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

Presented by:

Tim Kotnour, PhD, Program Director
Robert Hoekstra, PhD
Catherine Vergopia, PhD, Project Manager
John Farr, PhD

Enginnerring Leadership and Innovation Institute
Industriial 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 (eli^2). eli^2'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.

The MSEM Program Delivers on the Business Case.

To describe the eli^2 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 $1Billon 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 eli^2 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.

eli²'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.

eli²

Leadership Institute at UCF

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. They provided their time, energy and endorsement for our mission.

Harris	WDW D&E	KSC
• D'Alessandro, Carl	• Carbiener, Chip	• Bolger, Mike
• Clamons, James	• Jones, Brian	• Feeney, Joette
• Mathe, Stephen	• Kaplan, Jerold	• Manning, Kelvin M.
• Miller, Craig	• Labonge, Mike	• Simpkins, Patrick
• Nartatez, Jeffrey	• Lentsch, Pat	• Mitskevich,
• Newberry, Lilo	• Lind, Dennis	Amanda
• Wells, Tom	• Todd, Mark	
• Westbay, Joe	• Tschanz, Michael	**Raytheon**
	• Soto, Dan	• Glynn, Rick
LM-RMS	• Wagner, Doug	• Hendricks, Corey
• Herald, Tom	• Youngs, Erin	• Stikkers, Rick
• Kennedy, Chester		• Zwalina, Lisa
• Kilmer, Bob	**WDW-IT**	• Vangjel, Peter
• Sarpu, Mike	• Wingate, Robert	
• Wronsky, Chris	• Duguid, Michael	
	• Haas, Chad	
LM-EBS		
• Garland, Jerry	**Siemens**	
• Hodge, Yvonne	• Egli, Roland	
• Miller, Cecil	• Feller, Gerald	
• Ponto, Emily	• Garbett, Paul	
	• Philip, Vinod	
LM-MFC	• Sivick, Mike	
• Fleisher, Dennis	• Vanravenswaay	
• Frye, Robert	Henk	
• Garza, Robert	• ????, Hans	
• Hernandez, Mark		
• Jesensky, Bonnie		
• Mirek, Tom		
• Penkacik, Fre		

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 ….

- Biehl, 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'Rion
- Shulruff, Gabriellle

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	• Reyes, Kallie
• Cavanaugh, Pam	• Wyatt, Heidi
• Cole, Kim	
• Groover, Sylecia	
• Faler, Hannah	
• Holmes Stephen	
• Illassarie, Waheeda	
• Jones, Jeff	
• Laney, David	
• Misiano, Aarom	
• Palade, Carmen	
• Nielson, 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
- Whittaker, A. Dale
- Waldrop, Tony

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

- Williams, Deb
- McLaughlin, Michael
- Knight, Robin
- Lewis, Kimberly
- Rodriquez, Oscar
- Botteri, Francesca
- Rich, Bob

We thank our industry partners who have spoken to our classes. They dedicated their time and talents to our mission. They made a life-long impact on our students.

• Augustine, Walt	• Kennedy, Chester
• Bollo, Tim	• Melville, Ed
• Brown, James	• Provis, James
• Cates, Grant	• Rodriguez, Oscar
• Faber, Isaac	• Seeber, David
• Gilbrook, Michael	• Steinberg, Brian
• Jackson, Dale	• Talone, Tip
• Jagger, Mark	• Tschanz, Michael
• Keemer, Brian	• Voss, Dan

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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- A high-level summary of the mission

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

Welcome to Our Journey

(pages 2-6)

- Introduction

- Executive Summary—The eli^2 Grad Program Delivers on the Business Case

- eli^2 Mission

- Acknowledgements & Thank You to the Team

The Business Case

(pages 7-24)

- The Opportunity

- The Solution

- The Strategic Imperative

- The Results

- The Capability to Deliver

- The Financial Perspective

- The Winning Position

Detailed Description of the Program Experiences

(pages 25-34)

- Partner Objectives: Enhance Participant's Capability and Impact in the Organization.

- Core Role of the Business Case Across the Program

- Core Role of Design Thinking Tools Across the Program

- Logical Flow of the Courses

- Alignment of Courses and Project/Business Case Questions

- Course Objectives

- Assignment Objectives: Individual Learning and Application to the Workplace

- Integrated Assessment Approach

Lessons Learned

(pages 35-41)

- Our Evolution

- Our Lessons Learned

The Business Case

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? → 1) The Opportunity

2) What is the solution? → 2) The Solution

3) How *strategic* is this? → 3) The Strategic Imperative

4) How well are we providing a *solution*? → 4) Delivering the Solution Results

5) How well can we *deliver*? → 5) The Capability to Deliver

6) Will we make *money*? → 6) The Financial Perspective

7) Can we *win*? → 7) The Winning Position

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

Challenge	
Holding people accountable for achieving results aligned with the strategy	60%
Making decisions aligned with the strategy	60%
Operating with a realistic view of the business environment	60%
Pedicting the risk/success of the organization's strategy	50%
Trusting that following a disciplined strategy process will deliver results	40%
Making the choice to lead with strategy	40%
Investing the time in the strategic process	30%
Sharing a credible strategic story across the organization	30%
Holding strategic conversations	30%
Crafting and believing in credible strategic story	30%
Having a clear reason or "why" for using strategy	20%
Creating a positive environment for strategy	10%

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

Our Partnering Organizations are Looking to Overcome the Innovation Challenges.
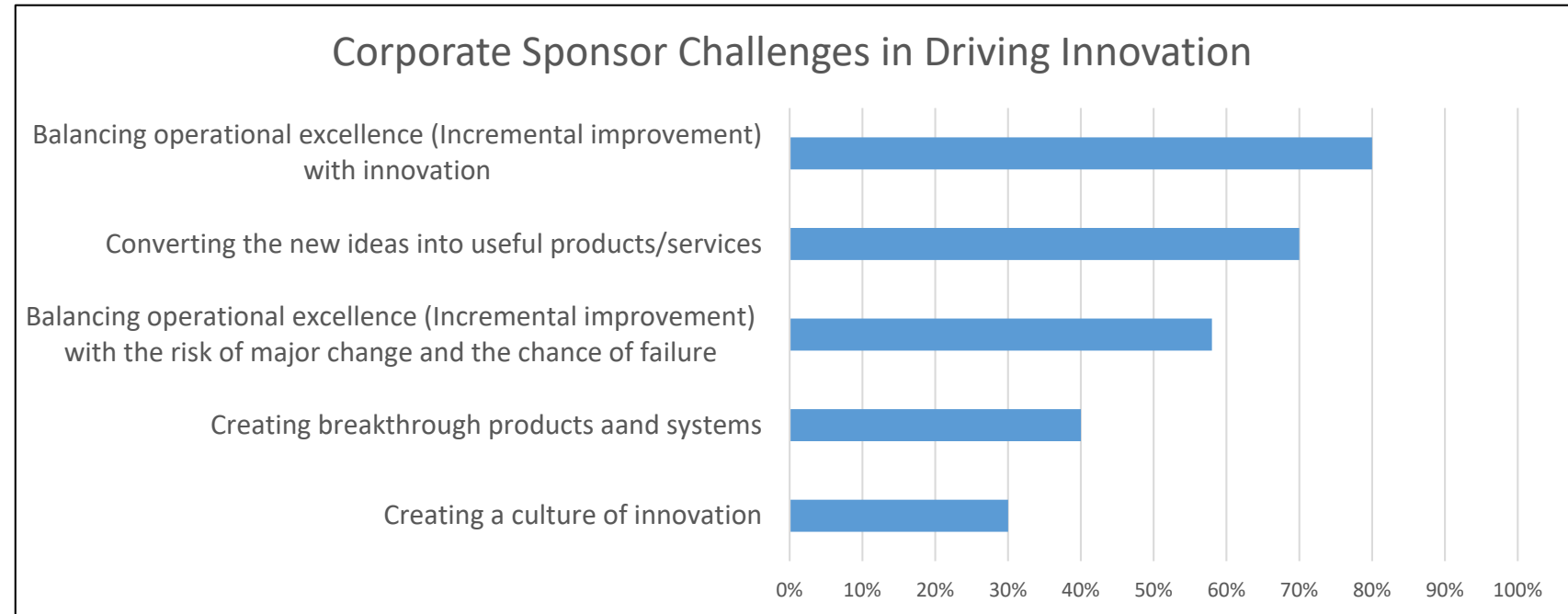
The MSEM Cohort Program helps our corporate partners be successful.

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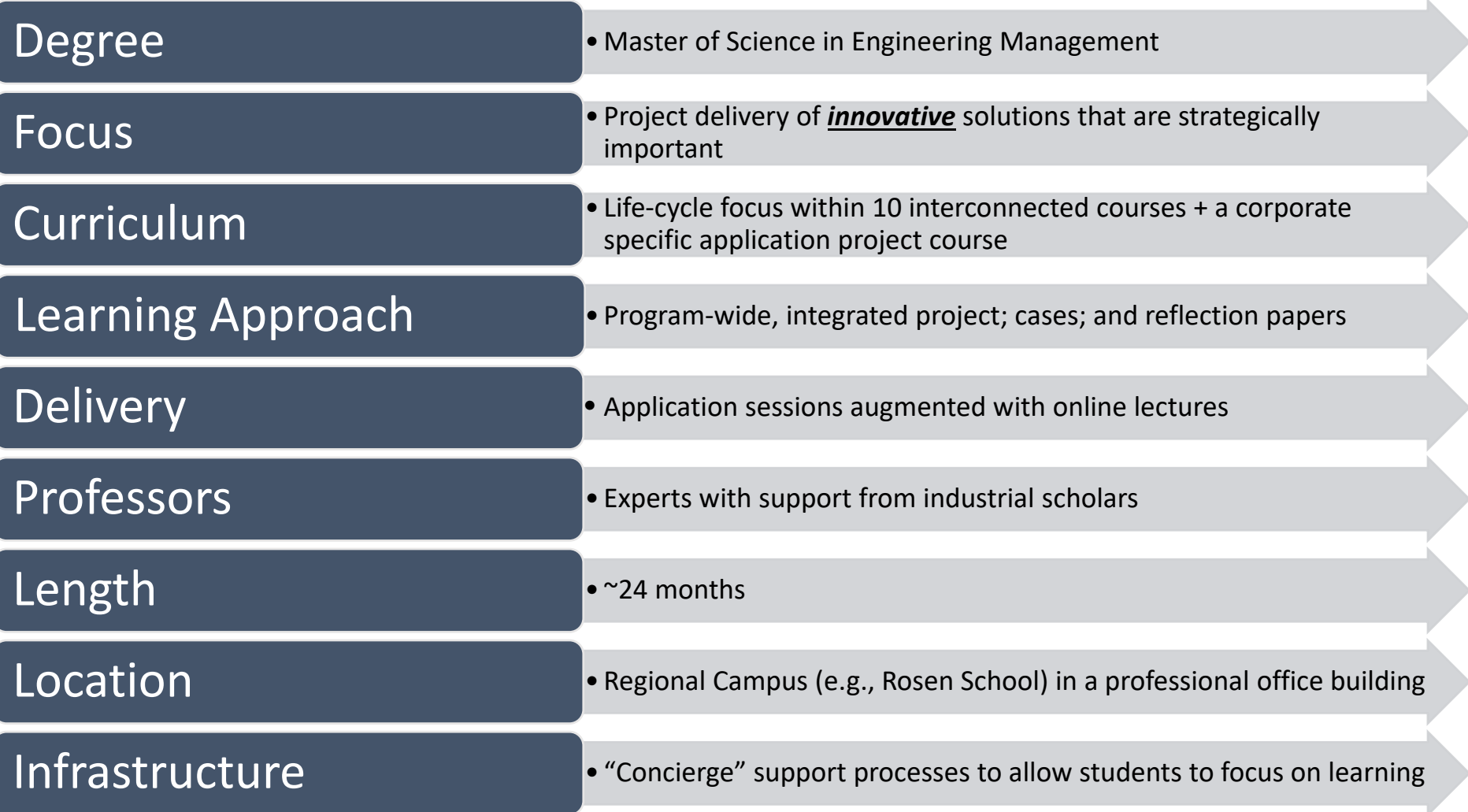
This data is from a survey of program sponsors in 2015.

Corporate Sponsor Challenges in Driving Innovation

Challenge	Value
Balancing operational excellence (Incremental improvement) with innovation	~80%
Converting the new ideas into useful products/services	~70%
Balancing operational excellence (Incremental improvement) with the risk of major change and the chance of failure	~58%
Creating breakthrough products aand systems	~40%
Creating a culture of innovation	~30%

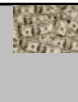1) The Opportunity 2) The Solution 3) The Strategic Imperative 4) Delivering the Solution Results 5) The Capability to Deliver 6) The Financial Perspective 7) The Winning Position
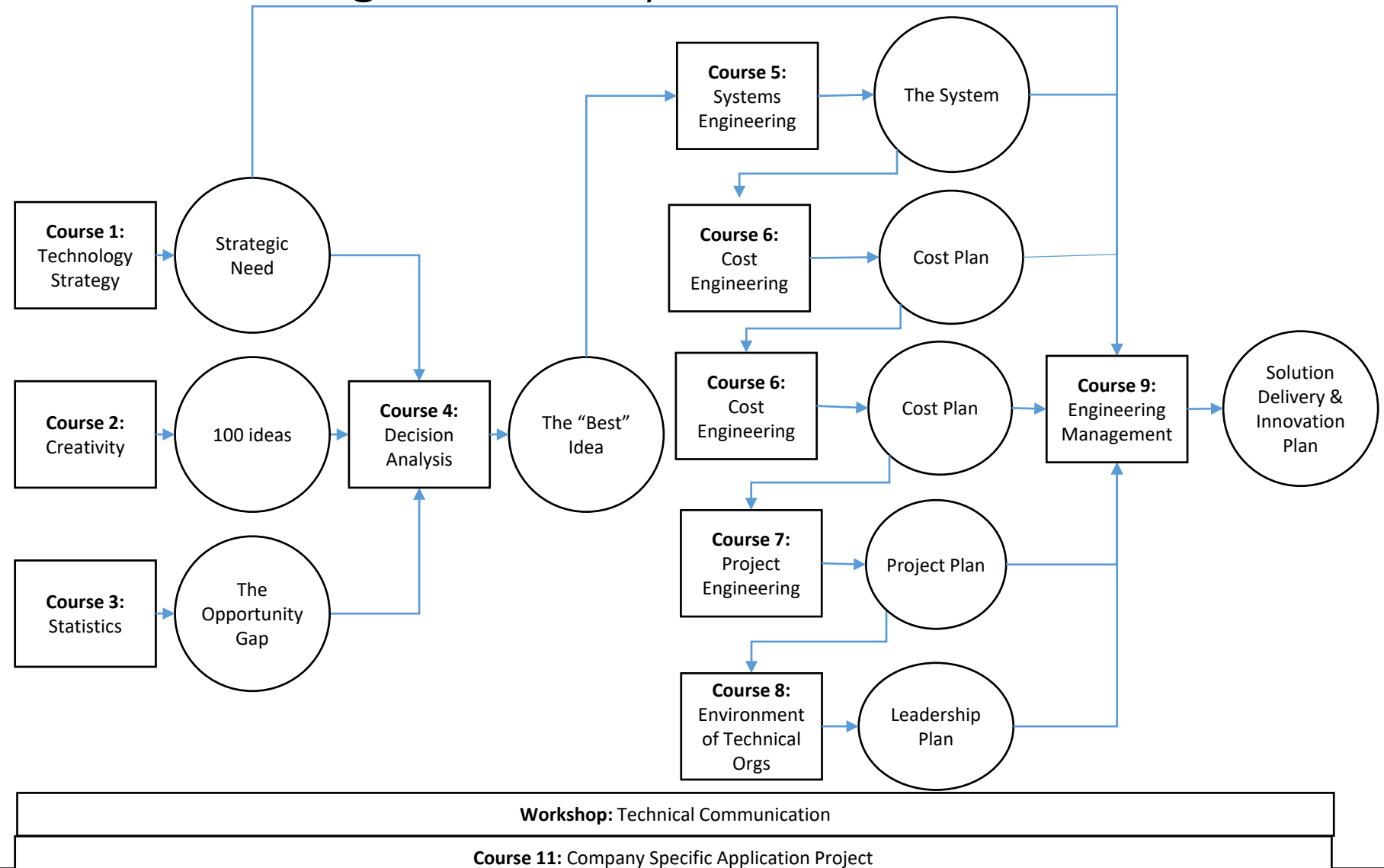
eli²
Engineering Leadership & Innovation Institute at UCF

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.

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

Degree	• Master of Science in Engineering Management
Focus	• Project delivery of _**innovative**_ solutions that are strategically important
Curriculum	• Life-cycle focus within 10 interconnected courses + a corporate specific application project course
Learning Approach	• Program-wide, integrated project; cases; and reflection papers
Delivery	• Application sessions augmented with online lectures
Professors	• Experts with support from industrial scholars
Length	• ~24 months
Location	• Regional Campus (e.g., Rosen School) in a professional office building
Infrastructure	• "Concierge" support processes to allow students to focus on learning

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

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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.
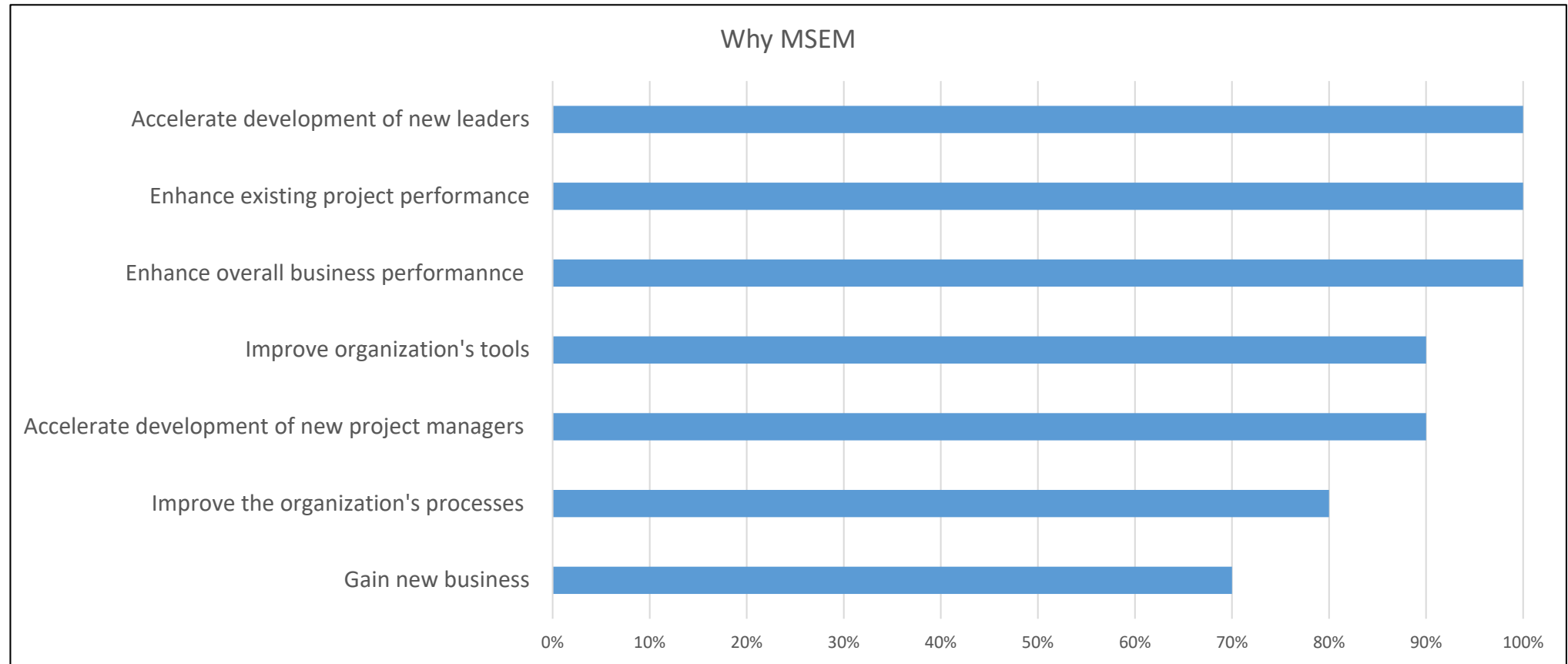
Course 1: Technology Strategy

Course 2: Creativity

Course 3: Statistics

Strategic Need

100 ideas

The Opportunity Gap

Course 4: Decision Analysis

The "Best" Idea

Course 5: Systems Engineering

The System

Course 6: Cost Engineering

Cost Plan

Course 6: Cost Engineering

Cost Plan

Course 7: Project Engineering

Project Plan

Course 8: Environment of Technical Orgs

Leadership Plan

Course 9: Engineering Management

Solution Delivery & Innovation Plan

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

Category	Value
Accelerate development of new leaders	100%
Enhance existing project performance	100%
Enhance overall business performannce	100%
Improve organization's tools	90%
Accelerate development of new project managers	90%
Improve the organization's processes	80%
Gain new business	70%

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 UCF, the Strategic Opportunity is "International Prominence in Key Programs of Graduate Study" and be "America's Leading Partnership University".

eli²
Engineering Leadership & Innovation Institute at UCF

The MSEM Cohort Program is strategic for our stakeholders.

For UCF, the strategic opportunity is "international prominence in key programs of graduate study" and be "America's leading partnership university".

UCF

UCF COLLECTIVE IMPACT
STRATEGIC PLAN

UCF BOARD OF TRUSTEES
2016

SCALE
EXCELLENCE
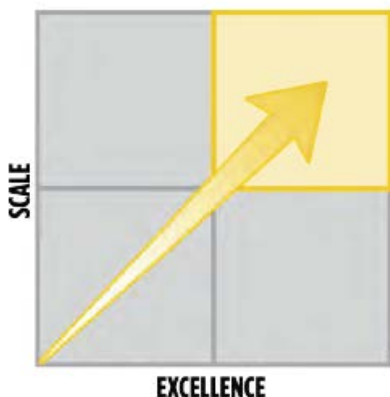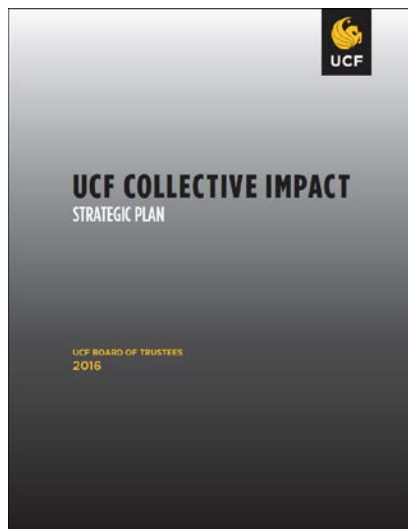
The five key goals that still guide UCF are:

- to offer the best undergraduate education available in Florida
- to achieve international prominence in key programs of graduate study and research
- to provide international focus to our curricula and research programs
- to become more inclusive and diverse
- to be America's leading partnership university.

GRADUATE STUDENT PROMINENCE

Metrics
- **Double the number of graduate students receiving national or international recognition.**
- Expand to 10,000 graduate students, a number which includes relevant professional degrees and graduate programs.

Strategies
- Set annual metrics by program that embrace size, quality, and mix of relevant professional degrees and research-based graduate degrees.
- Develop a proactive and inclusive strategy for graduate student support, awards, and recognition achievement, including a website with links to awards, new financial support strategies, faculty and peer mentoring, and other new initiatives.

Lead
- Provost
- Vice President for Research and Dean of Graduate Studies
- Deans and Department Heads

EXTERNAL PERCEPTIONS

Metrics
- Achieve Net Promoter Score of 20 indicating a strong likelihood to recommend UCF to others. (Link to NPS calculation method.)
- Exceed initial benchmark data on aided and unaided brand awareness among our service area and nationally by 10% and 5% respectively.

Strategies
- Develop a comprehensive, multi-year branding strategy that broadens positive awareness and perceptions of UCF among designated target audiences and achieves the metrics.
- Invest in the approved branding strategy at a level to achieve metrics.
- Achieve all of the strategic plan metrics associated with faculty, student, and program excellence, upon which our reputation and awareness will be built.
- Continue to develop a nationally recognized athletics program that builds awareness, recognition, alumni, and fan participation, and university pride and loyalty.

Lead
- Vice President for Communications and Marketing
- Vice President for Advancement
- Vice President and Director of Athletics
- Provost
- Deans and Department Heads

CURRENT	KEY METRIC	2021
2nd	Rank among Florida MSA's of percentage of population with a bachelor's degree	1st
9th	Rank among Orlando EDC peer regions of percentage of population with a bachelor's degree	5th
4.0/1850	Average first-year student GPA and SAT	4.0/1870
11	Public university rank of National Merit Scholars	Top 10
89%	First-year retention rate	92%
70%	Six-year graduation rate	75%
8,029	Number of graduate students	10,000
52	Post-doctoral research appointees	200
1	National Academy members	6
62%	Percentage of tenured or tenure-track faculty	65%
$133 million	Research awards	$250 million
64	Endowed professorship and chairs	80
15,000	Alumni annual giving donors	30,000
$151 million	UCF Foundation endowment	$175 million

FUNDING DIVERSIFICATION

Metrics
- **Increase new sources of funding by $100 million.**
- Develop a 20-year university-wide plan for growth of non-philanthropy new funding sources by 12/31/16.
- Build the UCF Foundation endowment to $175 million, with a continuing plan to achieve the state preeminence endowment metric.*
- Successful completion of the current $500 million comprehensive philanthropic campaign.
- Increase alumni giving donor count to at least 30,000.
- Increase annual $500,000+ donors from a campaign annual average of 16 to a sustainable average of 30+.

Strategies
- Develop a university-wide plan to model and fulfill the funding diversification objectives with ownership clearly defined.
- Within the strategy consider revenue options such as continuing education, expanded commercialization yield, expanded clinical services, innovative corporate partnerships and sponsorships, and new enterprise formation.
- Leverage the growth and aging of our alumni base to increase philanthropic participation.
- Expand UCF Health as a significant driver of improved health in the region and additional new funding for the university.

Lead
- Chief Financial Officer
- Provost
- Vice President for Advancement
- Vice President for Research and Dean of Graduate Studies
- Vice President for Medical Affairs

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

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Our Alumni Reported over $1 Billon in Business Impacts from Their Participation in the MSEM Program.

The MSEM Cohort Program is having a significant impact.

Our alumni reported over $1Billion in business impacts by applying the knowledge, processes, and innovative thinking taught throughout the cohort.

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

Company	Total impacts	Response Rates
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

| 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 |

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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.

Organization	Change In Job Title
CNL	1/1
CSX	0/1
Harris	9/15
KSC	15/17
L-3	0/1
LM	8/10
PAR	1/1
Siemens	2/3
WDW	3/4
Total	39/53

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
3) Provided "Concierge" Service Level	8) Defined delivery model with Regional Campuses to support all UCF administrative requirements on behalf of the students
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
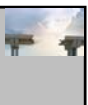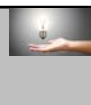
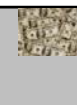| 1) The Opportunity	2) The Solution	3) The Strategic Imperative	4) Delivering the Solution Results	5) The Capability to Deliver	6) The Financial Perspective	7) The Winning Position

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.

Plan → Do → Study → Act (cycle)
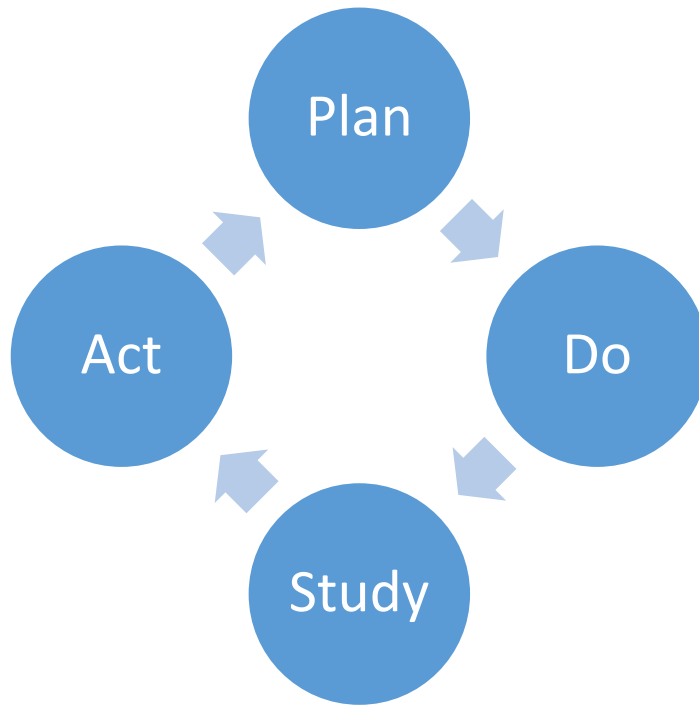
	Cohort	Size	Focus of "Experiment" (See "The Lean Startup" concept)	Changes to Implement in the Next Cohort
7	**Orlando IV** • May 2016-May 2018 • KSC, LM, Siemens, WDW, Raytheon (Kratos)	• 36	• Continue to infuse innovation topics and make more explicit • Adjust Decision Analysis course • Adapt project to driverless vehicles	• 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
6	**Orlando III** • May 2014-May 2016 • KSC, LM, Siemens, WDW (Raytheon, Northrup Grumman)	• 31	• Adapt project to healthcare • Add 11th course for company specific application	• Move locations
5	**Orlando II** • Jan 2012-Aug 2013 • KSC, LM, Siemens, WDW	• 30	• Deliver a cross-company cohort program • Provide program startup package	• Adjust curriculum • Explore new project concepts • Establish "course jumpstart packages"
4	**Harris II Cohort** • Nov 2010-Dec 2011	• 16	• Deliver a organizational unique cohort program focused on the business case • Deliver a condensed program	• Measure overall impact • Establish program startup package • Provide "breathing time"
3	**KSC I Cohort** • June 2010-Aug 2011	• 13	• Deliver a organizational unique cohort program focused on the business case	• Adjust curriculum
2	**Harris I Cohort** • May 2009-July 2010	• 16	• Deliver a organizational unique cohort program (Advanced Program Engineers)	• Adjust to the business case concept
1	**Orlando 1 Cohort** • Jan 2009-May 2010 • Boeing, KSC, LM, Siemens, WDW, others	• 12	• Deliver a cross-company cohort program tied to solution delivery	• Adjust curriculum (e.g., HSI)

HARRIS   LOCKHEED MARTIN   NASA   Raytheon   SIEMENS Ingenuity for life   Walt Disney World

1) The Opportunity 2) The Solution 3) The Strategic Imperative 4) Delivering the Solution Results SIEMENS 5) The Capability to Deliver 6) The Financial Perspective 7) The Winning Position

18

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.
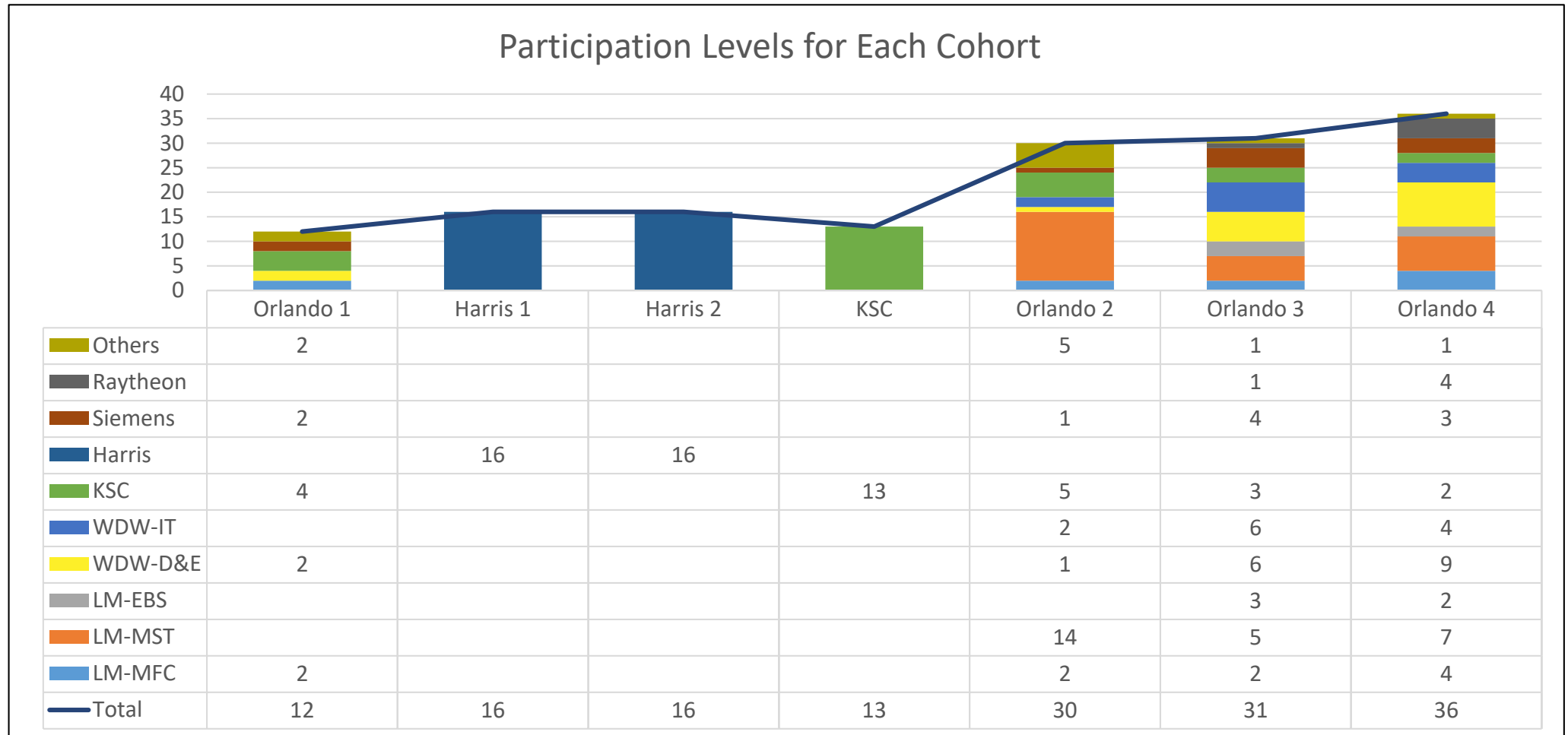
Participation Levels for Each Cohort

	Orlando 1	Harris 1	Harris 2	KSC	Orlando 2	Orlando 3	Orlando 4
Others	2				5	1	1
Raytheon						1	4
Siemens	2				1	4	3
Harris		16	16				
KSC	4			13	5	3	2
WDW-IT					2	6	4
WDW-D&E	2				1	6	9
LM-EBS						3	2
LM-MST					14	5	7
LM-MFC	2				2	2	4
Total	12	16	16	13	30	31	36

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

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

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

Our Alumni and Sponsors Find Value in the Program.

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- 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	Impacts for the Sponsors
• "Great program to help develop strategic thinking and management development"	• "By equipping skills to transform the organization"
• "Excellent program developing solution providers"	• "Enhancing business performance of successful engineers"
• "Beneficial to future project managers and leaders"	• "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"
• "MSEM is important because it provides a unique collection of education that gives contemporary tools and relevant knowledge to the upcoming manager.	• "Over 50% of alumni stated that the program helped their organization gain new business"
• "The MSEM program is critical because it is developing industry leaders to advance technology and efficiently solve problems"	• "Strategic Thinking – Alternate Thinking"
• "Provides tools that can be used directly in the workplace"	• "Refreshing look at approaching business"
• "Develops new toolset for critical thinking"	• "Tools to empower and drive today's leaders"
• "Great tools for setting strategic alignment"	• "Develops mission/thought leadership skills. Integrates the creative side to advanced/alternative solution thinking"
• "Abundance of engineering knowledge to equip your toolbox"	• "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. "
• "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"	

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

Alumni Testimonials Demonstrate We are Having a Life-Long Impact.

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- Siemens
- The Walt Disney Company.

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)

| 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 |

Anecdotes from Students

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

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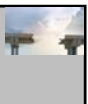- Raytheon
- Siemens
- The Walt Disney Company.

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

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…"
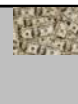
1) The Opportunity	2) The Solution	3) The Strategic Imperative	4) Delivering the Solution Results	5) The Capability to Deliver	6) The Financial Perspective	7) The Winning Position

Thank you to our Sponsors:

We wouldn't have been able to be successful without the strong support from industrial partners and sponsors.

We Are Sharing the eli^2 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.

Welcome to Our Journey

(pages 2-6)

- Introduction

- Executive Summary—The eli^2 Grad Program Delivers on the Business Case

- eli^2 Mission

- Acknowledgements & Thank You to the Team

The Business Case

(pages 7-24)

- The Opportunity

- The Solution

- The Strategic Imperative

- The Results

- The Capability to Deliver

- The Financial Perspective

- The Winning Position

Detailed Description of the Program Experiences
(pages 25-34)

- Partner Objectives: Enhance Participant's Capability and Impact in the Organization.

- Core Role of the Business Case Across the Program

- Core Role of Design Thinking Tools Across the Program

- Logical Flow of the Courses

- Alignment of Courses and Project/Business Case Questions

- Course Objectives

- Assignment Objectives: Individual Learning and Application to the Workplace

- Integrated Assessment Approach

Lessons Learned

(pages 35-41)

- 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 a 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".
3) The Curriculum Provides a Suite of Design Thinking Tools.
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.

```
                    ┌─────────────────┐
                    │ 2) Enhance      │
                    │ Delivery of     │
                    │ Existing Solution│
                    │ Delivery Projects│
┌──────────────┐    └─────────────────┘    ┌──────────────────┐
│ 1) Enhance   │                            │ 4) Enhance       │
│ Leadership   │                            │ Organizational   │
│ Development  │                            │ Performance      │
└──────────────┘    ┌─────────────────┐    │ (Profit & New    │
                    │ 3) Enhance New  │    │  Markets)        │
                    │ Business/New    │    └──────────────────┘
                    │ Project         │
                    │ Development     │
                    └─────────────────┘
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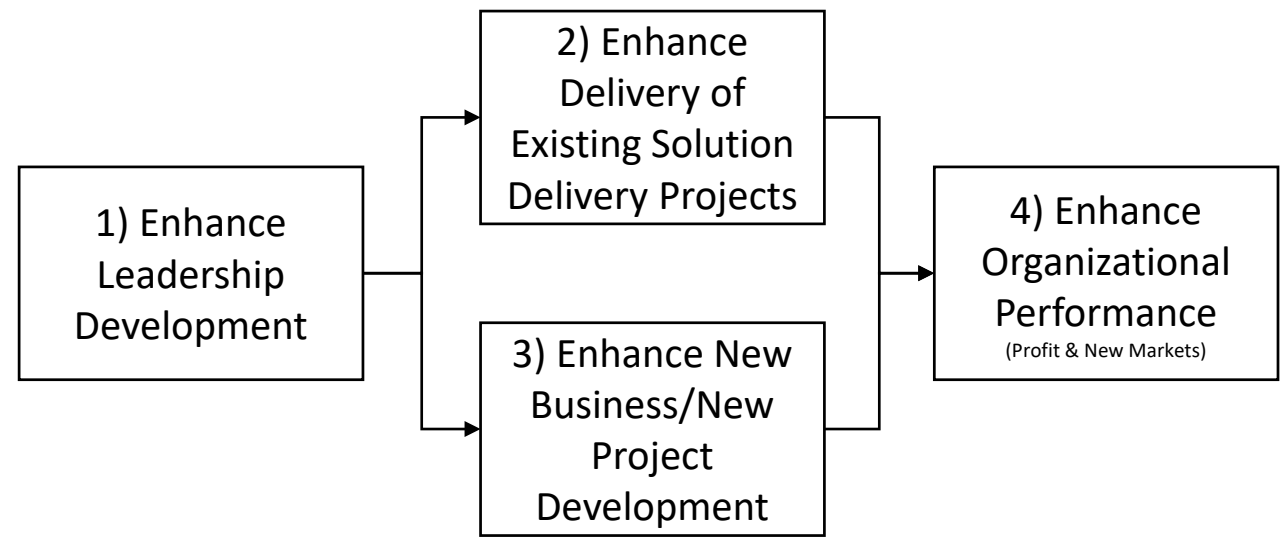
┌ ─ ┐
5) Enhance Organizational Capability (Process & Tool Development)
└ ─ ┘

The Curriculum Focuses on Developing and Using the "Business Case".

eli²
Engineering Leadership
& Innovation Institute at UCF

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*?

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*?

8. What is the *recommendation*?

1) What is the performance gap that needs to be closed?
2) What is the opportunity to capture?

3) What is the solution to the close the performance gap?
4) What is the solution to help us win the opportunity?

5) How strategic is this for the organization?
6) How strategic is this for the customer?

7) How well are we providing a solution to the customer's problem?
8) How well are we providing an integrated solution?
9) How well is the business case for the customer?

10) How well can we meet project expectations?
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?)
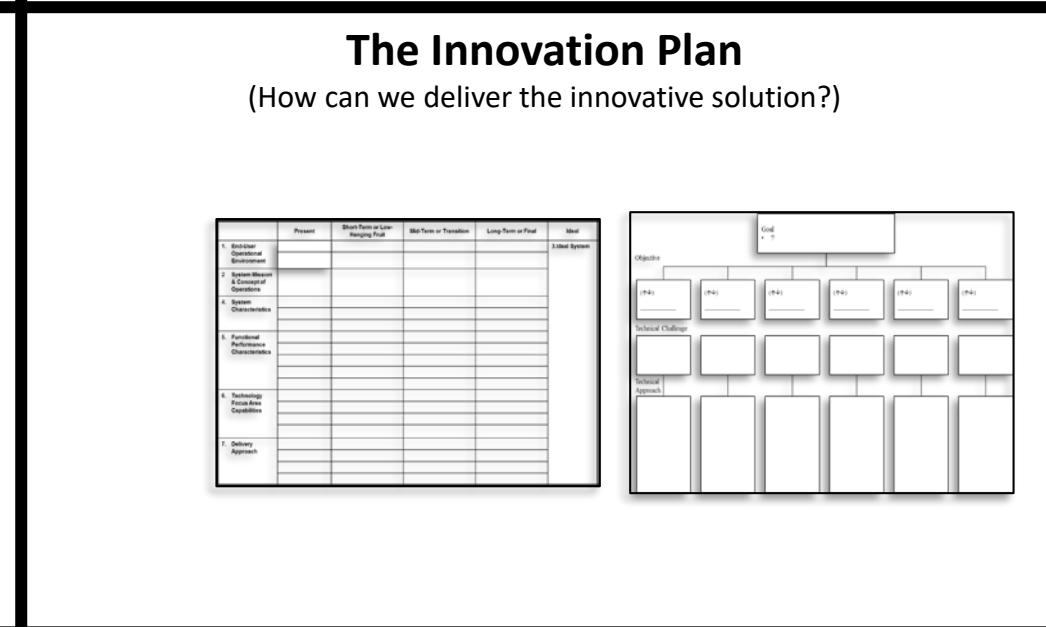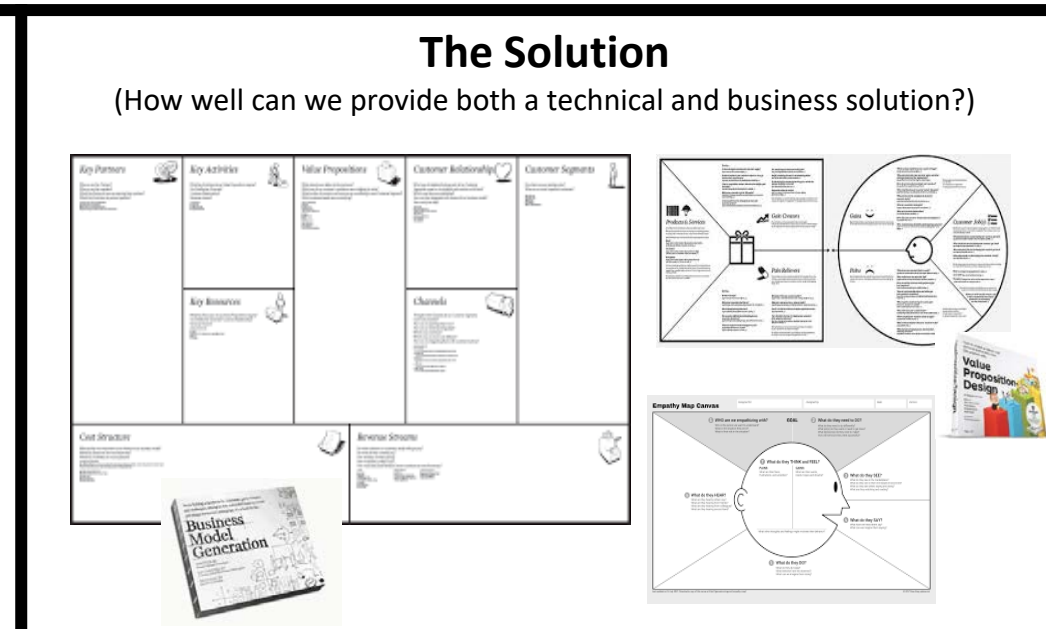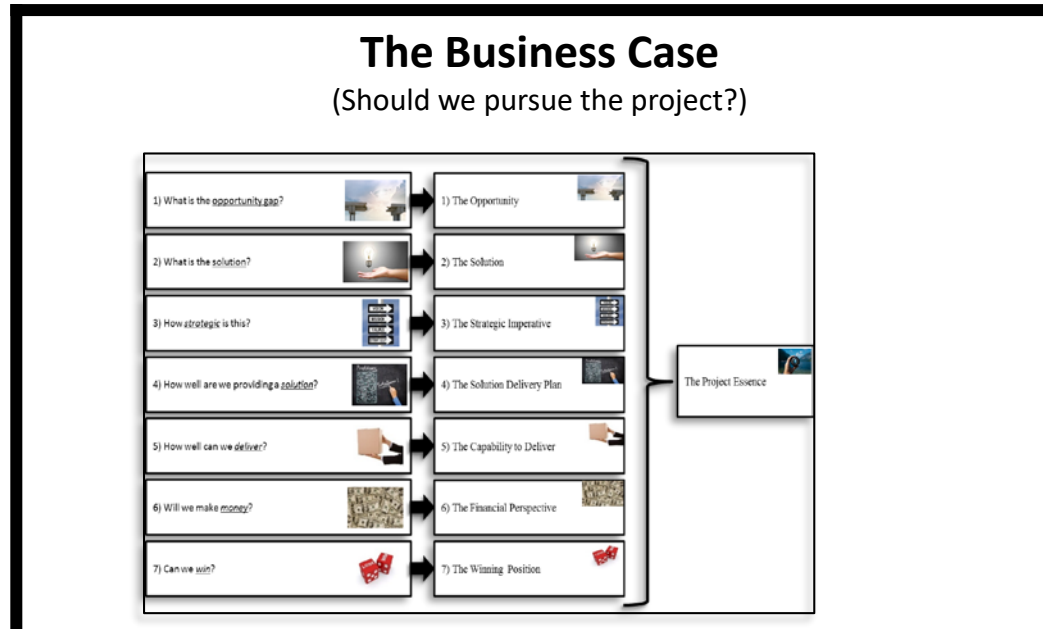
Our Courses Have a Logical Flow.

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

Strategic Need

Course 5: Systems Engineering

The System

Course 2: Creativity

100 ideas

Course 4: Decision Analysis

The "Best" Idea

Course 6: Cost Engineering

Cost Plan

Course 6: Cost Engineering

Cost Plan

Course 9: Engineering Management

Solution Delivery & Innovation Plan

Course 3: Statistics

The Opportunity Gap

Course 7: Project Engineering

Project Plan

Course 8: Environment of Technical Orgs

Leadership Plan

Workshop: Technical Communication

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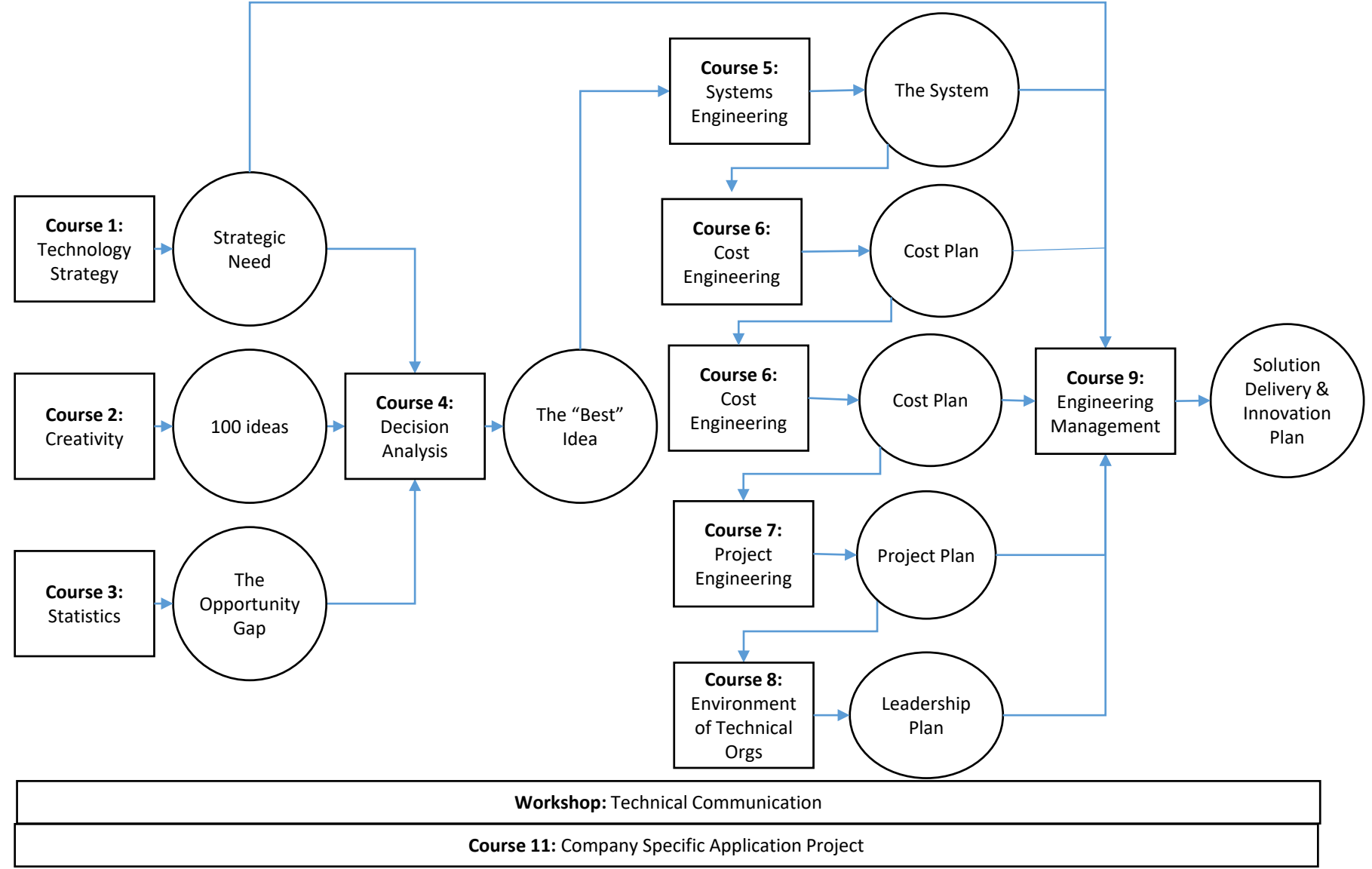
Each Course Helps Us answer Project and Business Case Questions.

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?

1) How strategic is this for the organization? (Organization Strategic Linkage)
- 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?

`6326`

2) How strategic is this for the customer? (Customer Strategic Linkage)
- How is the project related to the customer's strategic plan?
- How is the project related to the customer's portfolio plan?
- How does this project help the customer achieve their objectives?

How well are we providing a solution?

3) How well are we providing a solution to the customer's problem? (Solution & Business case #2)
- What gap does the project close?
- What are the alternative solutions?
- What is the best solution? Why?
- What is the reason for the selection?

`6358`

4) How well are we providing an integrated solution? (Solution)
- What is the solution?
- What is the system? What product deliverables are required?
- What is the product breakdown structure?

5) How well is the business case for the customer? (Business Case #3)
- How big is the problem space?
- What is the life-cycle ROI for the customer?

`6551` `6552` `6370` `6357`

How well can we deliver? (Delivery Plan)

`5140`

6) How well can we meet project expectations?

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

Work Content
- What tasks need to be performed?

Time Management
- What is the high-level schedule?
- What are the important events? When are they needed? Who is accountable?
- What is the detailed schedule?

Cost Management
- How much resource is needed for each task?
- What does each task cost?
- What is the overall budget? What is the phasing?
- How will costs be tracked?

Risk Management
- What risks does this project face?
- How will the risks be addressed?
- What assumptions are we making?

Systems Engineering Approach
- What is the life-cycle for the project?
- What is the systems engineering approach?
- What systems engineering deliverables are required?
- How will technical excellence be achieved?

Solution Delivery Approach
- What is the overall PM/Solution Delivery approach?
- What are the primary solution delivery deliverables?
- How will we project performance be measured?
- How will reviews be conducted?

Daily PM & Leadership
- How will trade decisions be made?
- How will we communicate?
- What is the "change" approach?
- What is the leadership approach?

`5108`

Customer & Stakeholder Management
- How will a productive relationship with the customer be managed?
- How will the project's stakeholders be managed?

7) How well do we have the capabilities to deliver?

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

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?

8) What are the impacts on the rest of the portfolio?

Portfolio Impacts
- How is the project related to the organization's portfolio plan?
- What are the resource impacts on the portfolio?

Will we make money?

9) How well are the terms and conditions?
- What is our preferred contract strategy with the customer?

10) What is the life-cycle cost & ROI? (Business Case #4)
- What is the life-cycle cost profile?
- What is the return on investment?

`6357`

11) What is our price to win?
- What is our competitor's expected price?
- What is our cost? What is our price?

Can we win?

12) What is the competitive landscape? (Business Case 1—Competitive Landscape)
- How big is the problem space?
- How big is the market space?
- How big is the solution space?
- Are there profitable subspaces?
- What is our unique value?
- What is the competitive landscape?

`5219`

14) How well have we influenced the acquisition? (Business Development Approach)
- How well do we know the selection process?
- How well have we influenced the definition and selection process?

13) How well is our relationship with the customer? (Business Development Approach)
- How well do we know the customer?
- How well do we understand the customer needs and desires?

Each Course Has Specific Objectives.

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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	Objective
EIN 6326 Technology Strategy	• Strategically Scope the Need and Solution
EIN 6370 Innovation in Engineering Design	• Develop Creative Solutions
ESI 5219 Engineering Statistics	• Determine the Business Case #1 • Verify the Need
ESI 6358 Decision Analysis	• Determine the Business Case #2 • Select the Best Solution
ESI 6551 Systems Analysis	• Define and Manage Solution and Project Requirements
ESI 6552 Systems Architecting	• Define the overall system
EIN 6357 Advanced Engineering Economics	• Define Project Cost Expectations • Make Decisions Within Corporate Financial Perspective
EIN 5140 Project Engineering	• Develop a Good Plan • Define What a Project Manager is Accountable for • Define a "Learning Approach" to Project Management
EIN 5108 The Environment of Technical Organizations	• Develop an Actionable Leadership Approach
EIN 6182 Engineering Management	• Develop a Repeatable Solution Delivery Methodology

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.

		Intent of the Exercise				
		Help the student better apply the concepts to their workplace	Help the students adjust the group project	Reinforce the students completion of the necessary reading and reflection	Provide meaningful feedback to the student	Provide a measure to provide a grade.
Individual work	**"Coming In With" Paper** (1 per course)	√				√
	Conversation Journal (1 for each application session)	√				
	Reading Reflection (3-4/course)	√		√		√
	"Leaving With" Paper (1 per course)	√			√	√
Program-Wide Group Project	**Management Presentation (Including lessons learned)**	√	√		√	√
	Detailed Staff Work	√	√		√	√
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.

Pre-Skills Level

Post-Skills Level

Course-by-Course Evaluation

Overall Program Assessment (Group)

Overall Program Assessment (Individual)

Student Use & Impact (Individual)

Trends

Program Wide Changes (Program)

Sponsor Impact Assessment (Program)

Change in Students Skills (Pre-Post) (Program)

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- Assignment Objectives: Individual Learning and Application to the Workplace

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Lessons Learned

(pages 35-41)

- Our Evolution

- Our Lessons Learned

The MSEM Program Grew From Past Efforts.

The MSEM Cohort program has it 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 form 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 eli^2.

Progress Energy Leadership Institute — Build?

IEMS Off-Campus Grad Program — Build? — MSEM Cohort

CIO COP

eli^2
- Undergraduate
- Graduate (MSEM Market-Based Cohort)
- Executive (learning community)

1990-2002 | 2003-2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | Beyond
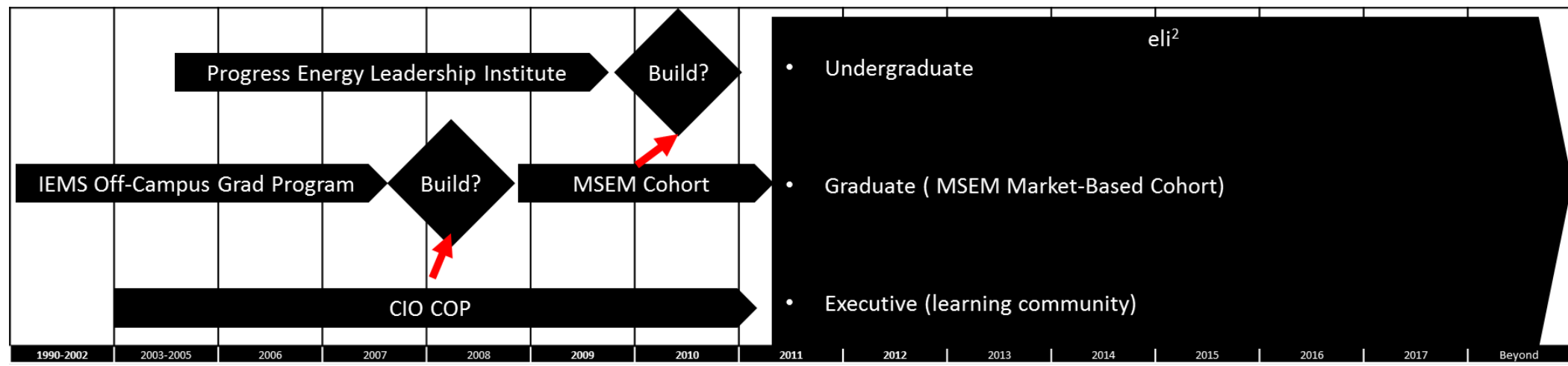
Item	Prior	Spring 2009	Summer 2009	Fall 2009	Spring 2010	Summer 2010	Fall 2010	Spring 2011	Summer 2011	Fall 2011	Spring 2012	Summer 2012	Fall 2012	Spring 2013	Summer 2013	Fall 2013	Spring 2014	Summer 2014	Fall 2014	Spring 2015	Summer 2015	Fall 2015	Spring 2016	Summer 2016	Fall 2016
Meaningful Cohort		Orlando 1									Orlando 2						Orlando 3							Orlando 4	
			Harris 1			Harris 2																			
					KSC 1																				
Meaningful Graduation					O1	H1			K1	H2						O2							O3		

36

Our Sponsors Learn and Adjust With Us.

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.

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

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.

Strategic

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

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

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

Creative & Innovative

- What do we want to know?
- What is the hypothesis?
- How will we test?
- Test
- What did we learn?

Collaborative

Goal	Partners
1) Create Professional Contributors at the Undergrad Level	TEXAS INSTRUMENTS, DUKE ENERGY, HARRIS, Walt Disney Parks and Resorts, BOEING
2) Create Program/ Project Leaders at the Graduate Level	HARRIS, Kennedy Space Center, Walt Disney Parks and Resorts, Raytheon, SIEMENS, LOCKHEED MARTIN, NORTHROP GRUMMAN
3) Enable Organizational Leaders at the Senior Level	HARRIS, DARDEN, SIEMENS, BOEING, HD SUPPLY, Walt Disney Parks and Resorts

Accountable

- Plan
- Do
- Study
- Act

Continuous Assessment & Learning—"Closed Loop" Learning—Process
- Course assessments
- Cohort assessments
- Sponsor feedback
- Alumni feedback

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.

Organization	Efforts to Establish and Refine the Program	Company Representatives Who Participated as Industrial Scholars
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

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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.

Desired Outcome	2009	2010	2011	2012
1) Impact Harris Corporation's Performance	Impact the Business (e.g., Influence pursuits: Mark Blue, Bruce Swahlan, Jessica Ascough, Rick Krebs and others—see testimonials)			
2) Deliver a Program Unique to Harris	Training Class / Harris I Cohort May 2009-July 2010 / Include Harris Specific Industrial Scholars		Harris II Cohort Nov 2010-Dec 2011	
3) Understand Harris Needs and Model	Understand and Refine APE model	Infuse Systems Engineering—APE/BAP / Attend Business Development Class	Develop Business Case Story / Attend APE Orientation Class / Attend Business Simulation Class / Provide Eng Strategic Growth Plan Concepts	
4) Learn with the Community	Orlando I Cohort Jan 2009-May 2010	KSC I Cohort June 2010-Aug 2011		Orlando II Cohort Jan 2012-Aug 2013
5) Build a Robust, Sustainable Program		Performance Assessment & Improvement Plan / Gain BOT approval for MSEM / Gain PSM approval for cohort-based program		

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