IBM Lean Six Sigma Training:
Delivering Blended Learning across a Global Enterprise

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- Founded in 2000
- Trained 435,000+ Lean Six Sigma professionals
- Served over 2,000 corporate customers (including 50+% of the F500)
- First firm to offer the complete Black Belt curriculum online
- Courses reviewed and approved by ASQ and PMI
- Academic Partnerships with Ohio State University, Cal Poly and George Washington University

Select Customers:
Today’s Program

• Welcome
• Introduction of MBB Webcast Series
  − Ellen Milnes, MoreSteam.com
• IBM Panelists:
  − Michael Testani, Don Sobeski, Luca Bencini
• Open Discussion and Questions
About Our Panelists

Michael Testani is a Business Transformation and Learning Consultant for IBM's Corporate Learning organization. He is the Program Manager for IBM's Global Process Excellence learning initiatives and the Course Manager of their Lean Six Sigma Black Belt worldwide learning offering.

Don Sobeski is a Business Transformation and Learning Consultant for IBM's Corporate Learning organization. He is the Course Manager for IBM's Lean Six Sigma Green Belt worldwide learning offering.

Luca Bencini recently retired from IBM where he was a Senior Managing Consultant and is currently delivering IBM's virtual Black Belt course.
Presentation Outline

- Background on IBM
- LSS history within IBM
- LSS course structure and evolution
- Training philosophy, principles and practices
- Current course structure: a Global Blended Learning approach
- Adaptation of the MoreSteam Sigma Brew case study in a virtual environment
- Blended Learning Benefits & Lessons Learned
International Business Machines

“More than a century of making the world a smarter place”

- An American **multinational technology** and **consulting corporation**, with headquarters in Armonk, New York, United States.

- The company was founded in 1911 as the Computing Tabulating Recording Company (CTR) through a merger of three companies: the Tabulating Machine Company, the International Time Recording Company, and the Computing Scale Company. CTR adopted the name International Business Machines in 1924.

- IBM manufactures and markets computer hardware and software, and offers infrastructure, cloud hosting and consulting services in areas ranging from mainframe computers to nanotechnology.

- 2013 year-end worldwide operations:
  - Revenue: $99.7 billion
  - Net income: $16.4 billion
  - Total assets: $126.2 billion
  - Number of employees: 431,212 working in 170 countries
100 years of IBM transformation and evolution
IBM Notables

- In 2012, Fortune Magazine ranked IBM the **No. 2 largest U.S. firm** in terms of number of employees (435,000 worldwide), the No. 4 largest in terms of market capitalization, the No. 9 most profitable, and the No. 19 largest firm in terms of revenue.

- IBM has 12 research laboratories worldwide and, as of 2013, has held the record for **most patents** generated by a company for 20 consecutive years.

- Its employees have garnered 5 **Nobel Prizes**, 6 Turing Awards, 10 National Medals of Technology, and 5 National Medals of Science.

- Notable inventions by IBM include the automated teller machine (ATM), the floppy disk, the hard disk drive, the magnetic stripe card, the relational database, the Universal Product Code (UPC), Fortran programming language and structured query language (SQL), SABRE airline reservation system, Dynamic Random Access Memory (DRAM), and Watson artificial intelligence.

IBM is known as a leader in **technology** and **innovation**. About 10 years ago, IBM began a concerted effort at achieving ‘Process Excellence’.
IBM Process Excellence History

The quality philosophy was part of IBM from early days.

- IBM Rochester, AS/400 Division won Malcolm Baldrige National Quality Award in 1990.

- In 1992 IBM was invited to participate in the Six Sigma Institute by Motorola to further develop the Six Sigma approach to problem solving
  
  - IBM launched Six Sigma as a Market Driven Quality Initiative with the key theme, “The customer is the final arbiter”.

- In October of 2002, IBM acquired PwC Consulting that included the largest Lean Six Sigma Consultancy group and obtained significant capability to offer DMAIC, DFSS and Lean Six Sigma consulting through our Global Business Services.


- IBM adopted Lean Development techniques through application of AGILE to software development.

- More recent effort on Lean Six Sigma (LSS) initiated as part of our overall Business Transformation effort from the CIO office with the establishment of a centralized Program Management Office (PMO) in 2006.

In the words of T. J. Watson, Sr., IBM Founder, “I want to thank the factory workers for the constant improvement in the quality of our products. That means much to the salesmen. It saves them time for our service force. When our machines work perfectly at all times our customers are always satisfied, and a satisfied customer is our most valuable advertisement.”
IBM Business Challenges early 2000’s

- Business Units are using a **variety of approaches** to process and quality improvement
- Business Units are using a variety of **learning programs**
- The **level of engagement** in process and quality improvement efforts vary across Business Units
- Shifting to a process focus requires a **cultural shift** for a technology company
- Need to make **process improvement** part of the IBM culture (DNA)…
- Education is **not always available** when needed and needs to be specialized by job role

**For IBM to remain competitive in the marketplace, the learning we provide our employees must be targeted to skill sets that identify operational efficiencies and drive quality improvement.**
The Value of Process Excellence to IBM

The strategic intent of IBM’s Process Excellence program is to:

- Enable IBM to become an **efficient and effective** globally integrated enterprise by identifying and improving core business processes

- Provide IBM with proven methodologies to take out **waste**, improve the **effectiveness** of core processes, and intelligently **design** new processes where there are none

- Provide a full-time **corporate program staff** to support Lean Six Sigma deployment across the global IBM enterprise

- Transfer Lean Six Sigma skills to IBM’s business areas **around the world**

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*A global **LSS skills enablement** effort provided significant challenges to the IBM Talent organization to design a **learning program** that is **effective, affordable** and **broadly available** to all IBMers*
Lean Six Sigma evolution to new course structure

IBM’s Lean Six Sigma education was originally delivered as ‘traditional’ face-to-face classroom: Green Belt (one week) and Black Belt (four weeks over 4 months) that transitioned to a blended learning approach

Driving Forces for changing the face-to-face model

➢ Education not always available when needed
   ❖ Training was U.S. centric
   ❖ Growing global demand
   ❖ Insufficient classes being scheduled
   ❖ Lack of BB/MBB facilitators to meet classroom demand

➢ Classroom training provided a good foundation, but…
   ❖ Too much time away from work
   ❖ Increased travel expense to meet global demand
   ❖ Limited ability to practice & apply the skills learned
The Lean Six Sigma Education Program follows the Bloom Taxonomy... cognitive, affective, and psychomotor

- **Master Black Belt (Thought Leader)**
  - Expert resource supporting executives
  - Drive major strategic projects
  - Coaches Black Belts and provides guidance to executives
  - Typically a Full-time role

- **Black Belt (Expert)**
  - Focused on 1 to 2 cross-functional projects
  - Responsible for project success and sustainability of improvements
  - Expertise in statistics and change management
  - Typically a Full-time role

- **Green Belt (Experienced)**
  - Focused on 1 project within their organization or expertise
  - Contributes to project success and sustainability of improvements
  - Department champions
  - Normally work on Lean Six Sigma projects part-time

- **Yellow Belt (Foundational)**
  - Support the project team with specific assignments
  - Understands the basic LSS principles and a few fundamental techniques
  - Normally work on projects part-time
LSS Learning Model

The Lean Six Sigma Black Belt course builds upon foundational knowledge

LSS Example

- **EngineRoom**
  Software/analytics

- **Control Charts**
  Selection and Interpretation

- **Actions To Take**
  Stable / Unstable Process

- **Variation**
  Common Vs Special Cause

A Learning Progression

- **Visualization**
  (SigmaBrew, EngineRoom)

- **Tools**
  (SigmaBrew, EngineRoom, Coaching)

- **Interpretation / Understanding / Applicability**
  (LVC’s, MoreSteam SigmaBrew, Coaching)

- **Foundational Knowledge**
  LVC’S, MoreSteam eLearning
Current course structure: A Global Blended Learning Approach

- **Live Virtual Class**: 2 hr sessions, meet once a week as a class, introduce key learning points, Q&A with instructor. LVC PDF files are available prior to class.
- **eLearning Assignments (individual)**: MoreSteam eLearning, 12 modules to be completed by student, Main LSS content.
- **Team Assignments (teamwork)**: 3 students per team, MoreSteam’s SigmaBrew case study and student teachbacks, MoreSteam’s EngineRoom.
- **Coaching Sessions**: 1 hr sessions, meet once a week, review case study exercises / teachbacks, reinforce key learning points, Q&A with instructor.

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**Lean Six Sigma Black Belt Class & Assignment Schedule**

<table>
<thead>
<tr>
<th>Week of</th>
<th>LVC</th>
<th>Topic</th>
<th>MoreSteam Reading (due)</th>
<th>Coaching Starts (due)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Aug</td>
<td>1</td>
<td>Course Introduction</td>
<td>N/A</td>
<td>Approach to coaching and address questions on course</td>
</tr>
<tr>
<td>18-Aug</td>
<td>3</td>
<td>Basic Statistics / Probability</td>
<td>Session 2: Introduction II- Lean Sigma Background (8.3)</td>
<td>Team Charter / Teachbacks</td>
</tr>
<tr>
<td>25-Aug</td>
<td>4</td>
<td>Introduction to Engine Room / SigmaBrew</td>
<td>No eLearning Due</td>
<td>Discuss Fundamentals / Teachbacks</td>
</tr>
<tr>
<td>1-Sep</td>
<td>Break</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-Sep</td>
<td>5</td>
<td>Define I</td>
<td>Session 3: Introduction III-Measurement and Basic Statistics (5.75)</td>
<td>Homework Basic stats, Teachbacks</td>
</tr>
<tr>
<td>15-Sep</td>
<td>6</td>
<td>Define II</td>
<td>Session 4: Define I- Voice of Customer (6.55)</td>
<td>Homework Engine Room / SigmaBrew - Discussion</td>
</tr>
<tr>
<td>22-Sep</td>
<td>7</td>
<td>Measure I</td>
<td>Session 5: Define II- Mapping the Process (6.25)</td>
<td>Define Concepts and Teachbacks</td>
</tr>
</tbody>
</table>
The virtual class component is delivered via Blackboard Collaborate

The Blackboard environment allows for a synchronous environment where all students are logged on at the same time and use Voice over IP (VoIP) to simplify class recordings and requiring only one connection to the virtual classroom.

The virtual class is still a very collaborative environment where ideas, knowledge, and work are shared.

Q&A and Quizzes help reinforce key learning points.
MoreSteam’s eLearning

- Main Lean Six Sigma Black Belt course content
- 12 online eLearning Sessions to be completed independently by each student
Case Study Teams use MoreSteam’s SigmaBrew Case Study

This SigmaSim® simulated project experience introduces students to a company called SigmaBrew - a large national chain of specialty coffee shops. SigmaBrew has experienced explosive expansion over the previous decade, and is starting to encounter increasingly troublesome growing pains, including operational problems that impact customer satisfaction. Meanwhile, the competitive environment has also become increasingly difficult, with new and sophisticated competitors on all fronts.

Teams of 3 students (meet with 2 case study teams = 1 coaching team)

➤ Ability to practice what you learned online and in class.
➤ Work in teams like an actual project.
➤ Build deliverables like those of an actual project between the virtual classes.
Coaching Teams

- Attendance to the coaching sessions is mandatory.
- Case study assignments and student teach backs.
- Each team shares/discusses their case study assignment deliverables with the instructor during their assigned weekly 1 hour coaching session.
- Through rotation during the course of weekly coaching sessions, each team member to lead case study discussion with instructor at least once.

Teach backs are a practice where the instructor asks the students to explain a concept or topic from the session. It allows the instructor to gauge the student’s understanding of that material.

LSS BB Teach back example:
- Graphical vs statistical techniques
- Type 1 and Type 2 errors
- Practical vs statistical significance
- Confidence intervals
- Cause & Effect diagram
- Linear Regression

Students who are able to Teach Back are more likely to retain information because they must truly understand the material in order to teach it to someone else.
Benefits of Blended Virtual Learning Approach

- Delivers cost efficient and replicable education to a global diversified audience.
- Leverages collaboration technologies (e.g. Blackboard Collaborate) that bring people together virtually with experts and peers for effective learning.
- Maximizes the reach of coaches and experts (MBBs/BBs) without the expense and loss of productivity associated with travel.
- Maximizes the effectiveness of facilitator-led when the objectives are aimed at developing higher level knowledge and decision-making skills that typically involve case studies, role playing, and mentoring and coaching with experts.
- Encourages collaboration among participants to share lessons learned, promote enthusiasm and provide a network for the future.
IBM Lessons Learned

➢ Technology is required to make blended learning effective
  ▶ Virtual Classroom (BlackBoard)
  ▶ Class and Team Repository (Activities)
  ▶ Web screen/documents sharing (Coaching sessions)
  ▶ Analytical Software (Engine Room)
  ▶ Reliable internet connectivity

➢ Scheduling challenges with global audience
  ▶ Multiple LVC offered to accommodate as WW audience /time zones
  ▶ Case Study teams assign by ‘similar’ time

➢ Always be mindful of class logistics (integrating all components of the class)
  ▶ Combining synchronous and asynchronous activities (teams, classes and eLearning)

➢ Factors critical for our blended learning success
  ▶ Active learning and participation is key to a student’s success
  ▶ Guidelines for successful course completion (multi-dimensional)
  ▶ Instructor with deep LSS subject matter expertise and virtual learning facilitation
  ▶ Coaching & Office hours available for one-on-one mentoring and guidance is key
Questions

Have you ever encountered ....

Would you explain more how you’ve approached ....

How have you handled ....

Michael Testani

Don Sobeski

Luca Bencini
Master Black Belt Program

• Offered in partnership with Fisher College of Business at The Ohio State University

• Employs a Blended Learning model with world-class instruction delivered in both the classroom and online

• Covers the MBB Body of Knowledge, topics ranging from advanced DOE to Leading Change to Finance for MBBs
Thank you for joining us

Questions? Comments about today’s program?

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