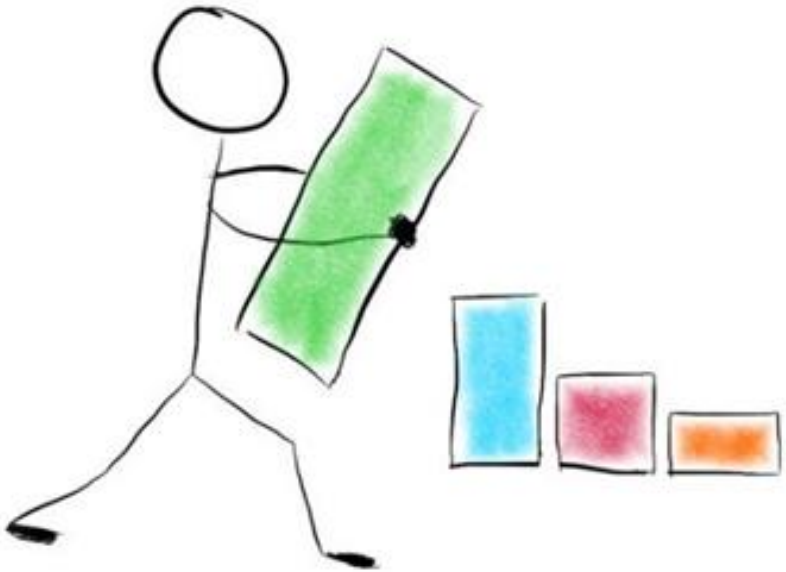
High Fidelity Customized Classroom Simulation at PPG



Jesse Shearin
PPG Industries
November 21, 2013

MoreSteam.com®

Agenda

- Welcome
- Introduction of MBB Webcast Series
  - Ellen Milnes, MoreSteam.com
- Today's Session
  - Jesse Shearin, PPG Industries
- Open Discussion and Questions

MoreSteam.com®

MoreSteam.com

- Founded in 2000
- Trained 400,000 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

Today's Presenter: Jesse Shearin

Jesse Shearin

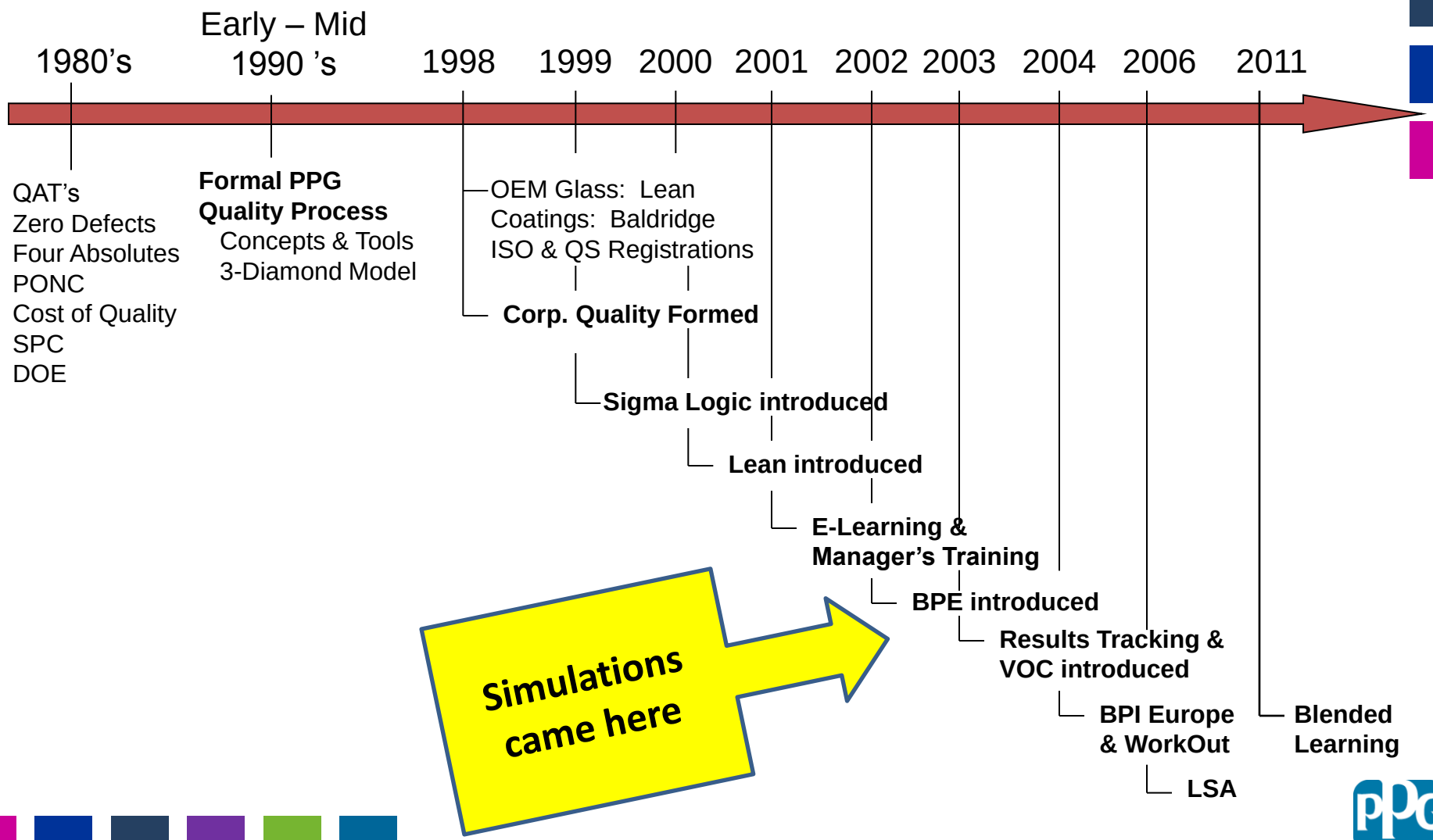
Director Corporate Enterprise Excellence

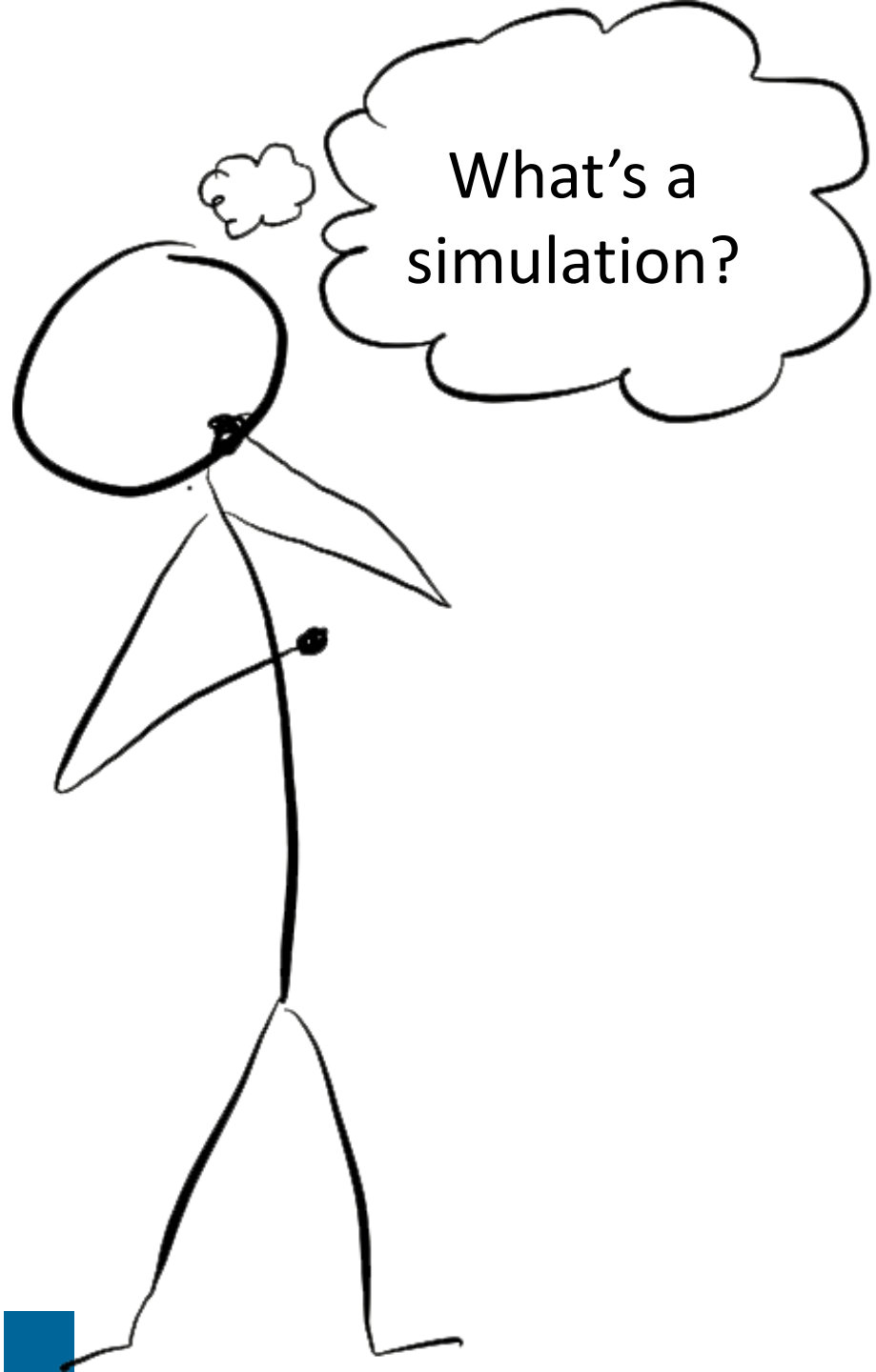
PPG Industries

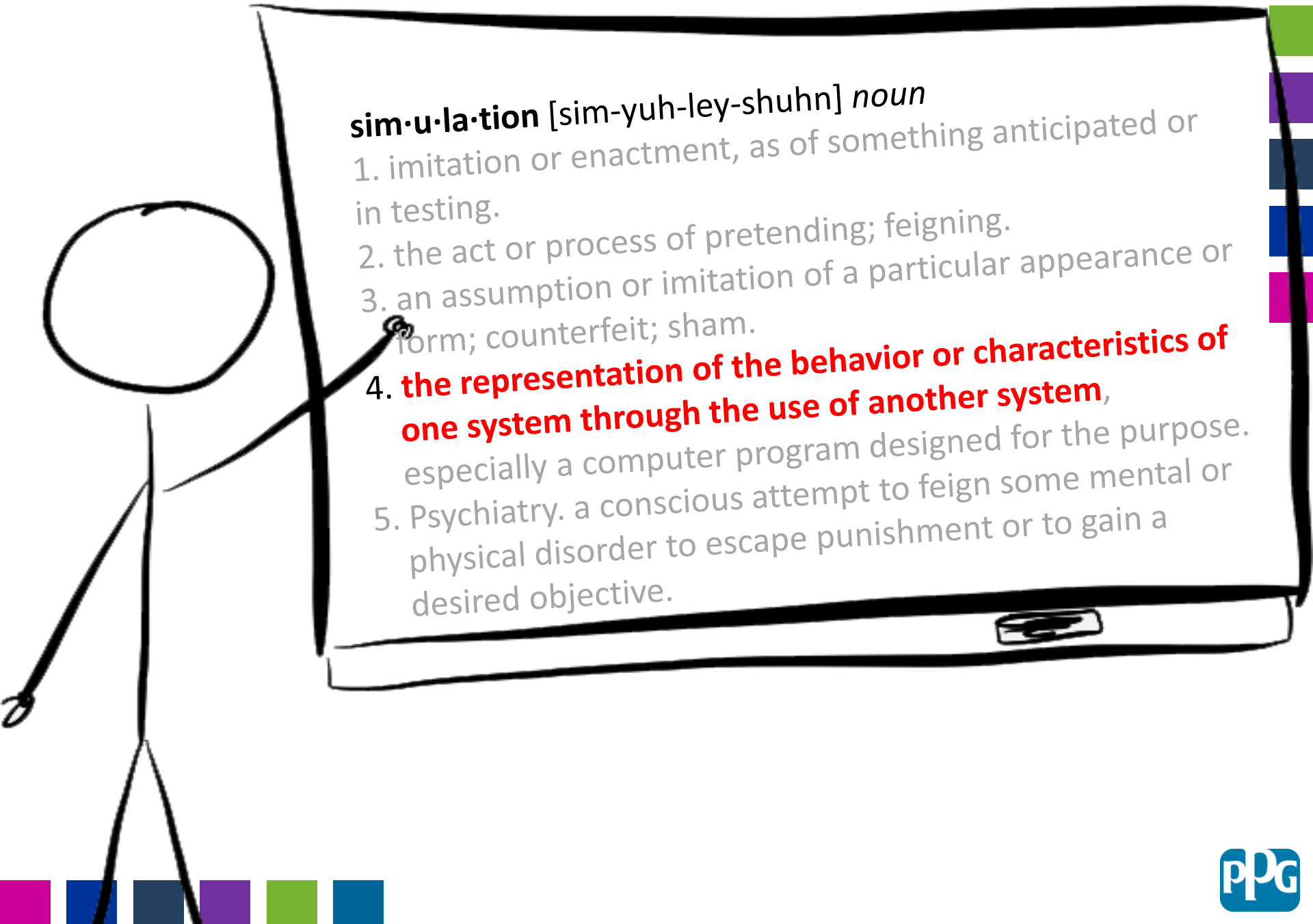
- *28 years experience in process & production engineering, production planning & scheduling, inventory/materials management, and quality management*
- *Adjunct faculty, University of Pittsburgh Katz School of Business*
- *CMQ/OE, CPIM, LSSBB*
- *BS in Chemical Engineering from Michigan State and MBA from DeVry University*

How did we get here?

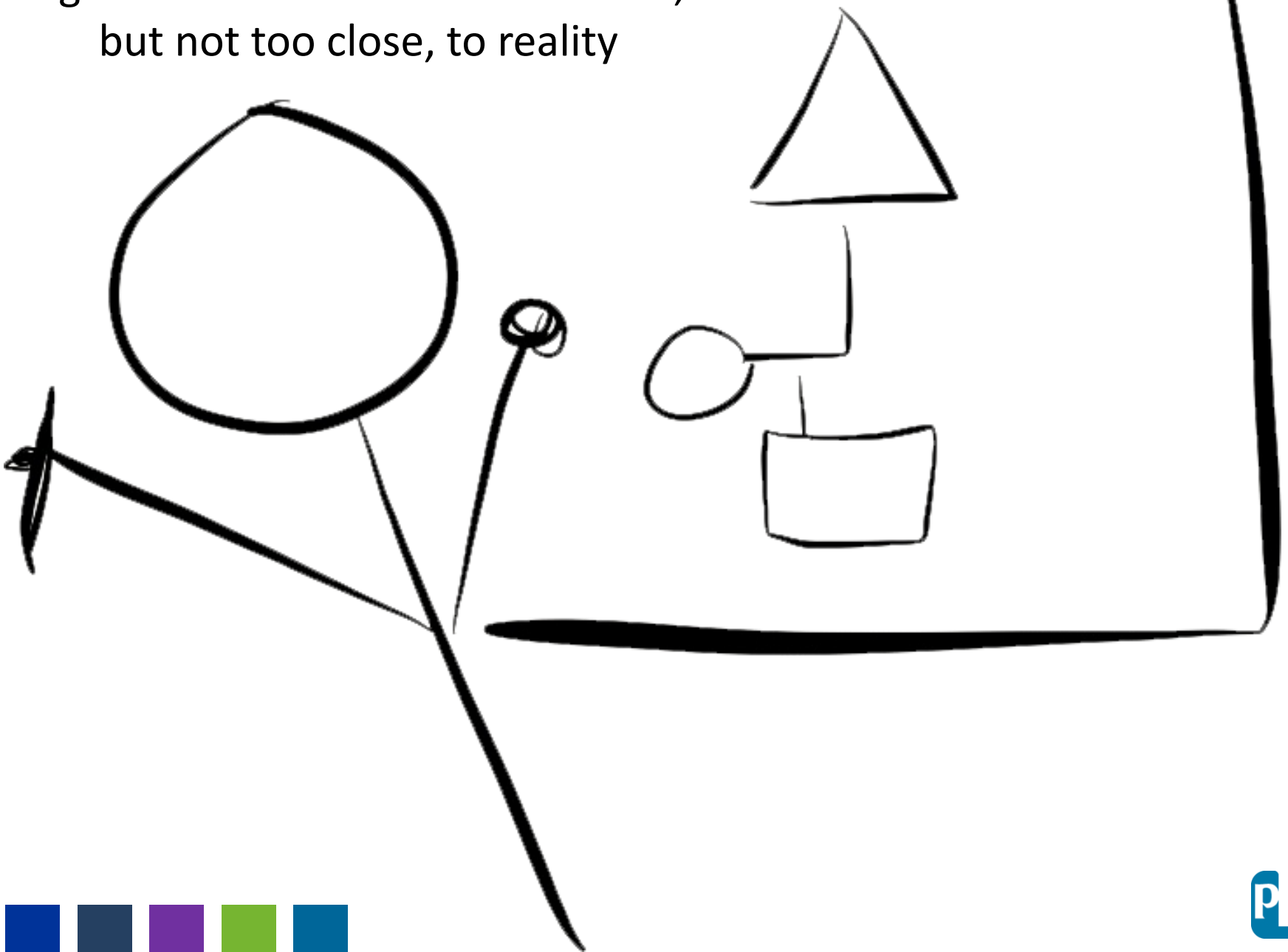
PPG Quality Process Timeline




What's a simulation?

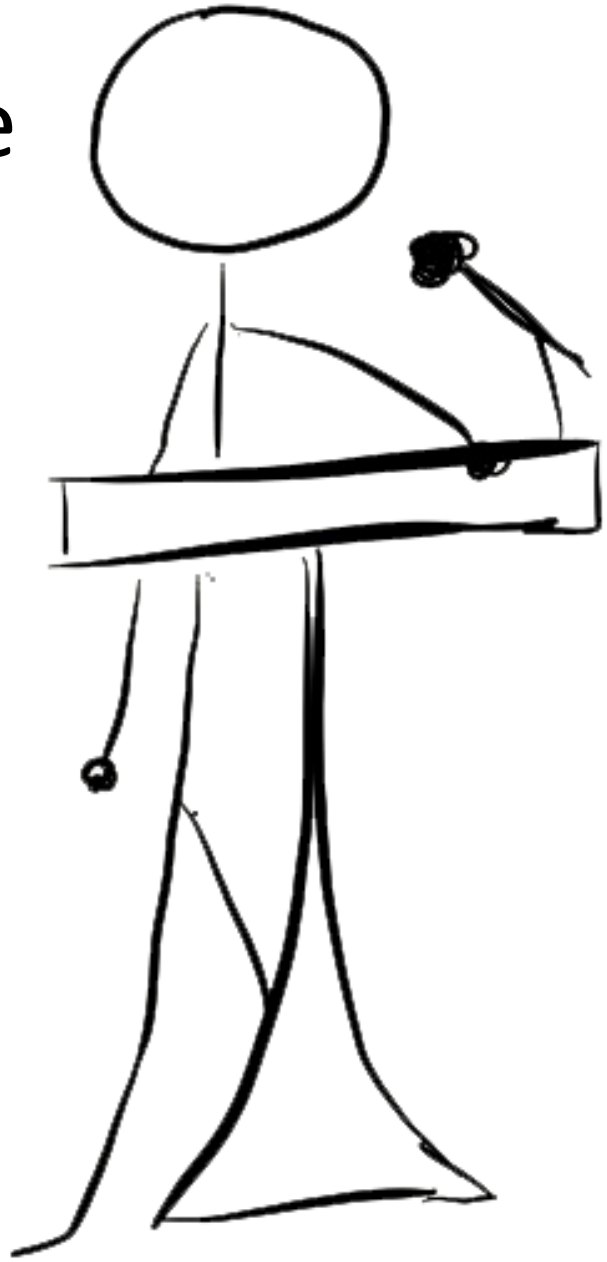

sim·u·la·tion [sim-yuh-ley-shuhn] *noun*
1. imitation or enactment, as of something anticipated or in testing.
2. the act or process of pretending; feigning.
3. an assumption or imitation of a particular appearance or form; counterfeit; sham.
4. **the representation of the behavior or characteristics of one system through the use of another system**, especially a computer program designed for the purpose.
5. Psychiatry. a conscious attempt to feign some mental or physical disorder to escape punishment or to gain a desired objective.

A good simulation should be close,
but not too close, to reality

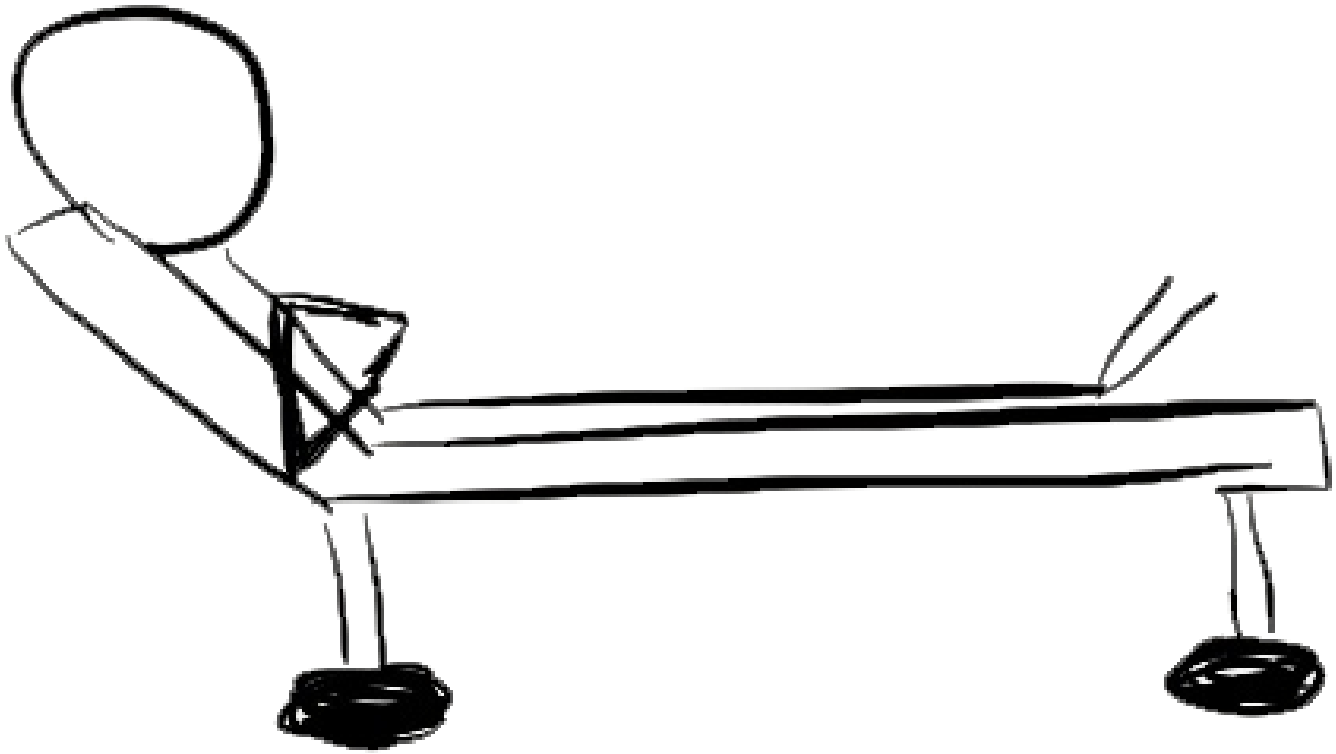


Simulation vs. Exercise

- A simulation is different from an exercise.
- An exercise demonstrates a principle, and perhaps how to use 1 or 2 tools. For example, many of us use paper airplanes to show push vs. pull. Or we use cookies or M&Ms to run an MSE exercise.
- A simulation is much more comprehensive. And much harder to develop!



The History of GPP…



Sim 1.0

- **GPP** (Greatest Paints Personalized), Black Belt level
  - Designed primarily for business processes in the transactional world, with an element of manufacturing included
  - Very similar to paint manufacture (blending, intermediates, liquids and colors, formulas, container labeling, MSDS, Bills of Lading)
  - Allowed the use of a lot of tools
  - BUT… very complex, very messy, not enough manufacturing to make a good VSM

Sim 2.0

- **Clip ‘n Ship**, Green Belt level
  - Geared primarily for the transactional world
  - Components similar to paint manufacture (colors, formulas, MSDS, BOL)
  - Allowed the use of a number of tools
  - BUT… too mechanical, not close enough to paint operations, not enough manufacturing to make a good manufacturing VSM

The World Famous Clup ®
from the Clip ‘n Ship simulation

- **GPP** (Greatest Putty Producers), Green Belt level
  - Works well for manufacturing, supply chain, transactional processes
  - Components similar to paint manufacture (mixing, intermediates, colors, formulas, MSDS, BOL)
  - Allows the use of almost the entire DMAIC lean six sigma green belt toolset

Greatest Putty Producers!

Introduction to GPP

Introduction to GPP

Session Objectives

- Create a link between the tools you will learn in this course and their application to your business project.
- Provide a low-risk environment to practice the tools and concepts from the course.

Critical Thinking creates better and broader thinking and solutions

Introduction to GPP

What Critical Thinking questions can we answer by simulating a business?

- How do all these tools fit together?
- How can I apply these tools to a business situation?
- Where can I practice using the tools?

Introduction to GPP

- GPP is a major manufacturer of putty triangles
- Current product offering is 15 SKUs
- Market share is 20%
- Average weekly sales approximately $25,000
- Work force of 15-20 depending on current market conditions (or class size)
- There are 13 existing customers, with the potential to add many more

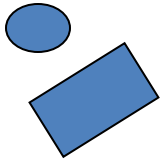
Introduction to GPP

- Simulation will run 10 days @ 5 min per day
- Measured on revenue
- Product is a putty triangle
- Silo Environment; you are not able or permitted to do someone else's job.
- If telephones fail or are busy you should use the "fax machine" to communicate between departments

Introduction to GPP

- Every job has a job description. You must follow the current procedures – no changes or improvements are permitted.
- On the job training will be completed for each role.
- As time permits during the simulation, look for the following:
  - Waste
  - Defects
  - Churn (inefficiencies)

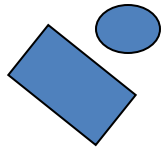
GPP Layout



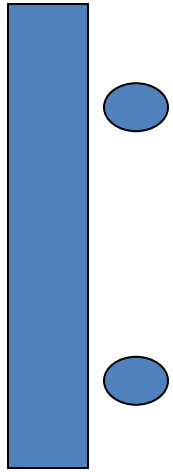
Customer (All)

Manufacturing #1

CSR #1

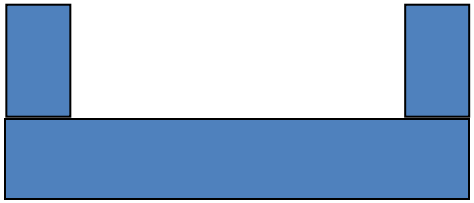


Finance

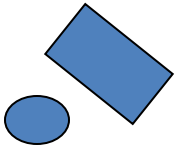


S&OP

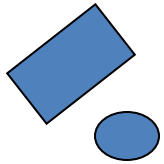
Manufacturing #2



CSR #2



Special Orders



Roles in GPP Simulation

1. Customer Service Representative #1
2. Customer Service Representative #2
3. Special Order Representative
4. S&OP -- Scheduler
5. S&OP -- Planner
6. S&OP -- Expeditor
7. Manufacturing 1 – Mixing
8. Manufacturing 1 – Mixing
9. Manufacturing 2 – PreAssembly
10. Manufacturing 2 – Mixing
11. Manufacturing 2 – Stamping
12. Manufacturing 2 – Quality Assurance
13. Manufacturing 2 – Shipping
14. Finance Credit Manager
15. Finance Accounts Receivable Supervisor
16. Finance Invoicing Specialist
17. Fax Machine/Fork Truck
18. General Manager

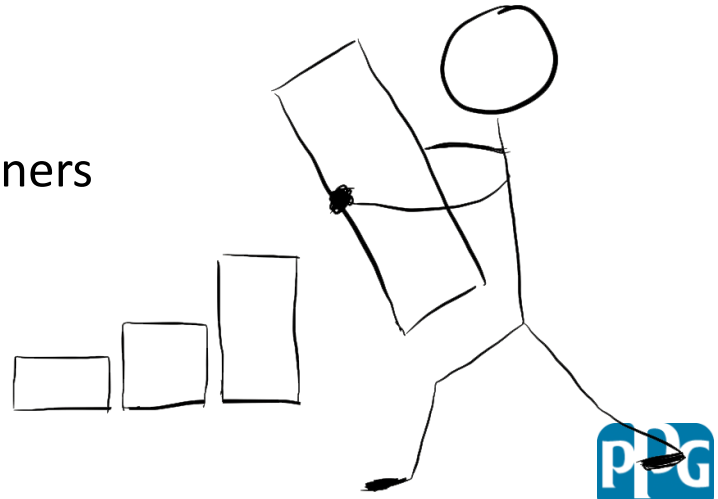
Note: exact roles will vary based on number of classroom participants

Video of GPP; the initial run

Video of GPP; the improved run

Tools that can be practiced in GPP

- Problem statement, SMART goal, business case, In/Out scope, SIPOC, metrics, Team dynamics
- Process Map, VSM manufacturing, VSM transactional, Spaghetti map, TAKT, Future state map, 7 wastes
- Pareto & bar charts, run charts, XmR charts
- ANOVA, Regression, MSE attribute & continuous
- Work Management Models (push/pull, MTO, MTS, ATO, kanban)
- Work cell design, visual management, standard work, error proofing, 5S, GO meetings
- Management presentation
- **EVERY tool** we teach in class, we have the learners apply to the GPP analysis and redesign.



Delivery considerations

- Two (2) instructors required
- Logistics, room set-up (e.g. tables, chairs, power cords) and availability (we run until 7 pm)
- Simulation set up time, break down time
- Materials requirements – consumables
- Materials requirements – permanent
- Shipping costs
- Minimum and maximum class size
- Cost to develop

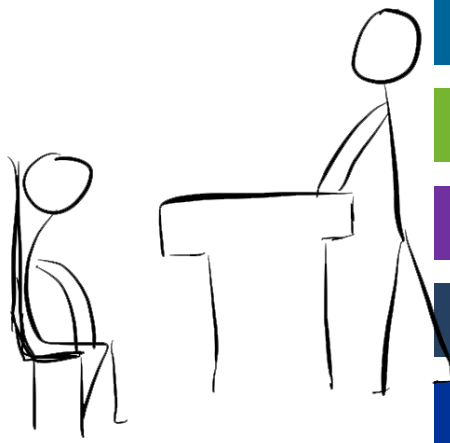
- GPP Instructor's manual and
  GPP example forms (PPG proprietary)

Simulation vs. Exercise vs. Games

- Exercises are necessary to help teach a tool or a specific application. They encourage focused critical thinking.
- A simulation allows the learner to put the whole thing together as a process
- A simulation allows broader critical thinking!

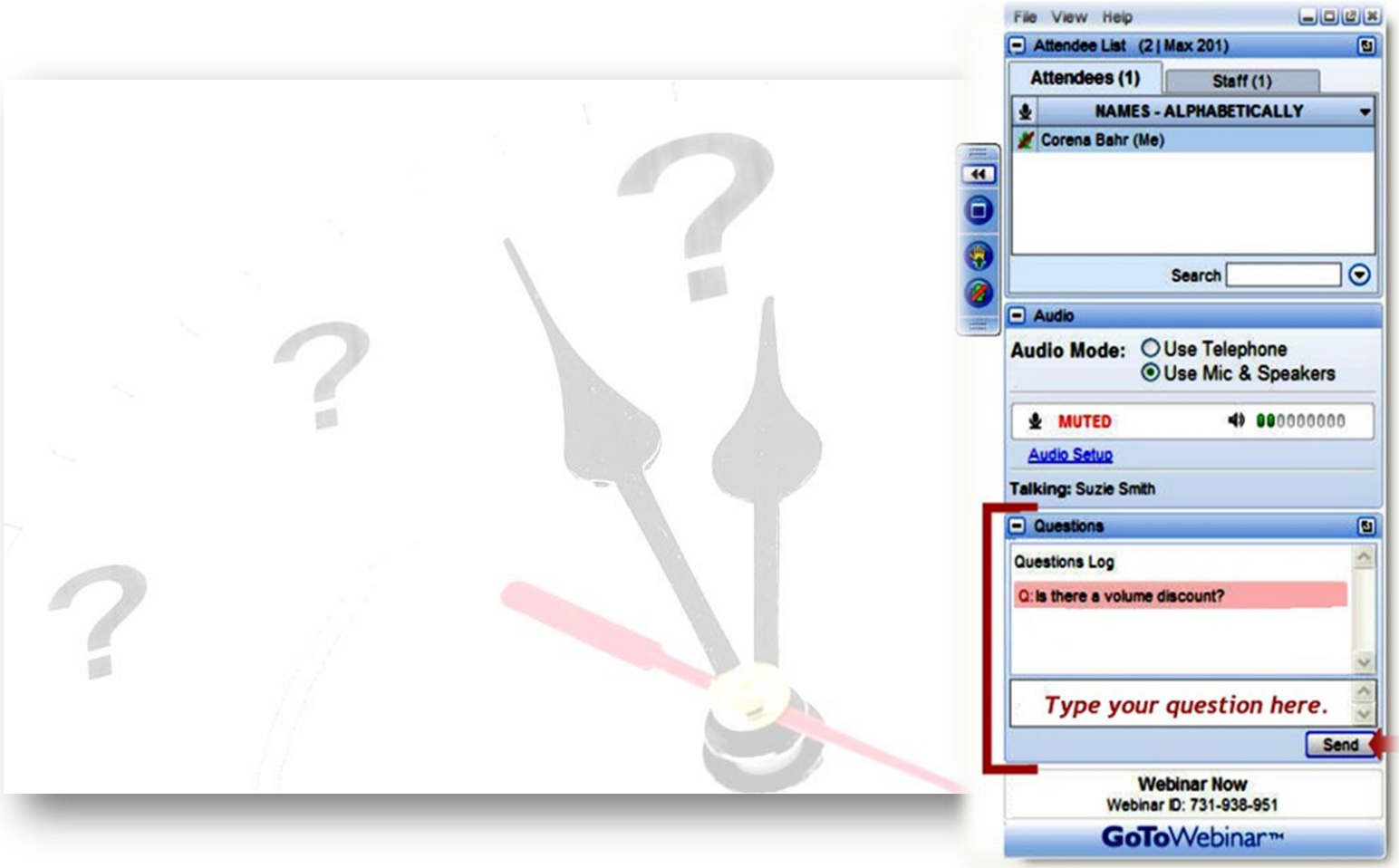
- Add rules and a “scoring” elements to create a game – GPP is definitely run as a competition!
- In a game the competition can be against a standard (we always give the record revenue) or against another team

Final Thoughts



- A simulation should be close to the real world so that learners can relate to the application of the methodologies.
  - BUT, don't try to duplicate the real world because the learners can't get past their normal paradigms
- A good simulation allows the learners to think, to determine which tools go where and why in the broader context. It allows them to try and to fail.
- It is HARD to get it right. It WILL be iterative. It IS worth it; it is what the learners will remember.

Questions



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?

Jesse Shearin, PPG Industries
jshearin@ppg.com

Ellen Milnes, MoreSteam.com
emilnes@moresteam.com

Archived presentations and other materials:
http://www.moresteam.com/presentations/