

***Lean Work Cell Design:
Taking the Lessons of Cellular
Manufacturing into Service Organizations***

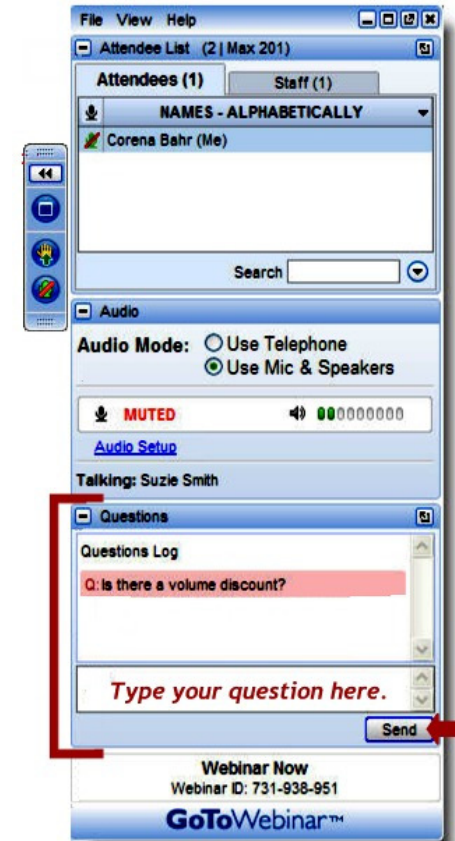
**Dr. Lars Maaseidvaag
MoreSteam.com**



Agenda



- Welcome
- Introduction of MBB Webcast Series
 - Ellen Milnes, MoreSteam.com
- Today's Session
 - Lars Maaseidvaag, MoreSteam.com
- Open Discussion and Questions



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

Select Customers:



Today's Presenter



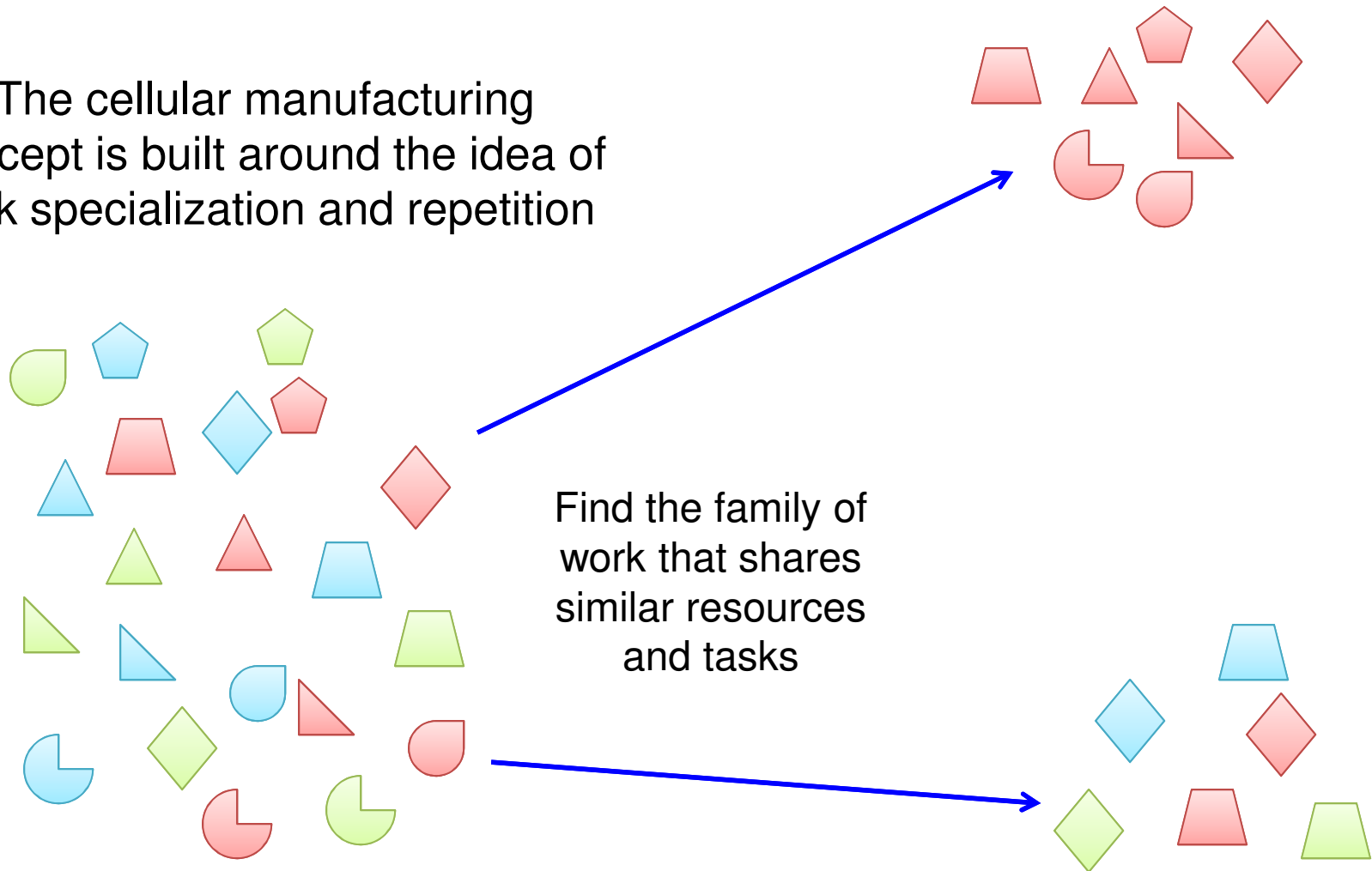
Lars Maaseidvaag

Senior Master Black Belt, MoreSteam.com

- *Leads Lean curriculum development; MBB instructor*
- *Previous Curriculum Director for Accenture/George Group*
- *PhD in Operations Research from the Illinois Institute of Technology; M.S. in Operations Research & Industrial Engineering as well as an MBA from The University of Texas in Austin*

It's All in the Family

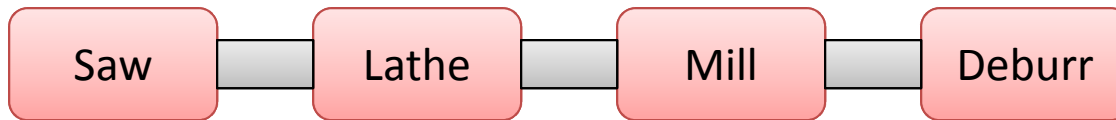
The cellular manufacturing concept is built around the idea of task specialization and repetition



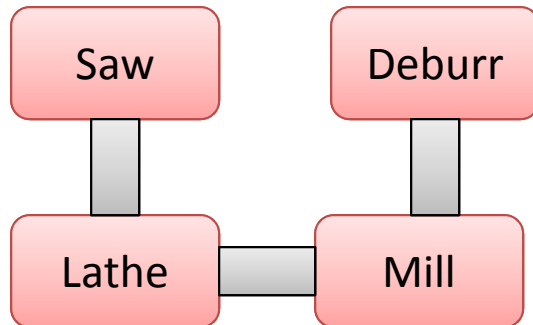
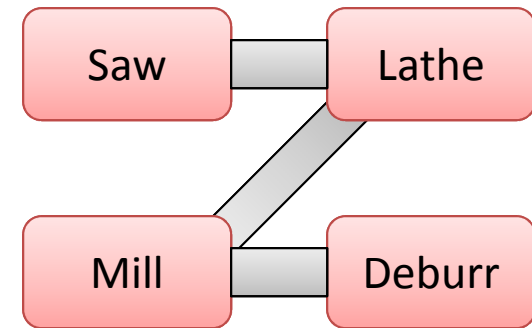
Manufacturing Routings

Part	Saw	Lathe	Mill	Deburr	In Family?
A	4	15	7	2	Yes
B	4	14	8	2	Yes
C	3	16	7	1	Yes
D	1	18	0	0	No
E	4	5	6	4	Unlikely
F	4	9	8	3	Possible
G	8	14	28	8	Unlikely
H	4	0	0	1	No
I	1	25	0	5	No

Cellular Layouts

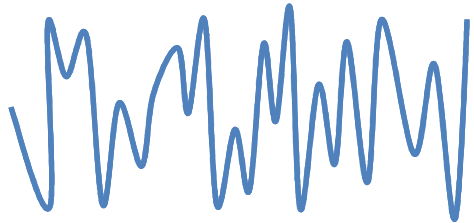


Cells come in many shapes and sizes, but they are all focused on eliminating TIMWOOD



- T – minimize the transportation distances
- I – minimize the work in process
- M – proper motions for workers
- W – minimize waiting
- O – eliminate over-production
- O – design out over-processing
- D – defects are identified quickly

High Task Variation in Service

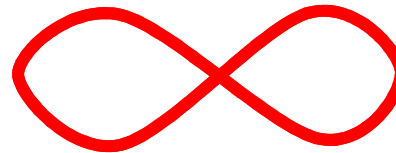


In many cases, service processes and tasks experience higher variation than manufacturing processes



Machine limitations are well known – a lathe can turn, and a grinder can grind

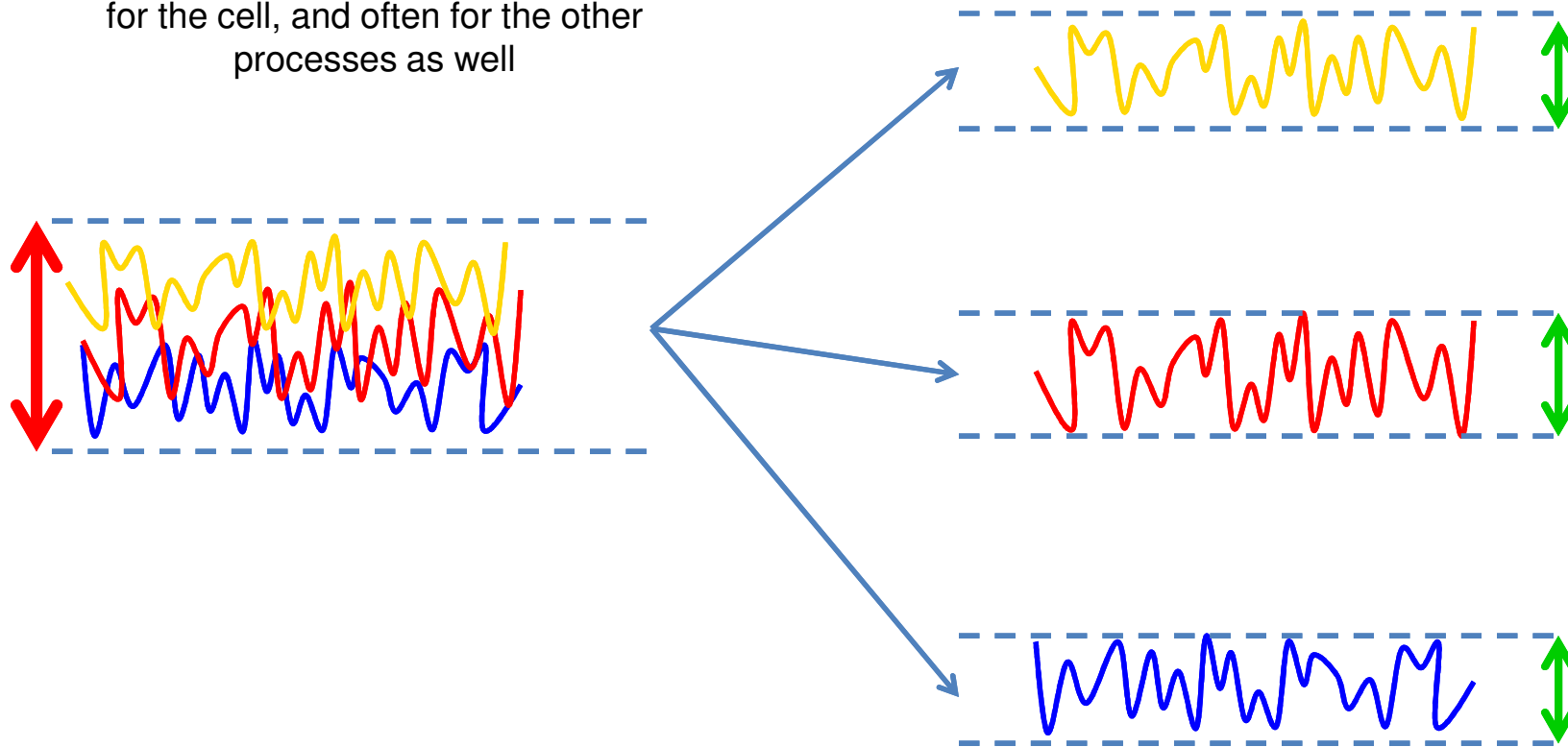
But our 'machines' in a service process, **our people**, are often assumed to have how much flexibility?



What are the likely, perhaps even inevitable results of high variation? Imbalance, queuing, low utilization periods mixed with periods of panic

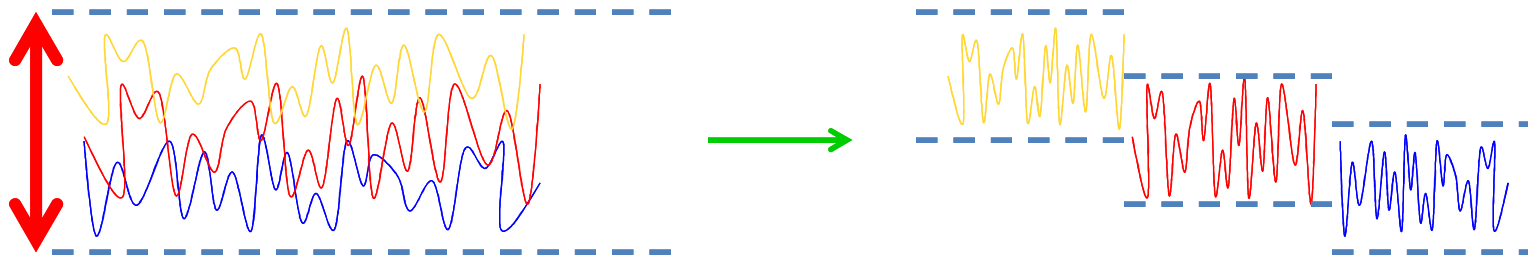
Cell Families Reduce Variation

The process of creating a family of work for a cell reduces the variation of work for the cell, and often for the other processes as well



Low Volume, High Variation

What are some options when you don't have enough volume to fill a dedicated cell?



In addition to all of the TIMWOOD sources of waste that cells help eliminate, perhaps the largest is the tremendous reduction or **complete elimination of setups** or changeovers

And humans in service processes have 'setups' just like machines!

If You Build It...

They ... may come

Unlike parts in manufacturing, customers to service processes are typically self-optimizing

Airport Check-in:

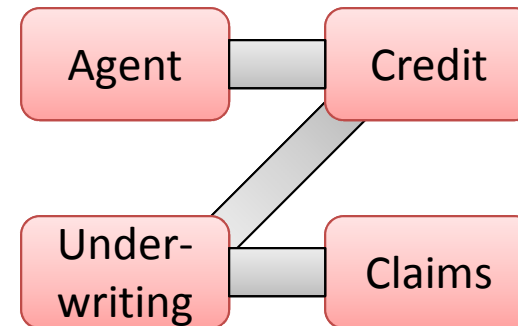
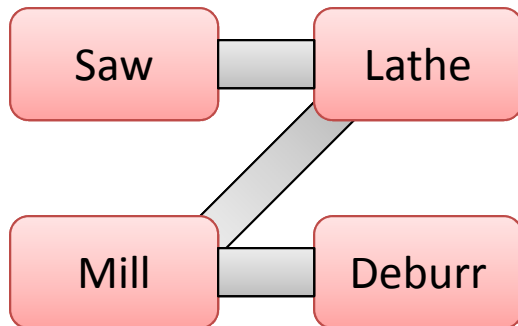
- Kiosks: low variation, low options
- Counter: full service, high variation
- Self-print: low options, no variation?

Grocery stores have created three 'cells' for the customers to chose from:

- Self-checkout: less motion, shorter queues, variation reduction?
- 10-items: less variation between customers
- Traditional lane: full service, full flexibility, more variation

The Case Team

The 'Case' team is the classic service implementation of a manufacturing work cell



T – reduce transportation of material
I – reduce inventory of WIP
M – reduce motion of people
W – reduce waiting of worker and WIP
O – reduce over production
O – reduce over processing
D – reduce defects

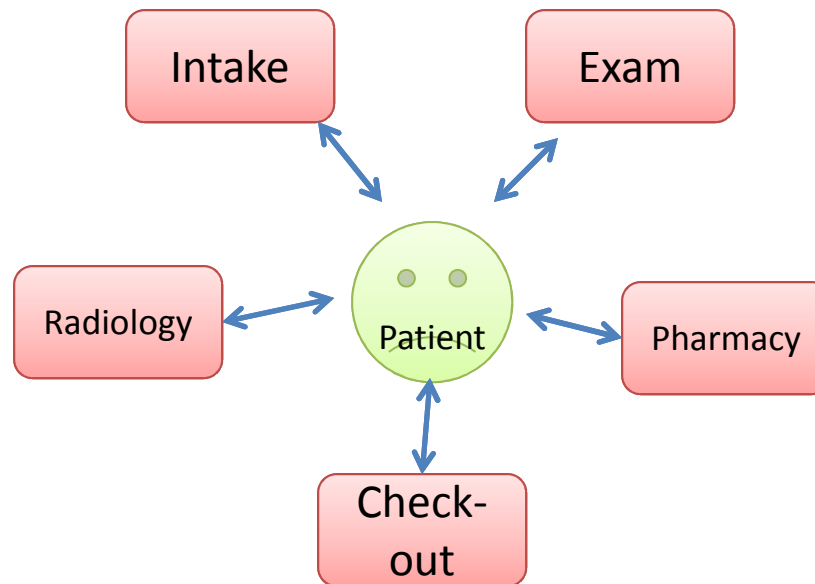
T – reduce transportation of **information**
I – reduce inventory of **customers waiting**
M – reduce motion of people **and customers**
W – reduce waiting of **worker and customer**
O – not typically applicable
O – reduce **losing track of customer needs**
D – reduce defects!!!

Case teams and cells are typically more scalable than large all-inclusive processes, and easier to balance and adjust to mix changes

Zero Flow

Move yourself, not the customer

With more flexible equipment, both manufacturing and services processes can become zero-flow, where the work or the customer stays in one place while the process comes to them



The Center for Family Safety and Healing

A cellular approach moved all of the resources needed for a family in crisis into a single building, eliminating travel for the family, improving communication between the various specialists, removing most of the waiting, and reducing the chance for information and families to fall “between the cracks”.

The case teams consist of (see bizjournals link for full story):

- Columbus Division of Police's sexual abuse squad.
- Franklin County Children Services' sexual abuse investigative team.
- Three Franklin County assistant prosecutors and three deputy sheriffs.
- Domestic violence advocates from the state Choices program.
- Children's Hospital's medical team, consisting of physicians, forensic social workers and nurse practitioners.
- Mental health professional and hospital therapists, providing ongoing treatment to victims and family members.

<http://www.nationwidechildrens.org/about-center-for-child-family-advocacy>

<http://www.bizjournals.com/columbus/stories/2003/10/06/focus3.html?s=print>

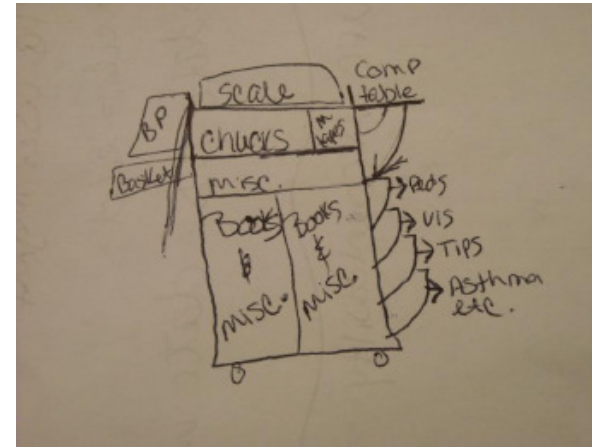


Akron Children's Hospital

Akron Children's Hospital

Zero Flow - A mobile triage cart was designed, eliminating the need for separate triage rooms, reducing the need to move patients and families, and creating an additional 4 exam rooms.

In this case, the cart became the mobile work cell.



Focused Factories in Healthcare

Clinics and outpatient centers, focused on a family of healthcare tasks are the focused factories of healthcare. They all rely on the principles of cellular design and finding a family of similar tasks.

In some cases, the tasks are centered around the time for the tasks and the resources staffing the clinic, as in the CVS and Wal-Mart clinic examples. In other cases, the tasks are centered around specific specialties or treatment protocols, as seen with the Ohio State Cancer Treatment Center or center specifically for the treatment of diabetes or other ailments.

Referring to clinics at CVS Drugstores and Wal-Mart:

"They're not doing brain surgery in those clinics -- they're doing highly evidence-based protocols for about 26 procedures," she noted. "And studies have shown they're cheaper and better for the limited menu of what they do, as focused factories, than emergency rooms or primary care physicians' offices."

<http://www.medpagetoday.com/MeetingCoverage/AAPM/25627>

Vanderbilt Trauma Center



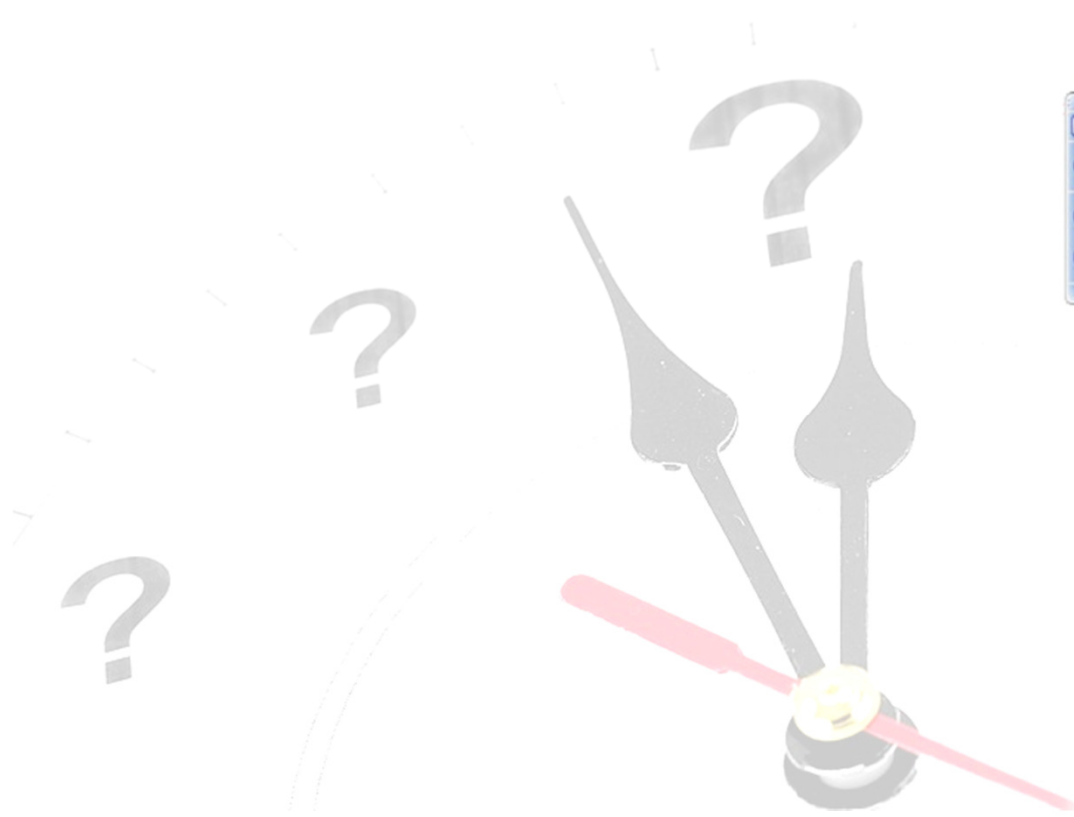
The Vanderbilt University Trauma Center underwent a complete transformation from a process characterized by functional departments, poor patient and information flow, inconsistency, and heavy rework of communication.

The new trauma center was built around cellular concepts to reduce all the sources of TIMWOOD waste, cutting cost at the same time as patient satisfaction and outcomes where improved.

Please take some time to review this presentation from: Innovations in Healthcare Delivery, September 18-19, 2008, Cincinnati, OH

<http://www.cincinnatichildrens.org/assets/0/78/1067/2709/2807/2813/720516cb-d1ee-4d11-9f81-52ade90e600a.pdf>

Questions



The screenshot shows the GoToWebinar interface with the following sections:

- Attendee List (2 | Max 201)**: Includes tabs for Attendees (1) and Staff (1). A dropdown menu is set to "NAMES - ALPHABETICALLY". A list shows "Corena Bahr (Me)". A search box is present.
- Audio**: Shows "Audio Mode" with radio buttons for "Use Telephone" and "Use Mic & Speakers" (selected). A "MUTED" status bar with a volume icon and a "Talking: Suzie Smith" indicator are also visible.
- Questions**: A section with a "Questions Log" containing the question "Q: Is there a volume discount?". Below the log is a text input field with the placeholder "Type your question here." and a "Send" button.

The "Questions" section and the "Send" button are highlighted with a red box and a red arrow, respectively.

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- 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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Watch for info about our September 26th Webcast

“Lessons Learned from Large Deployments” – Whitney
Mantonya, Collaborative Lean Solutions

Archived presentations and other materials:

<http://www.moresteam.com/presentations/>