

**MILWAUKEE SCHOOL OF ENGINEERING
B.S. COMPUTER ENGINEERING
INDUSTRY ADVISORY COMMITTEE
Wednesday, November 2, 2016**

Attendees

Industry Members

Mr. Ryan Barnett – Rockwell Collins
Mr. Jon Bonte – Plexus
Mr. Jason Esch – FedEx
Mr. Eric Gruetzmacher – FedEx
Mr. Joe Izzo – Rockwell Automation
Mr. Dave Neuman – Brady Corporation
Mr. Ryan Speiser – NVIDIA
Mr. Jeff Zingsheim, IAC Chair – Honeywell Corporation

Student Representatives

Mr. Ryan Kraemer '17
Ms. Josie LoCurto '18
Mr. Brian Scharles '17

CE Faculty

Dr. Eric Durant, Program Director
Dr. Adam Livingston
Dr. Darrin Rothe

Recorded by: Dr. Durant

Meeting called to order at approximately 8:35 a.m.

Note: All items on the agenda were discussed, but several informational items are not repeated in these minutes.

Safety Briefing

Mr. Brian Meacham, General Manager of this Honeywell location, gave a facility safety presentation.

Welcome and Introductions

Mr. Zingsheim, Chair, called the meeting to order. Dr. Durant thanked Mr. Zingsheim for hosting our meeting here at Honeywell in Pleasant Prairie and for arranging the facility tour to follow. Mr. Zingsheim and Dr. Durant welcomed the group and introductions were made.

Mr. Zingsheim gave a brief overview of Honeywell, noting that this extremely diverse company has about 130,000 employees worldwide. The facility we're in today extrudes wire for products including managed cabling. In addition to Honeywell's well known thermostats, they produce industrial printers, Performance Materials and Technologies ("PMT" including bulletproof vests, industrial fabric for roofs, and coolants), and aerospace products. Honeywell likes to move employees around to many areas, but this depends on one's tolerance for relocation. For a while Honeywell had centers of excellence, e.g., software concentrated expertise that did work across the company, but that has been dissolved and those people are back in the divisions. There have been a lot of internal moves to India, Minneapolis, etc.; there is a lot of *internal* turnover, which benefits the involved areas of the company.

Approval of Minutes

The May 27, 2016 meeting minutes were approved.

Opportunities for Collaboration

Guest Lectures

Mr. Bonte note that for the last several years Plexus sent a senior PCB designer to the UW-Madison campus to give a guest lecture. The designer showed a circuit board at every stage of the production process and explained the whole process including plating, etching, and vias. Groups of about 30 students go through the entire manufacturing process. We agree there would be a lot of interest in this and will investigate making it happen at MSOE. Dr. Rothe also expressed interest and had a brief discussion about following up.

Senior Projects

Dr. Rothe described a senior design team working on an app for inventory management of the EECS Technical Support Center stock room. This is a donation or sponsorship opportunity, especially for a company that has interest in barcode labels, scanners, etc.

Mr. Bonte shared thoughts from his colleague who serves on the SE IAC. They have SDL (Software Development Lab, a year-long team design experience for junior students) with both industry and internal projects; Plexus engineers and others act in the customer or "product owner" role and join recurring meetings for these projects, providing accountability. Mr. Neuman noted that Brady participates in SDL projects and sees the value that an external customer provides. This approach might fit into senior design at MSOE; it would be a lighter weight interaction than project sponsorship.

IEEEExtreme

Dr. Livingston again coordinated MSOE's participation in the 24-hour IEEEExtreme team programming competition. Dr. Livingston thanked Rockwell Collins for their sponsorship. Twenty-four students competed this year. Results should be out soon.

Hackathons

Mr. Esch noted that FedEx often runs hackathons at internal PI (Agile Program Increment) planning events. These are often held in January and span about ten weeks. Students would be welcome to come

to FedEx to participate after pre-hackathon brainstorming with FedEx employees. About 15-20 students could participate in teams of five, mixed in with FedEx employees.

Equipment

Mr. Speiser said that NVIDIA is always looking for ways to keep MSOE connected to the west coast. They might be able to donate TK1 development systems if there is a need at MSOE. MSOE is encouraged to suggest areas where NVIDIA can help

EECS Industry Forum

It was suggested that starting with discussion of common questions, a more structured approach than opening the floor to questions from the start, might improve this fall event.

New Embedded Systems Sequence

Dr. Rothe reported on the new embedded sequence running this year. Previously we used an Atmel and then a NIOS soft processor. Now, we've moved back to more of a classic microprocessor, the ST32 Nucleo, and we developed a PCB with keypad, LCD, etc. We're learning about the new hardware and are very happy with it. In Dr. Rothe's sections there has been one drop and everyone else is passing. These classes tend to be bimodal (those who "click," and those who don't understand the material well and barely get through). Dr. Livingston noted that the ST32 Nucleo is a complicated device that has sophisticated configuration options, so a key job of the professor is to distill that for the students. Dr. Livingston had four students drop, and has a couple more who are struggling. The challenge is system complexity; if they're good at building their skills to break down problems, they can figure it out.

CE4100/EE4100 Embedded Systems Fabrication

Dr. Rothe discussed this elective that he ran again this year. It focuses on a production prototype, sourcing parts through a catalog, schematic development, PCB design, ordering and assembly of their board using a common parts kit, and the bootstrapping process. Rockwell Collins donations supported surface mount equipment for this course that we have available in senior design labs.

CS4920 Information Security

Dr. Durant explained that venerable elective is transitioning to a required senior class with the current sophomores. Adjunct Asst. Prof. Michael Vieau is teaching this class for the second time and integrates his penetration testing expertise. Members agreed that this material is important for all CEs. It is not feasible in industry with so many products to have a security team that can serve the whole organization. There is still the common mistake of trying to test security in instead of building it in.

Mr. Izzo noted that in his functional safety work there are standards including IEC 61508 to address development, the process artifacts, and traceability. The security people are coming to the safety people to learn and use this disciplined process. Small mistakes in requirements and high level design often lead to security flaws.

Adjournment

Meeting adjourned to a facility tour at approximately 10:45 a.m.