The Only Lean and Six Sigma Conference
Created By Engineers for Engineers

The Engineering Industry’s Leaders in Both Business and Academic Fields Will
Meet to Discuss the Latest Innovations in Lean and Six Sigma and their
Impact on the Engineering Profession.

www.iienet.org/leansixsigma
OVERVIEW

ENGINEERING LEAN AND SIX SIGMA explores the application and theory of lean and Six Sigma from its historical development to its current application. This two-day conference brings together the practitioners and the researchers to share the successes and identify the opportunities for applying proven tools and methods.

Lean and Six Sigma have their roots in industrial engineering. Lean tools are traditionally developed by industrial engineers to improve productivity and eliminate wastes while Six Sigma tools are originally used by engineering to improve quality, reliability and defect level of products and services. Many problem solving tools used in Six Sigma and lean are also basic IE tools: 5S, theory of constraints, structured brainstorming, cause-and-effect, process mapping, preventive control and error proofing.

Come early and attend one of the interactive pre-conference workshops: Adapting Lean in Jobshops or Building a Dream Culture.

The conference will be filled with a variety of activities:
- Attend multidisciplinary educational sessions and case studies on all experience levels
- Twenty-seven 45-minute industry presentations
- Twenty-seven 15-minute academic/research presentations
- Informative and knowledgeable Keynote Speakers
- Exhibits
- Networking Opportunities
- Earn Continuing Education Units (1.4 CEUs) and Professional Development Hours (14 PDHs)

2011 CONFERENCE COMMITTEE

INDUSTRY CHAIR:
Majid Abab
The Boeing Company

ACADEMIA CHAIR
Ahad Ali, Ph.D.
Lawrence Technological University

COMMITTEE:
Jiju Antony, Ph.D.
University of Strathclyde, Glasgow, UK

Howard R. Appelman
The Boeing Company

Robert Bassett
Charming CHARLIE

Haleh Byrne
North Carolina State University - IES

F. Frank Chen, Ph.D.
University of Texas at San Antonio

Sandy Furterer, Ph.D.
Holy Cross

Marjorie Koch
Nike IHM Inc.

Tina Kovach
Dawn Foods

Glenn Kuriger, Ph.D.
University of Texas at San Antonio

Mike Mueller
Deere & Company

Paul Odomirok
Performance Excellence Associates

Ertunga C. Ozellkan, Ph.D.
University of North Carolina at Charlotte

Sharon Robertson
The Boeing Company

Aman Sapra
St. Onge Company

MD Sarder, Ph.D.
University Southern Mississippi

Rupy Sawhney, Ph.D.
University of Tennessee

David Skoor
The Boeing Company

Aaron M. Stransky
Space and Naval Warfare - Atlantic

Brent Tadsen
Adaptive Business Solutions
SCHEDULE AT-A-GLANCE

MONDAY, SEPTEMBER 12
8 a.m. – 5 p.m. Pre-conference Workshop

TUESDAY, SEPTEMBER 13
7 a.m. – 5 p.m. Registration
7:30 a.m. – 8:15 a.m. Continental Breakfast
8:30 a.m. – 9:45 a.m. Opening Session & Keynote Speaker
9:30 a.m. – 10:30 a.m. Exhibit Area - Foyer
9:30 a.m. – 10:30 a.m. Beverage Break in Foyer
10:30 a.m. – 11:15 p.m. Concurrent Sessions
11:15 a.m. – 12 p.m. Concurrent Sessions
12 p.m. – 1:20 p.m. Lunch & Keynote Speaker
1:30 p.m. – 2:15 p.m. Concurrent Sessions
2:15 p.m. – 3 p.m. Concurrent Sessions
3 p.m. – 3:15 p.m. Beverage Break in Foyer Area
3:15 p.m. – 4 p.m. Concurrent Sessions
4 p.m. – 4:45 p.m. Concurrent Sessions

WEDNESDAY, SEPTEMBER 14
7 a.m. – 5 p.m. Registration
7:30 a.m. – 8:15 a.m. Continental Breakfast
8:30 a.m. – 9:45 a.m. Opening Session & Keynote Speaker
9:30 a.m. – 10:30 a.m. Exhibit Area - Foyer
9:30 a.m. – 10:30 a.m. Beverage Break in Foyer
10:30 a.m. – 11:15 p.m. Concurrent Sessions
11:15 a.m. – 12 p.m. Concurrent Sessions
12 p.m. – 1:20 p.m. Lunch & Keynote Speaker
1:30 p.m. – 2:15 p.m. Concurrent Sessions
2:15 p.m. – 3 p.m. Concurrent Sessions
3 p.m. – 3:15 p.m. Beverage Break in Foyer Area
3:15 p.m. – 4 p.m. Concurrent Sessions
4 p.m. – 4:45 p.m. Concurrent Sessions

HOTEL INFORMATION

Westin Atlanta Perimeter North
7 Concourse Parkway, NE
Atlanta, Georgia 30328

Reservations
A limited number of rooms are available at the conference rate of $145 for a single or double plus applicable state and local taxes (currently 14 percent).

To receive this special rate call the hotel direct at (770) 395-3900, ask for reservations and identify yourself as attending the Engineering Lean & Six Sigma Conference. Discount room rate expires at 5 p.m. Eastern time on Monday, Aug. 22, 2011 or when the room block is full.

A deposit equal to one night’s room and tax is required to secure a reservation. Deposits are refundable if cancellation is made at least three (3) working days prior to arrival and a cancellation number is obtained. Guest departing prior to their reserved check-out date will be assessed an early check-out fee of $100 plus tax. Guests wishing to avoid an early check-out fee should advise the hotel at or before check-in of any change in planned length of stay.

Transportation
Car Rental - Hertz is the preferred car rental company for the conference. Reserve online at or call Hertz at (800) 654-2210 and use CDP# 1641833 and Promotional Code #121472. In Toronto, call (416) 620-9620 and in all other Canadian Provinces, call (800) 263-0600.

Taxi Service - Cab fare from airport: $38 one-way, approximately 30-45 minutes Atlanta Airport Superior Shuttle: $30 per person; approximately 30-45 minutes MARTA MetroLink: $5.50 round trip; Use North Springs train; exit Medical Center Station
Tim Copes leads the Manufacturing and Quality organization for Boeing Commercial Airplanes. He is responsible for ensuring that the global production system consistently operates effectively. Copes previously served as president of Boeing Shared Services Group (SSG) and was responsible for leading the 8,000-person, multibillion-dollar SSG team that provides more than 130 different internal services to support Boeing’s global business. Before joining Boeing in 1992, Copes held several management positions with IBM. He has a bachelor’s degree in mechanical engineering from the University of Wisconsin and master’s degrees in mechanical engineering and management from MIT.

Richard M. Calvaruso attended Youngstown State University, graduating with a B.E. degree in electrical engineering in 1989. He joined GE Lighting Fluorescent Lamp Manufacturing plant in Circleville, Ohio, in 1989. He worked at the Circleville plant from 1989 to 1997, holding positions as manufacturing engineer, operations manager and manager of manufacturing engineering. He was promoted to plant manager of GE Lighting Special Pack Inc. in Canton, Ohio, in 1997. In 1998, he was appointed master black belt for fluorescent manufacturing. In 2000, Calvaruso was promoted to plant manager at the GE Lighting Incandescent Lamp Manufacturing facility in Winchester, Va. He moved to GE Appliances in 2004 as master black belt for appliances manufacturing leading lean and Six Sigma initiatives. Calvaruso is currently leading the lean transformation for GE Appliances, a position he has held since 2006.
Russ Pirasteh, Ph.D.
Vice President, Operations Excellence, Stephen Gould Corp.
Wednesday, September 14 | 8:30 a.m. – 9:45 a.m.

Russ Pirasteh is vice president of operations excellence at the Stephen Gould Corp., and, along with Bob Fox, is co-author of Profitability with No Boundaries: Optimizing Lean, TOC, and Six Sigma Results. He is the founder of the iTLS® CPI methodology, which he formulated to fill the gaps among CPI methodologies he has experienced. He conducted scientific studies on the efficacy of CPI approaches, which were later published in a groundbreaking article, “The Continuous Improvement Trio.” Pirasteh has held executive, staff and line positions, gaining 25 years of experience in implementation of continuous improvement systems in manufacturing, services and transactional environments. He has a B.S. in industrial engineering, an MBA in industrial management and a Ph.D. in engineering, and he is a project management professional (PMP), a certified lean Six Sigma master black belt, and a certified lean master. He has published numerous publications and provided lectures for various universities and organizations. He is a member of APICS, ASQ, IIE and PMI.

Jason Daugherty
Business Unit Team Leader - Operations, John Deere Power Products
Wednesday, September 14 | 12 p.m. – 1:20 p.m.

Jason Daugherty has worked for John Deere Power Products (JDPP) for 11 years. He is currently responsible for manufacturing operations of the 100 series lawn tractors. His experience at John Deere includes welding, manufacturing engineering, logistics, project management, and operations. In each of those roles, he has applied lean philosophies to improve the area. Daugherty has led multiple lean initiatives that have resulted in significant improvement in earnings, logistics, and productivity. He holds a bachelor’s degree in industrial and systems engineering from Virginia Tech and a master’s degree in systems engineering from the University of Virginia. He also has a Six Sigma black belt and lean manager certification.

“...I believe based on my past 25 years of hands-on experience, academic experience, and research that [lean and Six Sigma] are wonderful approaches to do certain things. But just like the new hammer syndrome – when we find a new hammer, we think everything is a nail and we’ve got to use it. ... So a lot of organizations have tried to apply these things in the wrong applications and have not gotten results as good as they should have.”
-Russ Pirasteh, Ph.D.

“I think [lean and Six Sigma] are aligned, and they’re aligned in our factory. A lot of the problem-solving tools have Six Sigma methodology woven into them and ... those are the tools that our teams use to identify issues and drive toward improvement.”
-Jason Daugherty
<table>
<thead>
<tr>
<th>TRACKS</th>
</tr>
</thead>
</table>
| **Industrial Engineering & Lean Six Sigma**  
Lean and Six Sigma have their roots in industrial engineering. Lean tools are traditionally developed by industrial engineering to improve productivity and eliminate wastes while Six Sigma tools are originally used by engineering to improve quality, reliability and detect level of products and services. |
| **Lean Six Sigma Case Studies**  
Case studies are stories with an educational message. A case is a description of an actual situation, commonly involving a decision, a challenge, an opportunity, a problem, or an issue faced by a person or persons in an organization. The decision-maker faced with the situation described in a case can choose between several alternative courses of action, and each of these alternatives may plausibly be supported by logical argument. In this track, lean practitioners will share real world cases of Lean Six Sigma (LSS) deployment and present in depth analysis of the challenges faced and the results obtained. |
| **Lean Six Sigma Government**  
The government has recently announced and has already implemented many initiatives to reduce operating costs. While Lean Six Sigma is already being practiced, the government has greatly increased LSS efforts. This track aims to present case studies and lessons learned that can help practitioners succeed in their own agency’s initiatives. Further, discussions will allow members to collaborate and receive feedback from different perspectives, all with the knowledge and understanding of the requirements and challenges that are unique to government. |
| **Lean Six Sigma Healthcare**  
The purpose of this track is to share the fundamental challenges, success factors, benefits in the implementation of LSS within Healthcare Sector. The application of various appropriate lean and Six Sigma tools and techniques in the context of healthcare are also welcome. The speakers of this track can also present the applications of lean or Six Sigma methodologies and the key results achieved from the implementation. |
| **Lean Six Sigma Manufacturing**  
This tract is designed to showcase how industrial engineers affect the manufacturing world using such tools as lean and Six Sigma. Industrial engineers work to eliminate wastes of time, money, materials, energy, and other resources, as well as to eliminate waste due to variation and rework. How do industrial engineers identify the challenges faced in the everyday application of lean and Six-Sigma in manufacturing? What did those industrial engineers do to overcome those challenges? What was the business case to tackle these challenges? Real world examples are shared by those who experienced them. |
| **Lean Six Sigma Measurement**  
The purpose of this track is to share process improvement methodologies lean for speed and Six Sigma for stability and accuracy. It should include successful project execution with the use of Lean Six Sigma Methodology and have a direct measurable impact on the following metrics: customer satisfaction, employee growth, profitability, productivity and revenue generation. Lean efficiency, efficacy and lean matrices can be covered with theory and/or practice. |
Lean Six Sigma Product Development
Experts and practitioners will share their experiences, best practices, and innovative research in applying lean and Six Sigma concepts into the development of products. Reports on advancements related to people, process, tools and technology enabling lean product development are welcome. In particular the session will focus on overcoming common problems, the keys to success, current practices and case studies. This track will also examine key research issues that need to be addressed by practitioners, academics and researchers.

Lean Six Sigma Simulation
Simulation track is solicited on theoretical and application aspects of modeling and simulation of lean and Six Sigma systems in any area, including manufacturing and transportation systems, engineering, ecology and environment, education, etc. It will also include simulation based optimization, decision-making, agent based systems, etc.

Lean Six Sigma Supply Chain
Today's logistics & supply chain industry suffers from inefficiencies in freight movement, materials management, inventory control, quality sustainment, information management, and many other areas. Lean Six Sigma application in the supply chain sector has the potential to revolutionize this industry. This track will invite industry experts and cutting edge researchers from various segments of the supply chain sectors, who will share their successful lean six sigma implementation stories and knowhow's with the conference participants. The target audience of this track is primarily industry practitioners and researchers in supply chain management, manufacturing, warehousing, transportation, retail, and health care systems.

Lean Six Sigma Systems
This track focuses on how organizations can improve results from their Lean Six Sigma efforts by viewing continuous improvement as a system rather just a set of tools. Experts and practitioners will describe how Lean Six Sigma has been utilized in all functions to increase customer value and decrease waste in a systemic way. The target audience for this track is business leaders and managers who to go beyond a Lean Six Sigma program and achieve the results that only a Lean Six Sigma system can bring.

Sustaining Lean & Six Sigma
Lean implementation represents a fundamental change and most businesses have embraced lean transformation as agent of change. However, many lean implementation efforts begin with much fanfare and fizzle out without realizing anticipated results. Therefore this track presents strategies, tools and technologies that are necessary to develop sustainable and reliable lean systems. The target audience is business improvement researchers and business leaders; managers and industrial experts who are at different levels of business leadership but not limited to those that have successfully implemented lean processes.
Adapting Lean in Jobshops
Sept. 12 - 8 a.m.-5 p.m.
Instructor: Shahrukh Irani, ISE Department, The Ohio State University

The philosophy of Lean and the five-step Lean Thinking Process developed by James Womack and Daniel Jones are universal. However, many of the popular tools for implementing Lean are not. That is because the Toyota Production System was designed for low-variety high-volume assembly lines. In stark contrast, there are thousands of machine shops, forge shops, fabrication shops, automobile repair shops, etc., not to mention hospitals, offices and other service facilities that are high-variety low-volume manufacturers. This workshop will provide an overview of a production system concept for high-mix low-volume manufacturing based on group technology and cellular manufacturing. It was pioneered as early as the 1960s by the UK manufacturer, Serck Audco Valves. The workshop will feature a combination of presentations, exercises and an interactive Lean Simulation of a hypothetical machine shop.

BONUS FEATURE! Each workshop participant will receive a CD containing the following presentations on industry projects where the ideas and methods introduced in this workshop were successfully utilized:
- The Quick-Start Approach to JobshopLean
- Implementing JobshopLean in a Castings Repair Facility
- Common Sense Manufacturing at an Automotive Glass Manufacturing Facility
- A Comparison of Value Stream Mapping and Value Network Mapping
- Production Flow Analysis: A Tool for Designing a Lean Hospital
- Integration of Lean Thinking and Theory of Constraints
- Setup Reduction on a Forging Press
- Process Analysis to Improve Tooling Management

Building a Dream Team Culture
Sept. 12 - 8 a.m.-5 p.m.
Instructor: Joe Barto, Founder and President of Training Modernization Group

Smart business leaders understand the link between process and people and they work every day to boost the return on their most valuable asset - their people. Research has established that employee engagement is a leading indicator of future business performance and success. Employee satisfaction, tenure, and organizational perception are all linked to individual engagement and performance level. Join us to learn how to make employee engagement a top priority.

Employee engagement is a direct result of organizational culture and team stability. In order to increase employee engagement and build a dream team capable of a lean journey, a cultural change must take place. A lean journey is the ultimate cultural change; it requires full involvement and empowerment of all employees, from top to bottom. Whenever change is introduced, culture unfailingly pushes back in an attempt to maintain the status quo. Without team stability and strong leadership, culture will reject change and return to the status quo. Unless team stability and strong leadership can guide change to overcome the inevitable cultural push back, a lean journey is doomed to failure.

This workshop will show how to effect a cultural change that will sustain a lean journey. It will provide steps to maximize engagement and organizational/team stability through goal alignment, leader development, team engagement, overhead reduction and improved employee performance. It will cover methodologies for analyzing return on investment for human capital management programs and assessing internal cost drivers associated with implementation. These methodologies will be shown through case studies and discussions on how to synchronize and integrate people improvement programs into and in direct support of every lean initiative.

Learning Objectives
- Understand how to build a culture of continuous improvement
- Understand the difference between operational stability and team stability
- Understand importance of team alignment and how to organize your team for success
- Learn ways to better develop your most valuable assets: the leaders
- Understand the linkage between team engagement and business performance
- Understand that recruiting, trying out and making the team (on-boarding) are key value added activities
- Understand where to begin in the process of developing a “Modernized Human Capital Performance Program”
**TUESDAY, SEPTEMBER 13**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 a.m. – 5 p.m.</td>
<td>Registration</td>
</tr>
<tr>
<td>7:30 a.m. – 8 a.m.</td>
<td>Speaker-Moderator meeting with Track Chairs</td>
</tr>
<tr>
<td>7:30 am – 8:15 am</td>
<td>Continental Breakfast</td>
</tr>
<tr>
<td>8:30 a.m. -9:45 a.m.</td>
<td>Opening Session Keynote – Tim Copes, Vice President Boeing Commercial Airplanes Operations - Manufacturing and Quality</td>
</tr>
<tr>
<td>9:30 a.m. – 10:30 a.m.</td>
<td>Exhibits &amp; Break</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Track</th>
<th>Industry</th>
<th>Industry</th>
<th>Academia</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sustaining Lean &amp; Six Sigma</td>
<td>Lean Six Sigma Manufacturing</td>
<td>Lean Six Sigma Healthcare</td>
<td>Sustaining Lean &amp; Six Sigma</td>
</tr>
<tr>
<td>Chair</td>
<td>Rupy Sawhney</td>
<td>Mike Mueller</td>
<td>Jiju Anthony</td>
<td>Rupy Sawhney</td>
</tr>
<tr>
<td>10:30 a.m. - 11:15 a.m.</td>
<td>(One 45-minute or Three 15-minute sessions)</td>
<td>Reliable Lean Systems</td>
<td>Changing the World Through Lean Six Sigma in Manufacturing!</td>
<td>Lean Six Sigma Transformation in a Public Health Clinic</td>
</tr>
<tr>
<td></td>
<td>Robert Keyser, University of Tennessee in Knoxville</td>
<td>Tina Kovach, Dawn Foods</td>
<td>Patricia Banks, North Carolina Agricultural and Technical State University</td>
<td>Patricia Banks, North Carolina Agricultural and Technical State University</td>
</tr>
<tr>
<td></td>
<td># 34 (All)</td>
<td># 16 (I)</td>
<td># 77 (All)</td>
<td># 77 (All)</td>
</tr>
<tr>
<td>11:15 a.m. – 12 p.m.</td>
<td>(One 45-minute or Three 15-minute sessions)</td>
<td>Assessment of Reliability of Wireless Area Body Sensor Network (WABSN) for Patient Safety and Quality</td>
<td>The Challenge to Improve Order to Delivery</td>
<td>Virtual Learning Environment for Lean Education</td>
</tr>
<tr>
<td></td>
<td>Isaac Atuahene, University Of Tennessee</td>
<td>Gary Henby, Caterpillar Inc</td>
<td>Enrique Macias de Anda, The University of Tennessee</td>
<td>Akalpit Cadre, Missouri University of Science and Technology - Rolla</td>
</tr>
<tr>
<td></td>
<td>#42 (All)</td>
<td>#33 (I)</td>
<td>#68 (B)</td>
<td>#71 (B)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Simulation Study of Fast Track Process in Hospital Emergency Department</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vyahriti Joshi, UNC Charlotte</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>#54 (All)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Risk Analysis in a Lean System Using Montecarlo Simulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Enrique Macias de Anda, The University of Tennessee</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>#68 (B)</td>
</tr>
<tr>
<td>Time</td>
<td>Session Details</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 p.m. – 1:20 p.m.</td>
<td>Lunch &amp; Keynote - Richard Calvaruso, GE Appliance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Industry</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Academia</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Track</td>
<td>Lean Six Sigma Healthcare</td>
<td>Lean Six Sigma Supply Chain</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sandy Furterer</td>
<td>Paul Odomirok</td>
<td>Haleh Byrne</td>
<td></td>
</tr>
<tr>
<td>1:30 p.m. – 2:15 p.m.</td>
<td>Integration of Technology and Workflow Reengineering to Transform Hospital Performance (Amanda Mewborn, CareLogistics #11 (I))</td>
<td>From Albany to Big AL with Savings (David Leach, Albany Door Systems Products # 88 (All))</td>
<td>A New Lean Model: Improving Team Performance through Communications Efficacy (Joseph Stainback, University of Tennessee # 69 (I))</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Industry</strong></td>
<td>Lean Six Sigma Measurement</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Academia</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Track</td>
<td>Lean Six Sigma Healthcare</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sandy Furterer</td>
<td>Paul Odomirok</td>
<td>Rupy Sawhney</td>
<td></td>
</tr>
<tr>
<td>2:15 p.m. – 3 p.m.</td>
<td>Three Quality Imperatives for the Healthcare Industry (Larry Smith, The Quality Smith #27 (B))</td>
<td>Combined Business Tools for Multiple Process Resolution (Fred Johnstone, HQMC I&amp;L TLCM Office - Pentagon # 87 (I))</td>
<td>An Empirical Study on Using HRD Practices to Sustain Lean Transformation (Bryan Wang, Ohio State University #63 (All))</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Academia</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Track</td>
<td>Lean Six Sigma Healthcare</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sandy Furterer</td>
<td>Paul Odomirok</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 p.m. – 3: 15 p.m.</td>
<td>Break</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Track</td>
<td>Industry</td>
<td>Industry</td>
<td>Academia</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>---------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Industry</td>
<td>Industrial Engineering &amp; Lean Six Sigma</td>
<td>Lean Six Sigma</td>
<td>Lean Six Sigma Product Development</td>
<td></td>
</tr>
<tr>
<td>Chair</td>
<td>Robert Bassett</td>
<td>Aaron Stransky</td>
<td>Frank Chen</td>
<td></td>
</tr>
<tr>
<td>3:15 p.m. – 4 p.m.</td>
<td>Predicting Demand to Generate Staffing Models</td>
<td>Using Army’s LSS to Optimize the HR Data Entry Processes</td>
<td>Continuous Improvement of Knowledge Management Using Adaptive Control Chart</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chip McDonald, CableOne #5 (B)</td>
<td>Michael Gindl, Dept of ARMY - CHRA NC Regional Processing Center #56 (All)</td>
<td>Glenn Kuriger, University of Texas at San Antonio #73 (I)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Track</td>
<td>Industrial Engineering &amp; Lean Six Sigma</td>
<td>Lean Six Sigma</td>
<td>Lean Six Sigma Supply Chain</td>
<td></td>
</tr>
<tr>
<td>Chair</td>
<td>Robert Bassett</td>
<td>Aaron Stransky</td>
<td>MD Sarder</td>
<td></td>
</tr>
<tr>
<td>4 p.m. – 4:45 p.m.</td>
<td>A Six Sigma Approach for Reducing Non-Sellable Man-Hour Costs</td>
<td>Building an Analytically-Driven Financial Process Improvement Capability for the United States Navy</td>
<td>RFID Packaging Guidelines for Receiving and Shipping</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Raid Al-Aomar, Abu Dhabi University #15 (I)</td>
<td>Ryan Burge, Booz Allen Hamilton #36 (All)</td>
<td>Amoldeep Jaggi, University of Tennessee #47 (I)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legends for levels B = Basic; I = Intermediate; A = Advanced; All = Open to all
## WEDNESDAY, SEPTEMBER 14

<table>
<thead>
<tr>
<th>Time</th>
<th>Industry</th>
<th>Industry</th>
<th>Academia</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 a.m. – 5 p.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:30 a.m. – 8 a.m.</td>
<td>Speaker-Moderator meeting with Track Chairs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:30 am – 8:15 am</td>
<td>Continental Breakfast</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 8:30 a.m. -9:45 a.m.| Opening Session Keynote - Russ Pirasteh, Stephen Gould Corporation  
Book Signing - Immediately Following the Presentation |
| 9:30 a.m. – 10:30 a.m.| Exhibits & Break |
| **Track**           | **Industrial Engineering & Lean Six Sigma** | **Lean Six Sigma Systems** | **Lean Six Sigma Simulation** |
| **Chair**           | Larry Aft | Brent Tadsen | Ertunga Ozelkan |
| 10:30 a.m. - 11:15 a.m. (One 45-minute or Three 15-minute sessions) | **Lean Layout for Research & Development Laboratories**  
Craig Alexander, Monsanto  
#83 (B) | **Lean System for Managing ...the glue that enables sustainable Lean Six Sigma**  
Patrick Lucansky, Value Innovation Partners, Ltd  
#14 (I) | **Crescent Scale Methodology to Enhance Efficiency and Reliability of Manufacturing Systems**  
Kaveri Thakur, University of Tennessee  
# 45 (I) |
| 11:15 a.m. – 12 p.m. (One 45-minute or Three 15-minute sessions) | **Decision-Making using Lean Six Sigma**  
Chauncey Chandler, Rockwell Automation  
#9 (All) | **Planning and Executing a Sustainable Lean Transformation**  
Brent Tadsen, Adaptive Business Solutions  
#23 (All) | **Critical Analysis of the Systems in Fabtron**  
Maruf Mohsin, University of Tennessee  
#51 (All) |
| 12 p.m. – 1:20 p.m. | Lunch & Keynote - Jason Daugherty, Deere & Company | **Dynamic Workforce Planning Model**  
Tachapon Saengsureepornchai, University of Tennessee  
#62 (I) | **A Management Model to Understand the Change in a Lean Environment**  
Karthik Subburaman, University of Tennessee  
#67 (All) |
### Industry Industry Industry

<table>
<thead>
<tr>
<th>Track</th>
<th>Industry</th>
<th>Industry</th>
<th>Academia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair</td>
<td>Lean Six Sigma Healthcare</td>
<td>Lean Six Sigma Case Studies</td>
<td>Lean Six Sigma Manufacturing</td>
</tr>
<tr>
<td></td>
<td>Sandy Furterer</td>
<td>Howard Appelman</td>
<td>Tina Kovach</td>
</tr>
<tr>
<td>1:30 p.m. – 2:15 p.m. (One 45-minute or Three 15-minute sessions)</td>
<td>Lean and Automation in the Clinical Laboratory: A Success Story</td>
<td>New Approaches to Pull: Electronic Kanban for High-Mix Manufacturing</td>
<td>Six Sigma-based Research Framework for Biomechanical Evaluation of Human Performance in Construction-related Jobs</td>
</tr>
<tr>
<td></td>
<td>Brian Jackson, Nexus #29 (All)</td>
<td>Tom Knight, Invistics #26 (B)</td>
<td>Pradip Kumar Ray, Indian Institute of Technology Kharagpur #20 (All)</td>
</tr>
<tr>
<td></td>
<td>Overcoming DoD Waste through Lean Sigma</td>
<td>Towards a Waste Reduction Pre-Screening Tool in a Lean Level 1 Industry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kaleigh Hatfield, Aerospace Testing Alliance #43 (B)</td>
<td>Mario El Khoury, Lebanese American University #46 (All)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Industry</td>
<td>Industry</td>
<td></td>
</tr>
<tr>
<td>Chair</td>
<td>Lean Six Sigma Healthcare</td>
<td>Lean Six Sigma Case Studies</td>
<td>Lean Six Sigma Manufacturing</td>
</tr>
<tr>
<td></td>
<td>Sandy Furterer</td>
<td>Howard Appelman</td>
<td>Mike Mueller</td>
</tr>
<tr>
<td>2:15 p.m. – 3 p.m. (One 45-minute session)</td>
<td>Inculcating Adaptive Behavior Patterns in Complex Organizational Systems</td>
<td>Kellogg Special K Cereal Defect Reduction</td>
<td>Lean Principles and Six Sigma Methodology Applied to Industrial Maintenance</td>
</tr>
<tr>
<td></td>
<td>Conrad Soltero, University of Texas at El Paso #50 (Advance)</td>
<td>Jesse Peacock, Kellogg #8 (All)</td>
<td>Paul Casto, Value Implementation Meridium, Inc. # 66 (I)</td>
</tr>
<tr>
<td></td>
<td>Industry</td>
<td>Industry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 p.m. – 3:15 p.m.</td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>Chair</td>
<td>Lean Six Sigma Product Development</td>
<td>Lean Six Sigma Manufacturing</td>
<td>Lean Six Sigma Case Studies</td>
</tr>
<tr>
<td></td>
<td>Tina Kovach</td>
<td>Sharon Robertson</td>
<td>Howard Appelman</td>
</tr>
<tr>
<td>3:15 p.m. – 4 p.m. (One 45-minute session)</td>
<td>Improve Your Personal Productivity to Improve Customer Satisfaction</td>
<td>Merging Lean, Six-Sigma, TOC into a Robust Improvement Process for the High Mix Low Volume Assembly Lines</td>
<td>Case Study: Lean and Six Sigma Tools in Managed Care</td>
</tr>
<tr>
<td></td>
<td>Don Goldacker, The Boeing Company #4 (I)</td>
<td>Yoni Arrieta, Dyplast Products #12 (All)</td>
<td>Brandon Deihl, HealthSpring of Alabama #38 (B)</td>
</tr>
<tr>
<td></td>
<td>Industry</td>
<td>Industry</td>
<td></td>
</tr>
<tr>
<td>Chair</td>
<td>Lean Six Sigma Product Development</td>
<td>Lean Six Sigma Manufacturing</td>
<td>Industrial Engineering &amp; Lean Six Sigma</td>
</tr>
<tr>
<td></td>
<td>Tina Kovach</td>
<td>Sharon Robertson</td>
<td>Larry Aft</td>
</tr>
<tr>
<td>4 p.m. – 4:45 p.m. (One 45-minute session)</td>
<td>Using Lean Six Sigma to Enable the Transformation of Upstream Workflows</td>
<td>Development and Implementation of Standard Process for Manufacturing Scrap Reduction</td>
<td>Guerilla Transformation - Change an Insurgency into a Movement</td>
</tr>
<tr>
<td></td>
<td>Bradley Stump, Chevron #7 (I)</td>
<td>Hafiz Eisa, Missouri S&amp;T University #39 (I)</td>
<td>Joseph Paris, XONITEK Consulting Group Int’l LLC #84 (All)</td>
</tr>
</tbody>
</table>
Implementation of Lean manufacturing systems often turns into expensive hit-or-miss propositions. Whereas many organizations that lack immediate success quickly abandon their Lean journey in hopes that the next great marketing panacea will solve their efficiency woes, organizations that experience early success often have difficulty in sustaining their Lean efforts. To further exacerbate the dilemma, knowledge of reliability of Lean systems is currently inadequate. This paper proposes a contemporary Lean paradigm — reliability in Lean systems — through the development of an innovative Lean System Reliability model (LSRM). Principally, LSRM models the reliability of Lean subsystems as a basis for determining the reliability of Lean systems as a whole. Lean subsystems, in turn, consist of reliable measures for Lean components. Once principal components analysis techniques are employed to determine critical subsystems, value stream mapping is used to illustrate the critical subsystem workflow sequence. Monte Carlo simulations are performed for the Lean system, its subsystems, and components and are then compared with historical data to determine the adequacy of the LSRM model.

### SESSION 1

**Lean Six Sigma Transformations in a Public Health Clinic**

*Patricia Banks, M.S. Industrial and Systems Engineering - Candidate, North Carolina Agricultural and Technical State University | #77 (All)*

Public health clinics have been inundated by unprecedented surge in demand for services at a time that funding from federal and state governments for these agencies are diminishing, trending with prevailing economic conditions. Quality initiatives and continuous process improvement have long been established as plausible interventions to maintain and improve product and service delivery quality during business downturns. Ever increasing federal and state regulatory demands have compounded the issue and compel a heightened focus on eliminating waste, improving service delivery, and increasing efficiency. The goal of this project is to optimize resources and transform a clinic system to increase patient satisfaction by reducing overall wait times and increasing the number of patients served on a daily basis. This initiative is precedent-setting in that a first time collaboration, between the University, a local clinic and leadership development institute, capitalizes on expertise in three areas, including Six Sigma, healthcare and program assessment. In this paper, we present a case study documenting the use of Lean Six Sigma tools to extract customer critical-to-quality (CTQ) metrics, systematically resolve bottlenecks, and quantify tangible measures of success in order to improve operational flow within a public health clinic. Preliminary results of the analyses indicate reduced patient wait time, optimized resource allocation and leveled demand based on peak service hours.

**Patient Throughput Improvement from Using Lean Techniques in an Emergency Room**

*Stephen Ford, Student; Laura H. Ikuma, Ph.D., Isabelaia Nahmens, Ph.D., Louisiana State University and Julian Springler, Ochsner Medical Clinic | #57 (B)*

Current emergency departments are overflowing with high patient loads, leading to process breakdowns and patient dissatisfaction. Ochsner Health System has utilized lean principles to improve overcrowded emergency departments. Ochsner physicians developed qTrack, a new model to streamline the emergency room process and increase customer satisfaction. qTrack condenses registration and triage processes to under 30 seconds, considerably reducing the time to be seen by a doctor. Non-urgent patients can wait in a comfortable, internal waiting room, allowing ER beds to remain open. Metrics of patient throughput were tracked using time studies and work sampling lean techniques. qTrack was implemented in December 2010 and results show a 31 percent reduction in “left without being seen” and a 12 percent reduction in length of stay, while patient load increased 32 percent over the previous year. The qTrack model shows that increased patient capacity of an emergency room can be achieved with lean principles.
unexpected events. The combination of reliability with risk analysis provides a more realistic approach to the real life situation.

As systems are streamlined through methodologies to maximize customer value while minimizing waste, such as lean, risks can be introduced by removing system slack or redundancies. The purpose of this paper is to use Monte Carlo simulation as a mechanism to analyze the uncertainty of clinical tasks which would slow the flow of patients through the process of receiving physicals in a medical clinic where the process has been streamlined through the application of lean principles. The approach is applied to a case study to assist in the understanding of risk associated with lean. Risk, in this paper will be defined as the likelihood of an increase or more than expected clinic processing time.

As systems are streamlined through methodologies to maximize customer value while minimizing waste, such as lean, risks can be introduced by removing system slack or redundancies. The purpose of this paper is to use Monte Carlo simulation as a mechanism to analyze the uncertainty of clinical tasks which would slow the flow of patients through the process of receiving physicals in a medical clinic where the process has been streamlined through the application of lean principles. The approach is applied to a case study to assist in the understanding of risk associated with lean. Risk, in this paper will be defined as the likelihood of an increase or more than expected clinic processing time. Reliability of the process as a fixed theoretical variable is introduced for application of lean principles. The approach is applied to a case study to assist in the understanding of risk associated with lean. Risk, in this paper will be defined as the likelihood of an increase or more than expected clinic processing time. Reliability of the process as a fixed theoretical variable is introduced for application of lean principles.

There are various potential errors associated with the fast-track process. These errors can be grouped into four categories: equipment and technology, human errors, procedural errors, and organizational errors. As systems are streamlined through methodologies to maximize customer value while minimizing waste, such as lean, risks can be introduced by removing system slack or redundancies. The purpose of this paper is to use Monte Carlo simulation as a mechanism to analyze the uncertainty of clinical tasks which would slow the flow of patients through the process of receiving physicals in a medical clinic where the process has been streamlined through the application of lean principles. The approach is applied to a case study to assist in the understanding of risk associated with lean. Risk, in this paper will be defined as the likelihood of an increase or more than expected clinic processing time. Reliability of the process as a fixed theoretical variable is introduced for application of lean principles. The approach is applied to a case study to assist in the understanding of risk associated with lean. Risk, in this paper will be defined as the likelihood of an increase or more than expected clinic processing time. Reliability of the process as a fixed theoretical variable is introduced for application of lean principles.

In this talk, we present a simulation study of the fast track (FT) process implemented at the emergency department (ED) of a local hospital. The simulation study helps identify bottleneck processes and workload imbalance. Based on the simulation study, we propose an improved FT process, called the smart track (ST) process, in which workload between staffs are reassigned and the capacity of the inside waiting room is increased. We also introduce an additional option to patients so that they can come back at a later time instead of waiting for test results. With the proposed process, the simulation study displays a substantial reduction in the length of patient's stay in ED. In particular, the improvement is prominent for those patients who just need prescription.

In this talk, we present a simulation study of the fast track (FT) process implemented at the emergency department (ED) of a local hospital. The simulation study helps identify bottleneck processes and workload imbalance. Based on the simulation study, we propose an improved FT process, called the smart track (ST) process, in which workload between staffs are reassigned and the capacity of the inside waiting room is increased. We also introduce an additional option to patients so that they can come back at a later time instead of waiting for test results. With the proposed process, the simulation study displays a substantial reduction in the length of patient's stay in ED. In particular, the improvement is prominent for those patients who just need prescription.

As systems are streamlined through methodologies to maximize customer value while minimizing waste, such as lean, risks can be introduced by removing system slack or redundancies. The purpose of this paper is to use Monte Carlo simulation as a mechanism to analyze the uncertainty of clinical tasks which would slow the flow of patients through the process of receiving physicals in a medical clinic where the process has been streamlined through the application of lean principles. The approach is applied to a case study to assist in the understanding of risk associated with lean. Risk, in this paper will be defined as the likelihood of an increase or more than expected clinic processing time. Reliability of the process as a fixed theoretical variable is introduced for application of lean principles. The approach is applied to a case study to assist in the understanding of risk associated with lean. Risk, in this paper will be defined as the likelihood of an increase or more than expected clinic processing time. Reliability of the process as a fixed theoretical variable is introduced for application of lean principles. The approach is applied to a case study to assist in the understanding of risk associated with lean. Risk, in this paper will be defined as the likelihood of an increase or more than expected clinic processing time. Reliability of the process as a fixed theoretical variable is introduced for application of lean principles.
Integration of Technology and Workflow Reengineering to Transform Hospital Performance

Amanda Mewborn, RN, PMC, CPN, CPHIMS, DSHS, MSHS, BSN, BSIE, executive director, CareLogistics | #11 (I)

The session will present two case studies on U.S. hospitals who transformed their operations using a combination of mindset, methodology and technology. Operational transformation starts with mindset, meaning that leadership views the hospital as an inter-connected system instead of a collection of departmental silos. The second tool, methodology includes workflow mapping, including application of lean and Six Sigma principles to eliminate inefficiencies. The tools are utilized by healthcare industrial engineers to assist the organization with change management. Mapping the hospital's current state operation, and then mapping the desired future state, allows the hospital to identify the gaps between the current and future state. The gaps are addressed to drive the organization toward the future state. The third ingredient, technology, hardwires the future state processes. The results of integrating mindset, methodology, and technology are dramatic improvements in nearly every facet of hospital operations, including financial, quality, and patient satisfaction.

From Albany to Big AL with Savings

David Leach, quality manager, Albany Door Systems Products | #88 (All)

The presentation will cover how Albany Door Systems Products benefit the supply chain industry, manufacturing and other end users in their known or unknown pursuit of lean. The focus will be on Big AL’s 5S (Savings, Security, Safety, Speed, and Sanitary). I will review products that Reduce wait time (Speed), increase (Security), increase energy (Savings), provide machine protection (Safety), provide clean door (Sanitary) and reduce maintenance.

Additionally I will cover the ADS internal Improvement Initiatives. How we incorporate Lean (IE), Six Sigma (ME, QA) and Integrated Business Deployment (IBM). I will cover the struggles, the failures, the successes and the philosophy. I will also ask, “Does JIT in 2011 add value?” and attempt to answer.

A New Lean Model: Improving Team Performance through Communications Efficacy

Joseph R. Stainback, IV, Ph.D., program manager, Y-12 National Security Complex, University of Tennessee | #69 (I)

In some organizational settings certain situations and rules place an emphasis on and sometimes escalate the need for effective team communications. It has been shown that effective and dense communications contributes directly to positive team performance. In this paper, communications is explored as a new form of waste within the context of Industrial Engineering subject to data collection, measurements, and real-time, value-added metrics. Measuring and reporting trends in communications provides a basis for a new and unique model called a communications productivity model (CPM) with an associated communications density report (CDR). In addition, industrial engineering productivity tools such as statistics are combined with linguistic and text analysis tools to develop a unique dynamic productivity index (DPI) thus enhancing the CDR as a means to rapidly provide meaningful and value-added feedback on team performance. These tools are introduced as a means of measuring communications for organizations whereby critical decisions are important to sustain safety and/or profit within a dynamic setting, such as NASCAR Racing. The CDR with the DPI is shown to improve team performance through meaningful feedback thus improving performance.

Key Words: Lean Six Sigma, Generator, Value Engineering

Mohammad EslamiPour, hydro project manager, MAPNA Generator | #22 (All)

With accelerated global economic down term, business environments are going through a major problem and firms have intensified their search for strategies which can keep them on competitive track. This requires that companies continuously innovate, to think of new ideas that can be transformed to processes. Value engineering and LSS as tools and techniques would be able to create innovative solutions and play important roles in future of firms’ economy.

This paper explores collaboration between LSS and VE by discover potentials where they can be supported each other in-order to enhance the possibility of achieving improvements further than the capability of only one method.

This paper discusses the issues involved in the LSS that can be employed. It covers the variety of goals that can be set for the value analysis, to obtain optimum value.

Standardization of Work in a Paint Shop Using Yamazumi Charts

Gilbert Abi Zeid, research assistant and Jad Nehmeh, research assistant, Lebanese American University | #72 (I)

Standardization of work is a process that can be applied to any industry. It consists of implementing the best method to safely and efficiently perform work that meets the necessary level of quality and provides the standard for continuous improvement.

In this article, we cover the standardization of work in a SME: paint shop. The study will be made on the Yamazumi charting procedure used to standardize work.
Then, surveying of the work processes in the paint shop will be conducted. It will consist of servicing customers planning to buy painting equipments. Following, the Yamazumi charting procedure will be conducted in order to enhance the system and improve it with respect to customer satisfaction and profitability.

The proposed study is an effort to standardize work in local SME’s where little or no effort is observed.

Tuesday, September 13 | 2:15 p.m. – 3 p.m.

INDUSTRY | TRACK: LEAN SIX SIGMA HEALTHCARE

Three Quality Imperatives for the Healthcare Industry
Larry Smith, The Quality Smith | #27 (B)

Using the concept of a loss function to understand relevance and importance, this talk will first introduce the loss function and then explore three fundamental strategies for improving quality in the healthcare industry. The first strategy involves understanding customers and finding performance targets that are important for customer satisfaction. The second strategy involves reducing variation around these target values to Six Sigma or better performance. The third strategy deals with flattening the loss function by finding factors that can be controlled to make processes less sensitive or robust to external factors that are either too difficult or too expensive to control.

The relative importance and implementation order of these strategies will be discussed along with their practical relevance to the healthcare industry.

INDUSTRY | TRACK: LEAN SIX SIGMA SUPPLY CHAIN

Combined Business Tools for multiple Process Resolution
Fred Johnstone, HQMC I&L TLCM Office - Pentagon | #87 Level (I)

This presentation describes how a fast-track government acquisition project was initiated without a well-focused organizational architecture. This organization quickly grew to multiple locations with multiple points of leadership. The task was to capture an existing high-level value stream map and at the same time identify how all the different leadership and sub organizations interact at each process step within the high-level value stream map. This resulted in a solution that combined the Value Stream map and a RASIC tool to socialize across the enterprise providing the entire organization a better understanding of their functions within the program and how they were cross-functionally tied in support of the total output. This also resulted in the definition of roles and responsibilities without creating an over arching corporate board to set ridged sub-organizational structure. Level one and level two process maps were then easily along with a strategic plan for the entire enterprise.

ACADEMIA - (THREE 15-MINUTE SESSIONS) | TRACK: SUSTAINING LEAN & SIX SIGMA

SESSION 1
An Empirical Study on Using HRD Practices to Sustain Lean Transformation
Bryan Wang, Ph.D. candidate, Ohio State University | #63 (All)

This presentation will describe an empirical study on the relationships among organizational characteristics, lean practices, Human Resource Development (HRD) practices, and the institutionalization of lean practices in small and medium-sized enterprises. The results of this study will give the audience concrete ideas on sustaining lean transformation.

SESSION 2
The Impact of Lean Principles on Building a Sustainable Green Enterprise - A Review of Literature
Arun Nambiar, assistant professor, California State University–Fresno | #17 (B)

In today’s fast-changing and ever-expanding world of continued industrial growth and dwindling resources, companies are striving towards implementing sustainable practices which promote efficient use of scarce resources thus ensuring a sustainable world for future generations. The central paradigm behind lean principles is to reduce all forms of wastes. Combining lean principles with sustainable practices can help companies reap maximum benefits in terms of reduced operating costs, reduced carbon footprint, and improved customer satisfaction leading to increased market share and higher profits. This presentation will look into the different ways in which the two paradigms can be combined to maximum benefit.

SESSION 3
Change Management in Automotive Industries in Mexico
Maria Guadalupe Lopez Molina, head of Graduate Studies and Maria Guadalupe López, Dean of the School of Engineering, Universidad Iberoamericana | #58 (I)

This research is focused on those organizations in the automotive industry in Mexico that are in the process of implementing lean systems in their organizations and the success rate expected according to their internal processes of change. We interviewed local business providers in the automotive industry who are in the process or have already implemented Lean to determine those most significant factors that prevented or delayed the implementation of a lean philosophy and how these organizations were finally affected along these processes.
Predicting Demand to Generate Staffing Models

Chip McDonald, Industrial Engineer, CableOne | #5 (B)

CableOne local offices handle many different forms of customer contact on a monthly basis. Among these contacts are front counter walk-in customers who primarily visit our offices to pay their bill. Local managers staff the front counter statically on a monthly basis. However, variation in walk-in demand creates a labor surplus which results in a loss of productivity.

Overstaffing the front counter during periods of low customer demand leads to idle associates and continues to drive customer contacts to the front office due to minimal queue times. Improvements in productivity can be gained by reallocating the excess labor to other activities within the department. However, at this time there are no means to predict customer demand that would allow for an accurate staffing model to be developed. To increase productivity and customer service it was desired to create a model to predict customer demand and reduce the cost/transaction at the front counter by 20 percent. Utilize the model to adjust front counter labor on an hourly basis by creating a dynamic staffing schedule. The surplus labor can be reallocated to other areas of the department to boost productivity by completing monthly reports and answering phone calls that would normally overflow to the call center. The model also serves as a KPI for operational comparison and understanding customer behavior by location. The pilot use of the system has resulted in a greater than 20 percent reduction in front counter labor.

Using Army’s LSS to Optimize the HR Data Entry Processes

Michael Gindl, Dept of ARMY - CHRA NC Regional Processing Center | #56 (All)

This case study will demonstrate to other federal agency’s how the Army is improving productivity, quality, and reliability of their Civilian Human Resources system while reducing services level defect and eliminating waste. This is being done by utilizing Web-based Wizards, Web-based Dashboards, a powerful key stroke emulator program (called Quick Test Professional), and the Army’s LEAN/Six-Sigma and Continuous Process Improvement programs.

There are numerous benefits including: providing greater data entry accuracy & data throughput, improving customer focus & satisfaction, helping lower staffing levels, driving down data processing costs, roll-up & drilldown reporting capabilities, data from authoritative data sources to establish & monitor LEAN/Six-Sigma parameters for a variety of processes, timely & accurate information for reporting continuous process improvement & cost reductions, and reaching the future state for Civilian Human Resources. Additional benefits include improving overall customer services and reducing administrative costs of providing those services in the Civilian Human Resources offices.

NOTE: The views expressed in this paper are those of the author and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. Government.

Continuous Improvement of Knowledge Management Using Adaptive Control Chart

Glenn Kuriger, Ph.D., research assistant professor, Chia-jou Lin, Hung-da Wan, F. Frank Chen, Ph.D., University of Texas at San Antonio and Yuh-min Chen, National Cheng Kung University | #73 (I)

Knowledge is an essential asset for product development. Effective knowledge management would facilitate knowledge preservation, sharing, utilization and innovation. Particularly for product developers, a good knowledge retrieval system is required for providing the right knowledge to the right person at the right time. However, due to the ambiguity and complexity, knowledge searching is not a trivial task. Furthermore, the database expands constantly, and the inquiries and representations of existing knowledge evolve over time. Due to the dynamic nature, a knowledge retrieval system must be adaptive to sustain the performance level. To support product development, this research proposes a continuous improvement approach to maintain knowledge retrieval systems through a control chart. The precision of each retrieval operation is evaluated and monitored continuously by an adaptive p-chart. When the performance drops out of control, corrective actions are triggered to restore the precision level. Thus the performance of knowledge retrieval is sustained.

Lean Process Improvements for Global Hawk Aircraft Acceptance

J. Robert Wirthlin, Ph.D., Lt Col, Assistant Professor; Troy Cahoon, Student; J.J Homan, Student, Carissa Parker, Student; Joe Pignatiello, Ph.D., Professor; US Air Force Center for Systems Engineering | #89 (B)

In this case study, the Air Force’s process for formally accepting new aircraft delivered from the prime contractor is studied to reduce a number of problems that are frequently encountered by the Government. Using Toyota’s A3 approach together with the Air Force’s observe, orient, decide and act four-step problem solving process, root causes for several significant problems were identified and addressed by a number of proposed countermeasures. The resulting benefits could be applied throughout the Air Force to facilitate improvements in the delivered aircraft acceptance process.
Integrating Processes and CAE for Lean and Collaborative Product Development

Thomas Vosgien, Ph.D. candidate, Ecole Centrale Paris & SNECMA ; Thomas Nguyen Van, Sncema; Marija Jankovic, Ecole Centrale Paris; Benoît Eynard, Université de Technologie de Compiègne; Jeya Chandra, Pennsylvania State University; Jean-Claude Bocquet, Ecole Centrale Paris | #24 (All)

We propose to address the difficulties in developing an adequate value system in the implementation process especially with the changes undergone in the development process. Moreover, we propose to expand the definition of the value and related metric system within research study currently ongoing in the aeronautics industry. Once the value system is defined, in order to apply Lean Six Sigma to CPD processes, we need to associate pertinent, measurable and controllable metrics to our value system. The purpose is to provide a robust design measurement system enabling companies to control and follow their design processes. Our proposition also concerns developing digital tools capabilities while matching them with some design processes. Based on a Lean Six Sigma approach, the goal is to demonstrate how this matching can be a value creation driver within the development of an Integrated power plant system (i.e. design and integration of turbojet engine, nacelle, pylon and connected equipments).

Tuesday, September 13 | 4 p.m. – 4:45 p.m.

INDUSTRY | TRACK: INDUSTRIAL ENGINEERING & LEAN SIX SIGMA

A Six Sigma Approach for Reducing Non-Sellable Man-Hour Costs

Raid Al-Aomar, Ph.D., director of Master of Engineering Management (MEM), Abu Dhabi University and Mohammed Almakhzumi, process support engineer, Mouchel International Management Consulting | #15 (I)

This paper presents a Six Sigma approach for improving the productivity of maintenance technicians through the reduction of non-sellable man-hour (NSMH). The objective is to help companies increase the capacity and cost effectiveness of production and maintenance operations and meet the expectations of their customers without increasing prices. The approach aims primarily at deploying proper control measures in the production and maintenance unit to optimize consumption of resources and reduce the number of non-sellable hours.

A man-hour is the amount of work (i.e. a unit of labor or productivity) that an average person produces in one hour. It is used as a basis for determining the labor content of a particular project. Man-hours assume work continuity and do not take into account breaks due to fatigue and other human needs. In productivity context, man-hour is an input (resource) that is converted into an output (product or service). Total productivity is a productivity measure that incorporates all the inputs required to make a product or provide a service including man-hour. NSMH refers to work time (in hours) that is paid to workers but may not be charged to clients. Examples include breaks, training, and idle time.

Time spent on work assignments is referred to as “direct” and time spent on interventions is referred to as “indirect.” The relationship of direct to indirect time is referred to as an “effectiveness rate” delineating the use of time during the work day. Effectiveness rate should not be confused with efficiency rating. Whereas an efficiency rating measures how well someone performs a task in a given time, Effectiveness Rate simply measures the use of time during the work-day. In such context, NSMHs are considered as “Indirect” time. Six Sigma is a structured and data-driven approach that is aimed at improvement and design of underlying systems so that a high level of performance quality is achieved. Six Sigma aims at reducing defects by identifying sources of variability and enhancing system design to reduce the impact of such variability on system performance. In this paper, however, Six Sigma will be used to improve labor productivity and cost effectiveness through the reduction of NSMHs. A case study will be used to illustrate the proposed approach.

INDUSTRY | TRACK: LEAN SIX SIGMA GOVERNMENT

Building an Analytically-Driven Financial Process Improvement Capability for the United States Navy

Ryan Burge, Certified Lean Six Sigma master black belt, ASQ-CSSBB, lean sensei, CQE, CQIA, and CQPA, Booz Allen Hamilton | #36 (All)

Plagued by budgeting inefficiencies and errors, the U.S. Navy looked to Booz Allen for a methodology – to include expertise – that could standardize financial and capability drivers, streamline budgeting and decision processes, and produce visualizations and information that could better inform leadership. The Web-based Resource Allocation Model (RAM) and its integrated – and where appropriate, automated – modules provide decision-makers with a means for reviewing otherwise diluted, sparse data still vital to making robust, analytically-driven financial decisions. Through a fusion of LSS/CPI and data modeling and simulation methods, RAM was born. Beginning with data collection, analysis and modeling, RAM was implemented as a customizable portfolio management solution offering a more efficient and effective means for consolidating, understanding, and visualizing critical metrics and even more subjective information. It allows for unlimited “what if” scenarios while producing a defensible, balanced budget, while simultaneously bolstering increased staff efficiency with graphical representations of cost and capability impacts to decisions made in real-time. Incorporating a rigorous analytical methodology developed upon proven mathematical/statistical methods, it systematically prioritizes decision alternatives and optimizes a portfolio based on a series of dynamic metrics, decision curves and regression, and user-adjustable parameters and constraints. The result of this effort is a streamlined budgeting process, thus exhibiting significant reductions in human error, effort and costs while producing a more repeatable, standardized, validated, and analytical resource justification procedure.
RFID Packaging Guidelines for Receiving and Shipping
Amoldeep Jaggi, graduate research assistant, and Rapinder Sawhney, Ph.D., University of Tennessee | #47 (I)
Radio frequency identification (RFID) is a tool that is used to make supply chains lean and sustainable. This is an Auto-ID technology which is used in many sectors of industry to reduce the lead time and waste in production and maintenance. Packaging is one of the important areas of supply chain where RFID can be implemented to make the system lean and cost efficient. Despite of numerous benefits of this technology, packaging has not been integrated with RFID on a large scale. This is because of the lack of RFID packaging guidelines that are not available in the market. This paper proposes Design of Experiments methodology to develop the guidelines for “RFID Ready Facility.” The three different packaging strategies will be tested on packages, boxes and their various combinations. The factors considered in the experiments are Package Orientation (PO), Tag Placement (TP), Package Placement (PP), Reader Location (RL), Box Orientation (BO), Tag Placement on Box (TPB) and Tag Placement on Package (TPP). As a result, these operational guidelines will make the packaging lean and sustainable.

Lean Six Sigma Applied to Department of Defense Supply Chain
Robert Biedenharn, University of Southern Mississippi | #79
In the current business climate, companies are increasingly looking to cut costs and improve efficiency in all aspects of business operations. This trend is not exclusive to the private sector. The U.S. government has also begun the process of increasing efficiency while cutting cost. There are a number of philosophies in practice today that offer benefits to entities looking to increase the bottom line. One such philosophy is Lean Six Sigma. This presentation examines the process of integrating Lean Six Sigma principles into Department of Defense supply chain operations. This presentation will then analyze possible impacts of applying Lean Six Sigma principles across the DOD supply chain, specifically the principles of minimum inputs and waste, maximum throughput, and continuous process improvement. Additionally, the presentation will explore the possibility of combining Lean Six Sigma with other philosophies in order to tailor a cost reduction strategy that efficiently improves operations.

Integrate Quality Factors in Supply Chains Using Bayesian Network Approach
Mohammad Rahman, assistant professor and Asheka Rahman, engineering, University of Southern Mississippi; Ahad Ali, Ph.D., mechanical engineering, Lawrence Technological University | #76 (I)
Bayesian Network Approach and Lean Six Sigma can be integrated in a supply chain study to gain business advantages in global market. This study investigates a number of supply chain quality factors such as supplier quality culture, supplier development management credentials, strategic alliances and buyer-supplier interactions in a Bayesian network model integrated with lean six sigma concept in supply chain operations. The model uses probability inferences and estimates likelihood for the quality factors. The methodology is applied to supply chain management problems, and provides a decision making base for Lean Six Sigma application in supply chains.

Lean System for Managing …the glue that enables sustainable LeanSixSigma
Patrick Lucansky, Value Innovation Partners Ltd. | #14 (I)
The session outlines a systematic approach to provide the necessary input to ensure efficient economic operation of the business. Proper use of the tool will increase both the overall effectiveness of leaders and their ability to reach established goals & objectives on a daily basis.

LSFM is an integration program for organizational mobilization and sustained culture change. It provides the organization with an opportunity to build a new culture aligned with corporate objectives of work velocity, quality, and training. By carefully crafting the message of LSFM, the mobilization campaign can be instrumental in promoting the understanding, principles and practices critical to a successful culture change.
Crescent Scale Methodology to Enhance Efficiency and Reliability of Manufacturing Systems
Kaveri Thakur and Rapinder Sawhney, Ph.D., professor and department head, University Of Tennessee | #45 (I)

Variation is one the primary causes for degrading line efficiency and building excess inventory in a manufacturing process. This paper focuses on modeling the effects of different categories of variation (high, medium and low), in a manufacturing process. A methodology that applies a “crescent scale” to assess and evaluate performance of a manufacturing process and recommends customized lean tools to improve the system reliability is proposed. The crescent scale mathematically determines the state of a manufacturing process ranging from worst case to best case based on simulation study. The simulation study applies design of experiments (DOE) to determine the influence of different types of variations on the performance measures. The process performance measures considered are throughput (TH), work in process (WIP), and lead time (LT). DOE is structured based on high, medium and low levels of variation for each workstation in the process. This study identifies the location and level of improvement in a process to increase the overall gain in performance measures and reliability of the manufacturing process. The results provide an insight on the selection of appropriate lean tools to be implemented for improving the reliability of the system.

Capacity Planning using Simulation in a Pre-operative Outpatient Clinic
Tarun Moahn Lal, Ph.D., healthcare systems engineering analyst, Mayo Clinic | #65 (All)

This study was conducted to determine the additional capacity required at the Pre-operative Center to meet the increase in the patient volumes. Preliminary investigational process review indicated improvement opportunities at the POE Center due to existence of underutilized resources. Discrete event simulation model of the current state of the POE Center was used as a framework to investigate possible improvements in the system and also to evaluate the impact of these changes on the system. The recommended changes to scheduling patterns and capacity reallocation could potentially increase the patient throughput by 54 percent and significantly increase the resource utilization to expected institutional standards. Implementation of the recommended patient appointment schedules and associated change in staff work schedules would accommodate the increased demand in the existing facility with minimal addition of staff, thereby achieving significant cost savings.

Value Stream Map Simulator Using ExtendSim
Mohamed A. Shararah, MSc, assistant lecturer, Arab Academy for Science and Technology - Egypt | #35 (I)

Value stream mapping is a paper and pencil tool that captures the state of the system at the state it was drawn. Simulation is combined with value stream mapping to give it power and flexibility to dynamically capture the state of the system. This paper introduces the Value Stream Map Simulator using ExtendSim® (VSMSimx) as a powerful tool designed to facilitate the implementation of lean manufacturing by simulating the value stream map. The VSMSimx empowers the traditional value stream map by combining it with simulation and add the dimension of time making it a powerful analysis tool. Compared to traditional value stream mapping, this tool outputs accurate quantitative performance measures of various scenarios that allow better decision making. Inputs to the VSMSimx can be deterministic or stochastic, that would accurately represent the value stream map variables with any data distribution. As a conclusion, the VSMSimx is a tool that can pave the way for successful lean manufacturing implementations.

Decision-Making using Lean Six Sigma
Chaucey Chandler, Senior Engineer, Rockwell Automation | #9 (All)

Lean has emerged as a methodology to eliminate waste, while Six Sigma has materialized as a diagnostic tool to improve processes by eliminating variation. An important step in both processes is to identify the most critical processes to maximize results. Generally, this prioritization of projects is identified or approved by management. The author proposes using Analytical Network Processes (ANP) to improve prioritizing and selecting projects. This document joins these concepts identifying Lean Six Sigma Critical Business Processes using the mathematical model ANP and reviews its impact to decision-making methods. This holistic approach examines decisional outcomes in an experimental setting and supplies training guidelines leading to better decision outcomes and perceptions of the decision process. The goal is to further the knowledge and understanding of project selection using Lean Six Sigma Critical Business Processes as it relates to the manufacturing environment.

Planning and Executing a Sustainable Lean Transformation
Brent Tadsen, Adaptive Business Solutions | #23 (All)

It is estimated that more than 90 percent of the fortune 500 companies are attempting to utilize lean methodologies to reduce costs, decrease inventory, and better serve their customers. Toyota has shown that lean can deliver incredible results. Yet, many organizations fail in their transformation efforts. This presentation provides a proven framework for making a Lean transformation in any industry and addresses many of the change management and cultural issues associated with major organization change.
**Critical analysis of the Systems in Fabtron**  
Maruf Mohsin, Graduate Student, Christoph Kadura and Michael Henkel, University of Tennessee | #51 (All)

Any company is reluctant to changes, especially small business where changes often mean a high financial risk. Lean practitioners know that changes have to happen in our globalized world to succeed against other markets. This article will show how a small business can be improved by lean methods like quality control, an improved inventory system, etc. can increase its success and its profitability with a low risk. To make sure that risks aren’t too high, the article will show with the help of an FMECA Analysis how and in which order has to be processed to assure the acceptance among the worker and the management, which both have to work together even more in a lean environment.

**Dynamic Workforce Planning Model**  
Tachapon Saengsureepornchai, graduate student and Rapinder Sawhney, Ph.D., University of Tennessee | #62 (I)

Every organization has to deal with planning of the appropriate level of human resources over time. The workforce is not always aligned with the requirements of the organization and it increases an organization’s budget. A literature review reveals that there is no model that can systematically predict accurate personnel numbers in large complex organizations. A human resource planning approach was developed based on material planning requirements. It allows us to generalize the complexity of workforce planning into a mathematical model. The logistic binary regression model estimates the probability for employee turnover and forecasts the expected remaining headcount for the next time period. This model calculates the estimated turnover rate based on employee information, such as age, working year, salary, etc. Moreover, external variables and economic data can be utilized to adjust the estimated turnover probability. This model also suggests the possible internal workforce movement in case of in-house manpower imbalance.

**A Management Model to Understand the Change in a Lean Environment**  
Karthik Subburaman, M.S., industrial engineering, and Robert S. Keyser, Ph.D. in industrial engineering, University of Tennessee | #67 (All)

Companies implementing lean are seeking the way of minimizing cost and culture of organizational change towards the creation of a Lean enterprise. However, this transitional phase fails due to various reasons that are identified in this paper. A literature review reveals that a compilation of many principal reasons of why a lean strategy fails within an organization. A framework is explained in detail to understand this failure utilizing the definition of the parties or roles involved in the process: innovators, producers and end users. A fault tree analysis is performed to analyze the details of the transitional phase for a Lean implementation effort when is passed from the innovators & producers to the end users. The concerns identified from the end user perspective that lead to lean failure are addressed. A lean management model is developed including these concerns to determine the recommendations to embrace change in the organizational environment.

Every organization has to deal with planning of the appropriate level of human resources over time. The workforce is not always aligned with the requirements of the organization and it increases an organization’s budget. A literature review reveals that there is no model that can systematically predict accurate personnel numbers in large complex organizations. A human resource planning approach was developed based on material planning requirements. It allows us to generalize the complexity of workforce planning into a mathematical model. The logistic binary regression model estimates the probability for employee turnover and forecasts the expected remaining headcount for the next time period. This model calculates the estimated turnover rate based on employee information, such as age, working year, salary, etc. Moreover, external variables and economic data can be utilized to adjust the estimated turnover probability. This model also suggests the possible internal workforce movement in case of in-house manpower imbalance.

**Lean and Automation in the Clinical Laboratory: A Success Story**  
Brian Jackson, BS-I.E., M.B.A., Managing Partner, Nexus | #29 (All)

The challenges facing clinical laboratory managers in the past 20 years include staff shortages, the rising cost of providing testing services, and the significant number of error opportunities. Responding to these challenges, an Oklahoma-based health system implemented a series of improvements to include faster, more sensitive analyzers, high volume lab automation, and new management approaches through a continuous improvement philosophy. This lean philosophy contributed to dramatic operational improvements that were objectively captured in key metrics such as turnaround time compliance, STAT turnaround time and manpower reduction. The methods used, and lessons learned, may be applicable to many hospital departments and environments.

**New Approaches to Pull: Electronic Kanban for High-Mix Manufacturing**  
Tom Knight, Invistics and Donna Rudder, MeadWestvaco Corp. | #26 (B)

This case study will describe how MeadWestvaco (MWV) has successfully implemented pull techniques in their high-mix manufacturing operations using electronic Kanban. This conversion from a forecast-driven push approach to a demand-driven pull approach has dramatically reduced inventory while...
improving customer service. Specifically, attendees will learn how MWV:
Trained key decision makers in best practices to implement pull in high-mix manufacturing.
Quickly designed how to implement pull in an innovative 2-day “Pull Design Workshop.”
Developed the business case showing the compelling return on investment (ROI) from pull.
Optimized inventory levels to balance the trade-offs between inventory, customer service and change-over costs.
Built easy-to-use web pages to display customer needs and inventory positions using existing data in their Enterprise Resource Planning (ERP) system.
Integrated these pull methods into their monthly sales and operations planning (S&OP) process.

ACADEMIA - (THREE 15-MINUTE SESSIONS) | TRACK: LEAN SIX SIGMA MANUFACTURING
SESSION 1
Six sigma-based Research Framework for Biomechanical Evaluation of Human Performance in Construction-related Jobs
Pradip Kumar Ray, professor and Ratri Parida, research scholar, Indian Institute of Technology (IIT) - Kharagpur | #20 (All)
For different types of construction-related jobs involving manual material handling, biomechanical evaluation of work postures is essential for identifying preventive measures resulting in improved human performance. As a direct consequence of such an evaluation, ergonomic design of work systems gets improved with significant control of MSDs among the workers in the long run. In this context, a systematic and generic approach for constantly monitoring the force magnitudes at different body links and joints through biomechanical modeling of ‘human-job interaction,’ as per the Six Sigma concept-based improvement framework, may be considered to be very useful from both research and implementation perspectives. In this paper, such a Six Sigma-based approach for improvement of biomechanical performance related to construction-based jobs involving shoveling, welding, and grinding of steel shafts is proposed. The proposed approach has been validated with the data collected from several work situations at construction sites of a large manufacturing firm in India.

SESSION 2
Overcoming DoD Waste through Lean Sigma
Kaleigh Hatfield, continuous improvement lead, Aerospace Testing Alliance | #43 (B)
Lean Sigma has been used at Arnold Air Force Base to eliminate various types of wastes. Some examples include: an operator analysis that minimized the number of operators it took to run a plant; preventive maintenance optimization that eliminated non-value added maintenance tasks; and overall Lean efforts focused on eliminating waste in service-related processes, such as travel and meetings. Our continuous improvement group used a variety of Lean Sigma tools to eliminate the previously stated wastes, such as the DMAIC process (with a twist), process mapping, and statistical analysis. In times of continually shrinking government budgets, Lean Sigma is one tool to continue to overcome waste.

SESSION 3
Towards a Waste Reduction Pre-Screening Tool in a Lean Level 1 Industry
Mario El Khoury, research assistant, Eddy Fares, research assistant, and Ramy Harik, Ph.D., Lebanese American University | #46 (All)
Modern definitions state lean as a comprehensive set of techniques that works on identifying and eliminating the seven wastes. This system works on transforming the company into a leaner organization, more flexible and more responsive. However, lean is rarely applied in industries across Lebanon and in the Middle East region. Information about lean, assessments, and improvement tools are hardly accessible, and experts are hard to acquire. In consequence, local industries have additional tendency to go towards ISO 9001 certifications that are common and easily attained. The proposed study is an effort to enhance the overall regional industrial sector. The main advancement is the generation of a custom made waste reduction pre-screening tool for Lean Level 1 industries. This particular tool will serve as a base to commence manufacturing using lean techniques in a non-lean culture. The case study will be based on a particular Mediterranean industry: Extra Virgin Olive Oil.

---

INDUSTRY | TRACK: LEAN SIX SIGMA HEALTHCARE
Inculcating Adaptive Behavior Patterns in Complex Organizational Systems
Conrad Soltero, field engineer, University of Texas at El Paso | #50 (Advance)
From a systems engineering perspective, departmental alignment within the organization has always been a vexing challenge. At a more granular fractal, the individual behaviors of managers and value-adders alike drive the organization’s ability to adapt to changing conditions. A comprehensive systems’ engineering approach to improvement is applied to organizational processes using engineering solutions while simultaneously instilling adaptive behavior patterns within its workforce.
This applied systems research has been conducted in the most complex of healthcare environments. The healthcare system studied is publicly funded and charged with providing healthcare services to a large population of unfunded and uninsured patients. Additionally, the physician workforce is primarily made up of medical school faculty and residents. This research will demonstrate how adaptive behavior patterns are developed for the implementation of engineering solutions.
The purpose of the Special K cereal defect reduction case study was to eliminate defects in the extrusion and dryer unit of operation of the cereal making process. Evaluation of the process determined an annualized savings of $806,262 could be realized through improving the process sigma level from 2.89 to 3.19. The implemented final solution to the root cause yielded a process sigma level of 3.20, and an annualized savings of $827,078. The case study features the following Six Sigma tools: regression analysis, hypothesis testing, time series analysis, process mapping, pareto analysis, baseline sigma level and improved sigma level.

Lean Principles and Six Sigma Methodology Applied to Industrial Maintenance
Paul Casto, value implementation, Meridium Inc. | #66 (I)

Today’s business environment continues to drive manufacturers to create value by improving efficiency, driving waste out of the system and lowering costs. Companies are looking at all aspects of the manufacturing process for potential value. One function that is often overlooked is maintenance. In heavy industrial manufacturing maintenance may account for 10 to 25 percent of the operating budgets and improvements in performance of this function can create significant economic value. Two methodologies that can be applied in maintenance to create value are Six Sigma and the principles of lean manufacturing. This paper will look at the application of these methodologies to industrial maintenance, look at examples of how they are used, examine how economic value is created through maintenance and discuss typical results that have be realized applying these methodologies to maintenance.

Improve Your Personal Productivity to Improve Customer Satisfaction
Don Goldacker, Industrial Engineer, The Boeing Co. | #4 (I)

Lean education can teach employees how to identify and eliminate waste in processes, products, and services they provide to their customers. Lean experience can engrain in us, how to use Lean tools and methods to implement those process improvements. Those improvements that make our customers excited and devoted to our products and services, and help make your company a solid cultural environment for continuous improvement.

There are seven skills that help make people lean. In this presentation, we will define and discuss these skills, and the reasons why they are necessary to help develop a Lean culture for your organization. Attendees will leave with a clearer understanding of why they must help develop a lean culture within their organization, and why each and every employee must develop lean skills to become adaptive, collaborative, and innovative within that new culture.

Merging Lean, Six-Sigma, TOC into a Robust Improvement Process for the High Mix Low Volume Assembly Lines
Yoni Arrieta, production manager, Dyplast Products | #12 (All)

Improving the competitiveness of manufacturing systems has been discussed since the time of the moving line pioneered by Henry Ford. Since then diverse philosophies have emerged in an attempt to improve the performance of manufacturing systems. JIT or lean manufacturing, Theory of Constraints, quick response manufacturing, total quality management or Six Sigma, and agile manufacturing among others. It is well know that the principles used to manage traditional organizations emerged in the era of mass production, standard products and stable demand. Current economics conditions have forced companies to move to the other extreme; offering high variety of low volumes products in dynamic markets. In the last 40 years many companies have attempted to implement one of the aforementioned philosophies with very few successes or in extreme cases failure. The reality is that manufacturing environments are complex systems that have to be studied carefully before trying to improve it. Aiming at improving a system with partial knowledge or with pre-conceived knowledge can be disastrous now as well as in the future. The latest development in supply chain management and operation management presents us with new insights that have not been explored before. One of those insights is merging the best of Theory of Constraints, lean manufacturing, industrial engineering and Six Sigma into a robust improvement process. This presentation describes the integration of different improvements philosophies into one synergistic approach to reduce manufacturing lead-time, space utilization, raw material consumption and work in process in assembly lines. The end result of the implementation is the design of a novel manufacturing cell that enhances the principles of manufacturing system design.
Case Study: Lean and Six Sigma Tools in Managed Care
Brandon Deihl, HealthSpring of Alabama | #38 (B)

The purpose of this case study is to show an application of Lean and Six Sigma methodologies in the prior authorization department of a coordinated care health plan. By leveraging the knowledge of the front line employees as well as applying Lean thinking, areas for improvement were easily identified. This company had no prior experience with Lean or Six Sigma, so by using basic industrial engineering tools, key metrics were improved by over 50 percent in just nine weeks.

Wednesday, September 14 | 4 p.m. – 4:45 p.m.

Using Lean Six Sigma to Enable the Transformation of Upstream Workflows
Bradley Stump, Lean Sigma Advisor, Chevron | #7 (I)

Chevron has been using Lean Six Sigma to improve its Upstream Oil & Gas processes for more than a decade. We’re now taking the next step, integrating Lean Six Sigma into our Upstream Workflow Transformation (UWT) group. UWT is a new program with a vision to integrate people, processes, technology and information to make high quality analysis and decisions that will transform our key upstream processes and assets. UWT’s goal is to fundamentally change how we work and interact, access and use data, and conduct routine workflows. This is an exciting venture into using Design for Lean Six Sigma in the Oil & Gas industry.

Development and Implementation of Standard Process for Manufacturing Scrap Reduction
Hafiz Eisa, product applications leader, Missouri S&T University | #39 (I)

Cummins Fuel Systems Manufacturing Scrap Reduction: Plant-wide effort to reduce scrap by 50 percent in three to four months! This is a high profile effort that requires orchestrating two Black Belt umbrella projects and 12 Green Belt projects to ensure coordination and common tool usage. This was the number one priority of business unit leadership in 2009. The team was meeting weekly for updates on action items. Scrap reduction accomplished through the coordinated approach that consist of the following elements: Gap assessment, steering committee/leadership engagement, organization /subproject teams, measurement improvement, awareness and deployment of scrap status at-a-glance reports card “dashboard” for plant leadership.

Guerrilla Transformation - Change an Insurgency into a Movement
Joseph F. Paris Jr., chairman, XONITEK Consulting Group Int’l LLC | #84 (All)

Each of us belongs to a community, or network. And the individual members of a network have a shared commitment and affinity to the kernel and, as such, will behave in a predictable manner since there is nothing to gain by any individual changing their participation unilaterally. In reality, to disturb the predictability never even crosses the mind of the members.

In essence, a Nash Equilibrium exists – named after John Forbes Nash, who proposed it. A Nash Equilibrium basically states that each member of a network is supposed to know the natural objectives of the other members of the community, and no member is able to gain by deviating from a predicted behavior on their own. If all the members of a network share these common beliefs and no member of the network can gain an advantage by changing their behavior while the other members continue on as they always have, then the existing state perpetuates and constitutes a Nash Equilibrium.

As such, the equilibrium that exists in a community will not be disrupted by a threat originating from within the community – but rather a disruption that is introduced to the community from the outside. Some examples of such a disruptor might include; a merger, change in the “C-Suite”, a surprise competitor, the loss of a key customer, and a near global economic melt-down. When such an external disruptor is introduced, the resultant transformational change that occurs in an organization happens nearly lightning-fast.

So how can an internal disruptor be engineered and deployed in a controlled manner so that transformational change can occur when YOU want it to occur? Applying Game Theory and the Nash Equilibrium, this session will investigate the circumstances under which change takes place – and when it does not. And finally, we will discuss the creation of an effective disruptor and how it can be deployed in a controlled and sustainable fashion.
Register online and save time

www.iienet.org/LeanSixSigma

Team Discount
• Teams of two to four people will be eligible to deduct $50 off each conference registration fee.
• Teams of five or more can deduct $100 off each registration fee.
• Team members must be from the same company.
• Team registrations can be made online or submitted by fax or postal service mail using the conference registration form and must be received together.
• Team discounts will not apply to the student rate.

Student Registration
IIE student members will be able to register online using their member IDs.

Not a member?
Visit the IIE web site and join now to save on conference registration fees and enjoy additional member benefits and savings immediately.

Or, as a non-member, fax in registration form accompanied by documentation showing full-time student status. A copy of your student ID will not be accepted. Fax: (770) 441-3295

Registration cut-off date is September 5, 2011.