



Stanford eCorner

Disruptive Innovation Can Happen Anywhere [Entire Talk]

Hank Wuh, *Skai Ventures*

January 16, 2013

Video URL: <http://ecorner.stanford.edu/videos/3055/Disruptive-Innovation-Can-Happen-Anywhere-Entire-Talk>

Surgeon, inventor and entrepreneur Dr. Hank Wuh shares examples of how his firm, Skai Ventures, based in Hawaii, takes a hands-on approach to launching high-growth businesses. Wuh explores the challenges of identifying disruptive innovations that are commercially viable and building profitable companies that aim to do good in the world.



Transcript

Hello, everyone, it's great to be here. Can you hear me okay in the back? Yes? Now, first of all, I want to know how many people are from Hawaii here in this room? How many people have been to Hawaii? How many would like to go to Hawaii? Okay. This room has good judgment, I know that. It's great to be here. I've very fond memories in my days at Stanford. The biggest memory in my head was when I was doing my surgical residency at Stanford Medical Center. I was the resident and chief resident at Stanford. I was so poor that I bought a Cadillac for about \$600. And it was a great car except for the fact that it didn't have a reverse gear. So I could only drive forward, but not backwards.

So it took a lot of extra time to look for parking stalls where I can drive forward at the end of my shift and the headlights didn't work. So I'm driving in the freeway, I have to turn on emergency blinker, so I could see the road every other second basically so. But I have really fond memories, it is great to be back here and I'm looking forward to telling a little bit about what we do at Skai Ventures. This is my office. Please come and visit any time. Skai is a word that we invented, we created. Kai is the Hawaiian word for water, ocean. Of course, Sky is the blue sky. So where the ocean joins the sky is the horizon, which holds infinite breadth and possibilities. Hence, the name Skai Ventures.

And our business model is very simple. We look for the smartest people, the most ingenious ideas we can find at global scale and we transform them into businesses, the profitable high growth that can do something good for the world that we live in. And as you can see from our motto, Invent, Disrupt and Inspire and the word disrupt is in there because we like to focus on the kind of business that are really game-changers because it takes just as much time and energy and work to build something that's really a game-changer and something that's incremental. Hence, we like to focus on disruptive. What is interesting however is we do all of this in a part of the world that is the most isolated landmass on earth. This is a Google Earth shot of Hawaii. So for those of who have been there before - did anybody go to Hawaii not on an airplane? So we are in the middle of the Pacific Ocean, so we are about 2,400 miles from California and almost 4,000 miles from Japan, highly isolated. But the point of today's sort of us sharing with you is the fact that entrepreneurship can take place anywhere by anyone in any subject matter, right? It matters not where you're located, Silicon Valley, Stanford is a great fantastic location. It is the Mecca in the minds of many, but it's not a requisite. It is not a requisite for innovation and it's not a requisite for creating great enterprises.

So I would like to invite all of you when you have a chance to come and visit us in Hawaii and come and visit us at Skai Ventures. We'd love to sort of get to know you and share with you what we do. So just a plug for Hawaii while we're here, right? It has the highest percentage of millionaires in the United States. You will find every celebrity entrepreneur in Hawaii. Shopping at the same Whole Foods and Safeway, right? Oprah lives there, Dell lives there, Schwab lives there, Pierre Omidyar is there, Steve Case is there, everyone is there. We have the longest life expectancy in the United States and we have - in fact,

Honolulu is one of the 10th healthiest cities in entire world. Very ethnic diverse for those who have been to Hawaii you know that and we also have our own time zone, Hawaiian Standard Time. So when I was growing up, Hawaiian Standard Time used to mean that - it used to mean that - it used to mean 30 minutes late basically, but this is also very interesting. The attractive lifestyle also makes us one of the largest importers of entrepreneurs in the entire world. I always say, outside of Silicon Valley we probably have the highest concentration of entrepreneurs who are between successes or who are between failures of anywhere else in the world and it's the perfect place to incubate, to start and to nurture the next really big idea.

Besides, we're the most isolated landmass in the world. So no one really is going to steal your idea, until it's been nurtured long far enough. And we take a lot of young people every summer. So last summer, we have 15 interns and we had kids from everywhere, including Stanford, Harvard, Yale, Princeton, Columbia, all around, the United States and the world. In fact, I got a call in March of last year from the fellow who had did a summer internship with us the year before. He said, hey, Dr. Wuh, he said, I'm going to quit Columbia and start my own company. I said, Chris, that's great, have you told your dad? And so he finished Columbia and he is now working in the company with us. So like many other companies here in Silicon Valley, our basic guidelines were not so different, right? We're after big business, at least a \$1 billion in market size, strong IP, good management team and everything we do we hope at the end of the day will benefit the world and the community that we live in. We also pay a lot of attention to Asia and to China in all that we do as a very important market that we go after.

Who is from China here? Okay. Thank you. So we have a number of portfolio companies, six of which are really sort of very much in the midst of being grown and looking at exits. So I will share with you briefly some of these companies and by the way - so, Hawaiian style, Hawaiian time, right? Very casual, if you have a question, raise your hand and I will be happy to entertain them at any time. So we really have sort of two categories of businesses. One is in the area of novel materials, right? These are materials that I think are great platforms, I think grow in many different ways for multiple market applications. And so the top three, TruTag's, CBI Polymers and Eyegenix. TruTag is an edible barcode and it's extraordinarily information rich, very inexpensive that can be eaten and can tag everything that goes into your body basically. So think about the implications of that. CBI Polymers is a green tech for environmental remediation, which I will tell you a little bit more about and had a very large role in Fukushima in the last couple of years.

And Eyegenix is working on the most advanced technology for an artificial cornea to treat blindness, to restore vision for the 10 million people in the world who are blind today. So think about these technologies, right? These could very well be prototypic companies right here in Silicon Valley, except we're doing this in Hawaii. We also have healthcare services platforms, including these three companies. Our Skai Vision is the two - is focused on vision surgery, everything you can imagine, refractive cataract, oculoplasty in glaucoma, retina surgery as well as cornea transplantation. We have Endoscopy Institute that has capacity to do about 15,000 surgeries a year for the early detection of cancer and we're looking - also looking to build the largest cornea transplantation center in China today. And finally, we're putting a - the next vision of Skai together, which will be a fun that's going to be dedicated to software and healthcare IT which I will tell you a little bit about. So TruTag's. TruTag's is an edible barcode and as you've - as you find the common denominator for all these companies are threefold. One, a really big problem that needs to be solved. Two, a very unique solution; and three, a great team.

So while we're in this business, well, counterfeit is a big business. In fact, it is considered to be the largest business in the world, right, the margins are huge, everybody is in it. It touches every product, every region, everywhere. And so in essence, what we have created is another form of identification like a fingerprint, like a retina scan, except in this case, we can do it at a very large volume and create mass amount of information on customized basis. We started with a silicon wafer, much like what we do here in Silicon Valley for semiconductor manufacturing and we can convert them into basically silica. In the process, we can embed billions of combination of spectral codes into the material. But, the beauty is this, right, silica is already approved as an excipient in drugs. It's been used in many, many types of pharmaceuticals; hence, there is no regulatory risk associated with the development of this particular product. So, again, as you saw it earlier, to give you a sense of scale, alright, grain of salt, grain of sugar, and a grain of TruTags. So, in this particular case, we can insert over a billion combination of spectral code and we can read it.

The simple reflection from a light source can be picked up and deciphered as the basis for tracking, tagging, anti-counterfeiting, and identification. So, a light shone on a tablet can be read by an iPad enabled reader. In this case, we can tell you this is Lipitor 20 milligrams, lab code, expiration day, manufacturer site, and so on and so forth. And, this is a very powerful technology. Size of the market is quite large. There is 1.5 trillion tablets made every year in the world today, of which one-third are branded or high-value products. So that's the target for the counterfeiters. And so that basically makes up the \$80 billion counterfeit drug market. But, unlike Prada shoes or Gucci Bag, right, when you take a counterfeit medicine, it could have catastrophic consequences to the end-user. So, this is not just about economics, but it is also about something that's extremely important, right, for society at large.

We can do these things for roughly \$0.01 a pill or less. So that's roughly a \$5-billion opportunity for us just in the pharmaceutical side of the equation. So, for every 2% of market that we're able to penetrate is worth about \$100 million in

revenue basically. So, it's a powerful technology; it's an interesting sector. We're not limited, of course, to pharmaceuticals. Think about all the different things that we ingest or things that we don't ingest, whether it's in your Chinese milk powder, whether it's computer chips, wine. The folks from Chateau Lafite had come and talked to us and say, hey, this is really interesting. Would it be possible for this very high-end branded wine and spirits? We said sure, of course, it's possible. However, could you send us six cases of Chateau Lafite so we can do proper R&D on the equation? So, every one of our portfolio of companies has an executive team that seasons and understand the domain extremely well. So, Kent Mansfield was a President.

He was a COO of a company that he helped started called Authentix, started with five employees, just a startup company, grew to a point where eventually was sold to The Carlyle Group. Peter Wong is our Chief Operating Officer, spent many years in Silicon Valley, very transaction-oriented attorney, was involved in the IPO of LeapFrog and Quokka Sports and - so great management team that understands the security business, understands transactions. So that's TruTags. Any quick questions before I move on? Eyegenix. Eyegenix is another one of our material science companies. So, in this particular case, we're focusing on developing a solution to solve the problem of corneal blindness. This company came to be when I was on an airplane, flying back to Hawaii from California, and I sat next to an ophthalmologist who kind of shared with me the problem of the world not having enough donors for cornea or organs at large. And so, it's a huge problem, particularly in Asia because of a number of cultural and religious reasons. Asians, by and large, are very reluctant to donate organs. So, on the left what you see is a picture of a blind cornea.

On the right, it's the same cornea after transplant. So, it turns out that more corneas are transplanted in the world today than heart, lung, liver, kidney, pancreas combined. It is the number one human transplant procedure in the world. 10 million people in the world today could benefit from a corneal transplantation. The entire world's donor base is only about 100,000, which means 99% of the people who are blind in the world today will basically never have a chance to see for as long as they live and that's the reason we embarked upon this project. So, there are - even with the 1% of the population that could conceivably access a human donor cornea, there are many drawbacks. The rejection rate is roughly 20%, so one of every five cornea transplant rejects because there is no matching that takes place. There is no ABO blood typing or matching. There is, of course, the risk of disease transmission with a human donated organ and they have to be on lifelong topical immunosuppressive medication. So, there clearly are limitations.

So, we have a developed material from recombinant human collagen that has this very unique property to allow epithelialization and nerve growth to take place within the organ. We have now seen a fairly long-term follow-up in a group of patients that have been transplanted, and we have just finished the completion of a manufacturing facility that can supply basically the entire North American market, right, in Honolulu and this material interestingly enough can be laser sculpted to give it a right refractive power, which makes it extraordinarily interesting and powerful because conceivably this technology could be used not only to treat the 10 million people with corneal blindness, but to be used for refractive correction, things such as presbyopia as well, which impacts basically everyone over the age of 55. So, our advantages are multifold, unlimited supply. We would no longer be restricted by the 1% so a lottery for someone who wants to regain their vision. Off-the-shelf convenience; if you are a surgeon and you want to schedule a case for 3 o'clock, Tuesday, next week, you can go ahead and schedule that surgery. You don't have to wait for someone to pass away, will and donate their cornea, for someone to be able to pick that up, process it, harvest it and transport it to a recipient. And, the fact that it allows nerve and epithelial growth is extremely important from a clinical standpoint and no lifelong need for immunosuppressives. We have an opportunity to capture maybe a \$2-billion market opportunity, but equally important, we have a chance to do something that fundamentally is extremely important from a humanitarian standpoint for the 10 million people around the world who are blind and who basically would never really have a chance without a technology such as this. Doug Post who was the COO at VISX which was acquired by AMO for \$1.3 billion and then were sold to Abbott for \$1.2 billion is our Vice Chairman. And, Tony Lee from Silicon Valley, who has done three venture-backed medical device companies, all successfully exited, is our Chief Operating Officer.

So again the same thing, right, big markets, strong IP, great management team, except it's done all in Hawaii. We also have another healthcare services company. I will go through these very quickly. We run a surgery center that has a capacity to do 15,000 surgeries a year with 13 surgeons. This is really a very - a synergistic play with our core eye business. When you come to Hawaii, please come over. If you need to have eye surgery, it will be on the house; just give me a call. This is the lobby of our center and it's beautifully constructed and this is part of a franchise that we hope to shortly expand throughout Asia and China as well. And, of course as I mentioned before, we do all types of eye surgery. And, we also have an endoscopy center where we do colonoscopy, endoscopies for early detection of cancer.

And, similarly, if you ever want to have a colonoscopy, please give us a call. CBI Polymers, this is the last company I will share with you before we go to our Q&A. So, in the course of developing our artificial cornea, we had to assemble a team that's really world class in material science. And, then we saw an RFP from the U.S. Government, asking someone to develop material that could bind radioactive particles. So, we had this group of really great scientists sitting around the room and say, hey, could we try this? Of course that's - that wasn't the area of our commercial expertise but we certainly knew about materials

and we knew about binding at a very deep level. So, we competed for that prize, we won, we got a bunch of funding from the U.S. Government and then eventually developed the product in an arena that's for surface decontamination of radioactive and hazardous chemical materials. And so, it turns out that this is an industry that's not the most advanced with respect to innovation. The disposal of hazardous wastes has never been really a sexy area of pursuit for technologists.

And, the costs of waste disposal as you can imagine, right, is really tied to both volume and the weight of waste that you generate basically. So, the economics are huge in this area. So, we have developed a material that's got this exquisite ability to bind surface contaminants. And, again, a picture is worth a thousand words. So, this is a regular asphalt surface; somebody is driving. You can see the oil and the grease and the grime on that surface. You apply this blue gel, you wait for it to dry, and when you remove it, I think you can appreciate that on the slide you can see the area in the back are really being power washed, three times. Everything has been picked up and contained in that particular gel. This is mold and mildew on a concrete sidewalk. You can see the before, the during, and the after.

This is a bilge tank, petroleum, before and after. And so imagine the amount of labor and cost savings involved in the deployment of this particular technology. So let's see if you're going to clean 100,000 square feet of radiological waste using traditional technology, which is really soap and water, radiowash detergents, you probably generate around 140,000 pounds of waste and the cost of disposing that based on weight and volume will cost you about \$350 million. Using this technology because the material at the end of day is very compressible, it's very lightweight you don't require the use of water, we can do the same job for - and generate only about 13,000 pounds of waste. So the cost of disposal for that is roughly only \$33 million. So you're saving, in this particular case, \$317 million by the deployment of this particular technology. So we have customers all around the world, in all sectors of the industry at this point. And then of course as, all of you know, right, Fukushima happened about two years ago, March 11th. And so - and this is going to be a very long, very costly cleanup. And in many ways, right, Japan is like a brother to us by virtue of the fact that we're in Hawaii, so we did a lot of work to volunteer our time and efforts to help with the remediation and the cleanup in Japan.

This is one of our team members making a donation to the Japan hyper rescue team, helping to cleanup. This is our chief scientists in Fukushima. And - so this is an automobile that was driven in and out of Fukushima. If you're in Japan, if you see a car with a Fukushima license plate on it, don't go near it, right, because likely there's still a residual radiation on it and the radiation has been track. In this particular case where you apply the gel, you strip it off, you take away all the radiation and you can do the same thing, on tires, and so on and so forth, so people are spraying entire automobiles and buildings and so on and so forth. So this is a kindergarten outside of Fukushima where the kids since the event of March 11th for six months they couldn't go outside to play at all because everything surrounding the building was radioactive. So we actually assisted Japan Government and we did a complete decontamination of the entire schools, the kids go outside and play. And that was part of the basis for sort of the CNN coverage of this particular event and technology, thanks to one of the best publicists in the world, Paula Page. And so, as a commercial opportunity, 31 countries have nuclear power plants in this world and there are 439 nuclear reactors. Every 18 months every one of these reactors needs to be maintained and shut-downed and restarted and cleaned basically.

So, very interesting sort of long-term opportunity. Based on the technology, we'd also launched a secondary brand called Prestor for environmental building restoration. This is a Law Enforcement Officers Monument, Washington, D.C. You can see, the before, the during and the after, because the idea is we can actually remove debris and dirt from really fine surfaces without any damage or injury to that surface. This is St. Vincent's, New York. A very beautiful European style church and they have many years of soot carbon deposit on the walls, but certainly they don't want to power wash the inside of the church. You can see the before and the after on their Rumford tile. On the limestone, and it's - in fact this is an entire wall in front of where the candles are being burned, you can see the difference there basically, CBI Polymers. So, our next thing is we're going to actually put another fun together, that's going to focus more on the software and the healthcare IT side of the equation as well.

We realize there are lots of these accelerators that are springing up everywhere in the country. There are many of them in many parts of the world and there are several that are very well-known here, TechStars, Y Combinator and so on and so forth. So how many of you have the entry in one of those competitions? How many of you plan to? If you enter one of these competitions, if you win, come and see us in Hawaii. We would love to work with you, back you, support you and help you because that's the business that we're in, is working with really smart people, with great ideas, developing technologies that can have a really fundamental impact in the world. And guess what? You can do it in a part of the world, right, there's very little traffic, it's got a great weather, you can body surf, boogie-board. Right? You can go Hawaiian time and you can live longer than anybody else. To help me with this venture involves couple guys, Denis Coleman, who was introduced to me by Tom, Denis was the founder of Symantec, the fourth largest software company in the world, the inventor of spell check and Bill Melohn, who just retired from Cisco as their CTO, he is from Hawaii, he grew up there. He just moved back there. So we're going to forge a fund to really look at young entrepreneurs in this area. So, that's it, that's the line of SKAI Ventures.

And so if you have a chance, I would really urge you to come to Hawaii, come and visit us, we would be very happy to talk

to you about any ideas, innovations you might have that will really have a fundamental disruptive impact on the world that we live in. And so I hope to see one or several of you in our photo lineup for next year. Thank you very much. And I'm open for questions now, please. Just raise your hand, if you have a question and I'll... Dr. Wuh, okay I have two questions. One on the cornea transplant. Does insurance - on the numbers of the potential market - does insurance play a role on that in that at all in those numbers? Like for example, like, let's say, there's 10 million people that need the cornea transplant and, like, do you say X amount of those people would need insurance to cover the procedure and... I understand your question.

...will insurance cover that procedure? Yeah, yeah, very good question. So, our market numbers are 2 billion, it's only the addressable market in the parts of the world people have the ability to afford to pay for cornea whether through self-pay or through insurance. But as a corporate policy, we've also established a non-profit charity for the specific purpose of donating cornea in those regions of the world where people would not have the ability to pay either through themselves or through insurance. How do you make sure your entrepreneurs don't just go surfing all the time? We can't, but they're self-driven. Right? It's - if they go surfing all the time, and that's all they did, ultimately they're not going to be successful. Right? So, if they're not going to be successful, they're not going to last very long. So, there is a process of self-elimination and it's interesting. So, I'm a swimmer, so I swim almost daily in the ocean before the sharks come and it is great, it's sort of like my - sort of my problem solving time in that water for 40 minutes. So, it's Hawaii offers a really interesting environment, but I think people there work just as hard, they're just as driven, just as committed, except you have a lifestyle that's sort of really unmatched basically, because if someone was going to slack off, they can do it in Palo Alto as well as Hawaii basically, so. What key personal characteristics do you find make the best leaders or the best successful entrepreneurs? That's a very good question.

One is an enormous amount of optimism in general and the second is a very high level of tolerance for pain. Because - right, startups are difficult. Right? You met with challenges. Unlike walking into an established company where things are kind of laid out, here you have to sort of figure out the map and find a car and find the gas and drive the car yourself. I mean, it's all about creating something from nothing. So you have to really love it to thrive at it. I have some more specific question about TruTag and the scalability of the product. I was wondering about CapEx and you were talking about scalability, is it already at the stage where you have a minimum order quantity or for the actual tag itself? Yeah. What do you do by the way? I'm IT business development. For? A consultant group.

Okay, alright. I'm just curious, yeah. No, it's a very good question. And so we have the capacity - so you're right, it's a catch-22 basically, so we have a large portfolio of prospective clients globally basically, but we've also sort of figured out enough of the nitty-gritty's of this technology, we understand the efficiency of scale. So when it comes to pharmaceuticals, yeah, no question, we can do massive volumes and make it a very predictable business from a CapEx and a profit standpoint. Sure, it depends. Okay, no problem. And as far as your failure rate in the supply chain for the silicon, do you know is there a percentage failure rate? I don't have the answer to that. Okay. Yeah.

Do you mind describing the moment where you kind of walked out of med school and made the decision to go more of the innovation path as opposed to the standard medical practice? What was it that caused one direction versus the other? It was when my Cadillac caught on fire. So I actually didn't walk from medical school into business, I came to Stanford, to do my trainee as a surgeon. And so I got into Stanford, I was resident, I was chief residents, but being a surgeon and being at Stanford it was just a great place because everyone was entrepreneurial and sort of the concept being creative and problem-solving was all around you. So I was very much bitten by the bug. So the idea was really to look for problems to solve in the operating room because there are many and eventually we got into the business of creating, inventing devices and solutions that could solve these problems and we discover sure enough there are people who would invest and pay large sums of reward for coming with a great solution. And that's how that transformation eventually took place. And when the Cadillac caught on fire, it really crystallized everything else, so. I suppose a follow up to the question he asked, when you say like high tolerance of pain, like could you give an example like specifically what you mean by that in that context? Do you play sports? If I have time to play sports. Yeah, what did you play? Soccer. Soccer and what was training like when you're playing soccer? Where there days when you're pushed so hard that you just think, oh my gosh, I cannot go another five minutes.

Pain is more of a mental gain then. More of what? A mental game. A mental game? Oh, absolutely. Oh, absolutely. It's very much a mental game, sure. Right? It's - it requires a certain amount of mental toughness, I think. Right? I mean, it's not for everyone, not everyone is different. Right? It's about casting life. Right? If you're really tall and thin, you shouldn't be a wrestler, you should be a volleyball, basketball player. Entrepreneurship is the same thing.

Some people thrive in conditions where there is uncertainty and there is challenges and imperfection, other people really hate that. So it really selects for different sort of people, no right or wrong, no good or bad, just everybody is different basically and so... So I'm just thinking about the application of the products that, you want get them to as many fields as possible and just kind of spread out the word of the product, but at the same time you're definitely going to run into some - a lot of problems with safety issues and some other issues, only by actually trying things out will you actually know if something can work somewhere and yet as an entrepreneur when things are going well, it's perfect, but even as - when you have a great product

when it's actually may be having one or two very serious safety issues in some other areas especially lot of them are kind of in a medical field, how do you balance that and how do you know that a risk is something that you want to actually take? It's a rare moment when things all go well as an entrepreneur. But it's no more dangerous than walking across the street on a Friday night in Palo Alto either basically. So, I mean, it's just a constant sort of assessment of your risk and your return and of course you want to be thoughtful, you want to be strategic, you want to understand your risk so you can deal with it proactively, basically. But entrepreneurship is a risky - it's a risky game basically. And that's just the nature of the beast I think. I have another question. Sure. This is a product question, Dr.

Wuh. On the polymers product, when you clean the radiation off the car, the vehicle, is there a method that you can tell the percentage that it's fully cleaned? Sure. Sure. Geiger counter. Right? So with a Geiger counter, you're going to be able to know how much radiation there is before and how much there is after, how much you captured, it's actually fairly standard, easy - it's easy to do basically, yeah. Whoa, I see five hands go at the same time. I feel like we might have the same set of questions, what do you do with the waste once you've cleaned it? It depends very much on what it is that you're removing. So if it's radioactive material, there's very strict statute that you have to follow. Right? So what you're doing is really you're capturing and transporting that to a safe place, basically. But if it's dirt off your backyard, right, the material is incinerable, super-compressible, water-soluble, biodegradable.

So you can actually literally throw in the trash, basically. And so to follow up with another part of question on the TruTags, I think you said that there is like some crazy amount of combinations that you can make and it works basically on reflection so I was wondering if that - if the reflection has to do with some sort of different patterning you're doing on the surface of that silicon dioxide or whether you are molecularly changing the composition? It's actually nanoporous. So we're actually creating nanoporous structures within the silicon basically. At the back. Can you talk a bit about Skai Ventures' business model and its relationship to the entrepreneurs? I'm getting a sense it's something in between sort of like an incubator or a pure VC so I'm just trying to understand that? So it's not a pure VC in the sense that we don't just deploy capital, but we're quite hands-on. So typical - typically we will work with an entrepreneur in a very early stage, but we'll actually really sort of roll up our sleeves because we're operators. We understand sort of the pains of what it is to do a start-up company. So we will not only deploy capital but human resources and time and energy. So it is a hybrid. It is very much a hybrid between traditional venture capital and a technology accelerator.

Yeah, a good question. How did you - you mentioned with the cornea product you've got the arm that does that for those who can't afford it, kind of in social - kind of a corporate social responsibility. How do you determine how much to put into that versus being a venture capital firm? Where do you draw those - how do you draw those lines? Is that you making that call; is that - any thoughts on that balance between the social responsibility in that sense in the profit making aspect? Sure. No that's a - it's a really good question. I mean, that's probably a fairly long discussion that we could share after the session also. But Skai Ventures is really as the parent company we allowed our portfolio companies to make their own decisions about business models, but it has to really make sense because the business has to be successful, all right. You can't - in order for the philanthropy to be successful. So the cart and the horse has to be in the sort of right order basically, but there is a happy medium somewhere where you can truly do something good for the world but you can also build an enterprise that's got a great brand, that's profitable and it's got a lot of growth ahead of it. So like anything else, right, it's judgment, right; it's judgment. Also about the cornea transplant, like how did you expand the product in China and like kind of adapt to healthcare system there? Say that again, how did I what? Like expand like the market in China and in Asia? Are you from China? Yes.

Yeah, which part of China are you from? I'm from Shandong Province. Okay. I was just there. Oh, cool. Qingdao. I know like the healthcare system is very different. Yeah, it's very different. But it's changing, all right, and it's evolving. I was in Shandong just last year, I went to Qingdao, and they have the largest corneal transplantation hospitals in all of China. And - but their volume is not very large because there is a lack of donors basically.

So, I think China is a - it's a powerful economy, it's developing very quickly and things are evolving. And I think - but it is a very different system. So our basic approach in China is to work with very strong Chinese partners, right, that can understand best ways to sort of enter that market and work that market. What we provide is a very fundamental technology, all right, a source of supply that's extremely rare and valuable, but we cannot go and learn the system in every country from scratch, right? So for China, for Japan, for Korea, for Europe for that matter, right, we are working with local partners basically. So that's our fundamental approach. Okay one more. I have a question about what kind of technology based products that you're actually willing to try and see, like how long do you - for example if something that's going to really change the entire field but it's going to take maybe 15 years to try it out, are you actually willing to get into the field or are you more interested in something - getting involved with something that is going to have quick results but not necessarily having as much...? It depends. It depends if the surf is up or not, right. Something that is going to take 15 years is best at a university, where that's the function of a university, of an academic research institution, right, is basic fundamental knowledge basically, all right. We were - we would love to be in a position where any of you have an idea that we can prove if there is validity of concept in a commercial marketplace because there are tests you can do, all right.

We are not in the business of creating fundamental technology from scratch because that's unpredictable, it could take you a year, it could take you 100 years and we don't have 100 years, all right. So really it's about testing and validating commercially viable ideas, but not fundamental research, right. Fundamental research is for the university basically. At the back? Can you give a couple of examples of how Skai has helped the companies you've covered up there beyond pure funding? I'm sorry, I couldn't hear that second part of your question? How Skai has helped a couple of the example companies beyond the pure finances? Sure. In a number of these instances we are sort of the founder, if you will, of the business, all right. So, in the case of TruTags for example, right, it was a very smart scientist who had a great innovation, but there was no management team, there was no initial proof-of-concept, there was no development of the reader technology, there was no manufacturing, all right. So we at Skai actually played a role as part of that founding team, if you will, all right. We set up these different components so we can do proof-of-concept, demonstrate there is commercial value and then ramp from there, all right. So de facto, I mean, we are a founder in many of these businesses, if you will, much more than just the financial investor. How do you normally find the technology for these businesses? So you said that you're in the business of really accelerating commercially viable technology, but what kind of strategies do you use to find where this technology is being developed so that you can bring it to market? It's like anything else in life, right? It's serendipity plays a part in that and it is also about sort of the network.

So for me we have a lot of network through my alma mater, right. Hopkins, Stanford, Harvard and the likes, we do a lot of work with different universities, we fund different types of research, we have 15 interns that come through our shop every year and every one of them bring like really unique interesting ideas, but we're in the business of people more than anything else, right. It's about connecting with really smart people who - with a dream, with a dream and a vision to do something different. But no one person can do that alone, right. It takes a lot of efforts, and it takes a lot of sort of appetite for risk to make that happen. So we're in the business of people really and so I'm really glad to be here today because I suspect one of you or many of you have such an idea or have such a sort of dream in your minds basically and you are exactly the folks we want to be talking to basically. Very hands-on question, what do your interns do? On the first day of their internship we require everybody to learn how to do CPR and use an automatic defibrillator so they can save somebody's lives during the course of their internship. We - and we assign them to different tasks that depending on their level of interest, right, because so there is enough sort of technical projects that are very sort of science and technology oriented, you can actually go into a lab and work on something. Some of the other folks are more interested in business, right. We will put somebody on a supply chain analysis, figure out the CapEx, the risk factors and all of that stuff of course.

But we require every intern to make a presentation at the end of the internship on an idea that they would like to pursue, right, kind of a full-blown business plan, right, think through this, what would it take, why is this worthwhile, how do you make it a big business, how do you plan to do it, and because we want everyone to have sort of some presentation skills. So they can go out there and pitch an idea when they're done with this internship. So it's fairly - it's fairly flexible, actually. So you seem to be a very busy man in terms of all these new ventures you're involved in; how do you distribute your time? I always swim in the ocean daily, you saw my office earlier and I try to distribute my time again around people, but not events or projects, right. So, every one of our companies has a leader, it has a Chief Operating Officer or CEO whose job in life is to live and die by that company, right. So they're it, the buck stops with them basically. And my job is to find those kind of people, right, who really have the - not only the expertise but the passion to make that business successful. So again, I spend most of my time on people and ideas. What would you say are areas of healthcare where there are unsolved problems and where innovation will be needed in the future? I would say it will be virtually all aspects of healthcare that requires innovation, but I think the area of healthcare IT in particular is a very large area. For a whole variety of reasons that you're aware of and that's very much an area that we are particularly interested in diving in much deeper.

In fact, there is an entrepreneur here I met earlier who has got a great idea, I won't say the name, but we met just about an hour ago. Through all of this, what would you say has been the biggest failure and how do you move forward from that? There are so many. Instead of giving you sort of one, I think maybe I can sort of summarize for you, right. At the end of the day there are a lot of factors that have to work in concert for one of these ventures to be ultimately successful and timing is one of them. Because you operate in an environment where there are lots of other smart people in the world with equally great ideas. The operating environment where there is lots of funding and resources in this world, chasing after great ideas, all right. So, I guess the big challenge is you have to know where you are relative to everything else. It's - I tell people it's like - it's like sailing, all right. You got to have a great ship, which is your technology, you got to have a great crew and so they know how to sail, but you also got to have wind basically and you can't do it without - if one of the three variables are missing, basically. So we made all kinds of mistakes of course, right.

Picking the wrong guy for the management, all right. There are people who have a perfect resume but when they show up, when they have to make their own Xerox machine or get their own coffee in the morning they're shell-shocked. They say oh my gosh, I've never done this before, what am I going to do? You don't know that until they really show up, all right. You have technology that looks fantastic and a week later, all right, someone equally smart comes up with something that completely obviates that particular technology. So these are all things that happen and - but as they say here right in the valley, right, you

want to fail early so you can go on, and nothing wrong with failure. The worst thing is never taking a chance in the first place. Two more. So what are the key aspects you look for in the people you surround yourself with? It's very simple, I want them to be smarter and better looking than I am because then I don't have anything to worry about, right. And they can take care of as many tasks, as many difficulties as possible, all right. Always hire up, recruit up basically.

One more question. So the cloud and service providers like Amazon web services in the rack space have made the fixed cost for starting an IT company essentially zero at the beginning. What's going to be the next big thing in the medical space that similarly lowers the barrier to entry? There are many. I can talk to you afterwards actually. But that's extremely valuable, right. So now it's an even playing ground. So what you need now is people with really smart ideas, right. That means someone who is a great inventor with a great concept and a critical insight can be as competitive as some - as the next guy who has got a big infrastructure behind them because you don't have to build that stuff from scratch basically. So the playing field is really even. That's why being creative and smart, having great insight is going to make a huge difference.

And that's why healthcare IT is going to be a hot area, I think. Thank you. One more. Yeah, how did you start Skai Ventures? So it was actually that airplane ride, I was flying back and... Like the initial capital had to come from somewhere and how did you okay, we're going to - this is our first project and our first company that we're going to start with, how did that all sort of start? Like the old-fashioned way, I went home, sat down, took out my check book and started the company basically, yeah. All right. Thank you. Thank you.