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JOSEPH HADZIMA: OK, you met the financing sources. You got a little bit of an insight there. Part of what you're going to need when you talk to them is some idea of what the financials look like for your business. And joining us tonight to show you how to do that is Charlie Tillet.

Now, Charlie's been doing this for-- he was in the \$10K. I think he'll talk about that a bit.

CHARLIE TILLET: Yep.

JOSEPH HADZIMA: And I was in-- I've been doing things around the world-- I was in Istanbul two years ago, in a setting with 25 teams from around the Muslim world. And I was mentoring a team from Pakistan. And I'm looking at their slide deck, and I get to the financials, and I say, where did you get this template? And they didn't quite understand what I was saying. And I'm looking at it, it was Charlie's template that he uses in the course. So his speeches here have transformed financial plans all over the world, in Pakistan, and he's graciously come back to talk to us.

Charlie was the person I mentioned who I met outside of the MIT Enterprise Forum meeting, and asked him what he was doing, and that led to a whole career with a bunch of entrepreneurs up north.

CHARLIE TILLET: Yep.

JOSEPH HADZIMA: And I'll sort of let you pick it up there, Charlie.

CHARLIE TILLET: OK, great. Thanks, Joe. What was the first story he told?

AUDIENCE: Jumping in your pickup truck.

CHARLIE OK, yeah. So we will get to that.

TILLET:

So it's great to be here tonight. I've got probably twice as many slides as I should cover in my little over an hour that I've got. So I'm going to go quick. But feel free to ask any questions as we go along. And what I'll try and do is, I wrote down a few notes, listening to the panel, the great panel that we had here, maybe some terms that they brought up that they didn't really give enough explanation or background on. So I'm going to try to touch on those as we go as well.

So tonight we're going to talk about your business plan financials. Putting together that critical spreadsheet that you've got to have when you walk into that meeting, right? Or when you send someone your deck, and how to put that together. But we're going to step back a little bit.

And as people say, I was a CFO of a couple of companies. But part of my job was being a salesperson. And what I would do is I would walk into these meetings with a deck and with a team. But my job was to sell that team to the investors. And in return, they would give us money, and we would give them stock. But what we're really selling is the team, and the concept of the business that we're trying to build.

Then, will talk about what is your business model, and building your financial projections. And so this template that I'm going to show you tonight is up on the website. There's a new template this year. It's got a little more detail in terms of cost of goods sold, in case you're doing something that's got more of a hardware component. This gives a little more detail on that. But that was what I was trying to think of.

So this template is going to be out there, so that you can download it. It's an Excel spreadsheet. You can start plugging in your own stuff in it. And I'll tell you the things that you need to take out when you actually show it to someone.

And then, the last part is we're going to talk about sharing the pie. So I've added a couple things to this talk about putting together your business plan spreadsheet. And one of them is talking about the venture capital perspective, and helping you sit it in their shoes and evaluate your opportunity.

But also thinking about the other uses or takers of equity in your company. And by equity, I mean stock. So I've got couple slides on here on thinking about your company, and all of the people, and all of the entities that could potentially get stock in your company, and what that

does to your ownership in the company.

So my background is I was a graduate from Sloan in '91. That was the inaugural year-- oh, well, in 1990 was the inaugural year of the \$10K Contest. Well, it's now the \$100K. And we were the third place team. So rather than get, you know, I think it's now \$20,000 or \$30,000 worth of free legal service and accounting service, we got \$300 to split between the three of us.

So since that wasn't enough to start our business, we all went our separate ways. But what I did, Joe introduced me to some guys who had an interesting idea for some network monitoring equipment. And they didn't really know how to build a business around that. And that experience in the \$10K Contest was critical, because I'd worked with these two guys. And we'd sat at the-- we didn't have Wi-Fi at that time-- so we're sitting in the computer lab, plugging it into a spreadsheet late at night, going, well, if we increase the sales price by this much, what does it do to our business? If we are able to reduce cost by this much, what does it do to our business? How many salespeople are we going to need?

And I went through that whole exercise of building that template for the business plan contest. And because of that, I had tremendous credibility when I started. I knew what I was talking about when I went in to talk to these guys who had this data communications product. And I was able to convince them that I could help them build their model. And sure enough, I was able to do that. But it was the entering into the contest, and working with the team, and working through all of that, that helped give me that experience.

The company was NetScout Systems. We completed several rounds of venture financing there, and went public in 1999. I then got involved with a dot.com company, which fortunately didn't last too long. And then was at a Homeland Security company that made bomb detection equipment for airports.

So completely different industry, but the same metrics. The same tools apply. The same spreadsheet that I'd built to get NetScout off the ground was the same spreadsheet that I used to get Reveal off the ground. And it's the same spreadsheet that you guys can all use to get your business off the ground. I raised \$125 million in more than 10 transactions over that period.

So you're probably saying to yourself, I'm too busy to do my financials. Right? I've got more important things to do. One, they're not going to be right anyway. I mean, who can sit here

and say, we're going to be able to be spot on on our financials? Right?

The second is, the VCs aren't going to believe it anyway. They're going to look at your numbers, and they're going to say, they've got their own ideas of this.

And the third is, you've got more important things to do. Building the team, figuring out what the product is, and looking at who your customers are.

But the reality is the financials are the scoreboard, the scorecard for your company. So if you don't know what you're shooting for, then how do you know whether you're making progress against those goals?

But the more important thing is kind of what I was talking about with me and my team in the \$10K Contest. It helps you understand what your key assumptions are, because you've got to put those assumptions into either numbers or formulas. You've got to understand what the drivers are. So if you're able to increase prices by 10%, what does that do? Is that an important lever or not? Or is it more important to get your costs down? Or is it more important to outsource your development and get your R&D spending down? Is it more important to do software as a service model, or sell it is a product? And how do those things impact how much cash you're going to need? So it's a great exercise that helps you understand what's going on in your business.

Because as the CEO of your company, the number one job is to maintain the cash in the company. It's the oxygen supply. And without that, you could be doing everything else right, but it doesn't take long for people to start walking out the door when they're not getting a paycheck. Now, your management team-- we've had those days where I have to go to the guys and say, hey, guys, there's not going to be anything in the envelope this week. But for your rank and file employees, you can't be missing payroll. And your vendors will only let you stretch out payables for so long.

So you've got to know where you stand with your cash, and what cash you need. So you don't need to be an accountant, but you've got to understand these key terms. And you've got to be able to discuss them. Because the investors up here, they also don't expect you to be an accountant. But they do expect you to understand the drivers in your business, and what the key metrics in your business are.

In Reveal Imaging-- Reveal Imaging was a company that made bomb detection equipment.

And there we had an all-star management team. We had five guys-- this was founded in 2003, 18 months after 9/11-- we had five guys who'd been in Homeland Security for more than a decade each. So there were a lot of people who wanted to get into Homeland Security on September 12, OK? But there were not a lot of people who were in Homeland Security, the Homeland Security business, on September 10. And we had five of those guys here. So we had a market opportunity.

The Congress had said, all passenger bags that go on a passenger airliner in the United States have to be screened for explosives. And we want a machine that can automatically do that. We don't want people looking at X-ray images. And there were machines on the market.

These guys had actually-- of the eight machines that had been certified-- these guys had been involved in getting four of those machines certified. So we really had an all-star team. They had come up with an idea for a product that was half the size of the existing equipment. Also half of the throughput, but half of the cost.

And so those metrics were very compelling for the smaller airports like Burlington, Vermont, or Nantucket, Mass, rather than the Logan's. But there's 500 airports in the country, and one by one they were getting ticked off by our competitors. So we had an opportunity to get to market that we had to get to fast, because once those airports were staffed with our competitors' equipment, they were no longer an opportunity.

So we went out, and we hit the ground running. And we started raising money the first day we got together as a management team. We raised an angel round within 90 days of \$1 million dollars. And then, within six months, we raised our first venture round. And it was a \$5 million, but it was in two tranches. The tranches were a \$5 million tranche, and a second \$5 million tranche, based upon hitting milestones. Because we wanted to raise as much money as possible, but our investors were reluctant to give us everything up front.

So we reached this compromise, where we said, OK, we're going to hit some milestones, and because we had the financial plan, and we knew how far \$5 million would take us, we knew what we could get done before we ran out of money. And so we were able to pre-negotiate an increase in value upon hitting that milestone. So it was kind of a win-win, because we did not have to spend-- once we raised the \$5 million, we didn't have to immediately start thinking about raising the next \$5 million, because we had that kind of in our hip pocket.

All I can say is that, as soon as we raised a round of financing, I started thinking about the next

financing that we were going to do. It could have been bank financing, like an equipment line, which is simply as you buy equipment for your manufacturing facility, or as you buy computers for your software engineers, you send a copy of the invoice over to the bank, and they will provide-- they will give you 90% of that money back-- and you now have a loan to the bank.

So it didn't look like a lot of money, \$500,000. But as we were getting close to running out of money, and we hadn't met that milestone there we had committed to to get the second \$5 million, that \$500,000 was very important to us. Because that gave us an extra three months of runway to get closer to the goal.

So I'm going to kind of take you behind the scenes to think about what does a venture capitalist want. When they put in their money, they're interested in getting 3x to 5x absolute returns. So if they put \$1 million into your company, they want to get \$3 million back to \$5 million back, on top of the \$1 million. So they've got to get \$4 million to \$6 million back. And if it's \$5 million, do the math.

Their investment horizon is five to seven years. And what I will say is that, when you take venture money, that clock starts ticking the day that that money gets wired into your account. And while five years seems like forever, the investors realize that five years goes by in a heartbeat. And they will start pounding you to run faster than you think you can possibly run from day one.

And it's motivating, and it's a great thing. And if you have the right partners, they're helping you do the right things. But you got to recognize that it's going to be-- I think they admitted up here-- it's going to be a very intense environment when you take that money. So you better be prepared for it when you take the money.

They also want to get-- I mean, you heard up here that they want to get a significant amount of money invested. It depends on the firm. Some firms might want to put in \$1 million, some firms might want to put in \$5 million. It depends on the firm. But they want to have a significant amount of money invested. And they want to have a significant ownership. So if \$5 million is their target, they don't want to put in \$5 million and get 10% of the company. They want to have-- at an early stage investment-- they want to have a significant amount.

So the formula to think about how much equity you have to give up is the percentage of equity that the venture capitalists are going to get is the money that they invest-- and we'll have some examples on the next page-- divided by the pre-money value plus the money that they

invested.

Now, that's the formula. It doesn't really give you the answer, because what's the pre-money valuation? But as you heard up here, kind of where is the market today, he was saying he sees a lot of companies in the \$3 million to \$6 million pre-money range, right? So there is kind of a sense of where the market is today, and what other companies are getting. But where that pre-money valuation comes in, that's the key to the negotiation that you have to do. The other part is how much money they're investing.

So if we look at a couple of examples here. Say a Series A round, \$5 million invested on a \$5 million pre-money. So we take the \$5 million invested, we add that to the pre-money of \$5 million. It's 5 over 10, it comes out to 50%. If there's a Series B, let's say it's \$10 million invested on a \$15 million pre-money. That'd be \$10 million over 10 plus 15, would be 10 over 25, or 40%. But recognize that when the Series B money comes in, the Series A investors get diluted by the same 40% that everyone else gets diluted by. And I have an example walking through that.

Typically, the A and the B investors are going to be the same people. So the B investors are kind of diluting themselves. But recognize that that dilution happens. So don't think that you're giving up 50% of your company, and then 40% of your company, and you're left with 10% of your company. You're really left with 30% of your company, right?

So if an investor is looking for three to five times on their money, and they've put \$15 million in, and they own 70% of the company, then three times the \$15 million invested is \$45 million, plus the original \$15 million back, so they've got to get \$60 million. They own 70% of the company. So that company has to be valued at \$85 million to \$130 million for them to get that type of return. And so in order to get so that valuation, you've got to grow your revenues to \$40 to \$60 million.

So there's a lot of businesses that you guys could start that can grow to-- you know, another comment you heard here was make sure that your investors and your opportunity and your investment dollars are aligned, right? One of the big problems was people going after what turned out to be a small opportunity with too much capital. So the problem is, is that once someone has \$15 million invested in your company, you've got to go after the big return.

So you could have a business that could be a great business for you and a couple of your MIT

pals that goes to \$5 million in revenue, or \$10 million in revenue, and there's three of you, and you each own 33%, and you have no outside income, and no outside investors, and it's very profitable. It could be a great business that could be just a gold mine for you, but it would not be an appropriate investment for some of our panelists here. And if they had come in as an investor, then there's going to be a mismatch, and a lot of tension. Because you can't get to a happy place for both of you.

So I know that this screen's a little bit hard to read here, but let me just walk you real quickly through. If you've got a founding group here that has four million shares between all of the founders, they've got 100% of the equity, and there's 100% right there. You then bring in some early employees and give them-- and there'd be a list, I have a list in the back of showing kind of who would get what-- but you have some early employees, and maybe some advisors, that get a number of shares. And so already the founders get diluted a little bit.

They then bring in an angel round of \$500,000 at a \$4.5 million pre-money. So we know for our formula, \$500,000 divided by \$5 million, the angel investors are going to get 10%. In this case, and in all these cases, new shares are issued. The founders continue to own their four million shares, but now there's five million shares in the company, and the founders have been diluted to 80%, OK?

We now have kind of the classic A round venture capitalists come in, and they put in \$5 million at the \$5 million that I talked about earlier. They get 50%. But one of the things that is going to happen when the A round comes in is the investors are going to want to see that you have an option pool so that you can issue stock options to your employees. Because all employees like stock options, and it provides extra incentive to your employees. But the investors are saying, we don't want to be diluted for the first 100 people that you hire.

So you've got to set aside options to take care of those people without them being diluted. So they still get their 50%, but you've got to create this pool. And in my example, it's 12%. But it's somewhere in the 10% to 20% range, right? And that's a topic for discussion and negotiation with your venture capitalists. Anything I'm saying wrong here, feel free to hop in.

So then we have our final round is that \$10 million at \$15 million, and these investors get 40%. Notice the A investors are now down to 30%, and our founding team is down to 18.2%.

So this kind of walks you through the progression of how stock gets distributed to both employees, angel investors, and venture capital investors. Yep?

AUDIENCE: So the question I have is other than the stock distribution, do they get more control because they ask for more seats on the board? Is that something which happens a lot when the second round and third round happens?

CHARLIE TILLET: So the question is, do they-- so first off is the investors are going to get preferred shares that have many more rights than the common shares, OK? And there will be anti-dilution provisions, there will be ratchet provisions, in case there's a down round. But probably the most important thing that will always happen is that they will get board representation.

And that is a little bit of a negotiated-- it's not negotiated that they have board representation, but what I've seen is, so let's say that you're the founder, you say we have two seats, the founders have two seats on the board, your venture capitalists come in, they get two seats on the board, and then you agree that the fifth board member will be mutually agreed upon.

And you've got to figure out-- again, if you have problems deciding on a mutually agreeable fifth board member at this stage in the relationship, then these are not the right venture guys for you to be working with, OK? So it should be pretty easy to find someone that everyone agrees has domain knowledge, has expertise in the field, is entrepreneurial, and is going to be kind of neutral, right?

So does that answer your question?

Yep?

AUDIENCE: Yeah, on a previous slide, you were talking about, say you've taken \$10 million in VC money, but it turns out the opportunity was smaller. It's only \$5 million in revenue per year. What are the options, then, there?

CHARLIE TILLET: So her question is, let's say you've taken more money than the opportunity. There's really no happy ending there, because the investors are going to want to get their money back.

And a company that grows to \$5 million, it's kind of the walking dead, right? So you're now making enough money to where you're not going out of business, but there's another problem there, is that companies that only get to \$5 million and \$10 million-- now, I don't know, how much revenue does Pinterest-- you know, there's a lot of companies out there that have no revenue and have tremendous valuations. But let's not plan that we're going to catch lightning in a bottle, OK? So a company that has \$5 million to \$10 million in revenue, the reality is that

there's a very small market. Who's going to buy a company like that?

When we were at Reveal Imaging, we grew the company to \$100 million, and we grew the company to \$50 million in revenue, but our buyers were aerospace defense companies that are huge. And they were willing to pay us \$125 million for \$50 million revenue, but nothing more than that. They were only willing to pay us kind of 1.5 times revenue. They were hoping that we would have \$500 million in revenue, because they were willing to pay \$1.25 billion.

But the problem is that a \$5 million to \$10 million company doesn't get any big company who's your-- it's too small to go public, and the big companies, it's not big enough to move the needle. Especially if you've already proven that it's not going to go like that, right? You've already decided that it's going to go \$5 million, \$6 million, \$7 million. It doesn't get anyone excited.

So the business model, and in my mind-- I mean, you heard the term used a couple of times on the panel tonight-- how I think of it is it's an income statement in percentage terms. And we'll show you some of the business models from a number of companies in a number of different industries. But when you think about your business model, think about your business reaching critical mass. Do you have to have some kind of geographic dispersion? Or do you need a critical mass of sales in order to get your volume pricing down? Or maybe it's the number of customers that gives you some kind of synergy. So when you think about your business model, think about it, it's in the happy times, right? It's reached critical mass, and it is kind of hitting on all cylinders.

So how many are Course 15? OK, maybe about a third, or maybe 40%. So this is going to be a little bit boring. This section is going to be a little bit boring for you guys, but I want to make sure everyone's on the same page here.

So when we talk about the income statement, we start at the top. And it's your sales number, also called your revenue number, and that's the products that you're shipping out the door, or the service that you're providing, and the dollar number that you're putting on that invoice. So it's after any discounts that you give. It's after any kickbacks or anything. It's the number-- when you send out an invoice to that customer, what's the dollar on that invoice, and what's the check that you're going to get from that customer.

Your cost of goods sold is the material costs, the labor it costs to build your product, it's the facilities in which that product is built, but it's also your support cost. So if you ship a product,

and you have a one year warranty, or you have a tech support line that people are calling, that's part of your cost, too. So you've got to staff that tech support line. You've got to man it, maybe it's 24/7. If you've got a hardware product, and it breaks within the warranty period, you've got to fix that. You've got shipping costs. You might have to send someone out into the field, if you've got a big machine like we had at Reveal that weighed two tons.

So those are all the things that go into your cost of goods sold. It's not your R&D. So it's not your programming cost. Your product development costs go down in R&D.

Then, you have your three main departments. Sales and marketing is self-explanatory. R&D would be all of your programming, product development, any material that gets bought as part of your product development process. Then, your general and administrative is kind of everything else. Your CFO is in there, your CEO is in there. HR, IT, your facilities, your facility staff for the non-manufacturing facility.

And at the bottom is your operating profit, or EBITDA, earnings before interest, taxes, depreciation, and amortization. And I like to use that as the yardstick, because it gets really complicated adding in capital expenses and depreciating stuff, and that kind of obscures what's really going on in your business. So I would urge you in your plans don't depreciate anything, and also don't start allocating your general and administrative expenses across other departments. Just let them sit in your G&A.

So I get a lot of business plans. I'm happy to look at anyone's business plans. My email is at the end of this presentation. Any time, whether it's part of this class, or any time in the next 10 years, you want to send me a business plan, say, I'm getting ready to make a presentation. I want someone to look at this and just make sure it's not totally crazy. So I get a lot of business plans.

And the first thing that I do when I look at a business plan is I look at the top line, and say, how big is this business going to get? What is the market opportunity here? So here's an opportunity, they think it can grow to \$75 million.

The next thing that I look at is, in year four, kind of the happy times, once they've reached critical mass, what does this business look like? What are the gross margins? I've worked in companies that have 80% gross margins and companies that have 50% gross margins, and I can tell you it's dramatically easier to make money and run a business when you have 80%

gross margins versus 50% gross margins. It's dramatically different.

And then, where are the big expenses down here? What are they spending on R&D? Particularly, what are they spending on sales and marketing? Because most firms end up at about the same place in R&D spending once they reach critical mass. They end up about the same place G&A spending. But the sales and marketing wildly varies, depending on is it a consumer product, is it a business to business product, is it a luxury product that you have to do a lot of advertising, is there a lot of trade shows. So it depends on your whole sales strategy and distribution strategy, and that shows up in your sales and marketing.

The last thing that I look at is kind of the operating profit over the this four year period. Because that gives you a pretty good yardstick for how much cash this company is going to take to get to profitability. It's not perfect, but it's probably within 20% or 30%, which is a good-- you know, it at least says to me this company, \$3.5 million plus \$2.5 million is \$6 million, maybe it lost a little bit here in year three, so it's \$7 million. It's not a company that's going to need \$20 million. But it's also not a company that's going to need \$1 million or \$2 million. So it gives you just a sense of what this company needs.

Now, let's say you're looking at your business plan. I would urge you to look at the same thing. Start at the top line, and say, do I really think this business can do this kind of revenue? I would also urge you to look at year four or year five, whatever it's going to take you get to that place, the critical mass, and say, does this business model look like other companies in my space, or is it different? And if it's different, that doesn't mean it's wrong. It just means that you better understand why it's different. Maybe you're doing something dramatically different. Maybe you've got some tremendous cost of goods sold value that other companies don't have. But you've got to understand that.

Then, I would urge you to think about a year one, because thinking about expenses in year four is a very difficult exercise. Because you can't even-- I mean, here you are, you're getting your business off the ground. It's hard to think about if I had \$75 million in revenue, where would that money be spent. But it's very easy to think about the next 12 months. And who are my key hires? And how much are those people going to cost? And what are the stuff that they're going to need to buy to help them do their job? And you're probably not going to have a lot of sales, so you don't really need to think too much about cost of goods sold yet. OK? But you need to start thinking about what are my staffing priorities, and what are the things that we need, and where are we going to locate our business, and what we don't have to spend on

facilities, and that kind of thing.

And then, while year one should be fairly easy to do, year two is not that much more of a stretch, because you are ready have kind of thought about where I am in month 12. And so you just kind of extrapolate that into what are we going to do once we start having revenue? OK, so what is my support team going to look like? What is my sales team going to look like? And put some numbers on that.

And then, once you've done that, look at where your percentages are out here in year two. And you already looked at where they are in year four. And kind of make year three as kind of a blending process, OK? Now, you're not going to do this on an annual basis. I'm going to urge you to do it on a quarterly basis. And we'll get into those specific spreadsheets and talk you talk you through that in a bit.

So the business model in terms of this percentage of income, or percentage of revenue, exercise helps you think about what your business is going to look like, and how you're going to get there. It's going to show how your business is going to make money.

So let's look at a number of different companies, OK? This is a number in the retail sector. You guys all know them. Walmart, the low cost leader, Target's kind of a middle market, and Nordstrom is more high end. What has categorized these businesses. They all have crappy gross margins, right? 24% for Walmart, 34% percent for Target. They spend nothing on R&D. Target should probably spend a little something on their IT department, though, right?

Now, all of this information is available from the Securities and Exchange Commission, or you can get rid of Yahoo Finance now. So just going to Yahoo Finance, you can pull up the annual reports. You can get all this information off of there. Most companies do the lump sales, general and administrative expenses together. So I don't have a breakout on what they're spending on sales and marketing versus G&A.

But you can see the sales, and SG&A comes in kind of across the board here. But not tremendously profitable. But very high annual revenue. I mean, look at Walmart at \$344 billion. So 6% of a big number is still a big number.

One of the things that's useful to look at, not comparing yourself to these companies, but comparing yourself to your peers, is going to be looking at revenue per employee. So I just threw this on here so you could-- it does tell a lot how companies within similar industries have

very similar revenue per employee. And in retail, it's in the \$150,000 to \$200,000 range.

Let's look at the restaurant business. It's probably even worse, right? Again, terrible gross margins, but actually the profitability is a little bit better than the retail stores. But look at the revenue per employee, \$45,000 per employee.

So think of this. The cost of goods are 68%. And a lot of that's got to actually be meat and potatoes, right? So how much money is actually left over to pay-- if your average employee is \$45,000 per person, you can't pay that person \$45,000 a year. So this idea that they're going start being able to pay fast food workers \$15 an hour, which is this big argument, there's just not enough money there. It's a crazy business here, and I suspect that there are a lot of part-time workers. But it is an interesting fact here that all these businesses have such low revenue per employee.

Let's look at some interesting companies now. Cisco, very good gross margin, 64%. We see R&D is at 13% and operating profit at 25%. These might be a couple years old, but they're in line with this. And revenue per employee is \$573,000 per employee. Think of that versus \$45,000 per employee, OK? So you can afford to pay your Cisco employees \$100,000 to \$125,000. You can't afford to do that at McDonald's, right?

So again, these are characterized by R&D spending of kind of the 10% to 15% range. Except for Dell. And Dell is really just a box manufacture. They're just an assembler. They're just a supply chain story. They're not an R&D story. And it comes out in their numbers. Medtronic is a medical device maker, but it really has all the characteristics of a technology hardware company.

Let's look at some software companies. Again, even better gross margins. Say R&D is in that same 10% to 15%. And the revenue per employee at Microsoft is about the same as Cisco. Oracle and SAP, which are more peers, have very similar revenue per employee in that \$250,000 to \$300,000 range.

The internet companies are all across the board. I mean, Apple's not really an internet company, but they are kind of interesting here in that they have \$2 million of revenue per employee. Mind-boggling. I mean, Google is at \$1 million.

I started putting Google on this after they went public. And I said, well, they can't sustain that. They were about \$1 million when I first did it I think three years ago. And they've actually

increased their revenue per employee as they've grown. So they've become more productive, which is kind of-- few companies are able to do that. Usually, companies have a decrease in revenue per employee as they get bigger. Google's been able to increase it.

Again, here, R&D spending. I mean, Apple is so big that that 2% is still a huge number, right? But if we look at the rest of these, it is a little bit across the board, and it's part of where a company is in this stage of their life cycle. But this gives you kind of a sense of where companies are.

Another thing that's interesting here is the two companies with the lowest gross margin are Apple, which is selling hardware, and Pandora, which is selling music. So just because you're in an intellectual property business, or in a-- I don't know what you would call music, if you're not calling it hardware. But it's kind of interesting that their cost of goods are actually as high as Apple's, because of the royalties that they have to pay. And that creates some problems for them. I think they're now starting to show a profit, but it's still a very tough business.

Looking at business models over a period of time, they evolve slowly. I've been doing this talk since at least '98. And just looking at Cisco, it looks like the same. I mean, yeah, it goes up and down a little bit. But companies do not dramatically change over a period of time once they kind of hit that critical mass.

So as you're building your model-- I know the talk yesterday was on your product and pricing your product-- what's the value that you bring to the customer? And how is that value going to be split between you and the customer? I hear a lot of people say, well, we have a product that will save our customers \$10,000. So we think we should charge them \$10,000.

Well, at \$10,000, they're indifferent whether they do it manually or whether they do it with your new piece of equipment. So you've got to price that product to where it's compelling for the customer to take that risk and make that change. And if it's a \$10,000 value to them, you've probably got to price that at \$2,000 or \$3,000, and let them capture the majority of that savings, because they're taking the risk. And so you've got to figure out how, at a \$2,000 or \$3,000 price, you're going to be able to sell that and capture enough value yourself, OK?

Your distribution strategy. So think about the price, and then your cost of goods sold should be pretty straightforward. I mean, you know the material that goes in there. Again, it's not how long is it going to take to develop this product. That's part of your R&D, and that's a whole other exercise. But it's, if I sell a unit, how much material goes into it, how much labor goes

into it, how much overhead in the manufacturing facility goes into it, how much support am I going to have to provide? These are all questions that, if you sit there and noodle away at it, you can come up with a pretty reasonable range, and come up with your cost of goods sold.

When you think about your distribution strategy, how am I going to sell my product, that could have-- I have an example of that in here-- that could have a huge impact on everything involving your business, in both your revenue all the way down to your sales and marketing and your operating profit. So that's a huge decision you're going to have to make.

R&D, I would argue, should end up at the 10% to 20% range generally. As we've looked at a lot of companies, that's where they end up. That doesn't mean you shouldn't be at 30%, like Zynga was, depending on where you are in your life cycle. But if you're a technology company, and you're not spending 10% of your revenue on R&D, you're yourself short for tomorrow's products, right? Because you've always got to be evolving.

G&A is going to end up at 5% to 15%. The lower you can get that, the better. That's where the CFO is, so just squeeze that down.

And make sure you build in an operating profit. Now, your operating profit shouldn't be 40% to 50%. There's a few companies that can get away with that. But to think that your company is one of those is probably unrealistic. So if you're putting together your model, and you keep coming up with a 40% to 50% operating profit, you should really question some of your assumptions. Do I really, am I missing anything here? I'm not saying it's wrong. It might be doable. But you're going to get some pushback on that from people who've looked at a lot of business plans.

So I talked about how your distribution strategy is going to impact your operating profit. So let's look at an example here where you're selling it through your own direct sales force. You have \$100 million in revenue, your cost of goods is \$40 million, leaving you with \$60 million, or 60% gross margin. You have \$23 million in sales and marketing, \$12 million in R&D, and some G&A, bringing your total expenses to \$40 million, and an operating profit of \$20 million, or 20%.

So let's say, instead of that, you say, I'm going to bring in a distributor, and give him a 20% discount off of our list price or selling price. And in return for that 20%, he's going to go out and sell it to the customer. He gets to keep the 20%, but he frees me up of all the sales and marketing activity. Well, not entirely. Because even the distribution channel needs some care

and feeding. So you can't completely get rid of your sales force. You can't completely get rid of your marketing efforts. But you can cut those back. And in my example, I said, well, you could cut it back from \$23 million to \$8 million.

Now, your R&D is still going to be the same, because you've got to keep feeding the machine with new products, right? And your cost of goods is going to be exactly the same, because you're shipping the same number of units. But because you have fewer employees, you probably don't need quite as many people in HR, you don't need as many bean counters. Your G&A is going to be a little bit less, and so that's going to be \$4 million. So in this example, your revenue is reduced from \$100 million to \$80 million, and your operating profit is reduced from \$20 million to \$16 million, but you're still getting a 20% profit.

Now, I don't know whether one is right or wrong. I would say that the distributor model is going to be great if it can get you to market faster, or if it can take you from \$80 million to \$160 million faster than you could grow organically from \$100 million to \$160 million. You're still getting the same 20%. And whether that 20% came out at 15% or 25%, the more important number here is the \$16 million in operating profit versus the \$20 million in operating profit.

So as you're building your model, there is some business planing software out there, kind of like a TurboTax. It asks you a bunch of questions. It asks you the questions, you answer the assumptions, and it spits out a plan. Do not use that software, because the beauty of this exercise, the benefit of this exercise, is understanding exactly what's going into your model, and building it yourself. And when something doesn't add up, figuring out what's broken.

When you start getting 50% operating profits, start saying, let's look at my revenue per employee. Oh, my revenue per employee is \$1 million per employee. Well, Google does that, and Apple does that, but there are not very many other companies that have \$1 million in revenue per employee. So maybe I need to add more employees to my staffing plan. And where am I going to deploy those people in order to build up my organization? So it's doing it, it's working the exercise that is the real benefit.

Build your sales projections from the bottom up. Anyone watch *Shark Tank*? OK. I gave this talk about two months ago, and everyone said, no, it's on Friday night, I go out. You know, I'm not waiting at home Friday night. So someone was on *Shark Tank* last week, and they said they're selling a product that went into school lockers. And they said, why are you valuing your company at \$5 million? And he said, well, there's 50 million school lockers in the country, and

we only need to get 5% of them.

I mean, it's a crazy-- that's wrong on so many counts. Because it doesn't talk about how you're going to get into each school, how many are going to sell into each school, what is your distribution strategy to get there.

So instead of saying, the market is huge and we're going to get a slice of it, what you said need to say is, we're going to have five sales guys. And each sales guy is going to be responsible for a territory in the country. And each territory has-- I'm kind of making this up about the school lockers as I go here-- but each territory has 25,000 schools. And I expect each sales guy to higher 10 reps. And each rep is going to go to two schools a day. And we expect a closure rate of 10% when they go to a school, and each school that buys these is going to buy 50 lockers.

And you put that all in, and it'll come up with a model for how many you're going to sell. And that may not be-- it will not be accurate. Because as you put this together, it's a crystal ball. And when you get out there, you're going to find out a sales guy can't go to two schools a day, and he can't close 10%, and they don't buy 50.

But when you get a guy out there selling stuff, he's going to be providing data, and you're going to start getting feedback to say, we can visit three schools a day, but there's only a 5% closure rate, but each school that does buy is going to buy 75. And then, you can adjust your model. But since you've built your model, now you can adjust it, and figure out where you're going to go next.

The last thing is that there's spreadsheet overload. So never do a best case, worst case, and present three different models, and say, if everything goes right, here's what we need. I'm not saying don't look at contingencies. But just put your best foot forward. Put your best estimate on the paper. Say, here's what we think we're going to do, and leave the best case, worst case for someone else.

I might give you some rules of thumb on the next spreadsheet. These are focused on making your investment interest attractive to investors. Just like your \$5 million business might be a great business, it's not going to be attractive to investors. So I may say, don't put together a business plan that only gets you to \$5 million. That could be a great business. OK, so don't let me discourage you from that. It's most relevant for technology companies. So if you're going to start a fast food chain, these metrics are not going to apply to you. And like I said, it might

not apply to your industry.

Staffing is what's going to drive your expenses, OK? Most technology companies, staffing is 50% to 66% of your expense. And your average cost per employee is going to be about \$90,000. I know it sounds crazy, sounds crazy high. But the reality is, in Boston, first off is, who has administrative assistants anymore? Unless you have like a large manufacturing staff that's doing kind of assembly and stuff like that.

But in most of the companies that you guys are going to be starting, it's going to be a lot of technology workers, it's going to be a lot of programmers, it's going to be a lot of sales and marketing staff, it's going to be a few finance people. I mean, the finance and HR are probably going to be the cheapest people in your company. I mean, really. A programmer these days, especially if you want to get a algorithm engineer, algorithm engineer is probably going to cost you \$125,000, \$150,000 a year. OK? Just a programmer's going to cost you \$80,000, \$90,000, \$100,000. And these folks are going to want raises every year. So salaries are going to come in at about \$90,000.

Employee benefits are going to add about 15% to that. So I know you've all heard horror stories about General Motors pays their guys \$25 an hour, but they're true cost is \$50 an hour. Ignore all that accounting mumbo-jumbo. You can add in 15%, and that'll be a pretty good yardstick to cover their FICA expenses, which is Social Security tax, and their health insurance. OK?

As I said, salaries are going to be about 2/3 of your expenses. And sales staff is really industry dependent. So I've got some yardsticks on here, but it really depends on-- if you got a guy who's selling lockers to a school system, OK, you can probably get that guy for, I don't know, probably \$50,000 a year, and maybe give him a 10% commission or something. Or maybe \$40,000 a year. So you know, this is not a guy that's selling complicated software sale, OK? But someone who is selling something like that is going to need \$150,000 to \$250,000 a year.

So I don't have time to go through a case study here, but a couple years ago, I went in when OpenTable went public, and just looked at some of their publicly available information. And this first page is all of the publicly available information. But I was able to really uncover a lot of things about how they ran their business, and how they were generating revenue. And I would just urge you to look at these next few pages. This presentation will be on the website.

In terms of cash flow, it's critical to understand it. But producing a cash flow statement is really complicated, and it's really prone to error. And the reason is that you have to put in all of these formulas, and then the plug number that makes all the formulas work is cash. So any error in any formula, or anything that you fat-fingered wrong shows up as cash. And sometimes it's to the negative, sometimes it's to the positive.

Every time I do this, I say I'm going to put together a cash flow just so people can look at one. And maybe I'll chastise myself, and I'll go home and do this. And if I do, I'll send it to Joe.

But a good proxy for cash flow is just looking at your cumulative operating losses over the period of time, and adding in any capital expenses that you had. And while that's not perfect, it's a pretty good number for how much money this business is going to need.

So a lot of people ask me, well, how much should I pay myself? And venture catalysts, they don't want their entrepreneurs to starve, but they want them to be hungry. So what I would urge you to do is think about maybe what you made before you came back to school. I mean, I assume a lot of you are graduate students. Or think about what your peers are going to make as they're going out into industry.

Now, if you're in a very specific discipline, and your peers are going out to work in that discipline, and because-- let's say they're geological engineers, and they're going to go up to North Dakota and make \$250,000 a year because they're helping drill for oil. Well, you can't say, well, look, I could be drilling for oil in North Dakota for \$250,000 a year. Therefore, that's what I need to pay myself. So that's kind of an extreme case. But think about what your peers are making, and generally you can argue that that's what you ought to be paid. Or what you were getting paid in your prior life, unless you were an investment banker in your prior life, right?

Your investors want you to earn a living wage. They don't want you to be worried about paying the bills, or getting your car fixed. They don't want you to work 23 hours a day with as few distractions as possible. But they want to make sure that you're still hungry, and increasing shareholder value every day.

So here's what we want to get to is our profit and loss statement for four years, OK? And so I've got this color coded spreadsheet, and here's the code here. Anything that's in blue comes from another spreadsheet. And I've got a little column here that you would take out when you actually presented this to anyone that says, here, this is coming from the P&L by quarter

spreadsheet. And so this spreadsheet's got about 12 pages on it, right? So here's your summary page here, and as you can see, everything comes from another page. So nothing shows up on this page.

But as you're putting together your spreadsheet, you're going to keep coming back to this and say, how does this look? Does this make sense? Do my sales go like this? Or do my expenses go like this? Or is everything kind of in a nice, smooth trend line? Or if it's not, can I explain it?

So for example, I might have no marketing expenses in year one. I might have a tremendous amount of marketing expenses in year two as we launch our product. And then those expenses, maybe not in absolute terms, but in percentage terms, come down in year three, because now we've already reached the market.

So the next spreadsheet, and this spreadsheet is actually-- I would urge you to, at least to start with, do for your projections on quarterly terms. Because there's a lot of times you're going to be fat-fingering stuff in here, and when you have 48 cells that you have to fat-finger something in, you're going to make more errors than if you only have 16 to put them in. And so this spreadsheet goes out to about here, which is year 4, Q4, right? But as we can see, everything from our quarterly statement also comes from another spreadsheet.

So let's look at the detailed spreadsheets. And the first one is our sales spreadsheet. So here, in the red, is input numbers. So I've got my unit sales in units, and I've just plugged in some numbers here. Now, you're going to have to justify these in the rest of your projections by what's my sales staff, and how much units am I expecting a salesperson to sell. Here's my unit price, and I've got a couple different models.

And as you can see, when I launch model two, I decrease the price on model one, because now it's old technology. And so our product revenue is simply a multi-- you know, the black is a calculated figure-- it's just a multiplication of those two. And then the magenta number, that's what goes to our other spreadsheet. So our support revenue, here's our installed base, and there's some retention on our installed base, and then we charge 15% of what the value of that product is to show what our support revenue would be. But you're just going to have to play around with these percentages, depending on your product and your company. But I just wanted to show that there was actually some support revenue in it as well, and this support revenue goes to the other spreadsheet.

So then we have our cost of goods sold. So we have our units that are coming from our others

spreadsheet, and we've plugged in our unit cost down here. And so this gives us our variable cost per unit. We've got the 20 units at \$1,500 per unit, comes down to \$30,000 in material cost. But I've also got some staffing. I've got a VP of manufacturing, I've got a supervisor, I've got a technician. He can build one unit a day. And so I've got to think about how many technicians I need as I ramp up that product volume. OK?

So we'll talk about the staffing plan on another page, but those staffing costs get added up into salary and benefits. We have our variable cost here. We have a facilities cost that is really a step function, because you can't ramp up facilities in line with-- you can't add another 100 square feet, you've got to rent 10,000 square feet, and then another 10,000 square feet if you need more. So we just plugged in some numbers on our facilities expense, and that gives us our total product cost of goods sold here.

When we look at the staffing plan, this is a spreadsheet you're going to keep coming back to over and over again, because, as I said, this is where 66% of your expenses are going to be. So first is, you've got a spreadsheet that goes down to about here with all of your departments. And I would urge you, don't create too many lines in here. Don't create a junior programmer, senior programmer, programmer level three. You know, kind of glom things together, because you're going to be fat-fingering a lot of stuff in. And do the same thing with their salaries. If a junior programmer makes \$80,000, and a programmer makes \$100,000, and a senior programmer makes \$120,000, just put in programmer, put them all in at \$100,000. You know, again, this is going to be your guideline, right? So you've got this for all of your departments down here, and again, this spreadsheet goes all the way out to here.

So the companion part to this spreadsheet is actually over on the right side of this thing. And now you plug in salaries for each of these staffing positions. And all this spreadsheet does is take your number of employees, and remember, this is a quarterly, so we're taking the annual salary, dividing it by 4, multiplying it by the number of people in that position, and then we're adding in our benefits at 15%. So FICA is 7%. And I've done the math, I've done the math dozens of times, 8% of your total payroll is usually enough to cover health insurance for everyone, at kind of a 75% to 25% ratio. Because some people aren't going to take it. Some people are going to be on their spouse's plan. If you're a tech company, you're going to have a lot of single people, so they cost about a third as much as the married people. And so 8% works out to be pretty good.

But your employees are still going to want to get raises in year two. Just because you're a start up, they still want a little something extra. And as I mentioned, a lot of companies have problems getting those expenses up in years three and four because they don't add people enough. One of the things that people don't do is they don't ramp up their salaries. So add in 2% a quarter, that gives you 8% a year. It's not an unreasonable number. And again, while most payrolls are going up kind of 3% these days, if you're trying to hold on to technology talent, you're going to have to give them a little something extra. So again, this goes out-- just add 2% a year out until year four. And so the math gets done, and these go to the departmental expenses.

Non-salary expenses. Well, we've got our salary expenses, and then you've got tech supplies and miscellaneous. I would urge you to put in as many formulas as you can. So for like your programmers, put in \$2,000 per person, per month. It sounds like a lot, but I've worked in a couple technology companies, and it could be an oscilloscope, it could be some cabling, it could be some CAD software. Whatever it is, these guys can figure out a way to spin it. If that sounds like too much to you, put in \$1,000 a month.

But the beauty of that is that, as you change your staffing plan, this number just ramps up and down in line with that. So you can make dramatic changes to your staffing plan, you don't have to come back here and fat-finger anything in. But some of these things, you are going to have to, especially in the marketing area. You're going to have to decide, what trade shows do I go to, and what am I going to do for sales expenses?

And then you could even put in commissions in here, commissions as a percentage of sales, if that seems to work. And so therefore, as your cells ramp up, your commissions ramp up in line with that. And here's your travel per person per month for your sales people is \$3,000. That seems to be pretty good number there. I put in telephone and internet per person, and that just ramps up as your company ramps up. So use as many formulas in this as you can.

And so that brings us back to our quarterly P&L, and where it all comes together. I've got a quick example here on your CAPEX. And so what I did was I took your total revenues, but I offset revenues by a quarter, figuring that customers are going to take 60 to 90 days to pay. So if you bill them now, assume that you're going to get money 90 days from now, right? And hopefully, you'll get it sooner.

But your other expense is your employees, which are 2/3 of your expenses. They want to get

paid on payday, right? They don't want to get paid 30 days from now. So I just assumed-- you know, this is a little bit of a conservative look at it-- but I assume your other expenses come due in the current period. And so based on that, you plug in a starting balance here, and you say, where does this money get us to? This money gets us to the end of Q3. In that case, I'm going to need to raise additional money, and how much money am I going to have to raise there to get us to the next milestone? So in this case, I said, well, maybe we've hit a milestone here at the end of Q3, and that's going to allow us to raise our next round of funding. OK?

I've talked about most of these. Showing steady and consistent growth. And here's some suggestions in here, in terms of an executive summary versus a full blown business plan. In reality, the executive summary is all most people are going to want to look at, at the beginning, and then when they really get into due diligence, they're going to want to look at the rest.

So I think I can get through the rest of this in five minutes, because I've gone over a lot of it. What I would say, as you think about equity in your company-- you're sitting around a conference table here at MIT, and you're thinking about the company, or maybe you've been working on the company for the last two years and you're really ready to launch it-- all I would urge you is that the work that is yet to be done is far more than the work that has been done already. Even though it feels like you've done a tremendous amount, the work that it takes growing to a \$1 million dollars is hard. But growing from \$1 million to \$10 million is equally hard, if not harder. And going from \$10 million to \$100 million is really hard. So the fact that a lot has been accomplished, there's still a lot left to do.

So you don't want to reward people for what's been done in the past. You want to incentivize them to do things in the future. So I'm a big believer that everyone should vest. I used to be adamantly against this when I was a member of a founding team. But I've heard horror stories where three or four people get together, and one guy, or one person, gets an opportunity that they can't pass up and they leave with their 25% of the company. And then the three people that are left are now working for themselves, and not taking a paycheck, for someone who's actually got a great job. So I think everyone should vest over some kind of three or four your period.

Typically, this is the ranges that you would see. A CEO in the 5% range, 5% to maybe 10%. VPs in the 1% to 2 and 1/2%. This would be after dilution. Senior managers about 0.25%, and a senior individual contributor about 0.10%. If you're on the founding management team, you might get two to three times this amount, in part because you're going to get diluted. And if

you're founding employee, you might get even more. So if you have a senior individual contributor, who's really important to the company, and he's going to get 0.10%, that's the kind of person you might give 0.25% or 0.50% up front.

So let's look at some examples here. You get a sense I always like to look at the endpoint, and then go back to the beginning and figure out how I'm going to get to the endpoint. So my endpoint here is looking at this whole dilution, and here this is the same spreadsheet that we had earlier, I've just add a little more detail with some names here, and some specifics about the people. So looking at this point, this is where we're going to get to. But at the beginning, we have four founders that have split the equity \$2 million, \$1 million, and \$1 million. OK, that all sounds well and good. They have 100% here.

As we bring in our key employees-- here we have a VP of R&D. He's critical. Normally, you'd say a VP of R&D would get about 1%. Well, in reality, by the time we get out to this, after all of our dilution out here, this VP of R&D is going to be at 1%. And some other key employees here. And maybe a board of advisors or board members, who would get some equity.

We then bring in our angel investors, who get 10%, and everyone up here gets diluted. And we then bring in our VC round at 50%, and, again, everyone up above gets diluted, including the angels.

One of the things that got brought up-- you know, Axel was talking about \$50 for 10%. And my initial reaction was that seems really onerous. It doesn't seem like a great deal. But when you realize that he's coming in at this stage, he's coming in really as the angel investor, and by the time this all gets done-- well, what's my example? My example actually works out. Just take a zero off of this. His 10% is going to get diluted down to 2.3%.

So if you're getting all that other value, then that 2.3% doesn't seem to be too much to give up. I will say that angel investors are pretty keen on looking at this spreadsheet, too. And while a lot of people think that angel investors will not be as tough negotiators as the VC investors, I would argue they're investing their own money rather than the firm's money, and they have seen this spreadsheet as well, and the angel investors will be every bit as tough as the VC negotiations.

Now, friends and family is a different story. And I've had very good success with friends and family coming in, but I mean they're your friends and family. You're not going to try and screw them over. So hopefully you're going to give them a fair deal to begin with.

So it's 9 o'clock on the dot. I can take one or two questions, but then I know that Joe's going to shut me off. Any-- OK, one here.

AUDIENCE: What are the usual terms on the vests with the original founders?

CHARLIE TILLET: I think over four years, what you might say-- so four years with quarterly vesting. I mean, you could do monthly, but I mean it really doesn't matter at that point. So four year vesting with 1/16 every quarter. Or you what you could say is, let's say you've been working together for a year, you say, everyone starts with 20% vested, and then the remaining 80% vests over four years, or three years. Something like that, just so that someone doesn't get cold feet when they going starts to get tough and bail on the rest the team.

AUDIENCE: So if they leave after two years, would they still get the part they had before, or would they--

CHARLIE TILLET: Yeah. So let's say you were going to get 160,000 shares over four years. That would be \$40,000 a year, or \$10,000 a quarter. Every quarter, you vest \$10,000. So if you leave after two years, you have your 80,000 shares, and you go, and they're yours. And the \$80,000 that you didn't invest-- look, if you thought it was going to be successful, you shouldn't be leaving. So you've left that, and those are gone.

AUDIENCE: I was wondering if you could talk a little bit about the difference between the CEOs and the CFOs? First, the difference, B, whether a start-up needs a CFO at a very early stage, and the last part is, you know, who makes the decision?

CHARLIE TILLET: Well, look the CEO makes all the decisions. I serve at the pleasure of the CEO. But the CFO-- I think by the time you take your first venture money, first off you have the money to pay a CFO, and it will be money well spent. Because as I showed you, all those rounds of financing at Reveal, I can't tell you how much dilution I saved my founders by thinking ahead about what we needed to do.

So I saved my salary and equity for him, you know, 10 times over. But we did have a deal. For the very first year, I worked half time for half salary. And then, we agreed that as the company-- I was in a position where I could work half time. And so I think it's good to have-- maybe you have a mentor advisor for that first year and a controller. But the problem is, is that you really want someone, especially when you start raising money, you want someone who's been through the process before. And they will save you-- you know, an experienced person will

save you a couple percent of dilution right off the bat. So what's that worth? It all depends. So you sell your company for \$200 million, it's worth a lot.

OK, maybe one more. Oh, looks like I've gotten everything. So thank you very much.

[APPLAUSE]