The UCF MSEM Cohort Program—An Innovative Educational Program Which Continues to Deliver a Strategic Solution to Our Central Florida Partners

Presented by:
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John Farr, PhD

Engineering Leadership and Innovation Institute
Industrial Engineering and Management Systems
College of Engineering and Computer Science
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Introduction

This report provides a description and assessment of the graduate Master’s of Science in Engineering Management Professional Cohort program within UCF’s Engineering Leadership and Innovation Institute (eli²). eli²’s mission is to give our students the burning desire and confidence to deliver world-changing solutions. By students we mean an:

- Undergraduate student pursuing a Bachelor of Science degree in engineering, computer science, or information technology
- A working professional returning to school to pursue a Master of Science degree in Engineering Management
- An executive collaborating with us to search for best practices.

This report’s intent is to help share our graduate program story with you. The report is divided into four sections:

1. Welcome to Our Journey
2. The Business Case
3. The Implementation
4. Lessons Learned

Each section goes further in depth than the previous one. You can choose how deep you explore our story.

Specific participant company participation and impact is available upon request.
We Are Sharing the eli² Graduate Program Story at Multiple Levels.

This report provides a description and assessment of the graduate Master’s of Science in Engineering Management Professional Cohort program within UCF’s Engineering Leadership and Innovation Institute (eli²). The report is divided into 5 sections. Each successive section provides further detail.

This current “Welcome to Our Journey” section provides:
- A high-level summary of the mission
- A high-level summary of the program and its impacts.

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</table>

• Our Evolution
• Our Lessons Learned

| 894x486 to 960x540 | 154x110 to 932x479 | 7x500 | 947x10 | 3 |
To describe the eli2 graduate program, we use the business case. This model is explained further in a few pages.

As can be seen from this summary the program delivers a strategic solution to our industry partners and UCF:

In summary the MSEM cohort based program has seven strategic advantages for our industry partners and UCF:

1) **The MSEM Cohort Program helps our corporate partners be successful.** Our partnering organizations are looking to
   - Make their strategy real
   - Overcome challenges to enhancing innovation within their cultures.

   Our partners include:
   - Harris Corporation
   - Lockheed Martin
   - NASA/Kennedy Space Center
   - Raytheon
   - Siemens
   - The Walt Disney Company.

2) **The MSEM Cohort Program is program tailored for the working professional.** We offer the Master of Science in Engineering Management (MSEM) Cohort program focused on leading the delivery of innovative solutions. We have established a stand alone degree with a “concierge” level of service.

3) **The MSEM Cohort Program is strategic for our stakeholders:**
   - For our partners, the strategic opportunity is business growth through innovation and leadership development.
   - For UCF, the strategic opportunity is “international prominence in key programs of graduate study” & “America’s leading partnership university”.

4) **The MSEM Cohort Program is having a significant impact:**
   - Our alumni reported over $1 Billion in business impacts.
   - Over 75% of the alumni had significant increases in their job responsibilities.

5) **We have built a robust, sustainable capability.** We established a robust delivery system (with 34 of products/processes across 13 capabilities). We continue to define, deliver, measure, and refine the program with our partners.

6) **The MSEM Cohort Program is fiscally stable and responsible.** The program continues to grow through 7 cohorts. 118 alumni with 36 students in the current cohort. The program can contribute to eli2 being self-sufficient.

7) **The MSEM Cohort Program is “winning” with our students and our corporate partners.** Our corporate partners and students view this program as vital to their long-term growth. Sponsor and alumni testimonials demonstrate we are having a life-long impact.
The Graduate Program Transforms Individual Contributors to Project Leaders and Managers.

eli^2's mission is focused on lifelong engagement engineers and computer scientists.

This report provides a description and assessment of the graduate program. This report provides a description and assessment of the Graduate MSEM Cohort program.

This program focuses on supporting professional individual contributors to transition to the project leader and manager role.

This program’s intent is for the working professional to take on the role of leading teams to deliver innovative solutions that are strategically important to the organization and customer.
We Thank the Team Who Have Gone on the Journey With Us.

As great organizations and projects have a great team and set of supporters, eli² benefits from have a strong set of team members and supporters.

One of eli²’s key focus area is collaboration. The eli² story is a collaboration story. Our success is a collective success.

We thank our team and supporters for sharing their wisdom, energy, encouragement, and resources.

Note: If you felt you should be on this list, we apologize for forgetting.

We thank our Founding Sponsors for their encouragement and financial support. Their support demonstrates their belief in our mission.

- Harris Corporation
- KSC
- Siemens
- WDW

We thank our Founding Faculty for their dedication to the mission. They provided the initial energy and ideas.

- Tim Kotnour
- Bob Hoekstra
- Chuck Reilly

We thank our corporate leader partners for their dedication to the mission.

Harris
- D’Alessandro, Carl
- Clamons, James
- Mathe, Stephen
- Miller, Craig
- Nartatez, Jeffrey
- Newberry, Lilo
- Wells, Tom
- Westbay, Joe

LM-RMS
- Harris
- Clamons
- Mathe
- Miller
- Nartatez
- Newberry
- Wells
- Westbay
- Joe

LM-EBS
- Harris
- Clamons
- Mathe
- Miller
- Nartatez
- Newberry
- Wells
- Westbay
- Joe

LM-MFC
- Harris
- Clamons
- Mathe
- Miller
- Nartatez
- Newberry
- Westbay
- Joe

WDW D&E
- Carbiner, Chip
- Jones, Brian
- Kaplan, Jerold
- Labonge, Mike
- Lentsch, Pat
- Lind, Dennis
- Todd, Mark
- Tschanz, Michael
- Soto, Dan
- Wagner, Doug
- Youngs, Erin

WDW-IT
- Wingate, Robert
- Duguid, Michael
- Haas, Chad

Siemens
- Egli, Roland
- Feller, Gerald
- Garbett, Paul
- Philip, Vind
- Sivick, Mike
- Vannavenswaay, Henk
- ???, Hans

KSC
- Bolger, Mike
- Feeney, Joette
- Manning, Kelvin M.
- Simpkins, Patrick
- Mitskevich, Amanda

Raytheon
- Glynn, Rick
- Hendricks, Corey
- Stikkers, Rick
- Zwalina, Lisa
- Vangjel, Peter

We thank our graduate faculty partners from the core disciplines. They support the mission with ideas, concepts, energy, and their time. They share their love for teaching ....

- Bielh, Richard
- Cloutier, Robert
- Farr, John
- Herald, Tom
- Hoekstra, Robert
- Jones, Dan
- Kotnour, Tim
- Kowalski, Scott
- Kurstedt, Harold
- Lackey, Denise
- Kurstedt, Pam
- Nicholson, Denise
- Mollaghasemi, Mansooreh
- Nassal, Dima

We thank the Rosen College of Hospitality for their support. Their dedication to providing exceptional logistics for the cohort helps the program enjoy a pleasant experience.

- Palacios, Irysene
- Raymond, A’Ron
- Shufuff, Gabrielle

We thank the IEMS department team. They provided the energy and encouragement to provide a new model for education.

- Karwowski, Waldemar
- Stalvey, Liz
- Hurt, Katie
- Vergopia, Catherine

We thank the Regional Campus team for their support. They provided the energy and encouragement to provide a new model for education.

- Bryant, Allison
- Cavanaugh, Pam
- Cole, Kim
- Groover, Sylecia
- Faler, Hannah
- Holmes Stephen
- Illasanie, Waeheeda
- Jones, Jeff
- Laney, David
- Misiano, Aarom
- Padale, Carmen
- Nielsen, Eric

We thank the UCF administration for their support. They provided the “cover” and encouragement to provide a new model for education.

- Bishop, Pat
- Cavanaugh, Tom
- Fulginiti, George
- Georgiopoulos, Michael
- Goldman, Leben
- Hartman, Joel
- Simaan, Marwan
- O’Neal, Tom
- Reilly, Charles
- Seilhamer, Ryan
- Whitaker, A. Dale
- Waldrop, Tony

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We thank our graduate student alumni. These students helped refine our model to ensure it was meaningful to the students. They dedicated their time and talents to our mission.

- Alumni listed in previous slides
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To describe the program at a high-level we will use a “business case” model.

The business case uses seven questions to describe and evaluate an opportunity or project. Answering these questions provides the business case.

The UCF MSEM Cohort Program uses the “Business Case” as core element of the program. This model was developed in partnership with Harris Corporation and was refined through our teaching activities.

1) What is the **opportunity gap**?

2) What is the **solution**?

3) How **strategic** is this?

4) How well are we providing a **solution**?

5) How well can we **deliver**?

6) Will we make **money**?

7) Can we **win**?
Our Partnering Organizations are Looking to Make Their Strategy Real.

The MSEM Cohort Program helps our corporate partners be successful.

Based on our professional experiences, the broader literature, and a survey of our corporate sponsors, we see:

- Organizations and their leaders struggle with translating strategy to action and results.
- Managers struggle with connecting strategy and projects.

We designed the program to overcome these challenges.

This data is from a survey of program sponsors in 2015.

**Corporate Sponsor Challenges in Driving their Strategy**

- Holding people accountable for achieving results aligned with the strategy
- Making decisions aligned with the strategy
- Operating with a realistic view of the business environment
- Predicting the risk/success of the organization's strategy
- Trusting that following a disciplined strategy process will deliver results
- Making the choice to lead with strategy
- Investing the time in the strategic process
- Sharing a credible strategic story across the organization
- Holding strategic conversations
- Crafting and believing in credible strategic story
- Having a clear reason or "why" for using strategy
- Creating a positive environment for strategy
Our Partnering Organizations are Looking to Overcome the Innovation Challenges.

The MSEM Cohort Program helps our corporate partners be successful.

Based on our professional experiences, the broader literature, and a survey of our corporate sponsors, we see:

- Organizations and their leaders struggle with driving innovation in their organizations.

We designed the program to overcome these challenges.

This data is from a survey of program sponsors in 2015.

**Corporate Sponsor Challenges in Driving Innovation**

- Balancing operational excellence (Incremental improvement) with innovation
- Converting the new ideas into useful products/services
- Balancing operational excellence (Incremental improvement) with the risk of major change and the chance of failure
- Creating breakthrough products and systems
- Creating a culture of innovation
We offer the Master of Science in Engineering Management (MSEM) Cohort Program Focused on Leading the Delivery of Innovative Solutions.

The MSEM Cohort Program is program tailored for the working professional.

We offer the Master of Science in Engineering Management (MSEM) Cohort program focused on leading the delivery of innovative solutions.

We have established a stand alone degree with a "concierge" level of service for the cohort program.

<table>
<thead>
<tr>
<th>Degree</th>
<th>Master of Science in Engineering Management</th>
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<tbody>
<tr>
<td>Focus</td>
<td>Project delivery of <strong>innovative</strong> solutions that are strategically important</td>
</tr>
<tr>
<td>Curriculum</td>
<td>Life-cycle focus within 10 interconnected courses + a corporate specific application project course</td>
</tr>
<tr>
<td>Learning Approach</td>
<td>Program-wide, integrated project; cases; and reflection papers</td>
</tr>
<tr>
<td>Delivery</td>
<td>Application sessions augmented with online lectures</td>
</tr>
<tr>
<td>Professors</td>
<td>Experts with support from industrial scholars</td>
</tr>
<tr>
<td>Length</td>
<td>~24 months</td>
</tr>
<tr>
<td>Location</td>
<td>Regional Campus (e.g., Rosen School) in a professional office building</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>&quot;Concierge&quot; support processes to allow students to focus on learning</td>
</tr>
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</table>
We Offer the Master of Science in Engineering Management (MSEM) Cohort Program Focused on Leading the Delivery of Innovative Solutions.

The MSEM Cohort Program is program tailored for the working professional.

We offer the Master of Science in Engineering Management (MSEM) Cohort program focused on leading the delivery of innovative solutions.

We have developed an integrated curriculum that grows from one-course-to-the-next. The sequence is intentional and reflects a thought process for identifying, scoping, and delivering innovative solutions that are strategically important.

Workshop: Technical Communication

Course 11: Company Specific Application Project

1) The Opportunity
2) The Solution
3) The Strategic Imperative
4) Delivering the Solution Results
5) The Capability to Deliver
6) The Financial Perspective
7) The Winning Position
For Our Partners, the Strategic Opportunity is Business Growth through Innovation and Leadership.

The MSEM Cohort Program is strategic for our stakeholders.

For our partners, the strategic opportunity is business growth through innovation and leadership development.

This data is from a survey of program sponsors in 2015.

Why MSEM

- Accelerate development of new leaders
- Enhance existing project performance
- Enhance overall business performance
- Improve organization's tools
- Accelerate development of new project managers
- Improve the organization's processes
- Gain new business
For UCF, the Strategic Opportunity is “International Prominence in Key Programs of Graduate Study” and be “America’s Leading Partnership University.”
Our Alumni Reported over $1 Billion in Business Impacts from Their Participation in the MSEM Program.

<table>
<thead>
<tr>
<th>Company</th>
<th>Total impacts</th>
<th>Response Rates</th>
</tr>
</thead>
</table>
| Harris  | • Existing projects total impact: $~170 Million (14 projects)  
          • Future projects total impact: $~1.2 Billion (5 projects) | 16 of 31 alumni completed the survey |
| KSC     | • Existing projects total impact: $~74 Million (4 projects)  
          • Future projects total impact: $~10 Million (2 projects) | 17 of 24 alumni completed the survey |
| CSX     | • Existing projects total impact: $40 Million (1 project) | 1 of 1 alumni completed the survey |
| LM      | • Existing projects total impact: $~500,000 (2 projects) | 10 of 19 alumni completed the survey |
| Siemens | • Existing projects total impact: $~500 Million (1 project) | 3 of 3 alumni completed the survey |
| WDW     | • Existing projects total impact: $~1 Million (1 project)  
          • Future projects total impact: $~3 Million (2 projects) | 4 of 4 alumni completed the survey |
| Total   | 23 projects with $700,000,000+ of impacts on existing projects  
          9 projects with $1+ Billion of impacts on new projects | 51 of 82 provided feedback on specific project impacts |
Over 75% of the Alumni Had Significant Increases in Their Job Responsibilities.

The MSEM Cohort Program is having a significant impact.

Consistent with the intent to help develop leaders who can deliver solutions, the participants in the program enhanced their leadership skills. One measure of this enhanced leadership skill is the change in responsibilities after participating in the program. The attached table highlights the number of survey respondents who changed their job titles.

This data is based on a 2015 survey of alumni from the first five cohorts. Fifty-five of 87 alumni completed the survey.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Change In Job Title</th>
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<tbody>
<tr>
<td>CNL</td>
<td>1/1</td>
</tr>
<tr>
<td>CSX</td>
<td>0/1</td>
</tr>
<tr>
<td>Harris</td>
<td>9/15</td>
</tr>
<tr>
<td>KSC</td>
<td>15/17</td>
</tr>
<tr>
<td>L-3</td>
<td>0/1</td>
</tr>
<tr>
<td>LM</td>
<td>8/10</td>
</tr>
<tr>
<td>PAR</td>
<td>1/1</td>
</tr>
<tr>
<td>Siemens</td>
<td>2/3</td>
</tr>
<tr>
<td>WDW</td>
<td>3/4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>39/53</strong></td>
</tr>
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</table>
We Have Established a Robust Delivery System: 13 Capabilities Supported by 34 Products/Processes.

We have built a robust, sustainable capability.
We established a robust delivery system (with 34 of products/processes across 13 capabilities).

| 1) Established Stand Alone Degree | 1) Defined overall curriculum  
2) Established budget model for market-based programs  
3) Gained approval for market-based program  
4) Converted track to stand alone MSEM degree—Gained state approval |
|-----------------------------------|------------------------------------------------------------------|
| 2) Created a Laser-Focused, Interconnected Curriculum | 5) Created teaching and learning model focused on 10 interconnected courses and project  
6) Created 11th course to focus on company-specific applications  
7) Identified books to support students |
<table>
<thead>
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<tbody>
<tr>
<td>3) Provided “Concierge” Service Level</td>
<td>8) Defined delivery model with Regional Campuses to support all UCF administrative requirements on behalf of the students</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 4) Developed New Courses | 9) EIN 6328 Technology Strategy  
10) EIN 6950 Capstone Experience |
|-----------------------------------|------------------------------------------------------------------|
| 5) Enhanced Courses | 11) EIN 5108 Environment of Technical Organization—tied to Leadership Challenge by Kouzes & Posner  
12) EIN 5140 Project Engineering—focusing on “Learning Approach to PM” and building the ecosystem for a healthy project team  
13) EIN 6182 Engineering Management—focusing on overall Technology Strategy & Solution Delivery |
|-----------------------------------|------------------------------------------------------------------|
| 6) Developed Tools for Students to Be Successful | 14) Developed Program Orientation  
15) Developed Overall Detailed Program Playbook |
|-----------------------------------|------------------------------------------------------------------|
| 7) Defined Tools for Students Reflect & Apply to the Workplace | 16) Workbook #1: Application Session reflection notebook  
17) Workbook #2: Course/Company Application notebook |
|-----------------------------------|------------------------------------------------------------------|
| 8) Developed Mixed-Mode Delivery Model | 18) Developed standardized webcourses structure  
19) Developed standardized four “application” session model |
|-----------------------------------|------------------------------------------------------------------|
| 9) Developed Surveys on Work Practices | 20) The Challenges of Innovation & Solution Delivery  
21) A Learning Approach to Project Management  
22) The Solution Delivery Practices at Work |
|-----------------------------------|------------------------------------------------------------------|
| 10) Developed Tools to Help Professors be Successful | 23) Developed Professor Jumpstart Package  
24) Developed Course Jumpstart Package |
|-----------------------------------|------------------------------------------------------------------|
| 11) Defined Infrastructure to Run | 25) Defined Service Level Philosophy  
26) Established detailed playbooks for: Establishing a Cohort-Executing a Cohort-Closing a Cohort  
27) Established online tools for project management  
28) Identified books to support professors |
|-----------------------------------|------------------------------------------------------------------|
| 12) Defined Robust Assessment Process | 29) Created Cohort Assessment process  
30) Developed Individual Class Assessment surveys |
|-----------------------------------|------------------------------------------------------------------|
| 13) Defined Marketing Approach | 31) Developed program brochure  
32) Developed program FAQs  
33) Developed package: MBA vs MSEM  
34) Developed Package: Student Responsibilities |
We Continue to Define, Deliver, Measure, and Refine the Program with Our Partners.

We have built a robust, sustainable capability.

We continue to define, deliver, measure, and refine the program with our partners.

From each cohort we learned. We took those learnings and ran an “experiment” with the next cohort.

We will continuously adjust our program and delivery based on the changing needs and our learnings.

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<table>
<thead>
<tr>
<th>Cohort</th>
<th>Size</th>
<th>Focus of “Experiment”</th>
<th>Changes to Implement in the Next Cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 Orlando IV</td>
<td>36</td>
<td>• Continue to infuse innovation topics and make more explicit</td>
<td>• Further integrate innovation and design thinking tools throughout and part of “business case”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Adjust Decision Analysis course</td>
<td>• Move Systems Architecting in as a course</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Adapt project to driverless vehicles</td>
<td>• Move Technical Communication to a workshop model</td>
</tr>
<tr>
<td>6 Orlando III</td>
<td>31</td>
<td>• Adapt project to healthcare</td>
<td>• Move locations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Add 11th course for company specific application</td>
<td></td>
</tr>
<tr>
<td>5 Orlando II</td>
<td>30</td>
<td>• Deliver a cross-company cohort program</td>
<td>• Adjust curriculum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provide program startup package</td>
<td>• Explore new project concepts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Deliver a condensed program</td>
<td>• Establish “course jumpstart packages”</td>
</tr>
<tr>
<td>4 Harris II Cohort</td>
<td>16</td>
<td>• Deliver an organizational unique cohort program focused on the business case</td>
<td>• Measure overall impact</td>
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<td></td>
<td></td>
<td>• Deliver a condensed program</td>
<td>• Establish program startup package</td>
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<td></td>
<td></td>
<td>• Measure overall impact</td>
<td>• Provide “breathing time”</td>
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<tr>
<td>3 KSC I Cohort</td>
<td>13</td>
<td>• Deliver an organizational unique cohort program focused on the business case</td>
<td>• Adjust curriculum</td>
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<tr>
<td></td>
<td></td>
<td>• Adjust to the business case concept</td>
<td></td>
</tr>
<tr>
<td>2 Harris I Cohort</td>
<td>16</td>
<td>• Deliver an organizational unique cohort program</td>
<td>• Adjust to the business case concept</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Deliver a cross-company cohort program</td>
<td></td>
</tr>
<tr>
<td>1 Orlando 1 Cohort</td>
<td>12</td>
<td>• Deliver a cross-company cohort program tied to solution delivery</td>
<td>• Adjust curriculum (e.g., HSI)</td>
</tr>
</tbody>
</table>

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Plan

Act

Do

Study

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Size</th>
<th>Focus of “Experiment” (See “The Lean Startup” concept)</th>
<th>Changes to Implement in the Next Cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 Orlando IV</td>
<td>36</td>
<td>• Continue to infuse innovation topics and make more explicit</td>
<td>• Further integrate innovation and design thinking tools throughout and part of “business case”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Adjust Decision Analysis course</td>
<td>• Move Systems Architecting in as a course</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Adapt project to driverless vehicles</td>
<td>• Move Technical Communication to a workshop model</td>
</tr>
<tr>
<td>6 Orlando III</td>
<td>31</td>
<td>• Adapt project to healthcare</td>
<td>• Move locations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Add 11th course for company specific application</td>
<td></td>
</tr>
<tr>
<td>5 Orlando II</td>
<td>30</td>
<td>• Deliver a cross-company cohort program</td>
<td>• Adjust curriculum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provide program startup package</td>
<td>• Explore new project concepts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Deliver a condensed program</td>
<td>• Establish “course jumpstart packages”</td>
</tr>
<tr>
<td>4 Harris II Cohort</td>
<td>16</td>
<td>• Deliver an organizational unique cohort program focused on the business case</td>
<td>• Measure overall impact</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>• Measure overall impact</td>
<td>• Provide “breathing time”</td>
</tr>
<tr>
<td>3 KSC I Cohort</td>
<td>13</td>
<td>• Deliver an organizational unique cohort program focused on the business case</td>
<td>• Adjust curriculum</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>• Adjust curriculum (e.g., HSI)</td>
</tr>
</tbody>
</table>

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1) The Opportunity
2) The Solution
3) The Strategic Imperative
4) Delivering the Solution Results
5) The Capability to Deliver
6) The Financial Perspective
7) The Winning Position
The Program Continues to Grow through 7 Cohorts.

The MSEM Cohort Program is fiscally stable and responsible.

The program continues to grow through 7 cohorts—118 alumni with 36 students in the current cohort.

We are growing in both the number of students and companies participating.

Our intent is to not grow the size of a cohort. Both our team and our sponsors are focused on having the "quality" of students, not quantity of students drive our cohort size.

The program contributes to eli² being self-sufficient.
Our Corporate Partners and Students View This Program as Vital to Their Long-Term Growth.

The MSEM Cohort Program is “winning” with our students and our corporate partners.

Our partners include:
• Harris Corporation
• Lockheed Martin
• NASA/Kennedy Space Center
• Raytheon
• Siemens
• The Walt Disney Company.

Alumni testimonials demonstrate we are having a life-long impact.

Impacts for the Students

• 100% of Alumni use the program knowledge sometimes or always in the workplace
• 94% of the alumni were satisfied or extremely satisfied on how the program impacted their job performance
• 92% said that the program increased or significantly increased their ability to deliver a successful project
• 92% said the program increased or significantly increased their ability to strategically manage an engineering organization
• 86% said the program increased or significantly increased their ability to navigate the core solution delivery processes (project management, systems engineering, gate reviews)
• 70% of alumni found MSEM had directly enhanced existing project performance
• 58% of alumni found MSEM had accelerated the development of new project managers
• Over 50% of alumni stated that the program helped their organization gain new business
The MSEM Cohort Program is “winning” with our students and our corporate partners.

Our partners include:
- Harris Corporation
- Lockheed Martin
- NASA/Kennedy Space Center
- Raytheon
- Siemens
- The Walt Disney Company.

Alumni testimonials demonstrate we are having a life-long impact.

This data is based on a 2015 survey of alumni from the first five cohorts. Fifty-five of 87 alumni took the survey.

### Impacts for the Students

- “Great program to help develop strategic thinking and management development”
- “Excellent program developing solution providers”
- “Beneficial to future project managers and leaders”
- “MSEM is important because it provides a unique collection of education that gives contemporary tools and relevant knowledge to the upcoming manager.”
- “The MSEM program is critical because it is developing industry leaders to advance technology and efficiently solve problems”
- “Provides tools that can be used directly in the workplace”
- “Develops new toolset for critical thinking”
- “Great tools for setting strategic alignment”
- “Abundance of engineering knowledge to equip your toolbox”
- “It provided a framework for future success”
- “Opening your eyes to the potential”
- “The MSEM program does much more than teach how to provide solutions. The program DEVELOPS solution providers by changing the way they think. Those who go through this program will never be the same”
- “It enables furthering education in a controlled environment with a set curriculum that has proven successful. It also allowed for teambuilding, and building link to other professionals we might not otherwise meet”

### Impacts for the Sponsors

- “By equipping skills to transform the organization”
- “Enhancing business performance of successful engineers”
- “Help graduates make sound business decisions that improve products which has direct impact on customer and business. Also help minimize non-value add work and keep team focus on value add”
- “Over 50% of alumni stated that the program helped their organization gain new business”
- “Strategic Thinking – Alternate Thinking”
- “Refreshing look at approaching business”
- “Tools to empower and drive today’s leaders”
- “Develops mission/thought leadership skills. Integrates the creative side to advanced/alternative solution thinking”
- “The MSEM program is important for making a difference for the world because it provides students new skillsets enabling them to make greater contributions in developing effective solutions to complex problems.”
Alumni Testimonials Demonstrate We are Having a Life-Long Impact.

“The PEMP provides an in depth look at engineering project management in an environment that encourages discussion and exploration of best practices for the engineering professional. The program itself serves as a living example of project management with team building, resolving real-time issues, and a focus on continually evolving based on lessons learned. New and experienced project managers can benefit greatly from this program as it pushes participants to seek innovative and creative approaches to their assignments.”

James Minnear NASA – Kennedy Space Center (Orlando 1)

“I would call this program more like a MBA for people who work in a technology discipline. It is a blend of technical, project and business skills. If you want to move into the business areas or have aspirations of becoming a CEO somewhere, then go for the traditional MBA. This program is geared toward delivering solutions that meet business strategies”

Michael Duguid, Director, Telecom Services, Disney Technology Solutions & Services (Orlando 2)
Anecdotes from Students

Quotes from Harris Students

- “Combin[ing] Harris processes with real world practices...”
- “… was able to immediately apply the concepts taught in class in my current job”
- “The instructors were excellent...excellent program teaching critical tools for leadership, strategy, and decision making”
- “… actively use the learnings that I received during this degree program to help lead the technical teams that I oversee, build stronger relationships with my customer, and generate new business”
- “This program was both challenging and rewarding, and I highly recommend it to anyone interested in a higher level learning program which truly applies to the workplace”
- “…Courses were selected to emphasize the qualities that enable the students to succeed as APE .... with course work that truly achieves the goal to create unique individuals that are “Solution Providers””
- “Applying the learnings that I received in the first three courses alone directly resulted in an ~2.5M contract for prototype software...”
We wouldn’t have been able to be successful without the strong support from industrial partners and sponsors.
This report provides a description and assessment of the graduate Master’s of Science in Engineering Management Professional Cohort program within UCF’s Engineering Leadership and Innovation Institute (eli²).

The report is divided into 5 sections. Each successive section provides further detail.

This current “Welcome to Our Journey” section provides:

- A high-level summary of the mission
- A high-level summary of the program and its impacts.

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<thead>
<tr>
<th>Welcome to Our Journey</th>
<th>The Business Case</th>
<th>Detailed Description of the Program Experiences</th>
<th>Lessons Learned</th>
</tr>
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<tbody>
<tr>
<td>(pages 2-6)</td>
<td>(pages 7-24)</td>
<td>(pages 25-34)</td>
<td>(pages 35-41)</td>
</tr>
<tr>
<td>• Introduction</td>
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<td>• Executive Summary—The eli² Grad Program Delivers on the Business Case</td>
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</tr>
<tr>
<td>• Acknowledgements &amp; Thank You to the Team</td>
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<td>• Logical Flow of the Courses</td>
<td></td>
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<tr>
<td></td>
<td>• The Capability to Deliver</td>
<td>• Alignment of Courses and Project/Business Case Questions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The Financial Perspective</td>
<td>• Course Objectives</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The Winning Position</td>
<td>• Assignment Objectives: Individual Learning and Application to the Workplace</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Integrated Assessment Approach</td>
<td></td>
</tr>
</tbody>
</table>

• Our Evolution
• Our Lessons Learned
The Program is Driven to Make a Difference for Our Students and Their Sponsoring Organizations.

We designed the program to meet our sponsor’s and student’s needs.

Each element of the program has an intentional role.

In this section we define 8 key elements of the program.

1) Our Partner’s Are Looking to Enhance Participant’s Capability and Impact in the Organization.
2) The Curriculum Focuses on Developing and Using the “Business Case”.
4) Our Courses Have a Logical Flow.
5) Each Course Helps Us answer Project and Business Case Questions.
6) Each Course Has Specific Objectives.
7) The Assignments are Meant to Focus on the Individual’s Learning and Application to the Workplace.
8) We Have an Integrated Assessment Approach.
Our Partner’s Are Looking to Enhance Participant’s Capability and Impact in the Organization.

Each corporate sponsor has a specific objective they want to accomplish by participating in the program.

These five objectives are based on

1) the nature of the organization:
   - Commercial
   - Government
   - Government contractor

2) the role of the business unit the participants are from:
   - Engineering
   - IT
   - Program Management
   - New business development.

These five objectives are connected in the desire to enhance organizational performance.

1) Enhance Leadership Development

2) Enhance Delivery of Existing Solution Delivery Projects

3) Enhance New Business/New Project Development

4) Enhance Organizational Performance (Profit & New Markets)

5) Enhance Organizational Capability (Process & Tool Development)
The Curriculum Focuses on Developing and Using the “Business Case”.

The UCF MSEM Cohort Program uses the “Business Case” as core element of the program. This model was developed in partnership with Harris Corporation and was refined through our teaching activities.

Core to the program is for every project to have a strong business case. The term business case has meaning across and within organizations.

The business case uses seven questions to describe and evaluate an opportunity or project. Answering these questions provides the business case.

Each course provides a set of frameworks, skills, tools, and processes to help the leader define and deliver the business case for an innovative solution that is strategically important.

| 1. What is the opportunity gap? | 1) What is the performance gap that needs to be closed? |
| 2. What is the solution? | 2) What is the opportunity to capture? |
| 3. How strategic is this? | 3) What is the solution to close the performance gap? |
| 4. How well are we providing a solution? | 4) What is the solution to help us win the opportunity? |
| 5. How well can we deliver? | 5) How strategic is this for the organization? |
| 6. Will we make money? | 6) How strategic is this for the customer? |
| 7. Can we win? | 7) How well are we providing a solution to the customer’s problem? |
| 8. What is the recommendation? | 8) How well are we providing an integrated solution? |
| 9) How well is the business case for the customer? | 9) How well can we meet project expectations? |
| 10) How well do we have the capabilities to deliver? | 11) How well do we have the capabilities to deliver? |
| 12) What are the impacts on the rest of the portfolio? | 13) How well are the terms and conditions? |
| 14) What is the life-cycle cost & ROI? | 15) What is our price to win? |
| 16) What is the competitive landscape? | 17) How well have we influenced the acquisition? |
| 18) How well is our relationship with the customer? | 19) What is the final answer? What is the recommendation? |
The Curriculum Provides a Suite of Design Thinking Tools.

The UCF MSEM Cohort Program uses the "Business Case" as core element of the program. This model was developed in partnership with Harris Corporation and was refined through our teaching activities.

To support the development the "Business Case", we provide a suite of additional "design thinking" tools. These tools are best practices used throughout industry.

The Business Case
(Should we pursue the project?)

The Solution
(How well can we provide both a technical and business solution?)

The Strategic Market Play
(How can we win in the marketplace?)

The Innovation Plan
(How can we deliver the innovative solution?)
Our Courses Have a Logical Flow.

We offer the Master of Science in Engineering Management (MSEM) Cohort program focused on leading the delivery of innovative solutions. We have developed an integrated curriculum that grows from one-course-to-the-next. The sequence is intentional and reflects a thought process for identifying, scoping, and delivering innovative solutions that are strategically important.

Course 1: Technology Strategy
Course 2: Creativity
Course 3: Statistics
Course 4: Decision Analysis
Course 5: Systems Engineering
Course 6: Cost Engineering
Course 7: Project Engineering
Course 8: Environment of Technical Orgs
Course 9: Engineering Management
Course 10: The System
Course 11: Company Specific Application Project

Workshop: Technical Communication

Course 11: Company Specific Application Project
Each Course Helps Us answer Project and Business Case Questions.

The five core questions of the business case can be furthered decomposed into sub-questions.

Each box with a number in it represents a specific course. Each courses provides a set of tools to help the leader answer these questions.

The program uses the business case as the “integrating” framework for the content of the program.

### How strategic is this?
- How is the project related to the organization’s strategic plan?
- How is the project related to the organization’s portfolio plan?
- How does this project help the organization achieve their objectives?

### How well are we providing a solution?
- What is the solution?
- What is the system?
- What product deliverables are required?
- What is the product breakdown structure?

### How well are we providing an integrated solution? (Solution)
- What is the life-cycle cost profile?
- What is the return on investment?

### How well do we know the customer?
- What assumptions are we making?

### How well do we meet project expectations?
- What tasks need to be performed?
- What is the high-level schedule?
- What are the important events? When are they needed? Who is accountable?
- What is the detailed schedule?

### How well have we influenced the acquisition? (Business Development Approach)
- What is the life-cycle ROI for the customer?

### How is the project related to the organization’s strategic plan?
- What is our preferred contract strategy with the customer?

### Portfolio Impacts
- How is the project related to the organization’s portfolio plan?
- How is the project related to the organization’s strategic plan?

### Work Content
- What is the project’s essence?
- What are the cost, schedule, technical criteria?
- What is the project’s essence?

### Project Focus & Expectations
- What are the project objectives?
- What are the cost, schedule, technical criteria?
- What is the project’s essence?

### Cost Management
- How much resource is needed for each task?
- What is each task cost?
- What is the overall budget? What is the life-cycle cost profile?

### Daily PM & Leadership
- How will the project’s stakeholders be managed?
- How will the project’s stakeholders be managed?

### Human Capital Management
- What skills are needed for the work?
- What are the roles for each person and task?
- How is the team organized?

### Risk Management
- What risks does this project face?
- How will the risks be addressed?
- How will we develop new business?

### Partner Management
- What additional external resources are needed?
- What are the contract mechanisms and approach?

### Growth Management
- How will we grow & use our knowledge within & across projects?
- How will we develop new business?
- How will we improve our practices?

### How well is our relationship with the customer? (Business Case #3)
- How well is the project related to the customer’s portfolio plan?

### How is the project related to the customer’s strategic plan?
- How well is the project related to the customer’s portfolio plan?

### How does this project help the customer achieve their objectives?
- How is this project’s essence?
- What is our unique value?
- What is the competitive landscape?

### How is the project related to the customer’s portfolio plan?
- How is the project related to the customer’s portfolio plan?

### How is the product breakdown structure?
- How well do we know the customer?

### How is the project related to the portfolio?
- How is the project related to the portfolio?

### What is the product breakdown structure?
- How will technical excellence be achieved?

### How will we communicate?
- How will trade decisions be made?
- How will reviews be conducted?

### How will technical excellence be achieved?
- How will we develop new business?

### How will we project performance be measured?
- How will reviews be conducted?

### How will performance be tracked?
- What is the overall PM/Solution Delivery approach?

### How will costs be tracked?
- How will we communicate?
- How will reviews be conducted?

### How will trade decisions be made?
- How will costs be tracked?
- How will reviews be conducted?

### 7) How well do we have the capabilities to deliver?
- How is the project related to the organization’s portfolio plan?
- How is the project related to the organization’s portfolio plan?

### What is the life-cycle for the project?
- What is the system engineering approach?
- What systems engineering deliverables are required?

### What is the life-cycle for the project?
- How will technical excellence be achieved?
- How will technical excellence be achieved?

### How will we communicate?
- How will reviews be conducted?
- How will reviews be conducted?

### What is the “change management” approach?
- What is the leadership approach?

### How will the “change management” approach?
- What is the leadership approach?
- What is the leadership approach?

### How will the “change management” approach be managed?
- How will the “change management” approach be managed?
- How will the “change management” approach be managed?

### How will costs be tracked?
- How will we develop new business?
- How will we develop new business?

### How will technical excellence be achieved?
- How will technical excellence be achieved?
- How will technical excellence be achieved?

### How is the project related to the organization’s portfolio plan?
- How is the project related to the organization’s portfolio plan?
- How is the project related to the organization’s portfolio plan?

### How does this project help the organization achieve their objectives?
- How is the project related to the organization’s portfolio plan?
- How is the project related to the organization’s portfolio plan?

### How will technical excellence be achieved?
- How will technical excellence be achieved?
- How will technical excellence be achieved?

### How will reviews be conducted?
- How will reviews be conducted?
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### How will technical excellence be achieved?
- How will technical excellence be achieved?
- How will technical excellence be achieved?
Each Course Has Specific Objectives.

<table>
<thead>
<tr>
<th>Course</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIN 6326 Technology Strategy</td>
<td>• Strategically Scope the Need and Solution</td>
</tr>
<tr>
<td>EIN 6370 Innovation in Engineering Design</td>
<td>• Develop Creative Solutions</td>
</tr>
<tr>
<td>ESI 5219 Engineering Statistics</td>
<td>• Determine the Business Case #1</td>
</tr>
<tr>
<td>ESI 6358 Decision Analysis</td>
<td>• Verify the Need</td>
</tr>
<tr>
<td>ESI 6551 Systems Analysis</td>
<td>• Determine the Business Case #2</td>
</tr>
<tr>
<td>ESI 6552 Systems Architecting</td>
<td>• Select the Best Solution</td>
</tr>
<tr>
<td>EIN 6357 Advanced Engineering Economics</td>
<td>• Define and Manage Solution and Project Requirements</td>
</tr>
<tr>
<td>EIN 5140 Project Engineering</td>
<td>• Define the overall system</td>
</tr>
<tr>
<td>EIN 5108 The Environment of Technical</td>
<td>• Define Project Cost Expectations</td>
</tr>
<tr>
<td>Organizations</td>
<td>• Make Decisions Within Corporate Financial Perspective</td>
</tr>
<tr>
<td>EIN 6182 Engineering Management</td>
<td>• Develop a Good Plan</td>
</tr>
<tr>
<td></td>
<td>• Define What a Project Manager is Accountable for</td>
</tr>
<tr>
<td></td>
<td>• Define a “Learning Approach” to Project Management</td>
</tr>
<tr>
<td></td>
<td>• Develop an Actionable Leadership Approach</td>
</tr>
<tr>
<td></td>
<td>• Develop a Repeatable Solution Delivery Methodology</td>
</tr>
</tbody>
</table>
The Assignments are Meant to Focus on the Individual’s Learning and Application to the Workplace.

Our program is driven to ensure the participants:

1) Reflect on their experience
2) Learn new concepts and skills
3) Apply the learnings to their workplace.

We designed the course assignments to ensure these objectives are met within the context of a graduate program.

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Intent of the Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help the student better apply the concepts to their workplace</td>
<td>Help the students adjust the group project</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Individual work</th>
<th>“Coming In With” Paper (1 per course)</th>
<th>√</th>
<th></th>
<th></th>
<th>√</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conversation Journal (1 for each application session)</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reading Reflection (3-4/course)</td>
<td>√</td>
<td>√</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>“Leaving With” Paper (1 per course)</td>
<td>√</td>
<td></td>
<td>√</td>
<td>√</td>
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</table>

<table>
<thead>
<tr>
<th>Program-Wide Group Project</th>
<th>Management Presentation (Including lessons learned)</th>
<th>√</th>
<th>√</th>
<th></th>
<th>√</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Detailed Staff Work</td>
<td>√</td>
<td>√</td>
<td></td>
<td>√</td>
</tr>
</tbody>
</table>

| End-of-Program Company Application | Company Specific Project Report | √ |  | √ | √ |
We Have an Integrated Assessment Approach.

Consistent with our philosophy of always learning and improving the program, we have an integrated assessment approach.

We use the different feedback instruments to understand what to start, stop, and continue with the program.
We Are Sharing the eli² Graduate Program Story at Multiple Levels.

This report provides a description and assessment of the graduate Master’s of Science in Engineering Management Professional Cohort program within UCF’s Engineering Leadership and Innovation Institute (eli²).

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- A high-level summary of the program and its impacts.

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<td></td>
<td>The Capability to Deliver</td>
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<td></td>
<td>The Financial Perspective</td>
<td>Course Objectives</td>
<td></td>
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<tr>
<td></td>
<td>The Winning Position</td>
<td>Assignment Objectives: Individual Learning and Application to the Workplace</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Integrated Assessment Approach</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Our Evolution</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Our Lessons Learned</td>
<td></td>
</tr>
</tbody>
</table>
The MSEM program grew from past efforts.

The MSEM Cohort program has its roots from the off-campus Engineering Management Program IEMS started with the Kennedy Space Center (KSC). Overtime the KSC-based program evolved and needed to further adjust to the changing environment. In 2007-2008 the program was reviewed. We (Tim Kotnour, Bob Hoekstra, and Chuck Reilly) established the new MSEM cohort program.

The MSEM cohort program also grew from the industry-based learnings in the CIO Community of Practice.

The first cohort started in January of 2009. The program is housed in the IEMS Department and is part of eli².
We continue to learn with each cohort. We focus on delivering a high-quality program. We also seek to continually evolve. We view each cohort as an opportunity to test and evaluate improvements identified in the previous cohorts.

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Size</th>
<th>Focus of “Experiment” (See “The Lean Startup” concept)</th>
<th>Changes to Implement in Next Cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>7 Orlando IV</strong> • May 2016-May 2018 • KSC, LM, Siemens, WDW, Raytheon (+ individual participant from Kratos)</td>
<td>36</td>
<td>• Continue to infuse innovation topics and make more explicit • Adjust Decision Analysis course • Adapt project to driverless vehicles</td>
<td>• Further integrate innovation and design thinking tools throughout and part of “business case” • Move Systems Architecting in as a course • Move Technical Communication to a workshop model</td>
</tr>
<tr>
<td><strong>6 Orlando III</strong> • May 2014-May 2016 • KSC, LM, Siemens, WDW (+ individual participants from Raytheon and Northrup Grumman)</td>
<td>31</td>
<td>• Adapt project to healthcare • Add 11th course for company specific application</td>
<td>• Move locations</td>
</tr>
<tr>
<td><strong>5 Orlando II</strong> • Jan 2012-Aug 2013 • KSC, LM, Siemens, WDW (+ individual participants from CSX and Metters, Inc.)</td>
<td>30</td>
<td>• Deliver a cross-company cohort program • Provide program startup package</td>
<td>• Adjust curriculum • Explore new project concepts • Establish “course jumpstart packages”</td>
</tr>
<tr>
<td><strong>4 Harris II Cohort</strong> • Nov 2010-Dec 2011</td>
<td>16</td>
<td>• Deliver an organizational unique cohort program focused on the business case • Deliver a condensed program</td>
<td>• Measure overall impact • Establish program startup package • Provide “breathing time”</td>
</tr>
<tr>
<td><strong>3 KSC I Cohort</strong> • June 2010-Aug 2011</td>
<td>13</td>
<td>• Deliver an organizational unique cohort program focused on the business case</td>
<td>• Adjust curriculum</td>
</tr>
<tr>
<td><strong>2 Harris I Cohort</strong> • May 2009-July 2010</td>
<td>16</td>
<td>• Deliver an organizational unique cohort program (Advanced Program Engineers)</td>
<td>• Adjust to the business case concept</td>
</tr>
<tr>
<td><strong>1 Orlando 1 Cohort</strong> • Jan 2009-May 2010 • KSC, LM, Siemens, WDW (+ individual participants from Boing and CNL)</td>
<td>12</td>
<td>• Deliver a cross-company cohort program tied to solution delivery</td>
<td>• Adjust curriculum (e.g., HSI)</td>
</tr>
</tbody>
</table>
We Offer Lessons Learned from Our Story.

Based on our experience we have identified a set of lessons learned for developing and executing an engineering leadership institute within a large, research driven, public university.

• The primary lesson learned is to practice what we preach:
  • Be strategic, creative, innovative, collaborative, accountable, and continuously learning to enhance as we learn.
  • Our innovation = F (strategy + experimentation + delivery + learning).
    • Define the strategy and stay true to the core.
    • Have an “experimentation” mentality—continue to seek what works and why.
    • Deliver excellence in everything we do...but always see the need to improve.
    • Project manage the delivery: service level philosophy, roles, playbooks, and weekly check ins.
    • Install a continuous assessment & learning process.

• The lessons learned within this overall lesson learned include:
  1) Continuous engagement with industry partners is key.
     • The program needs to be industry driven.
     • The program must solve the right problem for industry.
     • Find 1-2 key players willing to take the “risk” to invest in the program.
  2) Faculty and staff team are the foundation for success.
  3) Learn from other’s experiences in delivering graduate/executive education programs.
Be Strategic, Creative, Innovative, Collaborative, Accountable, and Continuously Learning.

We developed and followed a set of processes to help us deliver the program.

These processes are consistent with what we are asking our students to do.

---

**Plan**

- Set & Share Strategy
  - Planning session
  - Strategic plan
  - Voice of the customer
  - Industry skills survey
  - Student views (via EGS 3030/3031)
  - Student working group

- Drive Alignment
  - Implementation plan
  - Priorities by semester
  - Annual improvement initiatives
  - 1 page initiative plans
  - Roles definition
  - Multi-year budget

- Drive Execution
  - MSEM/PEM Playbook
  - UG Delivery Playbook

- Close the Loop
  - Weekly check in with core team
  - Bi-weekly check in with extended team
  - Semester Lessons Learned
  - Annual Lessons Learned
  - UG Impact Performance and Assessment
  - MSEM/PEM Performance and Impact Assessment

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**Do**

- Study

---

**Act**

- Course assessments
- Cohort assessments
- Sponsor feedback
- Alumni feedback

---

**Continuous Assessment & Learning—“Closed Loop” Learning—Process**

- Course assessments
- Cohort assessments
- Sponsor feedback
- Alumni feedback

---

**Accountable**

- Plan
- Act
- Do
Continuous Engagement with Industry Partners is Key.

We continue to learn with each cohort.

Over the life of the program, each partner has worked with us to better understand their needs and how to adjust the program to their needs.

Examples of this interaction include:
- Efforts to establish and refine the program
- Support to courses as professors or industrial scholars.
- Attend annual conference
- Participate in cohort assessment

We are driven to engage with industry because we believe:
- The program needs to be industry driven.
- The program must solve the right problem for industry.
- We found 1-2 key players willing to take the "risk" to invest in the program.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Efforts to Establish and Refine the Program</th>
<th>Company Representatives Who Participated as Industrial Scholars</th>
</tr>
</thead>
</table>
| Harris       | • Part of CIO Community of Practice that identified the original need for the program  
• Established company specific cohort  
• Developed the “business case” framework  
• See detailed case study on next page | • Jim Clemons  
• Mark Blue |
| KSC          | • Participated in first cohort  
• Established stand-alone cohort  
• Provided significant off-campus model to learn from. | • Tip Talone  
• Tim Bollo |
| Lockheed Martin | • Participated in first cohort  
• Provided feedback about the curriculum | • Tom Herald (professor for Systems Engineering course)  
• Ed Melville  
• Chester Kennedy |
| Raytheon     | • Provided feedback about the curriculum | |
| Siemens      | • Part of CIO Community of Practice that identified the original need for the program  
• Provided executive endorsement of the program  
• Provided feedback about the curriculum  
• Participated in first cohort | • Philip Venod  
• John Crane |
| WDW          | • Part of CIO Community of Practice that identified the original need for the program  
• Provided executive endorsement of the program  
• Provided feedback about the curriculum  
• Participated in first cohort  
• Provided program overview concepts  
  • MBA vs MSEM  
  • Student responsibilities | • Dennis Lind  
• Robert Wingate  
• Jim Porvis  
• Michael Duguid  
• Marsha Zapoli  
• Michael Tschanz |
A Case Study of the Partnership with Harris Corporation.

Given to the right is a timeline of the major events in the partnership with the Harris Corporation. This partnership produced significant outcomes for both Harris and UCF.

We delivered 2 Harris’ specific cohorts. We spent considerable time understanding Harris’ needs and adjusted the curriculum to these needs.

The learnings from Harris helped us build the community and also a sustainable program.

We are grateful for this partnership.

<table>
<thead>
<tr>
<th>Desired Outcome</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Impact Harris Corporation’s Performance</td>
<td></td>
<td></td>
<td>Impact the Business (e.g., Influence pursuits: Mark Blue, Bruce Swahlan, Jessica Ascough, Rick Krebs and others—see testimonials)</td>
<td></td>
</tr>
<tr>
<td>2) Deliver a Program Unique to Harris</td>
<td>Harris I Cohort May 2009-July 2010</td>
<td>Harris II Cohort Nov 2010-Dec 2011</td>
<td></td>
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<tr>
<td>3) Understand Harris Needs and Model</td>
<td>Training Class</td>
<td>Include Harris Specific Industrial Scholars</td>
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<tr>
<td>4) Learn with the Community</td>
<td>Orlando I Cohort Jan 2009-May 2010</td>
<td>KSC I Cohort June 2010-Aug 2011</td>
<td>Orlando II Cohort Jan 2012-Aug 2013</td>
<td></td>
</tr>
<tr>
<td>5) Build a Robust, Sustainable Program</td>
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<td>Performance Assessment &amp; Improvement Plan</td>
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<td></td>
<td></td>
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<td></td>
<td>Gain BOT approval for MSEM</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Gain PSM approval for cohort-based program</td>
</tr>
</tbody>
</table>