

Quarterly Networking BILT Meeting – February 10, 2015

Meeting Minutes

Welcome and Introductions – Ann Beheler

Industry Trends

Matt Glover – Absolutely, Ann, thanks for allowing me this opportunity. I've gone to a couple of conferences. The recent conference that I just went to was the CIO Synergy Conference in Dallas. For industry trends it is really interesting to hear the different perspectives of the CIOs that are in our community. A couple of ones I want to highlight and then I want to open it up to the floor for the other business leaders in the industry to speak about their trends so please take this time while I'm talking to think about trends that are really impacting you. The first one, I'm going to open up with a story. The story is, the Keynote Speaker at CIO Synergy was Mark Randolph and he's the founder of Netflix. He talked about a gentleman who went, and I want to say the country was the Sudan. It was a country in Africa, where they were having some internal, civil wars that were happening. Lots of local population were losing limbs; arms, legs, etc., etc. Not to be morbid but what was fascinating is that this guy was a technologist. He does not have a degree in anything medical. The one thing that was damaging that country was this limb problem. So he went to the surgeons in the country and asked them why there was nothing being done about this issue. They explained that it is way too expensive and way too many people who would need them. So then he asked them if they would buy prosthetics from him if they were \$200. The physicians group said they absolutely would. He went back to America and thought about a way to do this. He came back to Africa and gave them a 3D printer, a bunch of materials, a computer to manage it and developed his very first working prototype of an arm replacement that included a moving hand. He did this all with a 3D printer and handed it off to them and by the time he left two weeks later from that country, the doctors had already created 73 other prosthetics using his technology. One of the big things from a trend in 2015, is 3D printers are going to go into an "explosive" mode. In addition to 3D printing, we're also seeing an impact to cloud computing. Not the cloud that we were all enamored with a year or two ago. It's more of a hybrid cloud where it is mixing community cloud-based services with on premise cloud-based services with the traditional cloud-based services. Those are two that I'd like to highlight. Another is the wearable technology as it impacts the internet of things. I think as good old fashioned capitalism wants to make more money they are going to find more ways to figure out where people are, what they like and then getting whatever that product is to them as soon as possible. The concept of computing everywhere is already here. Everyone on this call has some sort of mobile device. Everybody has high-powered computing technologies in their pocket. This will start a trend where it will be an anchor device and then there are other technologies that you will wear that you will Bluetooth to your anchor device and communicate with the world at large; very fascinating types of technologies. Some of the things that our organization as a whole is working on is Geo-fencing. Geo-fencing is huge and it's going to continue to grow. As the marketing people get engaged at a greater level of the capabilities of Geo-fencing it's going to become crazy with the amount of opportunities that are going to happen. Things like when you walk into your room or your house or whatever, it will know who you are, proximity, it'll be able to validate what it is that you want, where you need things, etc. All of those types of things are going to happen as well. I'll open it up to the floor. I've given you five but why don't we hear from some of the other business leaders. Anybody else want to talk about some trends they are seeing in their industry?

Ann Beheler – Wait, before we do, Matt, could you make comments about what it means for curriculum for each one of these if you have any idea?

Matt Glover – Sure, sure, I think that I'll back up to the 3D printing. I think that there will be labs that will be turned around. We're going to have ability to not just program a "1's and 0's" type of lab where I'm creating some kind of application. We are going to be able to program an application that then will produce things at your table and I believe that those things are going to happen in a lab environment and those things are going to happen a lot sooner than we think.

Ann Beheler - Matt, just an FYI, I spent our entire technology budget in 2001 on a \$30,000 3D printer that can now be bought for less than \$1000, which is really cool.

Matt Glover – That's great. So that's one, I think we are going to have some exciting lab capabilities where people start to make things tangible instead of just digital, so I'm pretty excited about that.

Helen Sullivan – Matt, this is Helen. Richard Grotegut on the chat wanted to know "Do students need CADD skills in order to use a 3D printer?"

Matt Glover – I don't know that question. I don't know the answer to that question. I think that we should do some research and find out. When I started programming back in the day, it was on Basic and then C++. And Basic is really not a very good language, it's very rudimentary. But if you look at the programming skills and the tools that people are using today to program it's almost like they've turned programming into dragging and dropping things. So my guess is with 3D printing and this is the story that I was sharing with you guys earlier, with 3D printing, he used an application that allowed doctors to drag and drop things to build the prosthetic that they needed for whatever patient, patient size, or what have you so it would be a custom fit. So my guess is that tools that we are going to be using will be a little bit easier to manage instead of line by line coding. I don't know if that helps but that would be my guess.

Ernie Friend – This is Ernie, let me just interject if I could real quick, an example of education using it. I'm on a board for online programs at the University of Florida, and what they are doing is they are actually requiring students to buy a small 3D printer. They are about \$800. So let's say for a Geology course, instead of shipping them a box of rocks, they are actually just going to email them the file and then have the 3D printer make the rock in their own home. Then they are going to do that with a bunch of other courses as well so I think for online programs, small 3D printers are definitely making their mark right now.

Ann Beheler – And even the craft stores are selling what's basically a 3D printer but it's design your own stuff, believe it or not. It's sold at Michaels for \$100.

Glenn Wintrich – This is Glenn. I can give a little background on what skill sets are going to be required on 3D printing. And for our students in curriculum, it won't be the printer that will matter. It will be no different than the old laser printers that used to be \$10,000. It will just be a device. But where the money is going to be made is in two areas. One is, and I'm going to be specific here, the software development where CADD-like skills will be required but those are the 1 in a 1,000 users will have that requirement, the rest of the people will be using the software that's developed around a technology like a replacement hip can be done on a 3D printer now with better accuracy custom made for a human. The skill set that will be used will be the applications development which will be able to be done by high school students and it won't require much more than as Matt mentioned the drag and drop approach and the typing of the coordinates and specifics needed. I'll give you an example, I was out at NASA three weeks ago and I visited with a company whose building is on the NASA facilities at AIM. They are called Made in Space. They are the people who put a 3D printer in outer space on the last launch. They will be putting a more sophisticated one on the next launch. As a joke, one of the astronauts said, "Too bad you can't make me a socket set. I could really use one right now I can't find where the other one floated off." And they sat down and within a week they developed the software and then they printed it out in outer space. They printed one out. It was made with an early low-grade plastic which was just a demo device they set up. But in a week they developed a socket set that was functional and 3D printed it. So the 3D printer is just the vessel that puts the filaments through and produces whatever you're looking for. It will be the applications working for this group. At Dell where we sell printers, we've said you don't need to sell printers. They are a commodity already. What we need to sell is the platform that people store the software and the applications on just as we write aps for games today where people go out and say "here's \$.99 for a downloadable flashlight for your phone." They'll be writing applications to print everything from Lego blocks to eyeglass frames and everything else and you'll buy it for \$.99. So there's a market there but that's not a career market other than those 1 in a 1,000 software developers. But platform as a service will become even more important as we go forward in 3D printing.

Matt Glover – Very nice, Glenn, very nice. Any other thoughts on 3D printing before we move on to the next one?

Ann Beheler – Probably should move on because we have about ten minutes left.

Matt Glover – Okay, computing everywhere. This is one of the things where, and I'm not a big fan of quoting Gartner, but I think they do a lot of good research and one of the quotes that they have is

“As mobile devices continue to proliferate, Gartner predicts the increased emphasis on serving the needs of the mobile user in a diverse context and environments as opposed to focusing on devices alone.”

And this is where I was telling you guys that the phone is really going to be an anchor device for all the other wearable technologies that you have and it will be the item where your sunglasses will communicate with your phone. And then when you look some direction it might highlight a restaurant, or something like that, but here's what was really fascinating, I went to another conference where some of the leading edge CIOs were there. The CIO of Kroger was there and he got up to talk about what he was doing in the grocery store market and it blew my mind. And the thing that he said was with wearable technology or even phone technology, one of the biggest challenges that our customers are facing today is the fact when they go down an aisle, there are too many choices. There are too many things on the shelf. And then they take half an hour in one area to read the back of every box to see what they are allergic to or what they're not. So what they are working on is a way for somebody to have a wearable device or even use their phone, put the camera setting up, and then hold their phone up to the aisle and it would highlight all of the milk products that they are allergic to; or all of the non-milk products that they can buy. So then it narrows their pathway to what it is they want to buy. There were 30 choices now there are 3 choices. And it makes the shopping experience much better. If they have a specific allergen they want to stay away from, they can go through and very easily identify the products you want. Then you take that to the next level and you make the phone the anchor device, you put on your Google glasses so now your prescription glasses are so smart, that when you look down the aisle, it highlights all the things you can buy in green. So that's the kind of cool technology that's coming out in front of us and I wish I could say it's 2, 5, or 10 years from now. But the reality is that CIO for Kroger said they have already released a store doing this in Tennessee. So this is happening very quickly. Much faster than I think all of you could have imagined.

Glenn Wintrich – Matt, this is Glenn again. This is very interesting area. You wouldn't think of things like insurance being interested in the internet of things. I'm working on multiple projects where the insurance companies are already saying they want to quit selling insurance and start selling home reliability instead. They will be doing everything from monitoring water flow in your house and noticing if the temperature goes dramatically below freezing. When there is no water flow in the house and all of a sudden there is a high volume of water, they'll be able to alert someone to go out and turn your water off. Your smoke alarms, your carbon monoxide alarms, all the different devices will be covered. They'll sell you a sense of security for your home and they'll back it up by insuring themselves. Things like that. Pet insurance is a huge thing now. One of the companies that I'm working with will send a care basket out and the care basket will come with a tag in it and it will alert you if your dog goes outside the perimeter of your yard. If you are at work and all of a sudden you notice your dog is half a mile from your house, it can track it. And it can do it all without a human intervention. I mean different things like that, so the insurance companies, the banks, the retail world, everybody is getting in. Gartner predicted that it would become main stream in 2020. Our prediction in our foresight group at Dell is now predicting it'll hit the knee of the curve and start exponentially growing later this year. That literally all of these early adopters will adopt this year and then it'll be if you want to stay in the game and be competitive, you'll adopt in 2016-17. And what that means for us is our students who are going to graduate in 1-2 years, one of the skill sets they are going to require is, understand that they used to only worry about the IT team, but if we go back to unified communications, the telephone guys and the IT guys didn't even work in the same building or for the same boss. The telephone guys worked for facilities, not the CIO, and we had all the problems with security and endpoints and training of the telephone guys to bring them into the UC world. The same is happening again with facilities. All of the different devices in the building, whether it be the elevators, the

security systems, the heating, the air conditioning, the water, all of those are going to be sensed. Intel has already come out with the chips and the gateways and the partnerships are growing across the globe. So we've seen the knee of the curve and it's not just going to go up, it's going to go up exponentially. So our students will need to have the skill sets to interface with facility systems and operating systems other than IP like Back Net. So they'll need to be aware of it. They won't have to be able to fix it, but they'll need to be aware of it so when they implement or maintain a system that's got your boiler system for a hotel building, you've now got another security risk, you've now got another end point to manage. Physical security, all those things; it's like you're looking at the year 2000 all over again.

Matt Glover – Right, while you were speaking, Glenn, I was thinking to myself this is one of those great opportunities where we have so many educators on the call right now, I think it would be great just to get you guys to explore the new possibilities. You could use the examples of things that are coming out today as great business cases for the students to go and get excited about and learn. And it kind of opens their mind to the new possibilities. Today in IT, it's probably the most thrilling time to ever be in IT, and I'm sure people over the ages have said that, but with the consumerization of technology and with cloud computing capabilities, it's almost like IT has been opened up to a brand new dimension of capabilities that we could never even think about doing before. That coupled with Geo-fencing and a lot of the other technologies that we've talked about today, wearable techs, etc., the sky is the limit of where our students can go. Many of the students that we're dealing with today grew up in the age of the internet. They don't even think like my "old school" view of just being at the jungle gym on the monkey bars and having a great time. That day has dawned and they have a different perspective. Anyway, I just wanted to leave that, I know we're running out of time. Any final comments before I pass it back over to Ann?

Glenn Wintrich – I've got one to add, Matt, and it's an interesting one. There is something called Google Trends, which you can go out and type in key words and you can see how many times it's been Googled over the years. One of the unusual trends right now is software defined networking and software defined data centers. It is not getting as many hits as it used to which might make you think it is losing importance. But what's losing is the newness. People aren't saying, "Gee, what is this?" They already know what it is. They don't need to go out and Google it anymore. Now they are starting to talk to their providers and just this last week Cisco even mentioned that Nexus 9000 they are going to have an open-standards approach to the operating system for that device. We are going to see the software defined datacenter—it won't be a knee-jerk exponential growth because of the embedded base but we are going to see more and more equipment coming out that's capable of it.

Tu Huynh – Glenn, this is Tu Huynh with Comerica Bank and I concur with that. We are absolutely talking about SDN now.

Matt Glover – I definitely agree as well.

Mark Dempsey – We have one question from our educators. The question from Richard Groticut, "For wearable technology support and development would it be safe to say that students will need coding skills and electronic basic skills as well?"

Glenn Wintrich – I would say no. The reason is we are actually moving toward what's called Pervasive Simplification, which means to remove the complexity from the end user. In this case the end user is the technician. They aren't going to be going in on the wearables and having to do a lot of component level. Most of the wearables, even the watches, just throw them away when they break. These things are going to be dirt cheap.

Matt Glover – Yes, I would second that. When I am in different meetings, either with other CIOs or even in my own office, the premier conversation is around how do we simplify the experience for end users? And how do we make it more Apple-like? It's really fascinating that before we were trying to overwhelm people with complexity and now we're not. If anybody is old enough to remember the cars in the 1980's, it was really cool for 1980's U.S.-based cars to have lots of buttons and gadgets and things on the dashboard, to really confuse your driving experience. But when you look at today's cars they have less,

much less. And the reason for that is because the focus should be on the driving and allow the technology to be just there and easy to access. I do agree with Glenn's assessment, as we complicate the heck out of everybody's life, the things that we are doing, like wearables and things like that, will be very simple in the process. From a student perspective it's not necessarily them having the programming skills to leverage it, it's them understanding what's available so that they can figure out how to best use that for their organizations, whoever they go to serve. All right, with that, Ann, I am going to go ahead and pass it back over to you. I think I went a little over.

Ann Beheler – Well, that's okay but I'm going to pass it back to you, too, because we're going to talk about the report out from the SDN Tiger Team meeting and you and Ron Halbach were key people on that meeting. And while we're not talking about coding skills specifically, one of the key things that came out of the Tiger Team meeting, and I'm looking at the draft minutes here, was that you wanted us to make sure that we had networking people that knew scripting and knew in general about SDN and more than the networking side of it; more information about the storage side, the server side, and so on. I'm going to turn it over to you and Ron to talk about that a bit more maybe for ten minutes or so?

Report from SDN Tiger Team Meeting

Matt Glover – Okay, so from my perspective, it's all about the ability to deliver massive changes across an entire network with low risk. You can't do that without scripting. One of the biggest things that Ron and I were talking about was the scripting capabilities. It transforms your teams view from being able to take 60 hours during a very long weekend, and that's 24 hour periods of time trying to deploy some kind of network change to getting it all done within 8 hours and then working out the bugs with the remaining hours. Those are the things that I think are going to critically set our students apart from everyone else. Ron, what were the key findings that you wanted to make sure that you, oh is Ron on?

Ron Halbach – Yes I am. I think you hit them perfectly so I'm happy with what you guys have said. I see the need for scripting. The only other comment that I would add, and perhaps something we didn't talk about is Python as a programming language and more and more devices from a networking perspective interfacing and using Python. I think that's going to be a growing trend, I think it's going to be Python, but you know the world can change. But that is something else that we need to think about as well as we look at scripting but it's a great trend. It's going to happen. You hit the impact of it, the advantages of it, remove human error, I'm good.

Ann Beheler – And Florida State-Jacksonville is putting together some curriculum on SDN and also, too, out of the conversation at the Tiger Team meeting, it came out that we might want to consider a not-so-many-courses certificate, like a 2 or 3 course certificate. Maybe less than that, but it would be more of an awareness. The point that was made was that we would not be looking at a person that would graduate from a 2-year program as being someone that would be the "guru." It would be more or less kind of like it was in the earlier days that a networking person that knew security would increase their chances of getting a job. If the networking person knew something about SDN it would improve their chances of getting that job. So that's it in a nutshell.

Matt Glover – Yeah, there's another point I want to make on that. I was just talking to a brand new citizen to the U.S. He came from India and he went to school in India, got his college degree in India. And then he came to America and received his graduate degree in an American school. And we were having a gentle dialog, this isn't super-scientific or anything, but he shared something with me that I thought was fascinating. He said, "You know, in India, the schools basically teach us to test, just the facts. We do a lot of memorization just so we can get the certification and pretend we know what we're doing. When I came to America and got my graduate degree, American schools all focus on how to apply it. I've got tons and tons of knowledge about what it is but not what to do with it." I thought that was really interesting and I wanted to share that with you guys mostly because in our American schools I really want us to focus on how to apply it. How do we make sure that as we find out these new trends, as we find out the future of where America and the rest of the world is going technologically, what is it that we can inspire our students to apply that's in software-delivered networks? Whether that's in wearable technologies or what have you, I think that it's opening the minds of our students so that they can see with a fresh perspective.

Mark Dempsey – We have three comments from the chat box real quick here.

Question #1: What language is going to be used to perform the scripting for the SDN environment?

Question #2: Will SDN reduce expenses for labs? Less hardware? More software?

And then Ron Halbach's asking, "Can we use MOOCs as a way to cover some basic knowledge SDN Python and still stay within the 60 hour limit?" Those are the questions.

Matt Glover – I like the MOOCs comment. I would agree. I think that would be great. As for software, I think that just like any new technologies there's going to be a fight between who is going to be the right software technology and over time, I'm going to use the Apple phone story to try and back up what I'm about to say. For years, Apple has dominated the phone and device market and over the last two years we've seen a sharp decline in Apple and their ability to deliver. They have a proprietary type of language that they use and the dominant market player has been open-source. So the Android market has now eclipsed Apple, so my guess is over time what will happen is there will be key players like Cisco, Juniper and others saying, "Hey, this is how we do it." Then there will be a different standard that's going to be developed, probably in open-source if those big companies don't get together and do it together. What will happen is Cisco or Juniper will dominate for a period of time and then five or ten years after that, it would move to a more open-source capability. Are there any thoughts or comments on that?

Glenn Wintrich – Everything we're seeing is proprietary is where it's going to start. The money will be made and then either of the companies making the money will help shift it to open standards. It's because there is just no longevity in the proprietary market anymore. You make it open standards and then you become the best at applying open standards.

Matt Glover – Yes, and Glenn, Dell is a big player in that, too because Dell is doing something the other organizations aren't doing as well and that's the convergence of technologies Dell has taken to the next level combining networking, compute and storage. I had this conversation with you guys probably a year to a year and a half ago. Things like the Vertex technology, they are continuing to morph that so where we talked about a software-defined network, where Ron and I were discussing it at length on the Tiger Team, what's interesting about it is the network starts to be melded with the compute and storage in the same devices, then it's going to go back to that original prediction that we're going to have to have more IT generalists in the industry helping us versus specific network engineers or specific systems engineers to do the work. We need people who can see across all of those venues and not be siloed into one camp versus another. So I think those are probably the big things that we need to make sure our educators and our students understand the trends going that direction.

Ann Beheler – This is Ann, I'd like to make a point about MOOCs. MOOCs are great; they are free online training courses, basically. I would say in general there's no free lunch, though, even though they are free courses. Ultimately, though, you have to have a very motivated student that wants to go and take those courses. At some point, the item that becomes of interest is providing some way of assessing whether someone learned the material or did not learn the material and it is not as easy as one might think to just say, "It's out there, go learn it." So I would caution our folks that are on the call to, I mean it sounds cool but MIT put all their courses into MOOCs or almost all their courses into MOOCs and I don't see business in industry taking people who have finished the MIT MOOCs courses and hiring them as equivalent to MIT graduates. I mean it could be a useful thing, but I think we are a bit away from that being the "Save-all End-all." With that said, there are a lot of courses that are being created as a part of some of these big grant programs including the DOLTC grant. Now we're not creating SDN in the DOLTC grant. I know that Florida State's creating SDN courses, but we are creating an online python course that might be useful for teaching scripting, for an example. I think we are really going to be up against it, though, in terms of the real estate on our 60 semester hour requirement and it's going to require us to put in some skills mastery certificates and to deal with our various state rules.

Ron Halbach – I'm not suggesting for a second that it's perfect because it's not, very few things are. I'm just thinking, Ann, we've got a 60 hour limit.

Ann Beheler – I know, I know.

Ron Halbach – You are absolutely right, though. You have no way of guaranteeing I took the course or you took the class, right?

Ann Beheler – Not without assessment.

Ron Halbach – Even there, right, so now you've got to figure out how to do assessments and there's certainly problems around it, but going to the comment we made earlier about "open," if you will, it's coming. We can deny it as much as we want to but it's coming.

Ann Beheler – Oh, I don't want to deny it. I want to figure out how to use it.

Ron Halbach – I didn't mean it that way. Earlier we talked about a word. We talked about "pro" like a commodity. That is the worst word in the world for a vendor and "open" kind of leads that way so I'm not suggesting anybody say anything bad about it. I'm just looking and in the crystal ball I see "open," right?

Ann Beheler – Oh no, I agree, there is a huge push for it, huge, huge. The missing part is often the assessment part and we are not keeping up with that piece of it, I guess, is what I'm trying to get across.

Ron Halbach – Oh I was just going to say that assessment is even a problem when you get around to certification and taking tests, right? There's lots of ways of getting around those, too. Industry-based certification tests...we're heading down a path here, I need to stop talking or Ann is going to tell me to shut up.

Ann Beheler – No I won't. I never have and never will.

Ron Halbach – This time I just said that out loud instead of in my mind. No we covered what I wanted to.

Mark Dempsey – Two comments in the chat box. Michael Gibson says, "Our advisory board in Huntsville, Alabama is also stressing scripting for networking students. Python is a popular choice." And from Gordon Snyder, "I like Objective C with C++ as a foundation. Good structural platforms that translate to other languages nicely." And this question has already been passed over, this is the question from Richard Grotegut, "What about fundamental IT skills in System Administration and Networking?" And we already covered that, this is an older question.

Matt Glover – I think it is most important, guys, and I can't emphasize this enough, that if you only understand your one lane and say you're a Network Engineer, and you know nothing more than Network Engineering, you are not going to be a good Network Engineer. You won't get a job on my team. So, from my perspective, if you make sure that your students understand there is no silo between a network engineer and a system engineer and an application developer. And you make sure that everybody understands that in order for us to give a good technology solution to an end-user all of these things have to work simultaneously together. Then, all of a sudden, when there is a problem we're not doing a blame game, we are all just jumping in trying to figure out why there's a problem and what it is we need to solve. And when you understand a generalist perspective of what application development does, what software engineering does versus what network engineering does versus what hardware engineering does and you can see across that consortium, that's going to make a you a key contributor and a valued team member on any IT team in the world.

Mark Conway – This is Mark Conway from NetApp. I would just echo that sentiment. Someone a few minutes ago was talking about the converged infrastructures that have networking, compute and storage and we certainly see the industry moving to that. We do a joint solution with Cisco that would now, probably sold thousands of them, billions of dollars of these converged infrastructures and the three legs to the stool that we would see would be networking, storage and virtualization. I think if students understand those three legs to the stool and to your point can talk about them how they interact and work together; IT hiring managers would be very pleased with that skill set.

Matt Glover – Absolutely.

Bill Morgan – This is Bill Morgan. Can I just comment quickly? I'm with Avistas. Another dimension that we're talking about what is what I would essentially call Cyber Surgeons and all of these are skills and tools you need in your kit, but another communication tool that we see is increasingly in demand is the Business Analyst type of communication. Not only are you a technical master in virtualization, whether it's storage or processing and applications or what not, but it's also understanding how it fits within the enterprise or within the commercial value of what you're trying to accomplish and with that a lot of people what we are seeing more and more is they are developing very systematic modeling tools to understand the convergence between the technical aptitude, the things you can do and the things that make sense in the environment you are trying to perform commercial transactions in. That is hugely valuable as well.

Matt Glover – I would agree. And finally to wrap this up, there is a big challenge we also have in the industry and I've kind of glazed over it and I don't really want to do that. And I'm going to say it three times for effect, security, security, security. As we go with these easier to use technologies and simplified technologies, the greater and greater risk our organizations and personally we take by having these technologies be used against us. So having a sharp and clear and crisp understanding on security and how to best secure our technologies so they can be used for good and not ill is also a critical path for the trends that we are seeing in the industry.

Schedule Next Portfolio and Mobility Tiger Team Meetings

Ann Beheler – Okay, let's move on a bit. On the Tiger Team for Portfolio and Mobility, I have the list of people that are involved but we will send you a doodle. I think it's not appropriate for us to try to come up with a time with everybody on the line. On the Mobility Tiger Team; Ron Halbach, Charlie Bess, Kpayah Tamba, Pam Betts, Mark Whigham, Matt Glover, and Rafat Elsharef. And on the Portfolio Tiger Team we have Lynn Mortensen, Rob Halbach, and Glenn Wintrich. We'll send you a doodle. If anybody else is interested on being on these Tiger Teams let me know. We will certainly add you to the list. The Tiger Teams are about an hour and a half to two hours. They are very fast moving, very interesting and we would welcome you being involved, so let us know.

Employment Forecast

Ann Beheler – How do you see the industry? From our point of view we have, well not at the very moment, we have one of the Department of Labor Job Developers and we are seeing really good success at placing our Department of Labor graduates at this point from our program. But what are you seeing in terms of industry? Are you seeing it trending up? Do you see it trending down? What are you seeing? This is more in generalities at this point. Anyone see it at all?

Matt Glover – Well, the Texas market is blisteringly hot. The same is not true of all the other markets in the other states. There are a few states that are exceptions to that rule. For the most part, when I'm looking at the employment trends and I just read an article yesterday on it. This isn't a shameless plug for Texas but the article that I read yesterday stated that if we looked at the economy as a whole, and the jobs as a whole and we removed Texas, we would actually see the Great Recession started until today. So it's really fascinating and I'd really like to hear from some of the other states because I know in Texas there are massive waves of people getting employed very quickly. I don't know that that's true everywhere else. Other states can you weigh in, please? Nobody from any other state? Everybody's from Texas?

Ann Beheler – No, there are several on the call.

David Pope - This is David Pope from OTC in Springfield, MO. We're seeing remarkable growth here in the southwest part of the state. We have employers who are bypassing our employment center and coming directly to networking faculty for recommendations on new hires. A regional company here, Jack Henry & Associates, the informal sources tell me that they will take every one of our graduates that can pass an interview. I don't know how things are in St. Louis or Kansas City.

Matt Glover – Thank you very much for that. Any others?

Ron Halbach – This is Ron, I can't pin it down to a state, some I can, Massachusetts and California always, right? We are searching everywhere for talented people. And the same holds true for other companies. I know because I'm getting their calls as well. I see a definite uptake in the market right now, I'm not exactly sure why, but yeah I'm seeing it.

Mark Dempsey – Richard Grotegut from California says, "Lots of opportunities in Silicon Valley, obviously."

Bill Saichek – This is Bill from Orange County, California. I'm sure Richard sees a little bit better growth than Northern California. Southern California is still very sluggish. The state is rather schizophrenic about wanting to help companies create jobs. The funny thing is we are getting a ton of recruiters coming in, but they are coming in from out of state. Again, Texas, I absolutely agree with the comments already made but from Arizona, from Nevada, we're seeing companies coming in, recruiters coming in wanting to talk to us. California companies, it is in fits and fizzes. A few markets, healthcare is a growth market. We are seeing that in southern California. Other industries, not so much. Large manufacturing-type companies are being driven out of the state, especially down here in the southland. The eastern part of southern California is still very much in a recession-type zone. So, again, we're real schizophrenic in that sense.

Glenn Wintrich – The good news is that right now, the North Texas region is at 4.0% unemployment and according to economists when you hit 4% unemployment, all of your high-value skills like IT, you're actually at 0% unemployment meaning there are more jobs than people and they are starting to leave the area to find them. It's a great market and a great reason to move to Texas right now if you're in IT.

Gordon Snyder – This is Gordon Snyder; I just want to throw in from Massachusetts. High demand for people with Bachelor's degrees and above in areas like Computer Science, Engineering, Mechanical Engineering in the prosthetics area but not a lot of demand right now for people with 2-year Community College degrees in those technical fields. I think these companies are finding people with engineering degrees. It's difficult now. A lot of the students are finding themselves going on to a 4-year college for a 4-year degree.

Ann Beheler – Susie Davisson, our Key Job Developer, she's not the only one. In fact our entire Career Coach team is focusing on Job Development right now, but Susie, you want to comment for us?

Susie Davisson – Well just from my experience here in the North Texas area, I have been told by employers here that they would rather see experience and certifications and the degree is not as important as the experiences.

Ann Beheler – But aren't you having reasonable luck with our 2-year folks?

Susie Davisson – Definitely having luck in placement because of that.

DOL Update – September 30 finish line

Ann Beheler – Moving on because we are only at #6 and we are already one hour into our hour and half. A quick DOL update, we are through with the Department of Labor grant as of 9/30. We're going to hate to see the money go away because it's done an awful lot of good things for us. We are thrilled about it. This Business and Industry Leadership Team will continue, so do not fear, it continues. The CTC continues. At this point, we are shifting heavily into primarily placing students or helping them get ready to be placed. We have a job fair on April 29th. We are working to have as many businesses as possible at that job fair as we have a lot of folks that will be graduating in the spring as well as the summer. We're going for placing as many as possible. Interestingly enough, it looks like at Collin we are going to be meeting the number of certificates and degrees we said we were going to be able to do. The part that we probably will fall short on is the number in employment. That is because we cannot count anyone that was already employed in any way. If they were a student assistant and we find them a \$50,000/year job, DOL does not allow us to count them. It's a funny definition situation and this is happening all the way

across the country. I'm not too concerned about it but that's just the way it is. We are meeting the certificate goal. In fact, it actually looks like we may exceed it. We are pretty happy about that. But with that said, is Natalie Greenwell on? Natalie? I don't think she's here but I will cover #7.

Programmatic items for review-CE fast-track CCNA for veterans

Ann Beheler – Number 7 on the agenda is talking about a fast track CCNA for Veterans. Continuing Ed has gotten some money from the state for a focused, short-term, very intensive, very selective CCNA program for veterans, to put them through the entire CCNA program by August. We are supporting this program through our tutoring and career coaching. We don't have to support it in hardly any other way, actually. We're sharing the labs that we've already provided equipment for. It's just a fast-track CCNA so we would ask if there is any problem with providing approval for their certificate program being offered in this manner and I would suspect there probably isn't because it is still CCNA. Does anybody have any problem providing approval for that program? It's going to be very, very intensive. Right now they have two programs, one is the CCNA the other is a manufacturing program that I really know very little about. But it's focusing specifically on veterans to get them trained, get them trained rapidly and get them a job so we are providing them our services to assist and also get to count them, which is a good thing. Okay, we'll turn it over to Florida State-Jacksonville to talk about your new program. Ernie, are you there or do you have someone else to talk about this program?

Feedback from BILT on new NES Degree at Florida State College Jacksonville

Helen Sullivan – Ernie, if you're on mute, hit your mute button.

Ann Beheler – I'm not hearing you, Ernie. Is Ernie there? Is someone from Florida State here?

Aaron Hoffer – Ann, this is Aaron Hoffer, I'm here but I'm not prepared to talk about the new program. I don't think I would do it justice.

Ann Beheler – Okay, well maybe we'll come back. Do you want to see if you can get Ernie?

Aaron Hoffer – All right, I'll see if I can raise him.

Ann Beheler – Okay, so we'll move on to Del Mar because we don't have time to wait much. We'll have to come back around. All right, so Del Mar. JJ and I don't remember who else is there. David?

Feedback from BILT for Del Mar College

JJ Nelson – This is JJ Nelson and I am going to be deferring to Dr. Abarca in regards to the proposal.

Ann Beheler – Okay do you want to bring up something...

Mark Dempsey – Do you want the screen share, David, to show what you want to show?

David Abarca – It's a PDF that says Network Programming BILT

Ann Beheler – Okay, we're bringing it up.

David Abarca – All right, essentially what we've done here, Del Mar College has been the Texas Skills Standard Based recognized program for networking and information security for the past 5 years. And our industry advisory committee, which just met earlier this week, has seen the trend. Some of you were talking about security, security, security. We started our program 11 or 12 years ago. They were two separate degrees. Almost 99% of our students went through our networking degree and then they took 5 or 6 additional courses and they got a second Associate's in Information Security. However, as we've all seen, security is now such a fundamental part of everything involving networking that rather than being two separate programs they've now morphed into two sides of the same coin. As a result along with the 60 hour mandate, what we've done is we have introduced a new degree this past fall. It is now a combined degree for networking and information security; Network Administration and Information Security. We kept the 60 hour goal by changing some of the hours from 4 hour courses to 3 hour

courses. Additionally, we've taken some of the courses that were closely aligned and pulled them together. For instance, in our server course, Implementing Servers, we now also as a part of that class do the operating systems security because they do go well paired up in that area. We're looking at some other courses that we're bringing in. It created a Fundamental Foundational Marketable Skills Award that had Logic in Design, PC hardware, PC Operating Systems, essentially Command Line Interface and Introduction to Unix and Intro to Computers as a one semester foundational skills set. However, the state has said since it's not part of the other degree you can't make it a prerequisite. You're essentially creating a 13 hour certificate in preparation for your 60 hour degree. Nice try, do it again. We're looking at taking some of those courses and really paring them down into 2 hour, 8 week courses where we'll be able to introduce those courses and still have a little bit of room to continue our program.

Matt Glover – This is Matt. I have a quick question. Have you guys had a chance to map your KSA's?

David Abarca – Yes, oh yes, absolutely. If you go a little bit farther down the list, all of the KSA's are mapped.

JJ Nelson – If you look in the course descriptions and Certificates of Networking and Cyber Security, and if you go to the bottom, I guess that would be page 37, that's where it will show you the cross walk.

Matt Glover – And so this mapping of the KSA's was done by your BILT team?

David Abarca – This was done by our program faculty in conjunction with our Industry Advisory Committee.

JJ Nelson – At the time and we have the updates with that.

Ann Beheler – Oh there it is.

David Abarca – Yes, this quick little 79 page document.

Matt Glover – Just a small 79 pages.

JJ Nelson – I was thinking when we sent it out that you'd have time to review it prior to the meeting. That's why I've included the course descriptions and syllabi and the different awards with the crosswalks so you can just go to the document for whatever information you need.

Matt Glover – Very nice. Do you guys have these KSA's weighted, as in which ones were the most important?

David Abarca – Yes, we have them weighted by our Entry Advisory committee. Earlier you all were talking about Python and just this past Tuesday we had a Registry Advisory Committee meeting and were pulling in a scripting class. From the Network and Security side we've gotten away from Introduction of Programming and we are replacing it with a scripting class because the students do more scripting in their job functions. In asking the employers, what do you all want? What do you need? What languages are you using? It was amazing, overwhelmingly they said PowerShell. It's nice if they know Python, if we see Python on a resume, that's all fine and good but day to day functions PowerShell was far more important.

Matt Glover – That's great feedback.

David Abarca – Yes it was. It took us totally by surprise. We teach PowerShell in our TLI class, Intro to PC Operating Systems and so we were already doing that and we as faculty had seen the importance of it and had already interjected that into the course so getting that response from the Industry Advisory Committee helped us quantify that we were certainly on track. In addition to being the Networking Information Security Program Director, I'm also in charge of our internship program so I am out talking to businesses all the time, establishing relationships for our students to get internships, so I have a good

sense of what our interns are going to need to do and what the employers are requiring. More than 60% of our interns end up being placed full time getting offers from their internship companies. The only reason it's not higher is some of our interns continue on to a 4 year degree and some of the Institutions like the City and the County that don't have the funding for permanent positions but keep all their special projects for our interns.

Ann Beheler – David, how do these KSAs relate to the National BILT KSAs? They are not the same.

David Abarca – No, they're not. These KSAs are based on the TSSB which came to us from Austin. The problem is there are so many standards that there really isn't a standard and as such the TSSB, who is obviously awarding their certification, had picked their set of standards based on the nice framework along with some of the other national standards.

Ann Beheler – And what is the timing on these standards? What is the date on them?

David Abarca – The original standards were in 2002 and then they were revised in 2005 and then again in 2007. And then we just re-qualified for it in 2010.

Ann Beheler – Did they update the standards in 2010?

David Abarca – Yes, they've updated the standards. Right now, we are the first institution to combine Networking and Security. Because we are the TSSB program in Texas all other Community Colleges who are setting up Networking programs or Information Security programs come here. They use our Curriculum, we share our curriculum, we share our syllabi, our whole lab program, our lab designs. That is all shared with Community Colleges across the state. That is one of the functions as being that recognized program. Now that we are going into this combined program, we are cutting edge. We are the only institution in the state currently offering this combined networking and security degree. Obviously some of the other programs are now looking at that degree to see how that will follow suit.

Ann Beheler – How do they justify being five years out of date on the KSA?

David Abarca – I don't know.

Ann Beheler – Because this group puts these things together and updates them every single year.

David Abarca – When you achieve the TSSB award it is for a 4 year cycle.

Matt Glover – You know what would be really great, David, maybe you and I can work together or one of the folks from Collin who works with the KSAs, because it would be great to see this KSA mapped to the KSAs that we've done nationally to see if there are any gaps. Quite frankly, we understand that the local communities are going to have a slightly modified version to fit the market that they are in. But I'd really like to get a better sense as to where these KSAs stacked against the KSAs that we've produced nationally.

David Abarca – Sure, sure, the challenge is anytime there is a standard there is going to be a gap. Otherwise, you'd have a never ending list of standards.

Matt Glover – I think from my perspective, though David, I really only care that our students are getting great jobs and not only are they getting great jobs but they aren't having to go through a lot of OJT once they get there. One of the big things that I take near and dear to my heart is making sure that we are equipping our faculty with exactly the formula that we need so that I don't have to spend 6 months of them coming into a new job and then retraining them on how to do it. My hope, quite frankly, David, is that you guys are spot on with everything that we need, but I'd really like to see it if that's possible.

David Abarca – Absolutely and here's another thing. One of the things, exactly what you do, we sat down and said, "What do you expect the person sitting across the desk from you entry level, networking be able

to do so they can hit the ground running?” He asked that specific question. We showed them the TSSB. We said look at these, these are national standards. Based on these, what other things do you want to see? And quite frankly, there was so much of that they said doesn’t apply here in Corpus Christi. These were the things that we want. I’m going to hire every one because they are going to have the low-hanging fruit that everybody needs to know.

Matt Glover – That’s great.

David Abarca – That becomes a bit of a challenge when you have employers who are looking at national KSAs and every one of them says “Don’t care.” We were overwhelmed when so many of them said PowerShell. This is what they need to know. And I had people from the medical community, from the Port industries, people from different refineries, school districts, I have hospitals represented, I have banks represented. And these are the people who are hiring the 60-70% of our students which is roughly (dead air) 15 to 20 students a semester getting placed here in our community. We are very, very responsive to the things they are telling us they need to have. And of course one of the fortunate things is we can be very responsive. I can guarantee them that come September all the things that they’ve requested are going to be in programs this September.

Matt Glover – David, don’t take my comments as anything negative. My comments are specifically around, because I think KSAs are very much a living, breathing, moving target, and it should be. And what is really great is if you’re having that type of success, as well as all the rest of the educators on the phone, if you’re having that type of success, it’s fantastic. But there needs to be a feedback mechanism that goes into our national KSAs that we’ve put together. I want the comparison not because I want to critique you. It’s more to critique all of us because we’re trying to set a national framework that says this is what we need. And if you’re seeing some trends that are starting to move then we need to move and shape our KSAs as well. And that’s really why I want to compare and contrast. It sounded like you were ad-libbing to share the value. I’m not by any way, shape or form trying to pick on you at all. I just really wanted to understand and I really want to do the mapping so we can continue to grow as an organization.

David Abarca – Like anything else, this particular state’s skill standards was used to map our courses to achieve that recognition. In addition to these, we take that feedback, including that local feedback to make sure it is integrated into the program because ultimately, those are the people our students are going to talk to.

Matt Glover – Sounds great, David. Ann, I think you wanted to speak?

Ann Beheler – Yes, we’re going to have to move along. What kind of a time frame are we looking at to get the mapping over to you, the national BILT KSAs? David or Matt, what are you looking for?

Matt Glover – It would be great if we could get it done in the next 2 or 3 weeks. That would be fantastic.

Ann Beheler – Do you think that could work, David?

David Abarca – You’ve got my information. Send me an email and tell me what you need from me and how I can achieve this.

Ann Beheler – All right, we’ll send you the latest KSAs. JJ should have it, actually, but we’ll send it to you. Sorry to cut this short but we’re running out of time.

David Abarca – Also understand, of course, that this is the same set that will be used on the Cyber Security BILT because it’s the same program now.

Ann Beheler – Okay, well, you don’t really need to take it to the Cyber Security BILT. One BILT’s sufficient. Okay?

David Abarca – We just wanted to make sure that was clarified.

Ann Beheler – Okay, all right. Aaron, did you find Ernie?

Aaron Hoffer – I did not. I tried to send him a text message. I'm not at his location and I haven't got anything back. I don't know if he's tied up.

Ann Beheler – We will send information about the NES degree around by email. I'm going to report on the "Recognition of Excellence" and the national BILT presentation real quick because that will take about 30 seconds.

Report on "Recognition of Excellence" at Texas Higher Education Coordinating Board

Ann Beheler – The work that we've done on the DOL grant that was based on the CTC grant, was recognized by the Texas Higher Education Coordinating Board at their last board meeting. They recognize up to four programs a year and we were lucky enough to be recognized on January 20th and I just thought you guys would like to know. One of the things that really resonated with him was our whole concept of Business and Industry Leadership Team. They really like the fact that we are not considering you "advisors." They like the fact that advice can be ignored and leadership cannot be. We got lots and lots of follow up. Lots of interest in how can we change our business advisory team into a leadership team? They really liked it. And similarly, we did a national presentation, thank you Matt. John Sands also participated in this. We did a national presentation on the Business and Industry Leadership Team concept and we're doing a follow up on February 20th, just a teleconference Q&A session. Matt if you can be on that, that's great, if you can't it is okay. Matt and John Sands both did a great job and again it's the concept of leadership with business and that being a key for high engagement with the business groups. Now, let's go back to #10.

Feedback from BILT: the Value of Scripting and Question of A.S. Security Degree without Certification

Ann Beheler – I think we've talked about scripting. You want scripting. What about an A.S. degree in Security with no certification preparation? What do you think?

Matt Glover – I'm not a big fan. This is Matt. I think it's kind of like a degree in Project Management but you're without your PMP certification. Those things don't set an industry standard that I would want to see for me employing. If they came out with an A.S. Security degree and even an entry-level security certification, it's a market changer. It's a transformational element for me to want to pull the trigger to hire that person because not only have they gone through a degree program but they've also achieved the national standard for that certification, whatever that certification is in.

Ann Beheler – Okay, Matt, I misunderstood. John Huff is clarifying. What about an A. S. degree in Security with no certifications other than security certifications? Like no Networking certifications, just security certifications, is that enough?

David Abarca – Just FYI, in our program, we see that, too and we heard the same thing so our students end up with a Networking and Security degree with C.C.N.A. and Network Plus.

Ann Beheler – What do the business people think? I'm sorry, John Huff, I hope I clarified, if not, are you on the phone? You can pipe in if you want. Oh, he says, "Thank you, no mic." Do you want more than Security Plus and some of the other, maybe the Ethical Hacking, and some of those certifications? Do you want some of the Networking certifications as well, or not?

Steve Linthicum – I think we're missing the point and that is that a string of certifications establishes life-long learning. Everybody that wants to be in this career path has to be a life-long learner.

Matt Glover – Well said.

Glenn Wintrich – I think there is also the issue of what gets you past the HR filtering process. That would be your security search but then when you get to the actual hiring manager it certainly would be a bonus to have some of those networking certificates.

Matt Glover – It also speaks to the holistic view of understanding the end-to-end technology stacks between Software Engineering, Systems Engineering and Network Engineering. So understanding that whole computing environment is really important.

Wrap up and date for next meeting – Tuesday, May 12

Ann Beheler – We have 30 seconds left. Michael Saylor is a new Security Professor here at Collin College. We're proud that the DOL grant is helping support him for his first year here. Welcome, Michael. I know we have a lot of new people on the call this time. I had hoped to give each of you a minute or two to talk but I think we are out of time. We do appreciate you and hope that you come back. We do have another meeting scheduled in May. That will be the time when we update our KSAs. David at Del Mar we actually update our KSAs annually. We do not feel that they are static enough to stay for very long at all. So the meeting will be May 12th. You're invited to come here to Frisco face-to-face if you would like. If you are not able to do that, we will allow you to dial in using the phone. If you need funding for coming here, we also have a little bit of funding available for some stipends to get at least the business people here for this KSA analysis.

Matt Glover – I know we are out of time, and I want to be very respectful for everybody's time, but as a part of this program I was recently asked to go to the White House to do some consulting and participate in a Round Table with them for the CPO of the White House. In that process there were a couple of things that came out of it and I have a follow up meeting with White House members on Thursday. I want to read to you what they are asking and then I'll read to you what I wrote them back last week and I'd really like to get everybody's feedback who would like to participate in that. If you would indulge me for just a minute, if I could walk through that, is that possible?

Ann Beheler – Sure and you may want to put it on email as well to catch some that could not attend.

Matt Glover – Okay, I'll quickly read this.

"In the State of the Union Address, the President called on leaders and business technology to work together in communities across the country to initiate partnerships. To give Americans willing to put in the work and able to master the skills, the chance to be hired in one of the over half a million technology jobs that are open today across the economy and many more in the years ahead. We have already begun this work in the leading cities, states and rural areas that are incubating programs focused on three goals to get a larger more diverse group of Americans into higher paying technology jobs.

1. Expanding hiring internships from non-traditional training sources based on demonstrated competencies rather than pedigree or standard HR markers.
2. Expanding slots upgrading quality and diversify participants in accelerated training pipeline for IT jobs, i.e., Community College, Coding Boot Camps, MOOCs, etc. that local employers demand and will hire from.
3. Contribute funding for the intermediary and clearing house to screen and match job seekers to appropriate job opportunities to provide financing for low income participants in accelerated training.

So that's the goal of the White House at the moment, at least the CTO Office of Science Technology. One of the challenges I was faced with, I wrote them back and said I am committed to making a difference in some American's life. I believe the work we are embarking here will make a transformational difference in the world around us. Most importantly, our work here has the ability to make a multi-generational impact on American families that otherwise may not have the ability to reach these higher paying stem jobs. There are a lot of interested parties in making the program a smashing success. To that end, I was hoping that you could share with me what we can do to highlight transparency or make it easier to understand what we're doing. And there are 3 things I think we need for transparency.

1. Do we have a way of tracking our progress?
2. Do we have a goal? Can we find out where we are today and where we want to be tomorrow? Setting a baseline and then outlining our goal.

3. What is the track? There are many tracks Community College, Coding, Boot Camps, MOOCs, etc. that each group is taking to achieve the ultimate goal of employing Americans. How can we measure each one fair and impartially so that we can hold each other accountable for moving America forward?

So those are the questions that I have and if you guys know of a really great way of us being able to highlight transparency, and we've had some of these transparency conversations before. But I'm meeting with them Thursday afternoon to discuss some of my views but I'd really like to hear from you guys, so if you have a moment, I'm happy to forward this email to anybody who would like to read it and then participate. You can write me at matt.glover@harman.com and I would be happy to forward the email to you and then participate in a real meaningful way between now and Thursday. So thank you, Ann for the quick aside.

Ann Beheler – Why don't you forward that to me and I will see that it gets out to all the business people on the call, actually to everybody, and then they can all respond to you because I'm sure people probably didn't get that written down. Also, Glenn is also involved in something at the White House. Frankly I had forgotten that Matt was involved as well. Is there something you would want to say?

Glenn Wintrich – Yes, Matt is the person I am dealing with. I'm not at my computer right now, but he is also at the White House Office of Science and Technology and he was meeting with me on how to bring education, well actually it wasn't education, I brought up education, it was the internet of things and smart cities. I'll have to look the guy's name up and send it to you and see if he's going to be on the call with you.

Ann Beheler – Thank you, I think that's good. The more we can get in that dialogue the better. Okay, thank you, everyone.