BILT Meeting
November 15, 2016

Attendees:

Julie Abell, DM Home Entertainment
Judy Archer, North Central Texas College
Ann Beheler, CTC
Ericka Bernhardt, Gateway Technical College
Laura Berry, North Arkansas
Pamela Betts, San Jacinto College - South
Nathan Carnahan, Rhodes State
Nancy Cerritos, WITC
Trevor Chandler, Houston CC
Michael Coffman, Collin College
Narges DeBary, Houston Community College
Mark Dempsey, CTC
Lucas Figg, EMC
Ernie Friend, Florida State College Jax
Matt Glover, Le-Vel Brands LLC
Santiago Guardiola, Lee College
Ron Halbach, Juniper Networks
Chelsea Hall-Fitzgerald, Exeter Finance
Mary Hawkins, CTC
Dan Heighton, Clark State
Julie Hietschold, Collin College
Cody Hooper, Cisco Systems
Tu Huynh, Comerica Bank
Jimmie Joseph, Ferris State University
Richard Kahler, Eastern Florida
Edwin Karuga (referral of Kurt Wall)
David Keathly, UNT
Doug Kirby, Klamath Community College
Dante Leon, Daytona State
Xintao Liu, Herzing

Amelia Maretka, Wharton County Junior College
CyndiKaye Medved, Waukesha County
Technical College
Jim Meeks, San Jacinto College South
Debbie Miller, CTC
Bill Morgan, Avistas
Brian Nelson, Lansing CC
Susan Randall, Cleveland Community College
Kurtis Sampson, Philips Healthtec
William Sanderson, Renton Technical College
Jim Simpson, Scottsdale CC
Candy Slocum, InterLink
Brian Smith, Dell Services
Jerry Snyder, Sinclair Community College
Beth Stall, El Centro
Brenda Steinke, Kirkwood CC
Susan Svane, North Central Texas College
Christina Titus, CCTA
Gary Toretti, Sabre
Tina Trainor, Gateway Technical College
Dan Tuuri, Kirkwood Community College
Cheryl Ucakar, Gateway Technical College
Mike Vickers, Tallahassee CC
Dwight Watt, Georgia Northwestern Technical
Mark Whigham, Calhoun community college
Donnie Willis, North Central Texas College
Glenn Wintrich, Dell retired
Kim Yohannan, Dell EMC
Saad Yousef, Gateway Technical

Welcome and Introductions / Roll Call

Mark – We are trying a new approach to cut down on some of the background noise. With 60+ people on the call, it doesn't take much to cause problems. We're going to mute all of the educators and ask them to please use the chat box to send comments and questions. When we call roll, we'll only be checking with the BILT members. All CCN educators, please send your name and school to us through the chat box.

Trends – discussion led by Matt Glover

- **Matt**: Cybersecurity risks associated with IOT mesh devices (all connected and working together) will require building platforms to secure. There was an attack on Netflix one month ago. Hackers are taking over simplified smart TVs, Blue Ray players & any connectors to the internet.

- **Matt**: 3-D Printing – The technology is being used to make replacement limbs for amputees (whole hands, functioning hands). Very amazing technology. It is also getting to the point where you can start using the technology to create new things at home (example 3-D Map). If we can take it to the next level in our industry, you'll also see where people will be ordering recipes and 3-D printers will print food. They'll order ingredients for medicines and you pharmacy will have a pharmaceutical 3-D printer that can print the medicine. Lots of really cool and exciting technologies like this are coming out.

- **Glenn** – You're going to start hearing a lot more about "Applications are taken in context." The phone knows your location, preferences, friends, etc. Now applications using the early stages of cognitive computing are going to be able to take advantage of these. You will see it on some of the new devices that are coming out from Microsoft and Google that do a lot of work. This is important in that in the business world where students will be working context will become important. Students going into interviews related to finance or banking (as an example) will need to know the applications that tie specifically to financial technology. This will be an advantage to students if prior to an interview they can do some background on how the technology applies to the industry they are applying for. It should get rid of the shotgun approach of build one resume and send to a thousand people. They will need to tie into their cover letter about the technology they have learned and how it is being applied in the industry they are applying for. This will separate their resume because they will have added context to their learning.

    I recently saw where an IPad Mini with a docking station is included and considered standard (not considered an upgrade) in a custom home build. It controls your thermostat, lights, shades, alarms, etc.   That means your wiring is run to a certain hub in your house. So for entry level install jobs there will be more need to have a technical background (basic switching, wifi, etc.) that will be used in the construction industry. So I think the context and the trickledown of technology such as the Internet of Things in your house is going to change the job opportunities for people just getting started in the career field.

- **Ann** – When we went for the very first CTC grant our focus was on Home Technology integration. The bottom fell out of the housing market. Now that the home market is moving up, we are going to have more jobs for our students in that market. That's a very good thing. The big concern when we first went for the CTC grant was that so many jobs would be sent offshore.   It's pretty hard to offshore too much of the home technology market, and it is good to see the home market coming back.

- **Glenn** – The housing industry and the building industry, construction as a whole, struggle to fill a lot of their positions because so many are told to not go into that industry because they will be doing construction jobs and working outside in 100 degrees.   Sixty percent of the housing industry jobs have nothing to do with hammering nails and technology jobs are one of those.

- **Candy –** Piggy backing on what Glenn said. Sensors- Smart everything are definitely something we need to be looking at in the convergence lab because sensors are everywhere.

- **Matt** – I definitely agree. Botnets are part of IOT and security needs to be taken into account. This may also impact the education of our students moving forward, making sure they have a fundamental understanding of how to protect a sensor from being taken over and used as a Botnet.

- **Bill Morgan** – This is leading into a discussion on risk management. Students have an excellent opportunity to help executives understand the risk relating to security issues. Insurance companies are reeling right now trying to figure out how to pivot and offer more Cyber products, especially as CEOs are now accountable for the cyber incidents. This is an opportunity to work from the bottom up to address the issues related to risk management and the overall impact on the corporation so they can pass the audit exams and balance their insurance obligation.

- **Tu –**   Business Continuity Planning goes along with that as well.   We just piloted virtual banking in Dallas. Technology is changing so rapidly.

- **Matt:** Another concept out there is Blockchain . Oxford definition: A digital ledger in which transactions made in bitcoin or another cryptocurrency are recorded chronologically and publicly. There may be a point in the future where our concept of currency stops being what we think today with money in the wallet. It has already transformed a lot where most people only carry a shared check or ATM style card (vs cash).   The very next pivoting stage in my opinion is to move to more of a crypto/bitcoin style currency as time moves on.

- **Curtis**: We are not actively pursuing this but there have been some papers on using Blockchain for medical health records because of all the advantages it provides for the financial institutions (it is distributed). It would apply to your personal health information also.

- **Matt:** Another kind of fun fact**,** I recently heard that the FAA is considering putting in flying lanes for drones (between 200 and 400 feet).

- **Candy** - One of the breweries in Colorado recently delivered beer to a vendor in an autonomous truck.

- **Matt** - Lower level jobs are being automated, and entry level jobs will dry up on the next few years. Education may need to change as a result.

- **Ann** - To help with that, I believe we are going to have to actively start 2+2, with more required at the high school level. The students need to know all the same fundamentals but they will need to know more for that 1st entry level job. The only way I know to do it is have some of it traditionally in high school.

- **Matt** –It could just be pivoting from you actually doing it to where we start teaching our students how

to control the autonomous agents. That could be a career where people say, you know how to do that? "Yes". Not only can I control those agents but I can also program them to be more exploratory and have an even more profound positive impact on the business. We have talked about the SDN paradigm for many quarters (that started a couple of years ago), and now we are starting to see software defined data centers, software defined infrastructure and software defined everything else. The datacenter that I run is a software defined data center. It is not just talk. We are doing it. Now what can we do to educate our students so they can pivot to these new technologies, and can come in driving the companies forward and sharing with them leading edge capabilities that small and in some cases medium businesses do not have the time or expertise to go through

- **Glenn** – A specific example of this is we are starting to see the automated chat box being used for communication with customers (not dealing with a human anymore). This is the 1st level of help desk to walk through the steps. You only get a person where problem solving is required. They will not need someone who can read a script. It is Important to stress problem solving skills are for all students.

- **Matt** – The sheer volume of change happening now is amazing. Gartner Top 10 trends:
    - The Device Mesh
    - Ambient User Experience
    - 3D Printing Materials
    - Information of Everything
    - Advanced Machine Learning
    - Autonomous Agents and Things
    - Adaptive Security Architecture
    - Advanced Systems Architecture
    - Mesh App and Service Architecture
    - Internet of Things Architecture and Platforms

- **Ann** – Please attend the KSA analysis in the Spring timeframe (probably in May).

- **Glenn** – Maybe we could set up a mailbox where people can submit input.

    - **Action**: Mark and Tricia will look into various tools that might be used (Dropbox, Reddit, CTC LinkedIn, etc,)

- **Dan Tuuri** suggests a Reddit type forum where people can post trends/topics and others can vote up or down.

CTC Grant Update

- **Ann** - Renewal Grant Proposal (October 2017-Sept 2022)
    - Grant submitted, requested funding date October 1, 2017
    - Includes 9 partners, adding universities
    - We appreciate everyone's help
    - Will go before a peer review panel 1st week of December 2016
    - Will be several months to hear any news
    - Five years, $4 million (vs current Grant four years, $5M)

- o Regional "hub" concept

- **Ann** - Researchers were at Collin last week to talk about our BILT process. They get it! They interviewed Matt, Glen, Tu and Susie (job developer). We are going to be included in their analysis for the Department of Education (not DOL or NSF). We will be included in their write up of absolutely the Best Practices for business engagement nationally.

- **Ann** - Diversity Summit – We keep hearing over and over again that there is a need for women, minorities , and veterans in the IT workplace. Matt had also previously mentioned that he thinks it makes a big big difference having diversity in the workplace.

  We know what it takes to recruit, retain, and place for the most part. However, oftentimes the efforts are funded through a grant and go away when the grant ends.

  - o Will include ~ 10 colleges. One faculty, one administrator (Dean level), and one advisor or career coach will be required to attend from each school.   Applications to attend will be due December 9th.
  - o 1st Day – A set of SME's will go over again the best practices for recruitment and retention. Day 1 purpose is to ensure everyone knows what the best practices are.
  - o 2nd Day – Each college team will come up with a plan how to implement at their college and how to get evidence to show if successful or not. If you have the evidence, there is a good change that you would be able to institutionalize the work.
  - o A stipend for some of the work will be provided to each college.

- **Mark** – Working Connections update
  - o Winter Working Connections
    - ▪ December 12-14 (online) – classes are full, filled up in about 10 days
    - ▪ Two tracks offered: Attacking Defending Web Applications, Using Python for System Administration
    - ▪ Filled in 2 weeks

  - o Summer Working Connections
    - ▪ June 5-9 - Michigan (Lansing Community College)
    - ▪ June 19-23 -Florida State College at Jacksonville
    - ▪ July 10-14- Frisco, Texas
- **Ann** – Social Media Grant - Preliminary information (not ready to share yet) is that enrollments are increasing. This is preliminary and we will share more on this as time goes on.

- **Mark** – Chat box feedback from some of the BILT members on discussions earlier
  - o Lucas Figg said something worth mentioning is the role of open source, cloud native apps, and the fundamentals of math required in so many IT roles today.
  - o Ron Halbach had to step off, but he would like to understand what if anything has been done or can be done to develop dev op skills. Automation, SDN is at the top trend, the ability to save over half the Op X costs for carriers, SDN delivers agility and agility is cost savings for customers. The IOT and now the hacking of things, what is the discussion from our perspective to aid students in securing this massive security wound.

- **Lucas** – Increasingly open source and contributing to open source is becoming a resume builder. Being

an active participant in open source projects and committing to those projects can really open doors for students. It is not that in order to get experience they need to get a job. There are ample opportunities for them to improve skills long before they begin to develop professionally. Another trend we see is a lot of the under pinnings of these trend (like IOT, Blockchain). All those require pretty advanced math. Being able to work with numbers at that scale is becoming an increasingly rare thing. I don't know if we can press students to take the advanced math courses, but if they want to be able to get and normalize data on the scale of billions of samples per hour they are going to have to be comfortable with these types of advanced math applications. This is just something we see lacking in the market today for people to hire.

- **Matt** – The pendulum has shifted vastly regarding open source. Thank you Lucas for bringing that up.

- **Candy** – There is a lot of confusion at the high school level on whether students should take calculus or trig. Kids are confused because they do not know what to take or they may choose not to take anything.

- **Ann** – No doubt we have some work to do. As we start working the 2+2, we may be calling on some of you to help us. No doubt the IT jobs are still going to be there and are some of the best paying jobs, so why should we not prepare our students to get them?

- **Candy** – So I would like to capture this in the minutes. When we are developing the 2 + 2, we need some leaders in secondary education and I have some really good resources for that.

- **Ann** – That is why we want to involve high schools in the CCN.

- **Glenn** – Question to Ann. Do we have an elective space where someone could do an open source project where the requirement was they would have a sponsor or mentor and do a 2 or 3 hour semester project?

- **Ann** - We really do not, however you are tipping the iceberg on something that is even broader. When you are focusing on networking and cyber and that sort of thing we really do not have much programming involved at all and we have to get that to happen.

Competency Based Education (CBE)

- **Ann** – We are living in the day and age where soon it is not going to make sense to award credit based on seat time in classes.   That is largely what we are doing right now. Ultimately I will allege that credentials have taken on a life of their own.   The whole competency based education approach is to give credit for prior learning no matter where that learning occurred.   This allows students to move at their own pace and be given the opportunity to accelerate their learning.

  Question to the BILT: So what we want to know is how important right now are academic credentials like degrees and certificates versus what the people know.

- **Lucas :** Not at all quite frankly. We have a program where we take recent college grads and recent people that have completed their military service and put them in a 10 week boot camp (Global Services Associate Program) to prepare them to become a baseline systems engineer in the storage

portion of IT. As a hiring person, degrees are attractive because it reflects some level of commitment, but if I had someone with 4 years of experience over a degree I would first take the interview with the person with the experience because I can put them to work more quickly.

- **Ann** – What if someone does not have experience, but they have gotten credit for courses along the way through prior learning or whatever. Does that make a difference?

- **Lucas** – If they can speak intelligently about the topics or areas they we are looking to hire. I do not really care where they got their knowledge.

- **Matt**: I think there is a challenge because Lucas and his organization may be more forward thinking. Although I agree with what he said, there are still toll gates out there. For example, as a CTO I do not see resumes until they have gone through the HR, 1st line hiring manager, etc. If there 400 applicants, HR is going to cull the list to those who are most qualified and so for those who do not have a degree they are not even going to get a 1st look. This has been true for all the large organizations I have worked with. Keep in mind we are targeting an entire nation of businesses.

- **Lucas** – I do believe that having a degree is important. Do not confuse that. It is being able to augment that with the ability to demonstrate specific skills that are relevant in the current market.

- **Ann**-   This is going to be an issue that educators up and down the line are going to have to address pretty soon, especially in the re training area (2 years is going to be way too long to acquire skills for re-employment).

The meeting ended with the announcement of the date & time of the next BILT meeting.

Next BILT Meeting: Tuesday, February 14th
8:00 a.m. -- 10:00 a.m. CST
via WebEx webinar