The $eli^2$ Fall 2015 Update:

1) CECS Pipeline Strategy
2) $eli^2$ Customers, Thanks, Student Perspective, and Development Circles

Presented to:
Dean’s Industry Advisory Board

November 2015

Presented by:
Tim Kotnour, PhD
Industrial Engineering & Management Systems Department
University of Central Florida
Our “Good” Strategy...

• “not just ‘what’ you are trying to do. It is also ‘why’ and ‘how’ you are doing it” (p. 85)

• “is at least as much about what an organization does not do as it is about what it does” (p. 20).

— Richard Rumelt
Bev Asked Us to Share Our Uniqueness Story.

The 11 Degree Programs—To Be Technically Sound

1) Aerospace Engineering (B.S.A.E.)
2) Civil Engineering (B.S.C.E.)
3) Computer Engineering (B.S.Cp.E.)
4) Computer Science (B.S.)
5) Construction Engineering (B.S.Con.E.)
6) Electrical Engineering (B.S.E.E.)
7) Environmental Engineering (B.S.Env.E.)
8) Industrial Engineering (B.S.I.E.)
9) Information Technology (B.S.)
10) Mechanical Engineering (B.S.M.E.)
11) Photonics Science and Engineering (B.S.P.S.E.) **This program is offered jointly with the UCF College of Optics and Photonics.

The “Traditional” Student Success Services

CECS Services
- Academic Affairs
- Academic Advisors

UCF Services
- Academic advising
- Supplemental Instruction
- SARC
- SARC mentorship training
- Math Lab
- Finals Reviews in the Union
- Peer Mentor Workshops
- Career Services
- Career Fairs

The Unique Co-Curriculum Opportunities

Our Corporate Partners Make This Happen
Our Why...Deliver World-Changing Solutions...Solve the “Pipeline” Challenge

1. Increase the inflow of students interested in Engineering & Computer Science

2. Decrease the leaks—Increase student retention

3. Increase student’s ownership of their academic career

4. Enhance the quality of the product coming out to ensure they are employable
   a) With the right skills
      • Technically sound
      • Creative
      • Innovative
      • Collaborative
      • Accountable
   a) With the ability to contribute on multiple paths
      • Corporate engineer
      • Researcher
      • Entrepreneur
CECS Is Understanding the Portfolio of Efforts.

1. Increase the inflow of students interested in Engineering & Computer Science
   - COMPASS (Convincing Outstanding Math-Potential Admits to Succeed in STEM)

2. Decrease the leaks—Increase student retention
   - EXCEL
   - EXCEL Athletes
   - Girls EXCELling in Math and Science (GEMS)
   - Women in Science and Engineering (WISE) Mentoring at UCF
   - PRIME STEM

3. Increase student’s ownership of their academic career
   - eli2 Planning & Reflection Workshops (e.g., Mission Employability: Development Circle)
   - Women in Science and Engineering (WISE) Mentoring at UCF

4. Enhance the quality of the product coming out to ensure they are employable
   a) With the right skills
      - Technically sound
      - Creative
      - Innovative
      - Collaborative
      - Accountable
      - eli2 Harris Gathering Lab, Idea Lab, TI Innovation Lab
      - eli2 Senior Design Boot Camp
      - eli2 EL Minor/Certificate courses
   b) With the ability to contribute on multiple paths
      - Corporate engineer
      - Researcher
      - LEARN™
      - Entrepreneur
      - YES
      - iCorps
We Need to Work the Portfolio & Communicate the Information to Our Students.
A community of leaders

Our Mission:
Engineers who create, innovate and collaborate to deliver world-changing solutions.

The Journey:

- **UNDERGRADUATE STUDENTS**
  - Self Leadership
- **YOUNG PROFESSIONALS**
  - Self Leadership Professionalism
- **TEAM LEADERS & PROJECT MANAGERS**
  - Self Leadership Professionalism
  - Team Leadership
- **ORGANIZATIONAL LEADERS**
  - Self Leadership Professionalism
  - Team Leadership
  - Organizational Leadership

Lifelong Engagement.
Ben Says....Customer =
I Say Thank You...

**Interns:** Duke (Melissa & Mike) & WDW (Chandler)

<table>
<thead>
<tr>
<th>Time</th>
<th>Dollars</th>
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<tbody>
<tr>
<td>• Boeing</td>
<td>• Duke Energy</td>
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<td>• Disney</td>
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<td>• Lockheed Martin</td>
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<td>• Ben, Bev, Pat</td>
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<td>• Tom O’Neal/UCF ORC</td>
<td>• KSC</td>
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**The UCF Team**
We Have the UG “All Get Some, Some Get All” Program.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Responsibility</th>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
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<td>4) Learn from Life Experiences</td>
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<td>Pre-Senior Design Experiences &amp; Professional Skills</td>
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<td>5) Experiment with Creating and Innovating</td>
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<td>6) Gain Work Experiences</td>
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<td>7) Learn from Leadership Courses</td>
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<td>Engineering Leadership Minor &amp; Certificate</td>
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<td>Duke Energy Leadership Seminar Series</td>
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**UNIVERSITY OF CENTRAL FLORIDA**
Our Progress—All Get Some—TI Innovation Lab Use

<table>
<thead>
<tr>
<th>Build Innovation &amp; CICA Ability</th>
<th>Critically think about a product</th>
<th>Define the purpose the prototype</th>
<th>Define what you want to test with the prototype</th>
<th>Build a prototype</th>
<th>Identify the best way to build the prototype</th>
<th>Be creative</th>
<th>Be innovative</th>
<th>Be collaborative</th>
<th>Be accountable</th>
<th>Deliver solutions</th>
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<tr>
<td>Significantly increased</td>
<td>18.52%</td>
<td>22.22%</td>
<td>19.23%</td>
<td>54.72%</td>
<td>47.17%</td>
<td>24.07%</td>
<td>22.22%</td>
<td>35.19%</td>
<td>33.33%</td>
<td>37.04%</td>
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<td>Increased</td>
<td>61.11%</td>
<td>51.85%</td>
<td>53.85%</td>
<td>37.74%</td>
<td>41.51%</td>
<td>51.85%</td>
<td>46.30%</td>
<td>46.30%</td>
<td>40.74%</td>
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<td>Did not change</td>
<td>20.37%</td>
<td>25.93%</td>
<td>26.92%</td>
<td>7.55%</td>
<td>11.32%</td>
<td>24.07%</td>
<td>31.48%</td>
<td>18.52%</td>
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<td>1.85%</td>
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<tr>
<td>Significantly decreased</td>
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Valuable Resource
• It made graduation possible.
• An invaluable resource that I wish were available earlier in my academic career at UCF.

Increased Ability to Develop Prototypes and Do Hands-on Engineering
• It gave me the confidence, knowledge, and equipment to bring an idea to fruition.
• A really great opportunity to get hands on experience with design and building

Complete Projects
• Incredibly useful space that us students are lucky to have.
• The lab was the only reason we were able to compete group projects as freshmen

Complete Senior Design Projects
• Without this lab or the help of the people running it, my group's senior design project would have been of much lower quality.
• I couldn't imagine going through my final year at UCF without it.

Great Story
• The lab is usually the first thing I show to my friends and family visiting the school when giving informal tours.
Our Progress—“Some Get All”—We Need to Market, Prove/Scale, “Produce the Whole Product” (Ian)

“eli² is reaching and interacting with the "3%" of students that are driven, passionate, and hard-working.”

- Industry
  - Feed the top performers into existing intern programs

- Students – Create a meaningful community
  - Simple text email & add “App” for CECS unique events
  - Collaborate/support existing clubs
  - Cross discipline hands-on design/build project experience
  - Professional skills development (senior led)
  - Peer mentoring
  - Internships
  - Outreach/volunteering in community

- Shape overall educational experience—make it count
Strategic Issues

• Graduate Program
  – State and University are adjusting business model
  – Need to understand these implications
  – Looking to start in May

• Undergraduate Program
  – How do we create an Honor’s college like experience for our “Some Get All” group?

• Overall
  – Ensure We Do the Simple Things Well—Tighten up the Daily Operations—
    • Kate Hurt
  – An external deep dive assessment and feedback session?
    • “Lunch with Ben and Randy”
  – Maintain and expand relationships
  – Lead strategic growth
Students Have the Opportunity to Shape Their Employability—Their Destiny.

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UNIVERSITY OF CENTRAL FLORIDA
Impacts
• My Story
  – Aerospace Engineering
  – Transfer student
  – Seminar class
  – Leadership role

• My Fellow Student’s Story
  – Internships
  – Professional careers

• Global Outcomes
  – Transferable skills
  – Broader perspective

Next Steps = Establish Community
• Professional Development Workshops
  – Leadership development
  – Creative, Innovative, Collaborative, Accountable

• Inspire Sessions
  – Demonstrate emerging technology innovations
  – Share areas needing more creativity and innovation

• “World-Changing Solutions”
  – Collaborate/support existing clubs
  – Cross discipline hands-on design/build project experience
  – Professional skills development (senior led)
  – Peer mentoring
  – Outreach/volunteering in community
Development Circles