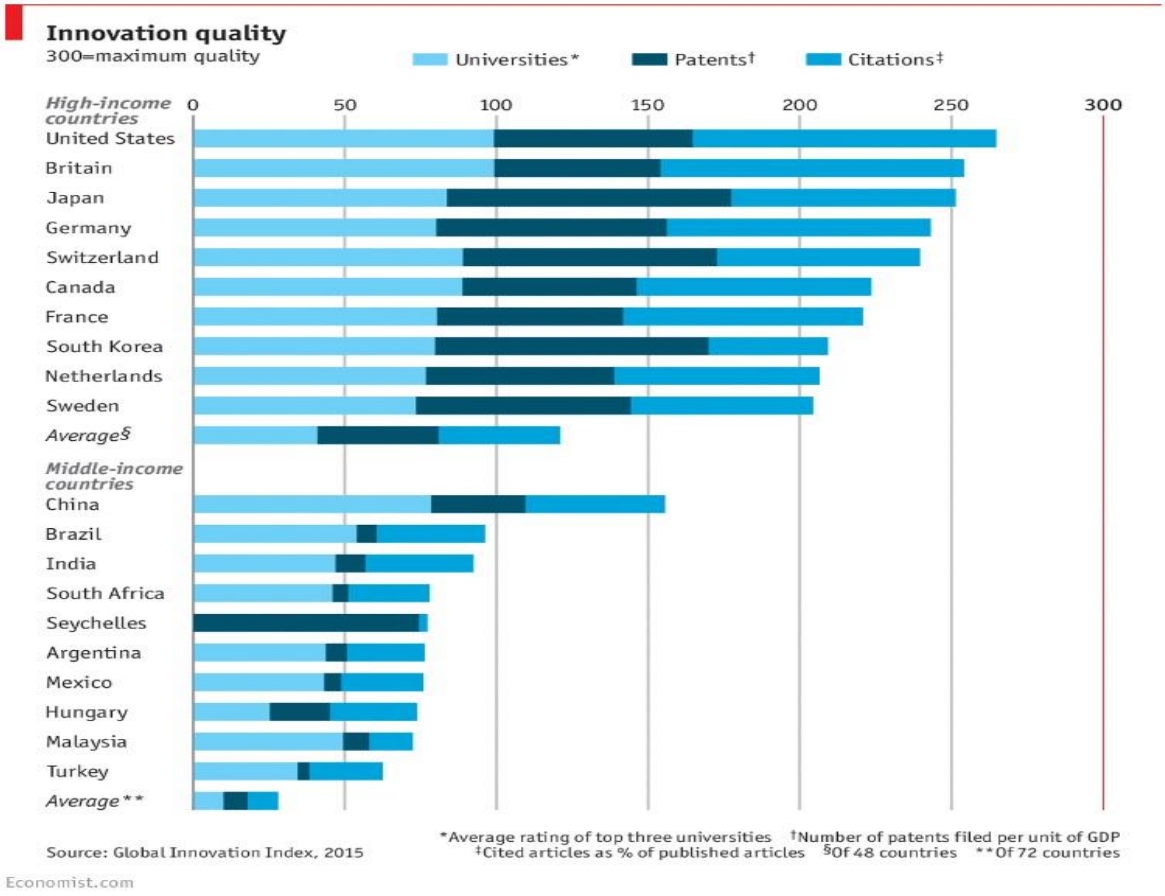

Figure 66 Innovation Quality

It makes clear just how important universities are to the process of innovation. It is important to point out that the presence of great universities also helps generate a larger flow of new patents and creates an opportunity for more citations to the literature.

Bessant and Tidd have identified four factors in the success of organizations[140]:

1. The *national system of innovation* in which the firm is embedded, and which in part defines its range of choices in dealing with opportunities and threats.
2. The *power and market position within the international value chain*, which in part defines the innovation based opportunities and threats that it faces.
3. The *capability and processes of the firm*, including research, design, development, production, marketing, and distribution.
4. *External awareness*: The ability to identify and exploit external sources of innovation, especially international networks.

[140] *Innovation and Entrepreneurship*, 3rd ed., by John Bessant and Joe Tidd; John Wiley and Sons; West Sussex, UK (2007).

Global Entrepreneurship has flourished over the last 50 years. Major changes in world governments, economic systems, and cultural interactions have created an environment in which entrepreneurship has become a significant factor in regional economic development, global geo-politics, and even cultural change.

There have been three significant issues that have enabled much of this innovation.

1. **Technology advances**: The incredible advances in technology –particularly in computing and the internet, but also in the life and medical sciences.

2. **Trade Liberalization**: The dismantling of barriers to trade and the movement of goods and ideas across borders that has found expression in world trade organizations like the WTO and in multi-national trade agreements like the European Union (EU), North American Free Trade Agreement (NAFTA) and many others.

3. **Freer movement of people**: The opening of borders to a much freer movement of people who emigrate and immigrate to find better opportunities in education and employment.

Technological Advances

It is hard to overstate the importance of the rise of computing, communication, and internet technologies to the creation of the world we live in today.

Tom Friedman in his book "*The World is Flat*" gives one of the best expositions of how technology and globalization have changed the world.

I cover his work and some of the criticisms of his work in more detail in my text on Global Entrepreneurship[141] in the chapter: "Types of Opportunities for Global Entrepreneurship,".

The internet has been an enabler of the global supply chain as we shall see later in this chapter.

As social media has spread around the world, it has enabled like-minded individuals to communicate without regard to borders and has enabled the good, the bad, and the ugly. It facilitates global business, global political movements, internet dating, and even terrorism.

Medicine has become a global issue with both disease propagation and enabling collaborative efforts to use advances in the life sciences to fight disease.

[141] http://www.jackmwilson.net/Entrepreneurship/GlobalE/JMW-GlobalEntrepreneurship-TOC.htm

Eliminating Restrictions on Trade and Investment

For most of the past half century, the trend has been to remove barriers to trade and the movement of goods and ideas across borders.

Toward that end the world has created global organizations like the World Trade Organizations (WTO) which creates a framework for rules for trade amongst nations that adhere to the WTO. The General Agreement on Tariffs and Trade (GATT) set out rules for tariffs and trade and eventually merged into the WTO.

The World Bank was created to provide capital to developing countries to enable them to join the groups of trading nations.

The Global Entrepreneurship[142] (GLE) text has a chapter on Global Finance which considers some of the methods that can be used to finance global ventures for those who wish to explore in more detail.[143]

Multi-national trade agreements like the European Union (EU), North American Free Trade Agreement (NAFTA) and many others created trade openings among the signatories.

The Southern Common Market (Mercosur) was formed in 1961 to enable trade among South American nations.

By 2016 this movement toward free trade was beginning to encounter some resistance from populist movements in many countries. In the US, it became an issue in the Presidential campaigns. It was a factor in leading the United Kingdom (UK) to vote to leave the European Union (EU). Populist movements in many of the EU countries are threatening to derail many of the changes we have seen over the past half century.

My Global Entrepreneurship[144] text has a chapter on Free Trade in which I consider the economic theories underlying free trade and also some of the critiques that threaten to disrupt the former global consensus.[145]

Freer Movement of People across Borders

The ability of people to move across borders to find opportunities in education, employment, and entrepreneurship has enabled entrepreneurship in ways that did not exist in the past. Later in this chapter, we will look at the role that emigration and immigration has had on the development of entrepreneurship and how it has affected both the home country and the host country.

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[142] http://www.jackmwilson.net/Entrepreneurship/GlobalE/JMW-GlobalEntrepreneurship-TOC.htm
[143] http://www.jackmwilson.net/Entrepreneurship/GlobalE/9-GlobalFinance.pdf
[144] http://www.jackmwilson.net/Entrepreneurship/GlobalE/JMW-GlobalEntrepreneurship-TOC.htm
[145] http://www.jackmwilson.net/Entrepreneurship/GlobalE/6-GlobalEcon-FreeTrade.pdf

The online text for Global Entrepreneurship[146], Chapter 2[147] addresses in more detail the effects of global changes like:

- The opening of China to the west after President Nixon's visit in 1972.
    - Educational exchanges like the Chinese US Physics Education Agreement (CUSPEA) brought thousands of Chinese students to US universities. Trade and foreign direct investment began soon thereafter.
- The end of the cold war and the dissolution of the former Soviet Union.
    - This allowed freer movement of people and ideas across borders and re-created nations in eastern Europe that embraced capitalism and entrepreneurship as a potential path toward catching up with the economic development of the west.
- The formation of the European Union with a common market and borders that were opened under the Schengen Agreement.
- A movement toward democratic capitalism and away from socialist oligarchies.

Global Supply Chains

Global Supply Chains often allow smaller firms to find a spot. Companies produce goods and services in a value-chain, a sequence of value added steps.

For example: An auto manufacturer would purchase raw materials, manufacture sub-assemblies, assemble complete cars, transport them to markets, sell, and service them. Traditionally, these steps were conducted in a single location, but no longer is that the case. Today these components are sourced from many different regions and brought together in a variety of assembly points until the final product is complete.

As trade barriers were reduced, communication and transportation expenses began to fall. This made it easier to have an interconnected (or "Flat") world. In an interconnected world with free trade, firms could begin to move parts of their value chain to different locations - locations where entrepreneurs could offer more innovative or cost-effective solutions than local suppliers.

The free flow of people and ideas

The free flow of people and ideas has enabled a globalization of research and development. The world's largest firms perform only about 25% of their innovative activities outside of the home country. Overall, the proportion of R&D expenditure made outside the home nation is growing, albeit slowly, from less than 15% in 1995. (Bessant and Tidd)

Since the late 1990s, European firms –and especially those from France, Germany, and Switzerland –have been performing an increasing share of their innovative activities in the

[146] http://www.jackmwilson.net/Entrepreneurship/GlobalE/JMW-GlobalEntrepreneurship-TOC.htm
[147] http://www.jackmwilson.net/Entrepreneurship/GlobalE/2-GenerationalChangeInWorldEnvironment.pdf

USA, in large part in order to tap into local skills and knowledge in such fields as biotech and IT. Boston has been a huge beneficiary of that trend –especially in BioTech. GE recently decided to move it headquarters to Boston to move closer to a center of research on the internet of things (IOT). Microsoft went around the globe to open an R&D Center on the edge of Tsinghua University in Beijing China in order to tap into the large flow of intellectual property being created at this technological university.

The cross border movement of intellectual property

Intellectual property—patents, trademarks, copyrights, trade secrets, and other proprietary processes—represent the top of the economic food chain. Intellectual property can move across borders without transportation costs, giving it high profit potential. By every measure, the transfer of intellectual property across borders is increasing at record rates. Many countries, and China is an example, require that companies entering their markets do so with joint ventures that require some formal technology transfer. In 2017, this became a hot political issue as the President publicly criticized and pushed China to reduce some of the restrictions which were considered to be unfair.

Informal, or even illegal, technology transfer is an increasing challenge to firms who are globalizing. **Spillovers** refer to the movement of ideas and know-how from one part of the economy to others. While it often just happens, many countries have policies to make it more intentional.

Theft of intellectual property through cyber methods, both criminally and state sponsored, is an increasing challenge for companies and for the world's law enforcement agencies – including the FBI in the US. Balancing these risks against reward is one of the great challenges of global entrepreneurship.

The Boston/Cambridge area has particularly benefited from the second bullet as biotech firms have wanted to locate in Kendall Square to be near to the very best R&D on the subject.

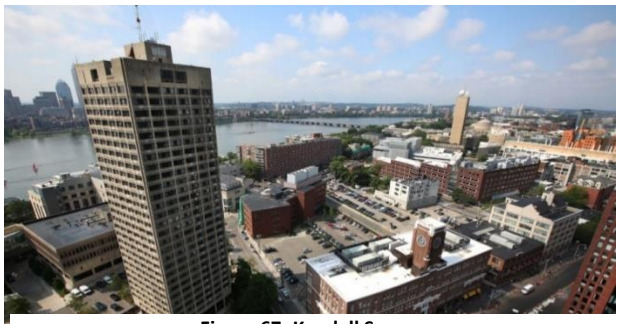

Figure 67 -Kendall Square

Biogen, Genzyme, Amgen, Novartis, Alnylam, Vertex, Microsoft, Google, Millennium, and 150 others all crowd into the small space on the north side of the Charles river.!

There is a thriving, albeit much smaller, biotech cluster in Worcester that depends upon the presence of the UMass Medical School for its Nobel Prize winning research and the UMass Medical Center as a suitable place for clinical trials.

The UMass Lowell Mass Medical Device Development Center (M2D2) benefits both from its links to the UMass Medical School and from its proximity to the eastern Mass medical industry.

US Companies also want to be close to the sources of innovation in other countries. Microsoft, for example, made a huge investment in China with 500 engineers on the edge of the Tsinghua University Campus and did this at a time when they were not able to sell much in China at all. They wanted to be close to what they saw as a significant source of intellectual capital and intellectual property.

Figure 68 Microsoft in Beijing China

Many countries, especially including China, demand that any foreign direct investments in their country be accompanied by opportunities for technology transfer in the other direction. They want access to outside intellectual property. China produces 75,000 people with higher degrees in engineering or computer science and India 60,000 every year. Major countries cannot afford to be provincial. They cannot ignore globalization.

Here is how The Economist described the situation in "The World Turned Upside Down.[148]"

> *"The world's biggest multinationals are becoming increasingly happy to do their research and development in emerging markets. Companies in the Fortune 500 list have 98 R&D facilities in China and 63 in India. Some have more than one. General Electric's health-care arm has spent more than $50m in the past few years to build a vast R&D center in India's Bangalore, its biggest anywhere in the world. Cisco is splashing out more than $1 billion on a second global headquarters—Cisco East—in Bangalore, now nearing completion. Microsoft's R&D center in Beijing is its largest outside its American headquarters in Redmond. Knowledge-intensive companies such as IT specialists and consultancies have hugely stepped up the number of people they employ in developing countries. For example, a quarter of Accenture's workforce is in India. "*
>
> *"Both Western and emerging-country companies have also realized that they need to try harder if they are to prosper in these booming markets. It is not enough to concentrate on the Gucci and Mercedes crowd; they have to learn how to appeal to the billions of people who live outside Shanghai and Bangalore, from the rising middle classes in second-tier cities to the farmers in isolated villages. That means rethinking everything from products to distribution systems. "*

[148] http://www.economist.com/node/15879369

Innovation at the "Bottom of the Pyramid"

In the restaurant business it is well known that there are many more customers at the bottom of the income pyramid than there are at the top. McDonalds has many more customers than Legal Seafood. Conventional wisdom is that those at the bottom of the pyramid cannot afford goods and services at prices that make firms profitable.

U of Michigan professor C.K. Prahalad debunked that notion.[149]

.

Bill Gates comments that this "offers an intriguing blueprint for how to fight poverty with profitability." Three billion people (almost half the world) live on less than $2.50 per day.[150]

Here are some examples of Examples of Innovation at the Bottom of the Pyramid:

- The Tata Nano Car
  - http://www.jackmwilson.net/Entrepreneurship/Cases/Case-Tata-Nano.pdf
- Selco –Harish Hande -UML Graduate
  - http://www.jackmwilson.net/Entrepreneurship/Cases/Case-SolarElectricLight-HarishHand.pdf
- D-Light
  - http://www.jackmwilson.net/Entrepreneurship/Cases/Case-d-light.pdf
- EcoSchool
  - http://www.jackmwilson.net/Entrepreneurship/Cases/Case-EcoSchool-Africa.pdf
- Grameen Banks and Industries –Muhammad Yunas
  - http://www.jackmwilson.net/Entrepreneurship/Cases/Case-MuhammadYunas.pdf
- GE hand held EKG device
- The BioBubbler is a low cost water filtration device invented by a UML student who won the 2014 Difference Maker Competition for "Significant Social Impact."
  - https://www.uml.edu/Innovation-Entrepreneurship/DifferenceMaker/Meet-the-DifferenceMakers/DM-BioBubbler.aspx

National Systems of Innovation

We see significant variation in how companies and countries participate in global innovation. Innovation (using patents as a proxy variable) is positively influenced by the size of the economy, foreign competition in the domestic market, public expenditure on Research & Development, and the availability of venture capital.

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[149] "The Fortune at the Bottom of the Pyramid;" C.K. Prahalad; University of Michigan; 2004.

[150] http://www.globalissues.org/article/26/poverty-facts-and-stats

Innovation is negatively impacted by the presence of large numbers of small and medium size firms (a fragmented market), high corporate tax rates, and high levels of economic prosperity which can lead to complacency.

Some factors lead to specific innovative opportunities including high levels of local demand (particularly when face to face contact is required.), local availability of natural resources, local pricing variation (high prices drive desire for substitutes), and local availability of specific skill sets –especially in machinery and manufacturing.

There is a trade-off of competition versus domination in some regions. For example, Germany is a leader in Chemicals with three large firms –BASF, Bayer, Hoechst. That rivalry keeps them each competitive. Japan has strength in consumer electronics and automobiles with a cluster of strong firms in each. Companies often work to reach a near monopolistic position by acquiring or simply defeating their rivals. This often leads to reduced competition and reduced innovation.

In the long term this reduced completion can be deadly to the company when other competitors (often in other countries) emerge and the former monopoly finds it hard to innovate and compete. The auto industry in the 70s and 80s was an example. Ford, General Motors, and American Motors seemed to have the US market to themselves. They were relatively content to divide the market and innovation and quality improvement was not a high priority. Along came Japan with quality models from Honda and Toyota, and suddenly the competitive environment changed. The US firms found it very hard to adapt to the new environment.

The Rise and Fall of the BRICS

The Rise and Fall of the BRICS provides a more recent example of emerging economic competitors. The term BRICS refers to : **Brazil, Russia, India, China, and South Africa.** The term was introduced by Goldman Sachs in 2001 as "BRIC," and South Africa was added in 2010 after petitioning to join what had become a formal group. In 2006 the BRICS heads of state met informally while attending a meeting at the United Nations. Their first formal meeting occurred on June 16, 2009 in Yekaterinburg Russia at the invitation of Russia's Dimitri Medvedev.

These emerging economies were seen by many as the engines of global growth. With that recognition came increased influence. The group has called for the replacement of the dollar as the main reserve currency and has entered a variety of political frays. It has not always gone well for the BRICS. By 2015, we were seeing Russia suffering from world economic sanctions, Brazil mired in a corruption and constitutional crisis, China

experiencing slow growth, and South Africa struggling politically and economically[151]. The story continues to unfold.

More information on the BRICS, Brazil, Russia, India, China, and South Africa,[152] can be found in the area chapters of *Global Entrepreneurship*.[153]

Global supply chain networks

The rise of small-firm supply chain networks has created countless entrepreneurial opportunities around the world. *Global sourcing* is the process of partnering with world's best suppliers to provide customers with the best quality product or service at the best possible cost. Global sourcing is a critical tool for firms in developed countries as it allows them to lower the average labor cost by mixing high paying knowledge jobs in the developed economy with lower paying lower-skilled jobs in the lesser developed country.

Global supply chain management is more comprehensive than global sourcing. In global supply chain management, firms integrate their entire supply chain globally -- from raw materials to finished delivered goods -- to provide high levels of customer satisfaction and higher profits. Firms increasingly rely on supplier networks around the globe to improve their quality and efficiency.

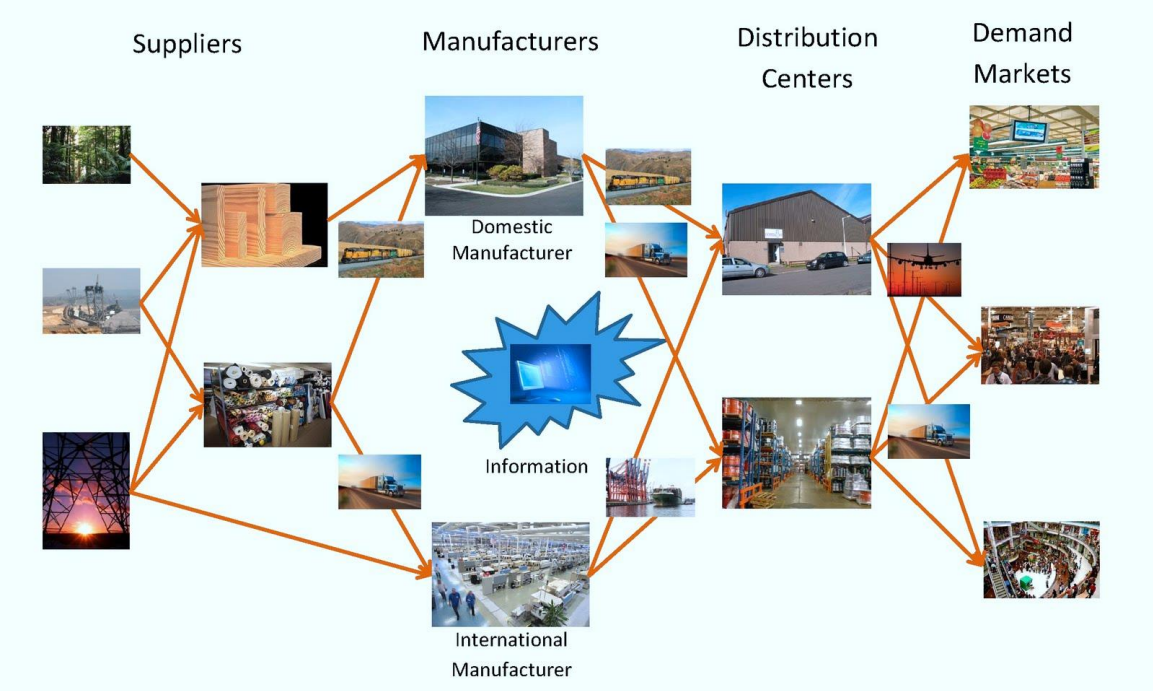

Figure 69 Global Supply Chain (from Anna Nagurny)

[151] http://www.bloomberg.com/news/articles/2016-03-18/zuma-and-rousseff-united-in-misery-as-corruption-threaten-gains

[152] http://www.jackmwilson.net/Entrepreneurship/GlobalE/JMW-GlobalEntrepreneurship-TOC.htm

[153] http://www.jackmwilson.net/Entrepreneurship/GlobalE/JMW-GlobalEntrepreneurship-TOC.htm

Anna Nagurney, UMass Amherst Professor, has provided an excellent analysis of the role that networks and information flow can play in creating a global supply chain[154]. She has also illuminated the role of networks and information flow in the supply chain[155].

Apple and the Global Supply Chain

Apple provides an outstanding example of a global supply chain for its iPhone.

Table 1 . Apple iPhone 3G's Major Components and Cost Drivers

Manufacturer	Component	Cost (USD)
Toshiba (Japan)	Flash Memory	$24.00
	Display Module	$19.25
	Touch Screen	$16.00
Samsung (Korea)	Application Processor	$14.46
	SDRAM-Mobile DDR	$8.50
Infineon (Germany)	Baseband	$13.00
	Camera Module	$9.55
	RF Transceiver	$2.80
	GPS Receiver	$2.25
	Power IC RF Function	$1.25
Broadcom (USA)	Bluetooth/FM/WLAN	$5.95
Numonyx (USA)	Memory MCP	$3.65
Murata (Japan)	FEM	$1.35
Dialog Semiconductor (Germany_	Power IC Application Processor Function	$1.30
Cirrus Logic (USA)	Audio Codec	$1.15
Rest of Bill of Materials		**$48.00**
Total Bill of Materials		**$172.46**
Manufacturing costs		**$6.50**
Grand Total		**$178.96**

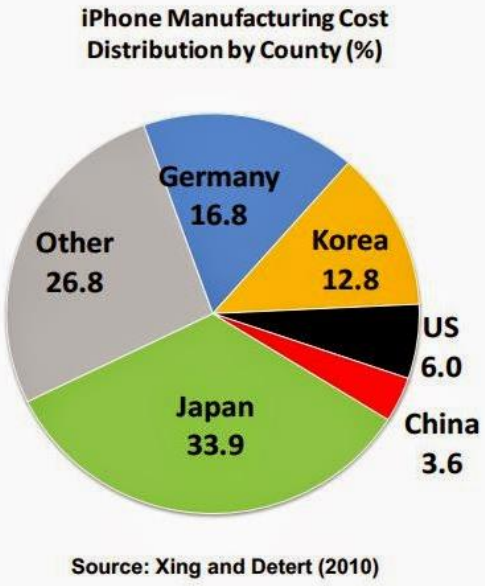

Figure 70 Apple iPhone Global Supply Chain

This supply chain has links in every corner of the globe.

Figure 71 Apple Supplier Map (Apple Computer)

[154] http://annanagurney.blogspot.com/2012/01/how-us-can-compete-and-win-in-global.html
[155] http://supernet.isenberg.umass.edu/dart.html

Boeing Supply chain

Boeing is another outstanding example of a company that use a global supply chain to meet global market needs.

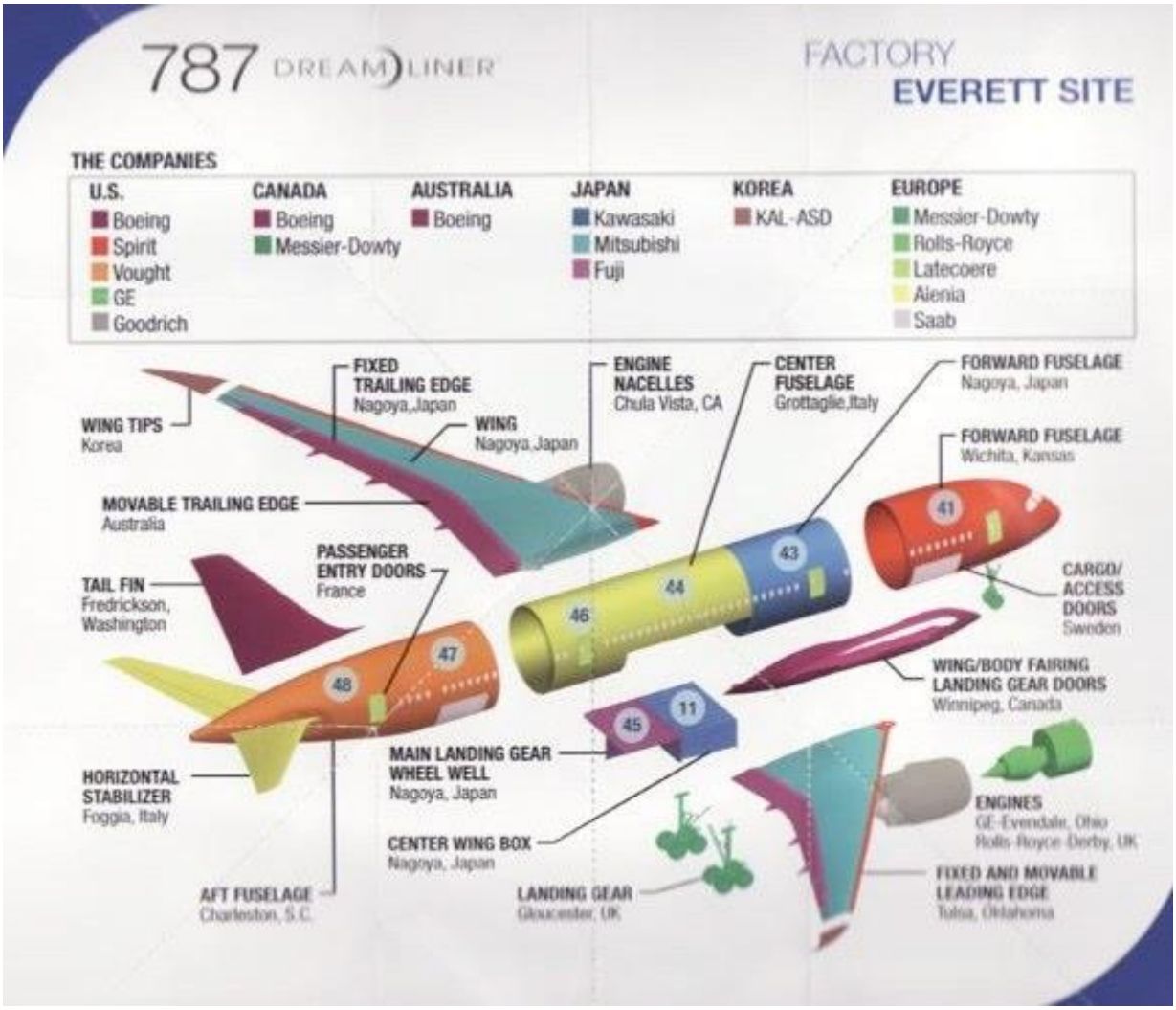

Figure 72 Boeing Supply Chain (courtesy of Boeing)

The most forward part of the fuselage of the Boeing 787 is made in Wichita Kansas, but the next section back is made in Nagoya Japan, and the center of the fuselage is made in Italy! Other parts are provided by France, the United Kingdom, Australia, and Charleston, SC! The process is coordinated over the internet and the entire plane can be brought together in various sites.

Succeeding in the Global Supply Chain

For small entrepreneurs to succeed in a global supply chain environment, they need to be interconnected with their dominant buyers and suppliers across the globe. They also need to cost effectively transport their goods and services to distant markets.

A few decades ago commercial airfreight was not an option, but today, air cargo is the most reliable and cost-effective means of shipping. Many modern production management practices, including the just-in-time inventory techniques so important to multinational corporations, rely heavily on global air cargo.

Ocean shipping costs have fallen by as much as 80% over the last fifty years. Sea freight has become seamlessly integrated with domestic rail and truck transportation; firms can now ship goods as easily across the globe as they once did across town.
Because of deregulation and new technologies, telecommunication costs have dropped significantly in the post WWII era. New communications technologies have made it cost efficient to separate value-adding steps of production and use --the value chain--in ways that were not previously feasible.

The global economy has also become interconnected along the Internet. Recent data shows over 800 million people use the Internet worldwide, and that number will top 1 billion users in 2006. The Internet has become a dynamic force in both business-to-consumer (B2C) and business-to-business (B2B) markets. B2B e-commerce now generates in excess of $1.5 billion in revenues.

E-commerce is not just for large business; Evertek Computer Corporation, which sells new and refurbished computers and parts, has business in more than 80 countries, booked through internet portals. MacNeill Engineering Company, headquartered in Marlboro MA discovered that the golf shoe companies to which they had sold spikes and other components had moved their manufacturing to China. Rather than close their doors, they created a global company with some of the manufacturing being done closer to the customers and also created a retail line of goods for the US and international markets. [Champ: a Case Study][156]

[156] http://www.jackmwilson.net/Entrepreneurship/Cases/Case-MacNeillUSA-Champ.pdf

Entrepreneurship is an Emigrant thing too

Migrant Brainpower is an important component of entrepreneurial activity[157],[158]. It is interesting that Indian inventors seem to need to leave home to file a patent (48.7%) while the German inventor usually does so at home -only 7.5% are done abroad.

Technically, this only shows patents and not entrepreneurship, but it indicates how influential immigration is upon innovation. This diaspora of innovation often becomes a source for new ventures as well as a built-in support structure. In many cases it also provides a stream of revenue flowing back into the originating country.

Harvard Business Review noted that[159] "*Many entrepreneurs have taken advantage of ethnic networks to formulate and execute a global strategy. The culture, values, and social norms members hold in common forge understanding and trust, making it easier to establish and enforce contracts.*"

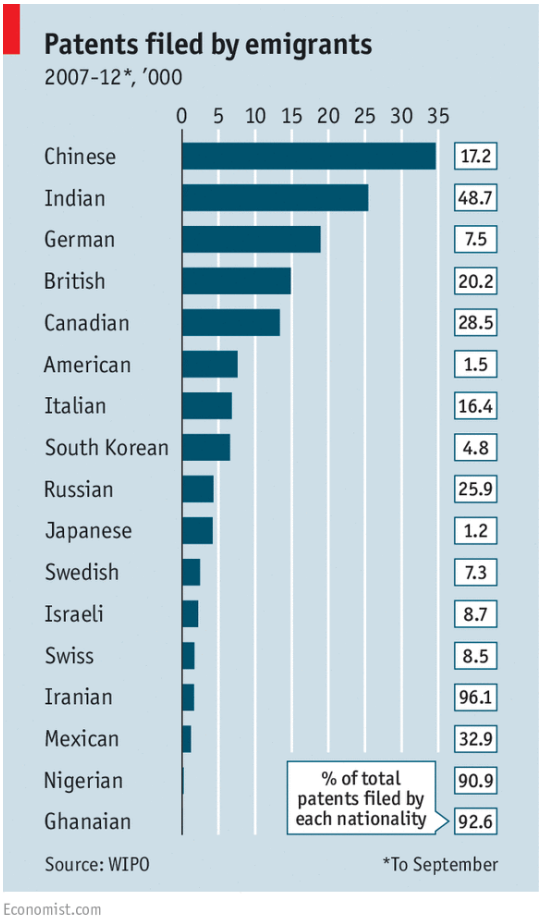

Figure 73 Emigrant Patents

"Through diaspora networks, global entrepreneurs can quickly gain access to information, funding, talent, technology—and, of course, contacts. In the late 1990s, for instance, "
"Boston-based Desh Deshpande, who had set up several high-tech ventures in the United States, was keen to start something in his native India. In April 2000, he met an optical communications expert, Kumar Sivarajan, who had worked at IBM's Watson Research Center before returning to India to take up a teaching position at the Indian Institute of Science in Bangalore. Deshpande introduced Sivarajan to two other Indians, Sanjay Nayak and Arnob Roy, who had both worked in the Indian subsidiaries of American high-tech companies. The trust among the four enabled the creation of the start-up Tejas Networks in two months' time. Deshpande and Sycamore Networks, the major investors, wired the initial capital of $5 million, attaching few of the usual conditions to the investment. Tejas Networks has become a leading telecommunications equipment manufacturer, generating revenues of around $100 million over the past year."

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[157] http://www.economist.com/news/international/21656175-migrant-brainpower
[158] http://www.economist.com/news/international/21656176-governments-believe-their-diasporas-can-solve-all-sorts-problems-they-are-picky
[159] Harvard Business Review; Daniel Isenberg; Dec.2008

"Desh" Deshpande has demonstrated how emigration and networking tend to knit entrepreneurship together. After founding several networking companies in the US that he sold for billions, he has been an active supporter of entrepreneurship at MIT, UMass Lowell, Canada, and India. He founded the Merrimac Valley Sandbox to support entrepreneurship in northeastern Massachusetts and then expanded to other regions and changed the name to eForAll.[160] He also involves regions from Canada where he went to the University and India where he emigrated from.

He has also founded the *Deshpande Symposium on Innovation and Entrepreneurship in Higher Education* with a conference that is hosted each year at UMass Lowell.[161]

His many contributions are covered in a Case study[162].

Figure 74
Gururaj "Desh" Deshpande and Jack Wilson

Collection of interesting videos on Global Entrepreneurship

- The Global Entrepreneurs Program | AIESEC
  - A student's viewpoint
  - https://www.youtube.com/watch?v=aH8oZxBmI6Y
- Mark Zuckerberg Live with President Obama after the Global Entrepreneurship Summit at Stanford
  - https://www.youtube.com/watch?v=6ByyepnhOiI
- INTERNATIONAL ENTREPRENEURSHIP - John Kraft
  - https://www.youtube.com/watch?v=feX59UcgyP4
- How To Become A Global Entrepreneur
  - https://www.youtube.com/watch?v=Den6AfP4sPY
- International entrepreneurship in the information age (Lucia Piscitello)
  - https://www.youtube.com/watch?v=gDTu3nIpnJg

[160] https://eforall.org/
[161] https://www.deshpandesymposium.org/
[162] http://www.jackmwilson.net/Entrepreneurship/Cases/Case-GururajDeshpande.pdf

Glossary of terms and acronyms that are useful in entrepreneurship

by Jack M. Wilson; http://www.jackmwilson.net
Distinguished Professor of Higher Education, Emerging Technologies and Innovation

AP - Accounts Payable: Money that a firm owes to others, but has not yet paid.

AR - Accounts Receivable: Money that others owe to the firm, but have not yet paid.

Arm's Length: A transaction that involves parties who have no other personal, financial, or professional relationships. A transaction between family members or business partners in not "arm's length."

ARPU: Average Revenue Per User measures how much money each user will generate for the venture. If an average customer subscribes to a website for $50 per year then the APRU would be $600.

Availability Bias: A term in psychology and economics that refers to the fact that the things we know about, have experienced, or have seen are considered more likely, and those that we have not are considered less likely –often a great variance to the facts.

Back Channel: A term referring to an alternative secondary and less formal communication methods often used in business or politics to avoid making an issue public until it is better understood.

Barrier to Entry: Something that makes it difficult for a new competitor to enter an established market. It can be regulatory or economic. Uber bypassed the regulatory barrier to entry in the taxi market by using unlicensed cabs and drivers –leading to legal challenges. It is difficult to sell new operating systems when Windows already has so many copies installed and there is a switching cost to retrain workers and install alternatives.

Beachhead: Finding a small place to gain a foothold in a market, from which expansion may be possible. It is taken from the military concept of storming the beach (Normandy) as a first step in invading a region. Steel mini-mills found a beachhead by making cheap rebar and they moved into more profitable markets later.

Born Global - Firms that are created to operate globally from their inception.

Break-even Point: Once a new venture finds enough revenue to exceed the expenses.

Business Acumen: The demonstrated experience and skillset that an individual possess to enable them to execute a business strategy competently. Many new ventures look for more experienced (gray hair) leaders to help develop and execute their business models.

Business Model - How a company creates, delivers, and captures value in the market place. That value can be in economic, social, governmental, cultural or other contexts

Business Model Innovation - By developing a new business model, a company can often compete with or displace more established competitors.

CAGR: **Cumulative Annual Growth Rate**, The rate at which an industry or organization is growing year by year.

CEO - Chief Executive officer

CFO - Chief Financial Officer

CIO - Chief Information Officer

CoCA Cost of Client Acquisition, measures how much must a venture spends on average to attract one more customer. If a venture spends $200,000 on marketing and sales and manages to attract 10,000 new customers then the CoCA would be $20/user.

COGS - Cost of Goods Sold

Component Innovation: When the larger product or service remains largely the same, but components of the larger system change. Replacing carburetors with fuel injection was a component innovation in automobiles. Replacing incandescent headlights with LEDs is another. It can be a radical innovation for the component, but is probably an incremental innovation for the larger product. **Recombinant Innovation** is a related term.

Confirmation Bias: A term used in psychology and economics that refers to the tendency to favor information that confirms our pre-conceptions and to ignore (or not believe) information that differs with our pre-conceptions. This often leads to mistakes that could have been avoided.

COO - Chief Operating Officer

Core Logic - Articulates the mission and business model for how an organization creates value.

Corridor Principle - One notices opportunities or open doors because of the path that one is on. If you do not walk the corridor, you cannot see the open doors.

Creating value: Implementing an idea or innovation which makes a difference that might be economic, social, cultural, or other.

Creative Destruction: Joseph Schumpeter, Harvard University and an economist from Austria, proposed in 1934 that new products and technologies make old products and technologies obsolete.

Crisis Driven –Need pull innovation on steroids. Ex: Zika Virus vaccine

Crossing the Chasm: Getting from the early adopters to the early majority in Rogers Diffusion of Innovations theroy. Also a book by G.Moore.

CTO Chief Technical Officer

CV Commercial Venture -Any organization created to return a profit to the owners.

Disruptive Innovation: A process, proposed by Harvard Professor Clayton Christensen, in which innovation allows an organization to find a niche in a less profitable and interesting part of the market and then learn how to grow and take over the more profitable parts of the market from much more established competitors.

Domain Knowledge: When a person has experiences and knowledge that allow them to have a good understanding of a particular business area or technology, we say they have domain knowledge.

Double Dipping: Any action that generates multiple benefits and revenue streams.

Due Diligence: Whenever a company is acquired, merged, or makes or take a significant investment, legal and business teams examine as much available information to ensure that the transaction is as informed as it can be.

EBIDTA Earnings before Interest, Depreciation, Taxes, and Amortization

Economy of Scale : As a company grows and makes and sells more products and services the variable costs tend to increase, but the fixed costs may not increase much. This leads to a lower unit cost and a higher net profit from the economy of scale. Tesla had to build factories top build it first few cars and thus the cost of each car was quite large. As they sell more and more the cost per unit goes down.

Effectual Entrepreneurship A model postulated by Saras Sarasvathy in 2001 as an alternative to causal entrepreneurship which sets goals and then seeks resources. EE looks at the resources and then selects the goals.

Elasticity of Demand: Price elasticity of demand is a measure of the relationship between a change in the quantity demanded of a particular good and a change in its price. The higher the price the lower the demand, but some things (water, air, medicine, etc) are so necessary that they are not so price sensitive.

Elevator Pitch: If you enter an elevator and have to explain what you are doing in only a minute or two it is termed an elevator pitch. It is now used to describe short explanations given to investors or customers to induce them to look more carefully at the opportunity.

Entrepreneurial Capacity - the ability of entrepreneurs to react to entrepreneurial opportunities. this is often affected by culture, education, experience, and the entrepreneurial environment.

Entrepreneurial Environment or Entrepreneurial Opportunity Environment. The conditions in any country or region that can permit and encourage entrepreneurial activity. this includes cultural issues, the educational levels, political environment, and regulatory issues, among others.

Escalating Commitment: Throwing good money after bad. Our psychological need to avoid the appearance of a loss will often induce us to make unwise follow-on investments.

Exit: Entrepreneurs and Investors often want to be able to invest in an idea, make it successful and then harvest the economic benefit by exiting the venture or investment. That exit may come through a company being acquired by another company or from going through an Initial Public Offering (IPO) to sell the stock publicly.

GAAP Generally accepted accounting principles

Gating Items: Decision theory identifies things that must happen before the next step in the process can occur. These can be established through negotiation or may be an inherent part of the process.

Gazelle A very rapidly growing new venture over a sustained time period. At least 20% yearly growth is a rule of thumb.

GEM Global Entrepreneurship Monitor - Begun in 1999 by a collaboration between universities to follow ten countries. It expanded to 42 countries by 2008 and over a hundred by 2014. It monitors and reports on entrepreneurship in countries around the world.

GL General Ledger

Guerrilla Marketing: Any innovative, unconventional, and low-cost marketing technique aimed at obtaining maximum exposure for a product. Use of social media and **viral marketing** techniques have become established forms of what were once guerilla marketing techniques.

Halo Effect: The goodwill generated by associating oneself with persons or brands that have a positive and well recognized reputation. Entrepreneurs will often ask prominent individuals to sit on their Board of Advisors or Board of Directors. Partnering with famous brands is another strategy.

Incremental Innovation: Innovations that remain close to the original products or services but add some innovative features. As contrasted with **radical innovation**.

IP Intellectual property

IPO Initial Public Offering

Intellectual Property: There are four primary forms: patents, trademarks, copyrights, and trade secrets. Investors often want to know how you will protect your intellectual property to maintain a competitive advantage.

LBO Leveraged Buyout

Knowledge Push – New knowledge or research suggests some new opportunities.

Lean Launchpad A model of entrepreneurship developed by Steve Blank and adopted by the National Science Foundation that bypasses the business plan and focuses on customer development and the search for a viable business model.

LLC Limited Liability Corporation

LLP Limited Liability Partnership

Management Risk: The risk associated with an inexperienced new venture team.

Market Risk: The risk that customers may not be willing to buy a new untested product. In the Lean Launchpad, one tries to minimize this risk by a customer discovery process.

Market Segmentation: Analyzing a market and decomposing that market into different parts or segments in order to find a suitable **"target market."**

Mass Customization: Have it your way. Dell Computer, in 80s and 90s built PCs to order and shipped direct to customer. Converse allows customers to order personalized athletic shoes

Minimal Viable Product (MVP): In the Lean Launchpad one is encouraged to bring the product to market once you have a viable product even though it may not be as feature rich as you want for later products. A minimal product is not enough. It must also be viable. The software industry often markets "beta" versions of software to test the market and product before the full release.

NAFTA North American Free Trade Agreement - a trilateral trade agreement between the United States, Canada, and Mexico

NDA Non-disclosure agreement

Need Pull – When an unfulfilled need is present and someone comes up with an idea to fill that need. Compare to **knowledge push** or **technology push**.

NTBF - New Technology Based Firms

Operational Experience: Many new ventures are started by people with a passion, but without much operational experience in the area. These ventures often recruit team members, who bring past experiences, to help in this area.

Opportunity Cost: When a decision is made to take a particular action, it may mean forgoing other potentially more attractive investments. "If I invest my time or money in this venture, what better investments (of time and/or money) must I pass up?"

P&L: Profit and Loss financial statement

Pain Point: A product or service should target some market problem (pain point) that people would be willing to pay money to solve.

Personal Attribution Error: Often called the **fundamental attribution error** or the **attribution error**. We tend to blame others for their mistakes, but we often blame our own mistakes on circumstances beyond our control.

Piggybacking: Finding a way to get your product to the market by connecting to some other better-known product. Many software vendors work with computer manufacturers to pre-load their software on the computers in trial versions –which they hope to induce the customer to buy.

Pivot A change in direction of a new venture based upon information obtained from prospective customers. A key strategy in the Lean Launchpad.

Premature Scaling: Trying to grow too fast and then being unable to deliver the quantity or quality of product desired. When UMassOnline was founded, we tried to limit annual growth to less than 40% each year since we did not feel we could deliver quality at growth rates larger than that. If a successful product grows too fast it might burnout or fail.

Pre-money Valuation: What a company is worth the moment before funding. See Post-money valuation below.

Proof of Concept: For a product, service, or business model there is often a desire to find an early example that shows that the overall concept is likely to work. ILinc built a software proof of concept that allowed it to sell millions of dollars of software for future delivery to companies like IBM, AT&T, Sprint, Aetna, Office Depot, and others. (ILinc)

Prospect Theory: : Behavioral Economics describes how people can make decisions based upon known risks. The decisions are not always rational. Kahnemann (Nobel Prize) and Tversky. (https://en.wikipedia.org/wiki/Prospect_theory)

Planning Fallacy: Human beings consistently underestimate the time and resource needed to complete tasks and project.

Post-money Valuation: What a company is worth the moment after funding, calculated as the pre-money valuation plus the cash invested. If I invest $1 million for 20% of a company, then the post-money valuation would be $5 million, and the pre-money would be $4 million.

Process Innovation – making an existing process work better –Ex: Total quality management, business process re-engineering, Six Sigma, Lean Management, etc.

Protectionism: Actions taken by nations to give advantage to their own local industries. These are often tariffs but can also be done through other kinds of restrictions on imports.

Radical Innovation: Innovation that significantly departs from the established product or services. As contrasted with Incremental Innovation.

Red Flag: Warning of danger. A sign that things may not as good as they look.

Red Herring: A distraction –which is often intentional. It can cause you to ignore red flags that you might have noticed. They can cause an entrepreneur to focus on the wrong issue.

Revenue Model: How does a venture obtain the necessary revenues and become a sustainable venture? An important part of the business model canvas.

Rogers' Diffusion of Innovations: A theory that describes the way that new ideas, products, and services roll out into markets. It identifies regions like "early adopters", "early majority," "laggards," and others. Crossing the chasm describes part of the movement through these regions.

RFP Request for Proposal

ROA Return on Assets

ROE Return on Equity

ROI Return on Investment

ROS Return on Sales

SEC Securities and Exchange Commission

SBA Small Business Administration

SBIR Small Business Innovation Research Grant

Segmenting a market: Identifying a market and then dividing it into various sub markets or segments in order to identify a **"target market."**

Scale/Scalability: In business it is desirable to grow revenues at a greater rate than expenses. If you can do that the company is scalable.

Serial entrepreneur: An entrepreneur who has had a track record of starting several business. It is better if they are successes, but even a few failures provide experience.

Signaling: Taking an action that signals to the market place that this is a venture to be taken seriously. It could be getting a famous investor, or leader, or adding an influential board member. Price signaling can be used by raising the price to signal higher quality (wine sales and colleges are two examples of the latter).

Skin in the Game: If someone has something to lose in a venture one can say they have "skin in the game." Investors want founders/entrepreneurs to have skin in the game.

Social Enterprise: An organization that incorporates social, environmental, and cultural goals. Often they are pursuing the **"triple bottom line."**

Social Entrepreneurship: When entrepreneurship and innovation are primarily directed toward creating social value rather than economic value. This can be done by either non-profit organizations or for-profit organizations.

SME: Small Medium-sized Enterprises

STTR: Science and Technology Transfer Research

Suboptimal Solutions: A solution that does not meet all the needs of the customers. Sometimes, this can be used to get into a market and then the venture can work to meet the unmet needs. **Disruptive Innovation** does this.

Sweat Equity: A term used to describe an ownership interest in a company that was procured by work over time and not by a financial investment. The two young founders of ILinc earned their percentages over several years of work.

Talent Triangle: Technical project management expertise, leadership, and management/strategy expertise make up the necessary talent triangle. https://www.pmi.org/learning/training-development/talent-triangle

Target Market: Once an appropriate market segment has been identified as interested in a product or service, that segment may be designated as the target market.

Third-Party Validation When an uninvolved and unrelated entity does something to indicate that your product, service, or business model has value.

TM Trademark

Total Addressable Market (TAM) : That portion of the target market that you feel that your product or service could reach..

TPP Trans-Pacific Partnership -Pacific area free trade agreement (proposed and very controversial)

Traction: When a product begins to get market acceptance we can say they are beginning to get traction.

Trade liberalization A process in which any country remove obstacles to trading with other countries. This often refers to reduction or removal of tariffs and other legal barriers to trade. In many cases there are bilateral and multilateral agreements (WTO, NAFTA and TPP are examples) to define the trading environment. These are often controversial because they remove protections for internal markets in the expectation that the growth of external markets will be more beneficial and enhance the local economy more than any local losses. This is often a subject of political disagreement.

Triple Bottom Line: Focusing a company on environmental and social (internal and external stakeholders) goals rather than only on financial and economic goals.

Uppsala Model - Created by Professors from Uppsala University in Sweden to describe the process of a company evolving from a domestic to an international firm. It is an incremental model as compared to the "Born Global" model.

Unicorn A startup company that achieves a valuation of $1 Billion dollars.

Unicorpse A Unicorn that tried to grow too rapidly and encountered obstacles that eventually proved to be fatal

USPTO United States Patent and Trademark Office

VC Venture Capitalist

Viral Marketing: a method of marketing whereby consumers are encouraged to (or spontaneously) share information about a company's products or services on social media or by word of mouth.

Willful Blindness: This occurs when a person or organization intentionally chooses to ignore a negative factor. Sometimes we say that a person is “in denial.” However, if the factor ignored is a legal factor, then this can lead to significant legal libility.

WTO World Trade Organization

Wikipedia has a more complete list of business acronyms here: <Wiki>
https://en.wikipedia.org/wiki/List_of_business_and_finance_abbreviations