

**Business and Industry Leadership Team Meeting Minutes
Focus on Cybersecurity**

February 18, 2015

9:30 – 10:48 a.m.

Welcome and Introduction

John Sands - We thought we would start this morning with a quick introduction of the BILT process. Then we want to go into industry trends, specifically with a big emphasis on placement of our students. We'll have someone from Moraine speak about placement of students, but I really want to hear from our business partners with some suggestions in that area. We've had a very successful run over the past three years in placement of our students but I think it's a good idea to have our business partners give suggestions for what we should be looking for in the future, and what specific things will help in employing our students in the Cybersecurity sector. To catch everyone up, we started the process by presenting a list of necessary knowledge and skills to the group. From there, we built objectives and then we built those objectives into courses and specific means of measuring those objectives, whether it was a skills-based lab or assessment items with instructional materials. At this point, all of our courses are now well under way. In fact, one of the things we've done this last quarter is that we have taken a couple of courses that we wrote early on and given them a facelift because some of the operating systems, tools and technologies have changed over the time period. A big thing in our area is looking at the types of attacks and data breaches that have changed the way we have to look at things. All the course content is either in use or we're going through final revisions or updates of some of the labs. The partner institutions that have adopted these courses are now in the process of placing program graduates. We did have a few new curriculum items come up in the last two meetings. What may be of interest to some of you is that we will have a full-blown scripting course available in the next month or so as well as labs. We took your feedback so we have a group of Python labs and Pearl. We've got some Power scripting and Bash scripting. We took the approach of keeping some basic programming concepts and then injecting scripting languages so that students could build simple tools into their day-to-day operations of their organization. We have two different authors working on the labs. Then we are also on our way to developing some industrial control security labs. A lab has been implemented, and the instructors have gone to some advanced training and are in the process of publishing a series of labs. We are going to append these to some of our existing courses. Both of those initiatives that started after the original curriculum processes are well under way. That pretty much catches us up. Any questions on any curriculum? Any input on how we've used it?

Matt Glover – John, I'm really excited to hear the things that you're doing to take the feedback from the BILT team and make it real. Thank you very much for doing that. I'm pretty excited for what the program holds.

John Sands – We host a lot of national competitions and we are going to take some of these elements and infuse them into the competitions this year. I think it's really a great way to have the students understand the importance of these concepts and go a little bit above and beyond what we do in the classroom in preparing for the competitions. That's one of the things we did outside the grant but once we have labs it's really easy to do things like that. It's one of the things we're doing for this round of CCDC and US Cyber Challenge. We are going to be using some of the elements in both of our major competitions this year.

Matt Glover – That sounds great, John, what do they achieve in the competition?

John Sands – We host the 7 states in the Midwest (IL, WI, IA, MN, IN, OH and KY) for this national competition in our virtual environment. They can win awards and can also be invited to the national competition that is held at University of Texas in San Antonio each year. The

CCDC is basically an “inherit and defend” competition. Each team is given a fairly complex environment that they have to assess and protect. At a certain time during the competition we release our red team on their environments and they are scored on their ability to keep their services up and running. That is what the competition is all about and they can win awards at the State, Regional and National level. We are involved in more competitions than this but these are the two big ones. The US Cyber Challenge is a little bit different. We work with the SANS Institute on that one. The SANS Institute basically provides free courseware that is available to our students through their commercial side and they have a series of quizzes that the students can participate in. The final part of it is a competition where the participants are given a series of virtual machines and they have to go through a series of tasks and complete requirements based on those configurations. They are submitted and graded based on the criteria that SANS has evaluated. The students who do really well are invited to do a free week of training at the college. SANS instructors are flown in and we take the top 30-40 participants for five days of workshops. We have a job fair and they have an ethics panel that they attend. The whole idea is to take top talent that is out there and introduce them to our network of employers and businesses. We infuse some of the new components into the competition as well.

Stephen Miller – John, what was the other competition? It wasn't the National Cyber League, was it?

John Sands – The National Cyber League is another one but that is more of a league. We are co-host of the NCL. They actually use our environment to run that. No, it was the US Cyber Challenge.

Stephen Miller – Okay, and you said there was another one besides the US Cyber Challenge, I didn't get that one.

John Sands – The Collegiate Cyber Defense Competition –CCDC. It is probably the predominant college level competition out there. It probably has the largest number of participants. The secondary level would be the US Patriot Games. We are involved with all of those but those are the big ones that we host and help shape.

Stephen Miller – You host them with the NDG labs?

John Sands – Yes.

Stephen Miller – Right, okay. Last fall we had students who participated in the NCL but it was the first one we've actually participated in. It's good to know about these others.

John Sands – Yes, and that's part of what we need to do, get more information out there. At this point, I'd like to open up a discussion on trends and specifically any kinds of things we should know about as far as preparing our students for jobs or better placement of students in this sector.

Industry Trends

Stephen Miller- This is Stephen Miller from Eastern New Mexico University in Ruidoso. I just made a presentation yesterday to the Houston InfraGard Oil and Gas special interest group with one of our business partners. I had some really promising feedback from OXY Petroleum. They are really interested. They have convinced their management and HR that they need more technicians in Cybersecurity, not people with 4-year degrees. I am inviting one of their representatives to the colloquium in June because I'm on the committee of people trying to get the private sector involved. I have a meeting set up. When I have more information I will try to get back to everyone through CyberWatch so that people understand what they are looking for.

They want to provide some internships. They also want to hire people with an Associate's degree, technician level. I thought that was promising. That's the first time in oil and gas I'd received any feedback. I'm retired from Exxon and I've been trying to push them in that direction, but they are not as responsive as some of the others.

Gary Toretto – This is Gary Toretto at AT&T. We sell and manage security services to our Enterprise customers and to the federal government agencies. Everybody's hot topic these days is around threat management and the analytics around threat management. As we go forward, how do we put stops in that basically stop this stuff dead in its tracks before it causes irreparable harm within the companies themselves? One of the areas that we're having difficulty with is in the web application firewall space. It's more in the internet of insecure things that are out there because we know that nobody's going to go back and update any of these operating systems or put any type of security in place on these devices themselves. It's got to be more in the network to protect a lot of what's going on out there.

Mike Wilson – This is Mike Wilson with Texas Instruments; I just wanted to second what the gentleman just said. We are seeing the exact same thing but people are setting up Security Operation Centers to do threat management and so forth. Typically the first level analysts in those situations, at least that I'm seeing, are going to be two year graduates. Any training they can get along the lines of web application, firewalls, intrusion detection and analyzing potential breaches is going to be really good stuff.

Gary Toretto – Understanding net flow data certainly, with everything that's going on. A lot of companies we deal with want to capture data coming from every device within their company itself and take it from the desktop, the servers, the network. All these devices bring it into one huge database, Splunk or something else, and they should be able to decipher very quickly where they may have potential malware or attacks or APTs that exist out there from an overall perspective. This whole threat management piece is hot and getting students focused on becoming Tier 1 analysts. That is going to be people coming out of school with a couple years of experience. Certainly as they get more experience they'll move to Tier 2 and then eventually to Tier 3. This is very hot right now with everyone creating security operation centers.

Stephen Miller – That's exactly what OXY Petroleum said. They just created an operation center and they are looking for people now.

Gary Toretto – That's the hard part. We've told a lot of our customers as we have tried to sell them the services, it's very difficult getting the people who understand the information that is coming out of those products to decipher that and get to the root cause of what's happening. You can buy and install all the products in the world and then you're going to get a ton of data nobody knows what to do with. If you don't get the right people that can go in and fine tune the systems and really get them working effectively, you are going to be overwhelmed with too much data. What you really need are people who understand this from an analytical perspective who can fine tune it and get it to where it needs to be.

Matt Glover – I think we are in a little bit of a "love fest" when it comes to this category. I asked my security team what can students coming out of school expect in Cybersecurity? The gentlemen told me two things. Once you have set up your defense perimeter, all of the threat analysis information starts to flow into your Dashboard. In the Dashboard, most of the time is spent chasing ghosts. A lot of times it's nothing and in the rare event it is something, then I go through my remediation process. I think the expectation should be set with students that a lot of time is going to be spent "chasing ghosts." I'm coining his phrase, not mine. He said most of his time is kind of boring just running down things where you think it's going to be an exciting day and something really amazing has just happened and you find out it was just something innocuous.

Gary Toretti – It changes day by day, hour by hour, minute by minute. The attackers out there, these nation states, they are funded quite well and they've got some very, very smart people. The most difficult things are these "flow and go" attacks where people are the weakest link. I can learn enough about you on Facebook and other social media sites to basically spoof an email to you that you are going to click on. I'm going to set up a remote access tool, get in and set up keystroke loggers to collect information, and then put in other tools that will get me into where I want to go. I don't know how we stop that. It's got to be an education process but we need better tools to basically prevent people from clicking on a bad attachment to begin with.

Matt Glover – I agree and I think one of the new trends, and we've seen a flood of new security expertise—we are going to see an influx of a whole bunch of analysis tools. And then the danger is how dependable is that analysis that's automated behind the scenes? How much education do we need to bring to our students so they can make effective use of that in that finite amount of time they have during the day to do their assessments?

John Sands – It's kind of hard for me to try to interpret the feedback that we are getting and I have a couple questions on this because the approach we've taken in the latest update is to address some of these things. We've tried to move to more open source Mac systems to have more control of these potential risk devices that are out there. A lot of them are literally impossible to totally secure. That's one of the reasons we've tried to incorporate some scripting tools to continuously monitor and track information to and from those devices. The other thing we spent a lot of time on, are open source IDS systems. Are those the key tools that you are using or are there other things we need to be looking at?

Gary Toretti – We don't use the open source. We use the vendor supplied type products that exist out there and we support many, many different products across the board, the McAfees and source bars of the world. From an IDS perspective firewall space, the big firewalls being the Check Points, Junipers, Fortinet. What we're finding now is that people want more chassis and blade technology and more combined with threat management, so you're looking at the Palo Altos now from a combined effort as you drive forward in this environment because it saves space and cost. As we move forward, the big thing is going to be a more virtual type environment so as we get into software defined networking environments we are already talking about how to define a virtual firewall, firewall space and so forth. I have concerns around policy because you still have to understand the customer's environments and the policies and the type of business they do, whether it's e-commerce or internet facing, etc. You still have to have a good understanding of somebody going in to create the right policies for the customer space. A lot of the vendor supplied products are very good products. You can't find one solution to solve all your problems.

John Sands – A little feedback on your comments: We have partnered with Palo Alto this year and we are actually going to have Palo Alto boxes within the CCDC competition this year. Over the past couple of months we've run some workshops for both faculty and students on how to implement and use those technologies.

John Sands – We've blended teaching policy with NAC and showing that NAC tools are a way of enforcing policy at a device level. Is that something you want to see students come in with? Is there a different approach that you would look for? We have students write policy but we're really preparing technicians and we want to show them how to make the connection between policy and enforcement and NAC has really seemed like the best tool to do that.

Gary Torelli – We've talked about NAC for probably 15 years as being the catch all, end all for everything that's going on out there. Some companies may have started down that path but the cost was always high from an overall perspective. What you've got now is a blended

environment. In a perfect world I guess we would have NAC and it would know every device out there and it would search and make sure they were all loaded with the latest and greatest versions of everything, and every device that came in would go through that process. I'm not aware of anybody that fully deployed something completely across the board. My thing is threat management, threat analytics, and how do we find what's going on. These people that get into Target, Home Depot, and all these different companies from an analytics perspective, what are the preventative controls, detective controls, the analytics that we need to teach these guys that are coming out of school so that they're about to hit the ground running when they get into companies? And I'm sorry I do need to drop for another meeting. Thank you.

John Sands – All right. Any other comments in that realm?

Lamar Owen – This is Lamar Owen at the PARI and I want to echo all those comments. That was an excellent, excellent discussion. I hope that got recorded in some way, form or fashion. In terms of the internet of things, I have experienced this situation with an older IP video camera and that qualifies as one of these things that's out here on this internet of things. This particular camera actually made an encrypted connection back to an overseas IP address. However, the current trend in security products is those cameras are going to cloud based servers and that complicates the issue from an end user standpoint. That really complicates the issue in terms of determining how to figure out if this is a ghost, expected cloud connections or something malicious. I don't see the tools out there helping me do that as of yet. Anyway, those are the only comments I would have.

John Sands – Okay. Any other comments in this area? Are any of us using open source things like Maggio? This is one of the things we are trying to do with this scripting course, have the ability to write scripts that react to different types of threats that we are facing. We found Maggio to be a pretty good tool for something like that. We are incorporating that into some of the new labs.

Lamar Owen – I am using Maggio. I am also using open NMS.

John Sands – Okay. Is it going to be valuable to have a student with some background in that?

Lamar Owen – I believe it would be, yes.

Update of Curriculum Development (For All Partners)

John Sands – I thought I might show you a couple of things we've worked on. I'm hearing more discussion about controls. I thought I would show you a couple of the exercises we built into the new course. We've tried to build a course around the new CAST certification. We talked about controls. One of the things we are exposing the students to now is the ISO 2700 series, but we are exposing students to the controls worksheet. If there is some interest, I can give an example of one of the exercises we're using in that realm. I just want to give you an idea of some of the things we are doing and maybe you could give us some feedback. We finished our Information Security Management course with an exercise like this. This is the final exercise. We have the students look at the different areas of control. Part of this is a case study where we work with volunteer local organizations, in most cases it is a government agency or a local library or some municipality. We have them implement and do an analysis of internal controls. This is one of the worksheets we go through and I put it in the form of a spreadsheet and then we go through all the different categories. As you can see, it is pretty detailed. Part of what we are trying to do in that course is exactly what you're seeing. Getting students exposed to the different mechanisms out there, how controls are used, what the different types of controls are and then assessing an organization and implementing proper controls to secure their resources. We are getting a little bit out of our realm by doing this course because in the past we've dealt more with teaching the technologies and the skills around implementing different products. We

are finding more and more that companies are asking us to at least expose students to the security management side of the house. Any comments on that? It's one course that we have in this area but I think this course is going to have a big impact because we've exposed them to all the different technologies and products and now we're trying to show the big picture and how we tie all this stuff together. Like I said, this is a little bit different from what we've done in the past but we're getting some good feedback from some of our partner organizations on the impact this stuff is having on our graduates.

Student Completion (For All Partners)

John Sands – One of the things that we wanted to talk about today is that we have a lot of student completion at this point. The big push now is placing students in jobs, and I invited one of our Student Success Coordinators to come in and talk about what we are doing in the area of linking students to employers, some of the different types of employment preparation events that we've done, and the statistics of students completing certifications and then ultimately being placed into jobs in the local area. We are a little concerned that when this grant ends, we are going to see a significant drop off in the key measures that we measure student success with. Part of it is the work this team has done in working hand-in-hand, student-by-student in preparing them for jobs. At this point I think I will introduce Dave and let him talk a little bit about some of the things that his team does.

Dave Termunde – Good morning, everybody. My name is Dave Termunde. I am the Student Success Coordinator over here at Moraine Valley. I'm just going to talk a little bit about the things we've done to work with our employers and help students get employment. One big thing we've been doing is going out and visiting employers to determine their needs. Employers are looking for entry level technicians between network students, security students, and well-rounded students. So what we're trying to do is determine the needs and fill in the missing gaps. One of the ways we do that is with job prep workshops. In the last few years with the NISGTC grant we've done a great job with student attendance at workshops. We've had workshops with CompTia, VMware, Cisco and also small companies because we know that IT jobs aren't just with the large companies, they are with small companies, too. Obviously it's the students who want to achieve their goals and want to do great. They come to the workshops, they practice a little bit, they get ready for certification exams and take their tests, and that helps make them more employable. The feedback we've been receiving from employers is fantastic. They are receiving resumes from students that have their A+ and their Network+. One other thing we've been doing in the last year is we've adapted our curriculum a little bit for the Linux+ and Server+ because we've had a few employers say they are looking for security professionals that know databases and Linux. So we are trying to help our students that don't have a lot of real world experience gain those necessary credentials to enter the workforce. One of the biggest things we are hearing from students is that they are looking for jobs and being told they need 2-3 years of experience. What we're trying to do is let them know that every job posting out there is for the perfect employee. If you have 80% of that, you may still have that job opportunity. In the workshops we go over job descriptions and all the requirements to help students get the confidence to gain the employment they are looking for. They are wanting to start their careers, not just a job. Visiting employers is one of the biggest things and we invite employers in, too. We go out, look at their network setup, determine their needs, meet the staff and figure out which students would be a good fit for their environment.

John Sands – We've had a couple of interesting interfaces with employers. We've asked a few employers to give us rotating internships; a student goes through the internship and then gets hired on to the job but that intern position is now open for another student to step into. This month we had one of our major employers in the area come in and 7 or 8 students interviewed. We expected to place maybe three of them into positions and they offered every single student an internship. I think things like internships and some of the job preparation workshops that we've done have been very effective. Students are getting interviewed now and the success

rate has been astronomical. For an employer to take every single person who applied for an internship, that's never happened before with any of our partner employers.

Dave Termunde – Last week we met with an employer who does 20-25 revolving internships throughout the year. In the past, he's only had 1 or 2 Moraine students and those are the 2 he's got working there now as full time employees. Last week we were hoping to secure 12 internships for students. We sent 12 resumes and all 12 students were able to get interviews the next day, so we are waiting to get feedback from the employer and students on that. The employer understands the importance of exposing students to the real world, so these internships are a great way to build their resumes and gain the experience that they need.

John Sands – We are very fortunate here to have companies that are really third party service providers. Not only do the students have the opportunity to be employed by that company, but they are also exposed to a network of companies that purchase the services of the company that's hiring them. This is a great way to expose them to the jobs and people that are out there and ultimately opportunities for employment. We can go on a little bit more but I'd like to open this up because this is really your time to give us feedback. Does anybody have any suggestions or anything as far as trends? Anything from your perspective about providing better job preparedness services for our students?

Denisha Jackson – John, this is Denisha, I can't answer that part but I would be interested in hearing what those employers are saying they are looking for. Especially while we're doing these KU reviews because if they are looking for something that's not in our KU set I think we should adjust those accordingly as well. We have academia's input but we do not have industry's input and I think that would probably help us as well. Maybe we could get Dave in a group and share some of the things that he is finding out from them or get a group together within the CAE community to talk about the things these employers are asking for.

John Sands – We'd be happy to do a focus group or something like that if that would be helpful.

Denisha Jackson – Okay, I'm going to pass that on. I think that would be a good idea.

Stephen Miller – I think that's a great idea. When I talked with InfraGard oil and gas people yesterday, I went over the knowledge units because they wanted to know what's in the curriculum and what our objectives are. I'd be happy to work from this end and get some companies here in Houston to participate.

Denisha Jackson – Okay, thanks, Stephen. I will take that back to the group and see how we can move forward. I'm not sure if you saw the newsletter but we have that CAE website coming up so maybe we could introduce that to the forum and let people have input there. We haven't created a role for industry to participate in that community yet since it's just getting started, but that could also be an option for the future. I'll take this back to my group and see where we can go from here. Thanks, that's all I have.

John Sands – Anyone else?

Christina Titus – John, this is Christina I wanted to share with the BILT members the overall grant numbers. The number of students for the entire grant that have completed certificates and degrees is 1,105 students. Currently, the number of employed students who were not employed when they entered the program is 89. Just to give an overview of where the grant is going and what we've done so far.

John Sands - Any other suggestions from any of the business partners on other things? One of the things on our agenda is competitions. These have been a really great way to interface our

students with employers. I see some people on the call are involved in some of our competitions. We find it really showcases what our students can do but also allows us to interface with the people working in our field on a daily basis. If I look back just before the grant, we didn't have the ability to prepare students like we can now. They can go into server farms and see the environments. I learned all these things and the first day they showed me where I would be working it blew me away because I didn't know that's what the environment would look like.

Employer after employer is telling us that they really like our students that have a blend of technical skills but also detail orientation, problem solving, and project management. Those things need to be hand in hand. Probably a little bit different skill set than what's coming out of a 4 year school. Our students leave with a good exposure to some of the technologies and products but we've really tried to stress teamwork and problem solving; paying attention to detail is probably one of the biggest skills we can teach our students.

Stephen Miller - I would agree. In our steering committee we had when we put our cybersecurity certification program together and also the associate's degree, the feedback we had from the private industry members of that steering committee was that they wanted a course that included cyber ethics, career development and professionalism. They were not going to endorse our program without that course being in place. I reviewed that yesterday with InfraGard and they agreed those are skills you need to know, even simple skills like being able to get to work on time and understanding that you don't put critical company information on LinkedIn or Facebook. Believe it or not, there are some new hires that tell the world what they are doing. It's good to have those kinds of courses. I've got 10 students who have job offers because of the National Cyber League competition. In our associates degree you are required in the Capstone to either participate in the NCL or an internship.

John Sands – Anything else while we have Dave here? Any kind of feedback or other experiences that could be incorporated into the Student Success program? Dave, do you want to give them some background on what the cohorts are and what you do with the cohorts?

Dave Termunde – In the last 2 years we've had 2 cohorts of about 30 students that volunteer their own time to prepare themselves for the work force. We put together about 6 workshops each and those workshops included everything from guest speakers coming in to talk about the missing gaps and what they are looking for, to getting to work on time, managing social media, and how to be a people person. A lot of these jobs now have you interacting and understanding other departments instead of sitting at a desk for 8 hours staring at code. Our guest speakers would come in and explain different things. Each cohort went on a separate field trip. The most recent one we went to was Cisco in Chicago. The students were exposed to their large sandbox where there was equipment and test servers. They saw things for Kohl's and Target that were staged there and I believe it was really eye-opening for the students. We have network racks and equipment at the school, but to be in a room where technicians are utilizing equipment and practicing with different technologies is different. When we did the surveys at the end, the students said that was one of the most beneficial activities...actually getting out in the real world, visiting these businesses and realizing that everything they are learning in school is going to apply to the real world. The cohort has really helped retention in employment. I told the students the first day of the cohort that they will absorb everything during the five days that we were going to meet over the semester but they would not see the effects until the next semester. Even yesterday I had a student come back and thank us for the cohort and for offering it for free. Obviously when you have students that are willing to step up and devote their time, they are going to be successful. So that's what our Student Success team tries to do. We put the tools together and make the resources available for them to succeed.

John Sands – I have 2 things to share with you about the cohort also. We do try to reward participation, but in addition we are going to be sending one of the Student Success

representatives and a couple of our females in the program to a Women in Cybersecurity Conference in Atlanta next month. This is a way to acknowledge their work and their participation level in the cohort, but also expose them to other women who work in the field and bring those experiences back to the classroom. And we've spent a lot of time and effort and created something of a culture of recognizing industry certifications here at our institution, so we take pictures with every person who finishes their certification and put them on the video board in the front of the building. Dave can tell you more of an overview of what we do to prepare students so they are more successful when they pursue industry certifications.

Dave Termunde – In the past before the grant, students would have to go out on their own to pursue certification. So we've brought in the tools, including the Pearson VUE testing center. Another thing we've done is review workshops for certification exams. Every semester we have 4 hour workshops for the A+, Network+, Security+, C Sentinel, CCNA to get students who haven't been certified yet to refresh and do some practice tests with software we use to get them more comfortable taking the exams. That has really had an impact on our numbers for the testing center. Last year I believe we had about 180-190 students take exams in our center, which is fantastic compared to years prior. When a student does pass we take their picture to give them that recognition and it makes them feel good, so when they add that to their resume they understand it is making them more employable. In all of our classes and the workshops we really push the certifications because we know a lot of the entry level students don't have the experience that employers are looking for. Some may, because they are coming from industry but for the ones that don't, this is a good way to supplement that missing experience. Get as many certifications as you can to start getting the internships and getting that real world experience so you can prove yourself during the interview process. That is one thing we do cover in all of the workshops and that is something we continue to look at past the grant. We offer the certification review workshops because we understand the impact it has on our students.

John Sands – Any feedback on that? One of the things we do with our students, and several of the partners have adopted something like this as well, is that when students come into our program we have an orientation class. It's a 1 credit hour class. During that class we set their academic goals, which will always include a degree or a series of certificates. But we really stress from day one that running parallel with that is getting a variety of different certifications. The more diverse their skill sets are, the better their chances of employment at the end of the program. We've done studies over the years that have proven that. Students that leave with 3 to 5 certifications fall in the 80-90% range of being able to get a job in this field. Those who leave without any certifications, even though they complete the program, typically percentage-wise are going to be less likely to get a job in the field. The data have proven the value to us. I would like to hear what employers feel about these certifications. A lot of people look at them as paper certifications and others value them more because they understand the students had to put the time and effort into completing these things, and the certifications have become much more strenuous over the years. So any feedback on that?

Matt Glover – I think it's excellent. I think there's a great opportunity for us to have more of a gamification of people's lives instead of a video game where they achieve levels. I think having their certifications helps them showcase their skills to potential employers. Then bringing those certifications into LinkedIn and making it a part of their continued brand is also a critical factor. I would say that's excellent work. The other thing I really like in relation to certifications is a whole bunch of the employers, people like myself, for example, don't have the time to dedicate to figuring out what all the deep nitty-gritty details are so I have to rely on a team. When you're trying to build on a team of folks you want to make sure that they at least have that foundational knowledge. Just like when I'm hiring a project manager, I really like that project manager to have a PMP certification because it tells me this person is an educated project manager. They may not be a great project manager but at least they've gone through the certification. You can

coach them into becoming an amazing project manager. I think certifications show the same way for security. It tells me they've got the foundations, they've got the basics and they are coachable at this point to advance those skills. And the other thing you can't teach is the eagerness to do that.

John Sands – Exactly, I think you touched on two important things. We know then that they have the foundational skills and the terminology. And you're right, a CCA does not necessarily mean they are a great engineer out of the gate but it does prove they took initiative to go and take the exam and pass it. In order to pass the exam you have to at least understand the terminology and the basic concepts. We are hoping employers understand that part of it. Every job you see out there they want 2...3...5...10 years of experience. Like Dave said this is a way of proving that they spent some time in gaining some experience while in school. Anyone else on certifications? Any comments or things we may want to consider?

Denisha Jackson – It's Denisha again. I don't have anything on certifications but I did want to mention (and I hate to bring this back to CAE again) but I think what you guys are saying is awesome. That's the kind of branding that we are trying to get at with this whole new CAE and showing the path that was followed to get those KU courses and then recognize the student. The student understands the value of that certification. That's where we want to go, where the student understands the value of going through the CAE courses. Somehow, I don't know how we're going to do this, but we need the branding of CAE to be the same as the branding of these certifications, so that CAE can almost be considered another type of certification. It's great to hear this conversation; that you are recognizing the students this way, but I'm kind of jealous.

John Sands – We are actually using the CA2Y logo on the certificates that we give them. In Illinois, just with our local businesses, when they go up to that map and see they are all universities, and in our case one community college, I think it does hold some weight. When they go out and apply for a job and they've got that logo on their certificate I agree that should have some weight.

Denisha Jackson – Okay, that's all I had. I just wanted to share that I think it's awesome that you're recognizing the students and they aren't just taking a class. It means something to them when they are done.

John Sands – I should catch people up a little bit just to let them know. Denisha's from NSA and one of the things we've done and we've encouraged the other grant partners to do is actually apply for the CAE program. It consists of several different components but part of it is making sure that you're teaching core skills and knowledge within your curriculum. We have to do a curriculum alignment with them or what we call mapping. But we also have to do things like serve as a community center for businesses and people within the area that have an interest in information assurance and best practices and things like that. They have a new requirement of literally having a physical center where you have events going on and people from the community coming in and learning about the different technologies that are out there, threats and vulnerabilities; really just to be a leader in this field in your community. We've gone through that process and we just submitted our application for renewal a couple of months ago. We responded to the final request a couple of weeks ago so we are waiting to hear the latest designation for CA2Y. I think it is a difference maker. Just in Illinois alone, we are the only community college in Illinois to go through a pretty rigorous process.

Stephen Miller – Part of that CA2Y for the overall institution is part of the articulation agreements and also partnerships. I think that ties in to those certifications because I know we had partnerships with CompTia and Pearson's VUE and (ISC)². We offer those certificates

along with our college certificate that you receive. You might want to put more emphasis on that as part of the criteria for being CAE.

Denisha Jackson – We've heard that before. We've even heard that if you have this certification then we know your students are already able to do this, this, this and that. So we are playing around with that also. Thank you.

John Sands – Just one other thing to add to that: we were one of the first five 2-year schools to apply for the CAE program and receive it early on, but one of the things we've tried to do is tap into the community itself. We do a needs assessment each year, and based on that needs assessment we found that there were some things that we needed to add to our curriculum that a lot of the other schools were lacking, too. A lot of the schools had the Cisco curriculum, they had Linux, and some of the Microsoft curriculum, but were still missing some things that were essential for the CAE. The DOL grant was just a godsend and it enabled us to create some courses that would meet those gaps. What we're going to be doing this summer is releasing that course (one of them is that scripting course). We are also going to as a National Science Foundation center; we're going to be offering faculty development workshops for other schools that are interested in implementing those. We are hoping that will help more schools complete the CAE process. All right, anything else?

Progress on SCADA

John Sands – I have a couple more items on the agenda and then we can take time for comments. I just want to share some of the things going on with the progress in SCADA. I mentioned to you that we built a SCADA lab. We're going to have a series of 8 labs that are going to be in conjunction with the virtual lab. We're going to expose students to that in our Cybersecurity course, so they are going to learn about controls and PLCs and SCADA servers along with the vulnerabilities and the controls that are necessary to protect those systems. We are also looking at hosting a Summit this summer for community colleges and schools that are interested in pursuing more curriculum in that area because we really see that as the area of growth in Cybersecurity. We've even invited 4 of the high profile community colleges around the country, and then we've also invited a group from Argonne National Labs and the Department of Energy to help us come up with a direction in producing new curriculum elements. Potentially we could do a certificate for students that specifically want to go in that area. So that's a little bit of news of what's happening with the SCADA. Any questions or suggestions in that area?

Stephen Miller – As I mentioned, I was in Houston with InfraGard, and my reason for being there was that I was covering an e-book that I co-authored with Wonderware Endosoft on the framework for SCADA cybersecurity. Endosoft also has an application design and SCADA deployment e-book to help reduce the cost to students. They are on Smashwords for free or \$.99. My background with SCADA stems from my work with Exxon and before that TRW controls, but we are very interested in developing and becoming a knowledge unit for SCADA at our campus. The SIG group in Houston participated as well so I'd like to pursue this. I think that Summit would be excellent, please get in contact with me. Also, I sent Tina the copies of the ISBN numbers of those books, so if you want to incorporate those into your courses, it would reduce the cost for the students as far as textbook information.

John Sands – It would probably be a good idea for us to talk and work together since we are going to be working on the lab elements. Maybe we can come up with a better alignment between the content and the course elements.

Stephen Miller – That would be good. Also, Endosoft, if you are not familiar with them, partners with several universities and community colleges and they donated \$125,000 worth of software.

It's a very good product for introducing students to SCADA and SCADA systems. They support everything from wind energy, water and waste, to prison control systems. They are very active, they've been a great partner, and they will probably be interested in this Summit as well. Richard Clark works for them and has 25 years with the National Institute of Standards. He's pretty well known in this area for SCADA. He's the one that wrote one of the books and I co-authored the book on *The Critical Infrastructure Framework for Cybersecurity*. We were involved in those nest workshops and, as a result of that, we decided to put that e-book together.

John Sands – I'll make sure we get you invited to the Summit. We are looking for some presenters at 3CS and CISE this year. I don't know if you are doing anything for them but if you would like to do a joint presentation, I'd like to talk to you about it.

Stephen Miller – We've already submitted that, but I'm very busy right now. We want to do it. Richard said he would be there at the CISE as well. I think I requested to be a presenter in the second conference for the community colleges or the CAE as well. They said they'd get back with me in the next week or two. But I am very interested in promoting this. It's my work and my hobby.

John Sands – Anyone else on the SCADA initiatives?

Key Terms and Search Engine

John Sands – All right, the last thing on the agenda is the Key Terms search engine. I rolled this out and demonstrated to you two meetings ago that we have this search engine that will search through both curriculum and labs. Part of what we're doing now is making that a portable component so each of the grant partners can install that on their systems. We've tested it and it seems like it has worked fine from platforms we've used it on, so we will be distributing this in the spring. Okay, to finish this up I think we'll just open this up to any comments or suggestions or any other feedback from the group.

Matt Glover – Great job, keep it up!

Lamar Owen – I echo that, excellent job. I would like to see more of this in my state of North Carolina.

Julie Hietschold – I look forward to getting some of those scripting labs out so I can share them with several of my classes.

John Sands – They are in the alpha stage with NDG right now. The betas will be coming out somewhere around mid to end of March. And if you want to be in on the beta testing just let me know and we can send the virtuals out to you and they will run right in your normal net labs.

Julie Hietschold – Fantastic, I definitely would like to do that. Thank you.

Christina Titus – Just so everybody knows, the next Cybersecurity BILT meeting will be sometime in May. We will get a date and get a save-the-date sent out to everybody.

John Sands – We would like to suggest May 13th or May 20th. If you would like to shoot us an email or give us some feedback for what you think would be best, those are the dates we are looking at for the next meeting.

Adjournment

John Sands – Well, I want to thank everyone for your participation. Your feedback is really valuable in our decision making and implementation of things. As business operators, hopefully

this helps you prepare for the job you're offering. Thank you for your time and I look forward to meeting with you in May. Thanks, bye.