

Notes from Dean's Advisory Board Meeting – April 29, 2017

Members present:

John Allgair, Sharon Bauer, Mike Carlson, Kevin Cochie, Carl D'Alessandro, Phil Dumas, Sam Hanna, Chuck Hardison, Mark Heck, Alexander Hoffs, Jeff Snyder, Jennifer Szaro, Ben Patz, Zach Quandt, Pat Simpkins, Mike Sarpu, Tim Smith

Members present via Skype: Bev Seay, Jason Dunn

Ex Officio Present: Michael Georgiopoulos

Guests present:

Mohamad Abdel-Aty, Mostafa Bassiouni, Francesca Boteri, Daniel Eilen, Ivan Garibay, Waldemar Karwowski, Robin Knight, Steve Kramer, Ranganathan Kumar, Gary Leavens, Kimberly Lewis, Mike McLaughlin, Lee Odess, Yoav Peles, Jeff Pridmore, Bob Reedy, Chuck Reilly, Oscar Rodriguez, Gavriel Salvendy, Sudipta Seal, Mark Steiner, Deborah Williams

Siemens Digital Grid – Mike Carlson

Mike Carlson from Siemens presented their efforts and rationale in establishing the Digital Grid Laboratory in ECE

- Focus on Physical protection at the substation level
- Main goals for UCF relationship
 - Want to become integrated into the curriculum – better prepared students
 - 7 different lab curriculum offerings (Fall'17)
 - Course curriculum (microgrid) – spring '18
 - Better Industry Engagement
 - Ultimately want an aligned R&D program with UCF
 - Employee engagement with the University (Grad school); people want a better experience, connecting with a university is a plus
- Key capabilities of interest
 - Reliability and maintainability
 - Distributed energy focus (new entrants onto the grid, including green production, manage intermittent sources of power)
 - Cybersecurity
 - Big data analytics – need real-time knowledge
- Deep involvement in the downtown campus – utilization of their emerging products, micro-grids is a big part of it
- Need to get into block chain exchanges, etc. future energy exchanges where consumer chooses the type of energy, what they consume vs. produce
- Locations – Bldg. mgmt., technologies (Chicago), SW control (Minnesota), adv. apps/grid control (Silicon Valley)

- Jeff Snyder comment – Raytheon has a DARPA contract to cyber protect the grid. Government recognizes 16 critical infrastructure elements – consider how this tech could be leveraged to other areas
- Bev Comment – Retiring workforce, need of younger workforce is of interest, can Augmented Reality play a role in Siemens’ business, DARPA RADIX program and Siemens involvement
- Bob Reedy Presentation – Focused on the FEEDER and RISES cluster efforts related to power systems and smart grid
- Ben Patz Comment – The hires in RISES seemed extremely siloed in EE
- **Action:** Follow up with both Jeff Snyder and Mike Carlson on interest in ICS Cybersecurity
 - Any UCF Downtown follow up?

Strategic Plan – Michael Georgiopoulos

Michael Georgiopoulos presented highlights of the CECS strategic plan (presentation will be sent to all DAB members)

- Bev Seay – How are we doing obtaining our fair share of [UCF] funding to support mentoring/development of young faculty. Answer: raised about \$60k/year for select new faculty, want to grow this so all new faculty with outstanding accomplishments receive funding. Philanthropy opportunities abound to support this effort.
- Phil Dumas - Didn’t see the communications and entrepreneurial elements in the strategic plan. Promote the realities of business in engineering, communicating an idea, etc.
- **Immediate Feedback from DAB regarding strategic plan:**
 - Augment Strat plan to emphasize soft skills and entrepreneurial/leadership elements more explicitly (make item(s) a sub-objective?.
 - Show better connectivity between CECS and partnering organizations – BRIDG, CREOL, IST, etc.

NAE Raising UCF Sights; Gavriel Salvendy (NAE) Discussion

Gavriel Salvendy posed two questions:

Q1: What can the College do for you?

Q2: What are some of your common interests that align with the College’s vision, mission and strengths?

- Ben Patz – Is there a program of distinguished professors outside of NAE that can provide similar guidance to other disciplines and across the university at large? What is the multidisciplinary equivalent of the NAE? Answer: UCF is including NAS members (which includes business) and medical will follow.
- Phil Dumas – Today’s engineering students have a lack of soft skills, empathy for the customer etc. How are we working with students to ensure they communicate within social norms?

- Technology is changing the nature of work, what does the resultant workforce look like? Should the college be looking into this as we educate the next gen workforce?
 - Social Impact of Technology
 - Social Responsibility of Engineering
 - **INTERNAL ACTION**
- Mark Hecht (Raytheon) – there is a huge demand for cyber – they are looking at non-STEM disciplines to do this. Can the university play a role in helping to solve this problem by opening the aperture (*implies providing non-STEM students with cyber curriculum*)?
- Alexander Hoffs (Siemens)
 - Communications is key, engineers have trouble communicating to non-engineers (welders was used as an example).
 - Practical nature of engineering is hands on, what is UCF doing to reintroduce hands off via projects. Answer – new senior design program, increased emphasis on internships, etc.
- Kevin Cochie (Nammo)
 - UAS/V technology focus not as prominent as he expected.
 - Reiterated soft skills comments
- Sharon Bauer (OUC) – close the feedback loop on internships with the university. Quality of assignments, what worked, what didn't work. Use to improve program, provide feedback to industry
- Phil Dumas – how to incentivize students through the “hard” path to seek internships, do developmental work outside of class, etc. What do you make part of formal requirements vs. recommended part of curriculum
- Tim Smith
 - Keep up with the curriculum
 - Internship program is important
 - Have modelers but cannot apply engineering
- Jason Dunn (Made in Space) – provided his view of major trends
 - Generative Design Tools – set parameters, software performs synthesis, design, optimizations, etc. In the future, software will continue to do more of the design, what is the engineer's role in this emerging paradigm?
 - Synthetic Biology – moving faster than Moore's Law. Biological designs can be done using Autodesk.
 - Connected World, what does it mean for the future? Crowd sourcing will always win, figuring how to do it first will be a major discriminator for emerging businesses in a number of areas.

A number of DAB members emphasized the importance of hands-on experiences through internships, club activities, senior design, and other activities. There must be some way to require that students are involved in one of these activities while they matriculate at UCF.

Technical Skills committee – Mike Sarpu (LM) – no real comments from me, they will get new survey out and report at next meeting.

Some thoughts about the survey. What are the companies looking for in their future employees? What are the students looking for in their job environment? The previous survey collected results from top students. Are students putting the right skills in their resume?

BRIDG Update

John Algair informed the DAB about the most recent activities related to BRIDG's efforts.

One comment made by a DAB member is that this presentation did not explain what the future involvement of CECS and BRIDG is. Nevertheless the presentation touched upon a number of topics that could be of interest to CECS faculty, such as: Photonics/Electronics Data Center, Advanced Materials and Device Development, 2.5-3-D Device integration, test and packaging, provide functionality on top of CMOS

Senior Design Program (Mark Steiner)

- Comments – competitive teams raise the level
- Anonymous comment – pitch did not describe the goals/benefits of senior projects (multidisciplinary engineering, hands on, problem solving, etc.) or the process, dove into minutiae of specific ones.
- Pat (NASA) – systems engineering (Mark called this contextual engineering) is required in Industry. Anything the university can do to bolster this skill set and train systems engineers is great. *May be a good opportunity for a new Master's program.*
 - **INTERNAL ACTION:** Discuss with Waldemar and Tim Kotnour

Data Analytics Program – Ivan Garibay, Lee Odess

Ivan Garibay and Lee Odess discussed the progress related with the MS in Data Analytics program recently established at UCF. Ivan Garibay is the Director of this program, Lee Odess is the chair of the IAB for the Data Analytics program

- Dan Eilen (Purdue) – business analytics focus
- Lee Odess – Unikey, chair of IAB for Data Analytics

IGNITE Campaign – Robin Knight

Robin Knight provided an overview of where CECS is with regard to the IGNITE Campaign goal of \$55 million. Robin, said that we are doing well in meeting this year's goal of \$12M for FY17 and in surpassing the campaign goal in FY18. An increased effort though is always needed to meet some of the College's needs in terms of supporting pockets of excellence, endowed professorships, DAB awards, infrastructure for the labs, and other items. Board members can help by becoming or continuing to be a donor; sharing names of people, foundations or corporations who we may engage in the campaign; working with the Advancement team to discuss the campaign and CECS with fellow alumni; encouraging alumni engagement and support.

PROMISED ACTION ITEMS:

1. Send all the presentations along with the minutes of the DAB to all the DAB members.
2. Mike Sarpu sends the technical survey to industries for edits. After it is received back we solicit feedback from industries who survey their employees, who are UCF graduates.
3. CECS creates a survey for DAB, accompanied with a one pager strategic plan summary and the strategic plan presentation. The survey will ask four questions.
 - a. How are you contributing to CECS's objectives in CECS's strategic plan?
 - b. How else can you contribute to CECS's objectives in CECS's strategic plan?
 - c. What other objectives/initiatives should CECS be pursuing to enhance its focal pursuits of:
 - Create a bigger and better research enterprise
 - Grow and Develop Faculty
 - Increase the Quality and Quantity of Graduate Studies
 - Enhance the Undergraduate Experience
 - Become the Nation's Technology Partner Leader
 - d. What multidisciplinary clusters would you like to see at UCF beyond the ones already created (Energy and Smart Grid, Coastal Research, Energy and Propulsion, Genomics and Bioinformatics, Smart Prosthetics, Cyber Security and Privacy, Human Augmentation and Robotics)?

OTHER ACTION ITEMS

- Get a group together to discuss the harder, long term issues brought up
 - Discuss what we need to do differently *at* scale, e.g. the things that have worked for the past 10 years won't necessarily work for the next ten.
 - How is the nature of engineering design going to change with new technology (AI, automated manufacturing, etc.)? How does this change what/how we teach?