National BILT Meeting Minutes

CHAIRPERSON: Matt Glover, Le-Vel

MEETING DATE:
Tue, November 19, 2019

MEETING TIME:
8:30am-9:30am Central

MEETING PLACE:
Zoom

RECORER: Mark Dempsey, Debbie Miller, Amy Garrison

RECORDING:
https://youtu.be/uH475vGYSKY

PREVIOUS MEETING:
August 13, 2019

MEMBERS PRESENT

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<th>BILT:</th>
<th>CCN educators:</th>
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<tr>
<td>Mercedes Adams, NetApp</td>
<td>Shakour Abuzneid, Univ of Bridgeport</td>
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<td>Chelsea Bray, Catalyst Corporate</td>
<td>Nisheeth Agrawal, Athens State Uni</td>
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<td>Susan Coefield, VMware</td>
<td>Garfield Anderson, Gwinnett</td>
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<td>Carolyn Corbin, Center for 21st C</td>
<td>Ericka Bernhardt, Gateway Tech</td>
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<td>Vincente D’Ingianni, Raytheon</td>
<td>Pam Betts, San Jacinto</td>
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<td>Matt Glover, Le-Vel</td>
<td>Bruce Caraway, Lone Star</td>
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<td>Corey Kirkendoll, 5K Technical Services</td>
<td>Julian Carranza, El Centro</td>
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<td>Yang Lai, Juniper</td>
<td>Mike Eilerman, Rhodes State</td>
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<td>Kimberlee Milikan, health care</td>
<td>Rafat Elsharef, Milwaukee Area</td>
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<td>Lynn Mortensen, retired Raytheon</td>
<td>Kathy Fant, Collin College</td>
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<td>Kurtis Sampson, Philips</td>
<td>Richard Grotegut, Bay Area CCC</td>
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<td>Candy Slocum, InterLink</td>
<td>Susan Hoggard, Tulsa CC</td>
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<td>Scott Veibell, Cisco</td>
<td>Glenn Jones, Tulsa</td>
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<td>Glenn Wintrich, RDM Innovation Training</td>
<td>Rebecca Knapp, Eastfield College</td>
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<td>Deb Kutrieb, Wisconsin Indianhead</td>
<td>Rick Williams, North Arkansas</td>
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<td>CyndiKaye Lambach, Waukesha</td>
<td>Renee Williams-Walter</td>
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<td>Jeongkyu Lee, Univ of Bridgeport</td>
<td>Donnie Willis, NCTC</td>
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<td>Dante Leon, Daytona State</td>
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CTC staff: Ann Beheler, Mark Dempsey, Christina Titus, Debbie Miller, Amy Garrison

Agenda items | Discussion
---|---
Trends/Big data and AI (BILT members) | Big data analytics continue to push the envelope and, now combined with automation and AI, it’s moving the data into business intelligence. Matt notes that when looking at future trends, sometimes you look first at bad actors (i.e. text bots and robocalls) to see where business may go next.
Trends/IoT and the edge (BILT members) | Future sources of big data will be IoT devices and enhanced edge computing, which is where data is moved out of the cloud and closer to the IoT device. Edge devices are gaining more processing power and storage. This is happening now in agriculture, oil fields, and smart cities (e.g. drones can fly over an area and communicate directly with edge devices in a peer-to-peer system rather than with the cloud).

Glenn notes that IT technicians think of the OSI model when troubleshooting, but at the edge there are two OSI models, not one. You can have two OSI models for the same system. Two OSI models can exist due to edge computing tied to
direct peer-to-peer such as a drone talking directly to the edge and the other model would be standard back to the cloud or data center.

The ramifications of that for education is that mesh architecture is increasing in complexity and will require a higher understanding of edge computing, applications, and data flows. It also means more “enhanced field services” training where workers aren’t just going out and replacing a part; they’re doing more testing first to determine which part of the edge architecture needs repair (i.e. is it a sensor or an application?).

It could be 2022 or 2030 before most businesses go here, but it’s happening now in certain areas (oil fields, European cities).

As for mashups, in addition to the IoT device and the edge computer, blockchain will become a factor. At the edge, you need to track the data. By 2020, more “practical blockchain” will be deployed that won’t need a high level of expertise.

Glenn also notes more and more “shadow IoT” deployments where people deploy IoT outside of the organization’s IT department, and do so without the cyber skills to do so correctly (similar to “shadow IT” in which employees put up their own servers and apps to tie into a network). Students need to be aware of this.


Glenn proposes this format going forward for trends:
* Define the trend
* Discuss the trend’s ramifications for educators
* Look at the trend’s timing/ adoption
* Identify the mashups needed to make the trend successful
* Project possible risks
Matt likes this template.

Vincente is still dealing with the “last mile.” When you consider all of those IoT devices gathering big data, there’s an impulse to just use wireless for all of it, but wireless isn’t always the best option. Sometimes you have to deploy IoT sensors with real wiring. When you deploy IoT devices, they need to be provisioned automatically through DevOps with security built in.

Glenn wonders about 5G. Is 5G an option to take the last mile out? Vincente says this has been considered, but in many cases the client is the federal government and old-fashioned wires work better. Matt agrees that for some buildings, wireless won’t work. The last mile will always be a problem, which means workers will always be needed to run the wire. Vincente says 5G will be a great backup to the wire.

Vincente notes he’s been pushing to integrate security into DevOps, but not the DevOps we usually think of where virtual machines are automatically configured in the cloud. He means DevOps where a technician is actually provisioning bare metal and security hardening. He worries we’re losing that skill set because so
| Trends/Four quick hits (BILT members) | many people are drawn to work with cloud services like AWS. There is always bare metal at the bottom. Matt mentions four other trends:  
1. “Computer vision” in which AI allows machines to see and analyze – via big data – visual data to help businesses make decisions.  
2. “Natural language processing” that is improving speech recognition applications like Siri and Alexa. Understanding speech requires complex processes, but soon many devices will be controlled by voice rather than a keypad. Matt notes also that students today will be the ones to apply these technologies in unexpected ways.  
3. “Robot co-workers” where companies are teaming human workers with robots. The robots do the simple repetitive work while the human performs the more complex task, but soon robots will do more, allowing the human worker to spend time on even more complex tasks.  
4. “Autonomous vehicles” can be purchased now with a $25,000 upgrade in a new Tesla. That price will soon come down as the technology expands. Right now, Uber has a program to put devices on the road for customers to use in requesting a driverless car.  
Ann asks what all of these trends mean for curriculum. Matt replied that there is still a need for network engineers to run wiring and cables. That need may go away in some building, but not all.  
Vicente mentions again that many customers run to the cloud “as a savior” and many new hires only want to work on new technologies like AWS and virtual machines, but he believes they all need basic understanding of how bare metal works, how to manually configure switches and routers, and how to run the cable. He fears all of that is becoming a lost art. Ann agrees students like the “shiny things” without wanting to do the foundational work. With only 60 hours in a program there may be a temptation to move all of the teaching to AWS, VMware, and Azure.  
Mercedes says this is a good debate. She agrees that students need to know hardware, infrastructure, and connectivity but argues we also have to look at what companies are seeking. It is a trend that business is moving to the cloud and companies are hiring for cloud skills. Even so, foundational knowledge is always relevant. Vicente says he can teach cloud skills if his worker knows the bare metal skills, but it doesn’t work as well the other way around. Mercedes notes also that some AAS students may be incumbent workers who already have the bare metal skills and are looking to retrain.  
Gregory says it’s an “art” to blend together in a program the “historical tech” and foundation skills with the newer technologies.  
Glenn agrees students cannot avoid basic skills like using the OSI model for troubleshooting and critical thinking. He also notes that when looking at job openings for a recent presentation, he found three times as many openings for cloud as for Cisco. Cisco is still important, but companies already have those |

| Trends/Cloud vs on-premises (BILT members) |  
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| Trends/Take-aways for educators (BILT members) | trained Cisco workers. Now as they’re growing the business, those companies are moving to the cloud and need cloud workers. Glenn quotes Wayne Gretsky: skate to where the puck is going to be, not where it is now. Look ahead. Matt agrees the cloud is easier to learn for someone who knows the basics. He reiterates the importance of mastering the OSI model and the IT foundational basics. From there, a worker can become an advanced troubleshooter in a specific area like cloud or security. The take-aways for the educators:  
* Make sure to focus on the foundational basics, especially the OSI model  
* Find room in the curriculum to educate students on how to parlay that basic foundational knowledge into a cloud-native space so they can more easily get a job  
* Understand the value of certifications – A+, Net+, Security+ can all lead to a sustainable job, sometimes even in the absence of a degree |
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<td>Trends/Define the problem (BILT members)</td>
<td>Glenn urges students to learn how to define a problem before jumping to possible solutions. This means creating scenarios in class that mimic the real world where customers don’t always give technicians the information they need. Customers often give too much irrelevant “junk” information or don’t provide essential details to provide an accurate picture of the problem. Glenn thinks students need to practice finding ways to “eliminate the wheat from the chaff” by asking the right questions. In other words, for case study projects students should not have all of the necessary information given to them. They should receive unnecessary information that needs to be discarded and the instructors should withhold necessary information the student must uncover.</td>
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<td>Trends/Teams (BILT members)</td>
<td>Matt also urges educators to pick the project teams. Don’t let students pick the teams. Getting along with people you may not know or may not like is an important employability skill. Students need to embrace the differences inside a team. Donnie divides his class into teams based on how students answer specific questions. Their answers suggest how they think; Donnie builds the teams so students are placed with others who think differently.</td>
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| ITSS project update (Ann Beheler) | In February-March 2020, IT “thought leaders” across several meetings identified seven critical IT job clusters. This project grant is now taking each cluster one by one and convening SMEs to identify the essential job skills within.  
As of now, SME meetings for two clusters have been completed (“Infrastructure” and “Technical Support”) with a third cluster hopefully completed later today (“Project Management”). When analyzing the meeting results, staff is looking not just at the job skill voting results but also the conversation about what skills are new and what skills are missing from the vote. The hope is to get the skills for these three clusters out for verification to a larger group of SMEs by early January.  
Next up in 2020 are clusters for the IT side of data analytics, software, and security. |
Ann notes the project is using information from other sources; in fact, the NICE and NIST organizations want to collaborate on this ITSS project.

If educators or BILT members want to be involved, let us know.

### Teamwork discussion (Mercedes Adams)

Mercedes wants to talk about the value of teamwork and why it matters to business success. She believes teamwork is the “fabric that stitches effort into impact.” One of NetApp’s seven core values is “Teamwork and Synergy” and that concept helps drive how the company works and who it hires.

See Appendix A for an excerpt from NetApp’s employee handbook regarding “Teamwork and Synergy.”

Appendix B lists some of Mercedes’ perspectives on teamwork, including the three core elements:

- **Contribution** – What are you bringing to the team?
- **Collaboration** – How are you working together? Are you valuing those with diverse opinions and perspectives?
- **Communication** – It needs to be clear, consistent, concise, candid, and direct.

NetApp employs 10,000 people around the world and most work remotely using all kinds of platforms and tools (i.e. phone, email, Zoom), so the company looks for new hires that can participate in that environment. NetApp wants people who listen and pay attention; in fact, the company teaches “listening” as a skill to new salespeople. NetApp CEO George Kurian often emphasizes at company-wide meetings some of the qualities he’s seeing in the most successful, high-performing NetApp teams.

Mercedes also discussed seven strategies for cultivating teamwork.

1. **Create diverse groups** – This means different levels of experience, different backgrounds, different kinds of expertise.
2. **Design in get-to-know-you activities** – Help the team “break the ice.”
3. **Build a ‘code of cooperation’ & adhere to it** – This means that the team actively decides how they will work together. This is not a code of conduct; this is a set of accountability standards (i.e. the team agrees to always be on time, follow through on tasks, speak candidly)
4. **Establish clear roles & responsibilities** – Make sure team members know their jobs.
5. **Practice participating in remote meetings** – NetApp trains new hires how to do this, including how to present, manage conversation, and watch for body language in a remote online forum.
6. **Practice active listening & giving feedback** – This includes delivering constructive feedback.
7. **Reward & recognize the right behaviors** – Mercedes notes that if one “hero” does all of the work and everyone gets the credit, that’s not a team.

LinkedIn poll responses (Mark Dempsey)

Hopefully everyone is getting invitations to participate in monthly LinkedIn polls.

One recent poll question asked BILT members and educators about the “WIIFM” (what’s in it for me?) for industry participation in BILTs. Most responses focused
on “giving back” altruism, but BILT “WIIFM”s will vary: some will participate to get access to new graduates, others will participate so they can “talk shop” at the meetings and hear other IT experts’ perspectives. Ann encourages educators to understand their BILT members’ individual, unique “WIIFM.”

If you’re not a member of the BILT LinkedIn group [https://www.linkedin.com/groups/5106773](https://www.linkedin.com/groups/5106773), please consider joining. Send a request to join via LinkedIn and the CTC will approve you.

Apprenticeship grant (Ann Beheler)

Collin College has a new apprenticeship grant. Ann’s working to hire a project manager. The grant will provide help to students on sharpening employability skills and resume writing and interview practice. She will contact BILT members to see if they’d like to be involved. This is not a “registered” apprenticeship that requires a lot of paperwork.

About halfway through the AAS, students will participate in a kind of “sports draft” where companies conduct speed interviews. After they sign on as an apprentice, the student will continue with the AAS and coordinate with the host company. The ultimate goal is to convert the apprenticeship into a full-time job.

Next Meeting: tentatively February 11, 2019 (8:30am-10:00am Central) – via Zoom

Appendix A

Why teamwork matters

*Business & Industry Leadership Team*

**Teamwork & Synergy**

We achieve synergy through the skills and ideas of all participants. Through collaboration, we strive for win-win solutions to issues and problems. Personal success is realized through team achievements.

- Contribute and collaborate with other teams; jump in to help others when asked
- Share goals, thoughts, and plans to gain support and consensus
- Create environment of unity; no personal agendas
- Pull people with core expertise together to solve a problem; value diverse perspectives
- Be approachable, inclusive, accessible, respectful, and easy to work with

*Our Values*

- Leadership
- Trust & Integrity
- Teamwork & Synergy
- Simplicity
- Adaptability
- Go Beyond
- Get Things Done

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Appendix B

Strategies for teamwork in learning
Business & Industry Leadership Team

1. Create diverse groups
2. Design in get-to-know-you activities
3. Build a ‘code of cooperation’ & adhere to it
4. Establish clear roles & responsibilities
5. Practice participating in remote meetings
6. Practice active listening & giving feedback
7. Reward & recognize the right behaviors
8. Share success of high performing teams

What are your best practices?