

Lecture Text

Professor Lynda M. Applegate

Jumpstarting Entrepreneurial Innovation

(edited for clarity)

Introduction

Welcome to Harvard Business School. I'm Lynda Applegate, a professor in our entrepreneurial management area. I also have a joint appointment in our general management area. I work with large and small companies that are in the midst of innovations. Especially entrepreneurial innovations, which focus on large-scale, more radical innovations that involve both launching new businesses and innovations in established businesses.

Today I'd like to go over a number of topics around the concept of entrepreneurial innovation. You see here a set of topics that are important if you are pursuing innovation either in an established company or as an independent entrepreneur. We are not going to go through all of these today, but in your packets you have tutorials and tools that will take you deeper into each of these topics.

The Innovation Imperative

So what are executives doing these days? Why are we even talking more about this? IBM did a study in 2006 and asked over 750 CEOs from around the world, primarily large organizations that were global in scope, "What's the extent of change that you need to make in the next two years?"

Surprisingly, 65 percent said they were planning significant change over the next two years. More importantly, when asked, "What's the past level of success at managing significant change?"—radical innovation as we have just defined it—only 15 percent of these executives said that they had been very successful. And 15 percent said there was little or no success with that kind of change.

That's a huge imperative, and it's why our jumpstarting entrepreneurship in established companies' executive programs are oversubscribed. We have a hard time actually offering enough different sections to be able to fit the demand right now. And it's because of this very fact: Executives realize that radical change is needed and they do not feel equipped to make those changes.

One of the things we know is that the interest in innovation is being spurred by radical change and disruption that is going on around the world. Disruptive change destabilizes industries, companies, and even countries. So disruption and disruptive change is what is spurring the kind of interest that we are seeing in innovation. Let's review some of the key disruptors:

- Technology disruption. What are the key emerging technologies and how are they being used inside and outside your region, industry, region, or country?
- Globalization. What's happening in other parts of the world that you could adapt and adopt in your environment? Or what is happening in other parts of

全国Mini-MBA职业经理双证班



精品课程 权威双证 全国招生 请速充电

你可能准备跳槽或者求职, 却为缺少行业经验和专业证书而被用人单位百般挑惕!

你可能目前衣食无忧, 但随着年龄的增长和社会竞争压力的增大, 因为得不到专业的全新培训而失去竞争的机会和面临被淘汰的危机。

美华教育携手中国经济管理大学面向全国举办迷你 MBA 职业经理双证书班, 毕业颁发双证书。

招生专业及其颁发证书

认证项目	颁发双证	学费
全国《职业经理》MBA 高等教育双证书班	高级职业经理资格证书+2 年制 MBA 高等教育研修结业证书	1280 元
全国《人力资源总监》MBA 双证书班	高级人力资源总监职业经理资格证书+2 年制 MBA 高等教育研修证书	1280 元
全国《生产经理》MBA 高等教育双证班	高级生产管理职业经理资格证书+2 年制 MBA 高等教育研修结业证书	1280 元
全国《品质经理》MBA 高等教育双证班	高级品质管理职业经理资格证书+2 年制 MBA 高等教育研修结业证书	1280 元
全国《营销经理》MBA 高等教育双证班	高级营销经理资格证书+2 年制 MBA 高等教育研修结业证书	1280 元
全国《物流经理》MBA 高等教育双证班	高级物流管理职业经理资格证书+2 年制 MBA 高等教育结业证书	1280 元
全国《项目经理》MBA 高等教育双证班	高级项目管理职业经理资格证书+2 年制 MBA 高等教育研修结业证书	1280 元
全国《市场总监》MBA 高等教育双证书班	高级市场总监职业经理资格证书+2 年制 MBA 高等教育研修结业证书	1280 元
全国《酒店经理》MBA 高等教育双证班	高级酒店管理职业经理资格证书+2 年制 MBA 高等教育研修结业证书	1280 元
全国《企业培训师》MBA 高等教育双证班	企业培训师高级资格认证毕业证书+2 年制 MBA 高等教育研修证书	1280 元
全国《财务总监》MBA 高等教育双证班	高级财务总监职业经理资格证书+2 年制 MBA 高等教育研修结业证书	1280 元
全国《营销策划师》MBA 双证书班	高级营销策划师高级资格认证证书+2 年制 MBA 高等教育研修证书	1280 元
全国《企业总经理》MBA 高等教育双证班	全国企业总经理高级资格证书+2 年制 MBA 高等教育研修结业证书	1280 元
全国《行政总监》MBA 高等教育双证班	高级行政总监职业经理资格证书+2 年制 MBA 高等教育结业证书	1280 元
全国《采购经理》MBA 高等教育双证班	高级采购管理职业经理资格证书+2 年制 MBA 高等教育结业证书	1280 元
全国《IE 工业工程管理》MBA 双证班	高级 IE 工业工程师职业资格证书+2 年制 MBA 高等教育结业证书	1280 元
全国《企业管理咨询师》MBA 双证班	高级企业管理咨询师资格证书+2 年制 MBA 高等教育结业证书	1280 元



【授课方式】 全国招生、函授学习、权威双证

我校采用国际通用3结合的先进教育方式授课：远程函授+视频光盘+网络学院在线辅导（集中面授）



【颁发证书】 学员毕业后可以获取权威双证书与全套学员学籍档案

- 1、毕业后可以获取相应专业钢印《高级职业经理资格证书》；
- 2、毕业后可以获取2年制的《MBA研究生课程高等教育研修结业证书》；



【证书说明】

- 1、证书加盖中国经济管理大学钢印和公章（学校官方网站电子注册查询、随证书带整套学籍档案）；
- 2、毕业获取的证书与面授学员完全一致，无“函授”字样，与面授学员享有同等待遇，证书是学员求职、提干、晋级的有效证明。



【学习期限】 3个月（允许有工作经验学员提前毕业，毕业获取证书后学校仍持续辅导2年）



【收费标准】 全部费用1280元（含教材光盘、认证辅导、注册证书、学籍注册等全部费用）

函授学习为你节省了大量的宝贵的学习时间以及昂贵的MBA导师的面授费用，是经理人首选的学习方式。



【招生对象】

- 1、对管理知识感兴趣，具有简单电脑操作能力（有2年以上相应工作经验者可以申请提前毕业）。
- 2、年龄在20—55岁之间的各界管理知识需求者均可报名学习。



【教程特点】

- 1、完全实战教材，注重企业实战管理方法与中国管理背景完美融合，关注学员实际执行能力的培养；
- 2、对学员采用1对1顾问式教学指导，确保学员顺利完成学业、胸有成竹的走向领导岗位；
- 3、互动学习：专家、顾问24小时接受在线教学辅导+每年度集中面授辅导



【考试说明】

1. 卷面考核：毕业试卷是一套完整的情景模拟试卷（与工作相关联的基础问卷）
2. 论文考核：毕业需要提交2000字的论文（学员不需要参加毕业论文答辩但论文中必修体现出5点独特的企业管理心得）
3. 综合心理测评等问卷。



【颁证单位】

中国经济管理大学经中华人民共和国香港特别行政区批准注册成立。目前中国经济管理大学课程涉及国际学位教育、国际职业教育等。学院教学方式灵活多样，注重人才的实际技能的培养，向学员传授先进的管理思想和实际工作技能，学院会永远遵循“科技兴国、严谨办学”的原则不断的向社会提供优秀的管理人才。



【承办单位】

美华管理人才学校是中国最早由教委批准成立的“工商管理MBA实战教育机构”之一，由资深MBA教育培训专家、教育协会常务理事徐传有教授担任学校理事长。迄今为止，已为社会培养各类“能力型”管理人才近10万余人，并为多家企业提供了整合策划和企业内训，连续13年被教委评选为《优秀成人教育学校》《甲级先进办学单位》。办学多年来，美华人独特的教学方法，先进的教学理念赢得了社会各界的高度赞誉和认可。



【咨询电话】 13684609885 0451--88342620

【咨询教师】 王海涛 郑毅

【学校网站】 <http://www.mh.jy.net>

【咨询邮箱】 xchy007@163.com



【报名须知】

- 1、报名登记表格下载后详细填写并发送邮件至 xchy007@163.com (入学时不需要提交相片，毕业提交试卷同时邮寄4张2寸相片和一张身份证复印件即可)
- 2、交费后请及时电话通知招生办确认，以便于收费当日学校为你办理教材邮寄等入学手续。



【证书样本】(全国招生 函授学习 权威双证 请速充电)

(高级职业经理资格证书样本)

(两年制研究生课程高等教育结业证书样本)



【学费缴纳方式】(请携带本人身份证到银行办理交费手续，部分银行需要查验办理者身份证)

方式一	学校地址	<p>邮寄地址：哈尔滨市道外区南马路 120 号职工大学 109 室</p> <p>邮政编码：150020 收件人：王海涛</p>
方式二	学校帐号 (企业账户)	<p>学校帐号：184080723702015 账号户名：哈尔滨市道外区美华管理人才学校</p> <p>开户银行：哈尔滨银行中大支行 支付系统行号：313261018018</p>
方式三	交通银行 (太平洋卡)	<p>帐号：40551220360141505 户名：王海涛</p> <p>开户行：交通银行哈尔滨分行信用卡中心</p>
方式四	邮政储蓄 (存折)	<p>帐号：602610301201201234 户名：王海涛</p> <p>开户行：哈尔滨道外储蓄中心</p>
方式五	中国工商银行 (存折)	<p>帐号：3500016701101298023 户名：王海涛</p> <p>开户行：哈尔滨市道外区靖宇支行</p>
方式六	建设银行帐户 (存折)	<p>中国人民建设银行帐户(存折)： 1141449980130106399</p> <p>用户名：王海涛</p>
方式七	农业银行帐户 (卡号)	<p>农业银行帐户(卡号)： 6228480170232416918 用户名：王海涛</p> <p>农行卡开户银行：中国农业银行黑龙江分行营业部道外支行景阳支行</p>
方式八	招商银行 (卡号)	<p>招商银行帐户(卡号)： 6225884517313071 用户名：王海涛</p> <p>招商银行卡开户银行：招商银行哈尔滨分行马迭尔支行</p>

可以选择任意一种方式缴纳学费，收到学费当天，学校就会用邮政特快的方式为你邮寄教材、考试问卷以及收费票据。

the world that is creating opportunities and threats? Offshoring, outsourcing, etc., are huge changes that require people to think very differently about the way they organize, about the way they think about their business networks.

- New business models. Are there new business models emerging that you can adopt or adapt to deliver radical improvements in revenues or productivity or profits?
- Industry dynamics. Are there fragmented industries where significant value can be delivered through consolidation? Are there shifts in power in your industry that indicate that radical change is going to be required?
- Regulatory, macro-economic, political, societal disruptors. All of us recognize that over the last ten years there's been tremendous disruption in terms of regulatory changes, in terms of government destabilization in different parts of the world, emerging markets that are catching hold and really taking off, like China, like India, like some markets in Latin America, Eastern Europe.

So take a moment and stop and think. What are some of the disruptive changes in your industry that are influencing you to think very differently about where you might have to search for innovation?

What's important about disruptive change is that it can have two different kinds of effects. Disruptive change mobilizes entrepreneurial excitement and engagement. Entrepreneurs frame disruption as a source of opportunity. When they see a disrupted environment out there, when they see changes in regulatory environment, changes in technology, and new kinds of business models that may emerge, they say, "Yes. This is a place where I can find opportunity."

But large organizations often approach innovation and disruption much differently. Many large companies are paralyzed by their established organizations and stuck in their existing business models. As a result, they frame disruption as a threat. When they see changes happening, they start spending tons of money trying to prolong their existing business model, saying, "How can I ward off these disruptive threats to my existing business models?"

In this session, we will look at how to frame disruption more as an opportunity than a threat. Because while the threat may be there, it's the source of opportunity that is going to drive new ideas that lead to innovation.

Entrepreneurial Innovation Defined

We know it's important. Let's go back and take a quick look at what entrepreneurship is and how we think about it. And then we will get into the innovation process itself.

We define entrepreneurial innovation as "the relentless pursuit of opportunity without regard to the resources currently controlled." Now this is a really interesting definition. It doesn't talk about little companies and big companies. It doesn't talk about specific innovations.

What it says is that entrepreneurship is the pursuit of opportunity—a way of framing disruption as an opportunity as opposed to a threat. Entrepreneurship is looking at

opportunity. Second, it is relentless. When you are looking at radical change, especially, you don't always get it right the first time. And frequently it takes an iterative process; you need to iterate as you try to define what the opportunity is and how to exploit it.

And then finally, the definition says: "without regard to resources currently controlled." This is probably the area where large companies have the most difficulty. We frequently think that innovation is incremental in nature and can be handled within our traditional budgeting process. You've got resources already and you are going to use them to innovate.

What we are talking about today is more radical innovation. And as a result, you don't necessarily have the resources when you get started. The whole purpose of entrepreneurship is not only to come up with the opportunity but also to assemble the resources you need.

We also have a definition for the entrepreneurial innovation process. If we are looking at more radical innovation, it's a series of iterative, interlocking stages that extend from identifying an opportunity through sustainability. It's a process of experimentation to reduce uncertainty.

The Innovation Process

Let's look at the process. If we look at business complexity and time and start with the first stage of the innovation process, idea to opportunity, how do I take different ideas and turn them into an opportunity? Let me ask you, is an idea the same thing as an opportunity? Frequently people will say, "Yes. What's the difference? There's no difference between an idea and an opportunity."

The truth is, to qualify as an opportunity, you must determine that this idea looks like it is feasible and will drive value. So from an innovation perspective, to turn an idea into an opportunity I must frame the ideas in a way, usually with a business plan, that lays out how big this business could be and what capabilities are going to be required. So we put a business model around the idea and we've said, "We think there's something here that might be a good opportunity for us to pursue."

Product development to launch. Once I've defined an opportunity that I want to pursue, then the second thing I need to do is put the organization together and attract the resources needed to develop the product-service offering and take it to market. Now you will notice that squiggly line there. And at the bottom it says, "evolutionary change versus revolutionary change." When we are changing from one stage of the innovation process to the next—that's when revolutionary change occurs.

So it's at that point where there is the most radical change in the innovation process. When I'm looking at companies or people going through the innovation process, that's where I frequently see major mistakes. During the idea to opportunity phase, what do we have in terms of an organization? We usually have a small team that is sitting around the table, trying to come up with new ideas and frame them into a business plan.

When we go from idea and opportunity to product development to launch, we need an engineering team or a product development team. We've got to expand the

organizational requirements, the capabilities that are needed, and we have to start taking that opportunity and making it a reality, actually developing the product, developing the service, identifying which particular customers I am going to serve at launch.

Launch to sustainability. Once I've built the product, then I've got to go to market with it. When I go to market with the product, we are going to, once again, have to change the organization, build capabilities, and assemble resources. We now are going to need marketing. We now are going to need sales. We are now going to have to say, "All of these plans that we've had in terms of product launch, are they real? Can we really get the customers? Will customers really buy?"

Can we build the capabilities required to launch the product or service in our initial market? And, more importantly, can we scale it to the size where we can develop a sustainable business? And when I say sustainable I mean that it is delivering positive cash flow and that we can see that it will continue delivering profits over time.

And then finally, growing and evolving. Once I've reached sustainability how am I going to go after adjacent kinds of opportunities? How am I going to start using my four Es—enhancements, expansion, and extensions—to evolve the business. By the way, that fourth E that I mentioned, it's called exit. We always have to think about not only are we always continuing to grow with every kind of opportunity, but are there opportunities to exit?

So this is the innovation process. A lot of you might say this looks very similar to the product development process, to a stage-gate kind of product development process. And it does. But with entrepreneurial innovation, what we are looking at differently is the amount of uncertainty. And I will talk about that in a minute. So, the entrepreneurial process goes from idea to opportunity all the way through to launch to sustainability.

Once we have reached sustainability, we then get into a more evolutionary kind of growth and maturity phase, either high growth or a slower growth depending upon the opportunity. So the entrepreneurial innovation process is the first three phases.

Categories of New Ventures

The way you go through the innovation process is different depending upon the type of innovation or new venture that you are trying to build. So what I'd like to do now is to give you a framework for thinking about those different types of innovations and thinking about what's the risk and what's the approach that we use to manage risk as we move forward.

New ventures framework

The two-by-two that you see here frames two dimensions: the size of the opportunity—from small to large—which is on your horizontal axis, and then how easy or hard it is to execute, which is on your vertical axis, with hard being at the bottom and easy being at the top. Now, the first thing I would like you to consider is: if you had your choice of the type of innovation you would most like to pursue, what would you choose? Where would you want it to be on this matrix?

If you are like most people, you immediately say, "I want to pursue a category three venture—a huge opportunity that's really easy to do." Now what should we

call that kind of a business? What kind of venture would that be? It's a high-growth business. There's lots of opportunity but there's also risk involved when we operate in that space. What are the risks of a big opportunity that is fairly easy to go after?

If you think about it, the biggest risk is sustainability. If this is a huge opportunity, and it is easy for you, it could be easy for lots of other people, too. So, sustainability risk is high. When we have high levels of sustainability risk we have to know that we can go through the innovation process—all the way from deciding this is an opportunity we want to pursue to sustainability—very very quickly.

Can we go to market quickly? Do we have a way of getting lots of new customers to adopt fairly quickly? We will need to build the business on a platform that is very flexible and allows for very rapid growth. So our capabilities need to be very scalable. Ahead of time I will need to ask: How can we evolve the product? How do we evolve the market? How do we evolve and scale our channels?

Second, we are also going to want to know if there are ways to lock in customers, to lock in partners in your business network, etc.

Google and Amazon.com are good examples of businesses that have been built on a high-growth kind of business model, new ventures where they are able to build a platform that allows them to scale customers very quickly, enter new markets, and penetrate each market as they grow so that they are providing more and more products and services that envelop and create solutions for customers so that they stay with you longer.

Patent protection is important. But patent protection is only as good as your ability to fight it. I see a lot of people that say, "I've got a patent on that and that's what's protecting me." But if you're a small company and large companies want to come in, you might go out of business while you are trying to fight your patent. Or you might not have the resources to keep them out. You can't depend upon patent protection. It's important in certain kinds of businesses, but when pursuing high-growth kinds of opportunities, frequently we will see that patent protection becomes less of an important area.

So high-growth businesses are up in quadrant three. The problem is sustainability. The solutions are the ability to rapidly scale that business, both from a strategy perspective and from a capability perspective.

Category four are disruptive innovations. Here you are pursuing a large opportunity, but exploiting it will be hard. The kinds of new ventures that I work with are primarily in this category. They are the large, high-tech or biotech kinds of ventures. The key risk here is implementation and adoption risk. These are businesses where there may be an invention required—where there is a lot of uncertainty about whether customers will adopt or whether we can actually build the product in the first place.

Frequently, these kinds of innovations are going to take longer. They are going to take more money. What we think about in terms of managing the risk is our implementation needs to be able to scale over time. So if I'm going after these opportunities and I'm getting money at this point, I know that I'm going to need several different rounds of funding to actually get this new product developed and

get it to market. I'm going to want to be able to understand what I think the time frame is going to be between each stage and how much funding and resources I will need.

Second of all, this is where you see people getting capital from a number of different partners. No one person will be able to invest in this large-scale kind of innovation. So frequently in a venture community, you will see people syndicating the risk across several different venture funds, all putting in money during a round of funding. They're doing that because they need to manage the risk at each stage of the process. They are syndicating the risk across a number of different partners.

Project and program management are also important. Very structured project management, product management, and program management processes need to be in place as you go through stages of your innovation process.

Reducing the size and complexity. Frequently what we will do in the beginning is we will ask, "Can we actually scale the innovation and build this component of the product and then we can build the next component and the next component over time?" So we reduce the complexity of the project by increasing modularity of the products.

Building expertise and experience is also really critical here. We want people with large-scale innovation experience. We are going to want to have people leading these kinds of organizations that have experience doing fairly disruptive innovations like this, because experience and expertise are required.

When you are building disruptive innovations, there is a difference whether the innovation is new to you or new to the world. New to the world means you are going to be starting from scratch. So there will be even more risk and uncertainty. If it's new to you but not new to the world, one of the first things you are going to ask is: "Can I attract resources that will be able to provide the kind of expertise I need?" It still might be a disruptive innovation in that there is a lot of technological uncertainty, product uncertainty, or market uncertainty. But can I go out and get people that have at least done this before?

New ventures in category one are really interesting. For an independent entrepreneur, if it is a small opportunity yet really hard to do, I call it a "dumb idea." If you are going to launch a new business that you are developing on your own, you would probably not choose something in this quadrant. Now, the problem is, sometimes I think I'm building a disruptive innovation or high-growth business, but I really have a dumb idea that is disguising itself.

So continually ask yourself: "Is the opportunity really as big as I need it to be? Is this really as easy as I think it is going to be?" For established organizations, we are going to change that a little bit and add "mandatory" in there because sometimes there are things that you need to do. There are innovations that are needed to respond to regulatory compliance, SOX compliance, things like that, that are really not going to be a huge opportunity for you but you don't have a choice.

What's key is the same kind of risk pattern that you see for disruptive innovations is also relevant for "dumb ideas" or mandatory projects. So implementation and adoption are the big risks that you are trying to manage.

Now let's go up into the small opportunity but easy to execute category, I call these lifestyle businesses. For independent entrepreneurs there are opportunities to build very successful new businesses that are in the lifestyle quadrant. Not every business has to have a huge opportunity where you are going to have to think about scaling into a big business. The risk on this side, though, is what we call burnout risk and personal risk.

Many of the executives that come to my owner-managed programs are family businesses and have been in that quadrant for a long time and they like it there. That's where they want to be. But if the world changes and disruptive opportunities start to emerge, you will frequently see that a lifestyle business may no longer be sustainable.

And if it isn't, you must question whether you personally, as an entrepreneur want to grow your business. That's a huge decision that is a very personal one. Second, if all of your family wealth is tied up in one business, then from a personal perspective, you have a much higher risk of losing that wealth than if you diversify. So if you run a family business, if you run a small lifestyle business, the other question that you must deal with is have you thought very carefully about diversifying your wealth and not having all of your wealth tied up in one investment opportunity, which happens to be your personal business.

If you're an established company, there are two changes that I make to this model. One is that lifestyle businesses can also be what we call low-hanging fruit kind of opportunities. These are small, incremental innovations that are not going to be a huge opportunity but there is value. These are incremental innovations—not large innovations. The second is that, as mentioned earlier, there are some opportunities that are mandatory in category I.

Let me take you through some businesses and see how they change. Because being in any one of these quadrants is not usually static. You don't necessarily stay there. So it is necessary to manage the *space* of opportunity not just the quadrant you are in today.

Medtronic Carelink implementation

First, I'd like to talk about a company called Medtronic. Medtronic is a fascinating case. Medtronic founded the implantable pacemaker industry. A pacemaker is a small device that fits underneath your skin around your heart. And it has leads that go to your heart. If you have a problem with a rhythm disturbance, it will fire and provide a normal rhythm for you and is used to treat specific conditions. Those conditions can be due to heart disease of different kinds, some congenital. Most of it, though, is due to congestive heart failure or heart disease that's chronic and happens in later stages of life.

Medtronic's pacemaker revolutionized medicine and it became a tremendous innovation for the company and allowed Medtronic to grow from a small, two-person operation operating out of a garage in Minnesota to a \$4 billion company by the late 1980s.

By that time they dominated the industry and, over time, competitors started to come in and started to steal share. Plus, they were only focusing on late-stage kind of heart disease. So there was a lot of market opportunity where they didn't focus and the chronic heart disease market itself was limited.

In the late 1980s Medtronic executives asked, “Can we expand our footprint? Can we expand outside of that one product market area?” And the company spent the majority of the nineties going into some different businesses but not actually changing the focus or vision of the company. In 1999, they went through a visioning exercise and said, “We’re going to continue to focus on medical therapies and medical devices. But instead of only focusing on the device itself and end stage heart disease, what if we go back and look at the ability to improve the quality of life through patient management solutions, not necessarily only from the device?”

One of the first business plans that came out of their visioning exercise was remote monitoring. Remote monitoring meant that if I have a Medtronic pacemaker in place and I’m a patient at home, what if we could monitor remotely the rhythm of the pacemaker, how well it is doing, etc.? And I would not have to go in for doctor’s visits quite so frequently. What if physicians, patients, and families could all get information on how the pacemaker is doing and how the treatment is doing in real time from home?

So that was the idea. This was an idea that several other competitors were starting to look at, many of them new competitors. Hewlett Packard and some of the technology companies in the late nineties were also pursuing remote monitoring solutions in different areas. When Medtronic went into this industry their first business plan was between a dumb idea and a disruptive innovation.

Building this new business was going to be very hard for them to do. But it was a huge opportunity because it allowed them to go into a brand new space. Second, it would connect and provide a new platform for their existing business and so would represent a new revenue stream— And would better envelop the customers, the patients, the physicians, and their families and tie them into Medtronic kinds of solutions. So it was a very important innovation for them but it was going to be very hard to do.

Contrast that with the companies that already did provide remote monitoring in other industries—your home monitoring systems, Hewlett Packard, Honeywell, etc. They had already entered this market and were looking at ways to go forward.

The difference between where Medtronic stood and where others stood said that there’s a problem here. What did they do? They acquired a company Paceart, which already provided remote monitoring systems. By acquiring the platform, they were able to take this idea and move it from being a disruptive innovation for them up to being a more high growth. Because now I have a platform upon which I can develop my solution much more quickly.

By acquiring Paceart they also tapped into a revenue stream. This was a business that was already in place. So, by seeing—I’m down here. My competitors are up here. This is a big opportunity. Asking what would be needed to move upstream was a critical way of thinking about how I can use these four different quadrants to rethink how I’m going to implement innovation. Once they got Paceart, they were able to launch not only cardiac rhythm monitoring for their pacemakers but they were also able to launch a whole new set of businesses in remote monitoring for devices that treat spinal, for ear, nose, and throat, for fainting, etc.

Each one of these new innovations could be developed using the platform that had been built for CareLink. So as a result, what they were able to do is layer in a

platform, layer in a business, reduce uncertainty around technology, reduce uncertainty around market acceptance, reduce uncertainty about resources and implementation, and then use that platform to build lots of new revenue generating businesses better, faster, cheaper than they could before.

So this is how to think about implementation. It requires experimentation. It frames how to manage uncertainty and risk management as you go from idea to opportunity, product development to launch and sustainability, and then through growth and evolution over time.

Linking Innovation to Economics

We've looked at implementation. We've looked at risk. Now let's link that directly into economics. When we are looking at new ventures, we don't have profitability. We don't have income statements. So the way we think about investing and the way we think about the economics of the business is that we look at cash flow.

Here you see a typical cash flow curve. It usually starts with a period of investment, which might be small or might be large. If you are in a different one of our four categories of innovation, we are going to have a very different look at that curve. Disruptive innovations usually take a lot of time and they cost a lot of money. At some point you start generating cash. When you start generating positive sustainable cash flow, you start into the growth phase. At some point you begin to pay back what you've invested and start generating value for the original investors and for new investors coming in. The depth, the breadth of that curve, is the investment that we are looking at.

Now the problem is that when you are at the start of that curve, you don't know for sure what the shape will be. You don't know for sure how deep that investment trough is going to be or how big that opportunity is going to be.

So from a venture capital or an investor's perspective what we are looking at, as we think about a brand new innovation, is that at the very start of that curve, we are looking at the assumptions behind what we think the curve is going to look like. Is it a big opportunity? How much are we going to have to invest? And then, what happens if we relax those assumptions and look at best case-worst case scenarios around some of those critical assumptions? What happens to the curve?

The risk involved is dependent upon how that curve responds to relaxation of the different assumptions when you do your best case-worst case sensitivity analysis. As you can see, this curve links to the innovation process that we talked about—with new ideas and the opportunity analysis being at the very beginning of that curve and moving into growth and evolution as you start into capturing the value of the high-growth phase of the business.

There are four different horizons, then, that you as executives need to be concerned with. Horizon one says, "I'm looking directly ahead. I am at the mature phase of the curve." In a mature business, our investment logic is that we want to invest in opportunities to reduce cost and improve asset efficiency. We want to have the most flexible platform possible and we want to generate as much cash as possible so we can start using the platform and the cash to grow new businesses and to go backward on this curve.

What I often see, however, is that a lot of large companies, when they are at the mature stage, are continually investing in trying to extend their current business longer and prolong it for a longer period of time without thinking about how do I use the cash I'm generating and the business platform and position that I have to start looking for new opportunities. So a big takeaway from this lecture is that if you are at the top of the curve, you have to invest to generate cash. But more importantly, you should be asking how you will use that cash to drive new innovations.

Horizon two businesses are high-growth businesses. These are businesses that have gotten past sustainability and are now on the high-growth trajectory and are starting to generate and to grow revenues. But they are also investing cash in growth.

If you take out investments in growth you can look at operating profit. And there is a big difference in profit growth and profitable growth. Profitable *growth* puts the emphasis on the growth requirement. It says, "I'm growing revenue. I'm growing share. There is more market opportunity I can go after. I can evolve my products. I can evolve my markets, I can evolve my capabilities to generate revenue and to generate market share." Profit growth can be achieved by simply taking costs out of your business. And if that's all you do over time, you can manage your way into decline.

Horizon three and horizon four businesses are what I call emerging opportunities. Horizon three businesses are where we look at an opportunity that's just getting started or just starting to deliver value but not yet at breakeven. And horizon four business is where there is lots of venture investing, R&D, etc., that's required to get the innovation defined. In emerging opportunities, what we are really looking at is funding experiments with the goal being rapid learning to move into the high-growth portion of the cash flow curve.

The cash flow curve can also be used to think about the window of opportunity. Analysis of the window of opportunity helps you determine when to enter and how fast you need to enter to be able to capture the value in the marketplace. If you think about Medtronic's decision to buy Paceart as a strategy for entering the remote monitoring market with CareLink, this is an example of an established player that buys a business to acquire the platform needed to exploit an opportunity when the window of opportunity is open but is also expected to close quickly.

In that case the business, Paceart, became the platform for the CareLink remote monitoring business. They were able then to change the window of opportunity and get into the business just as it was starting through its high-growth phase. In doing so, they reduced some of the risk that would have been present if the company had chosen to enter at the very beginning of the cash flow curve.

Not all entrepreneurs or established players need to buy. Sometimes it's appropriate build the business organically. The important takeaway is that understanding the window of opportunity helps frame the buy-or-build decision.

The decision to build requires that the window of opportunity remain open longer and you may incur more risk because you have to invest in building the business from the ground up. So one of the things the cash flow curve does is it give us a sense for timing, when we need to enter, how long we have to enter, and where on the curve we want to enter.

The second thing the cash flow curve does is it gives us a sense for the cycle time of innovation. IBM, for example, got caught in the trap of measuring the cycle time of innovation using the mainframe standard. They were used to having a long timeframe between when they launched a new product line or launched a new kind of innovation and when they would have to start improving the innovation or coming up with a new kind of product. When they launched the PC, it was one of the most successful launches in history. And a lot of people forget that because we think of IBM as missing the PC market.

But they missed the PC market not because they didn't launch correctly or launch quickly or have a good product launch—they missed the PC market because they didn't recognize that the timeframe for innovation on that new product would have to be much quicker than the timeframe for innovation of a mainframe. They treated the PC, which had very fast, short-cycled innovation timeframe, like it was a mainframe with a very long cycle timeframe for innovation. And over time, they fell behind.

So analysis of the window of opportunity not only tells you when to enter and how to enter, it also tells you what's the rate of innovation that is going to be required once in the market.

Putting the Insights to Work

Now I'd like to refer you to the materials that we've pulled together for you in your packets. Those packets have tools—some of which I've talked about along the way—and they have tutorials that will allow you to dig deeper into some of the areas that we highlighted in the beginning but that we are not going to be talking about today. It also has a step-by-step guide for thinking about how to turn disruptive opportunities, opportunities that come because of changes in the marketplace, into sustainable advantage.

We have provided you with a series of next steps, ways to think about using the tools to drive innovation into your organization and to go back and start to do the kinds of analyses to actually identify the opportunities, to develop those opportunities into businesses, to pitch those businesses, assemble resources, and develop sustainable advantage from them. Finally, we've also given you a set of readings that you can use for further information about some of the topics that we have highlighted in this introductory lecture.

So, with that in mind, I'd like to wish you tons of success as you start jumpstarting innovation in your organization or jumpstarting innovation in you careers, if you are thinking of pursuing as an independent entrepreneur. And I hope all of you are able to use these materials to generate ideas and exploit tremendous opportunities. Thank you very much.