



Getting to the Heart of A3 Deployment

Lean Transformation Summit

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Medtronic Structural Heart Business Unit

Global Leader in Medical Technology



45,000+ | employees, making us the largest global medical technology company



9,000+ | scientists and engineers around the world



2,050+ | FY11 patents awarded, bringing our total worldwide to more than 23,000

\$15.9B | FY11 global sales which generate \$3.2B in free cash flow

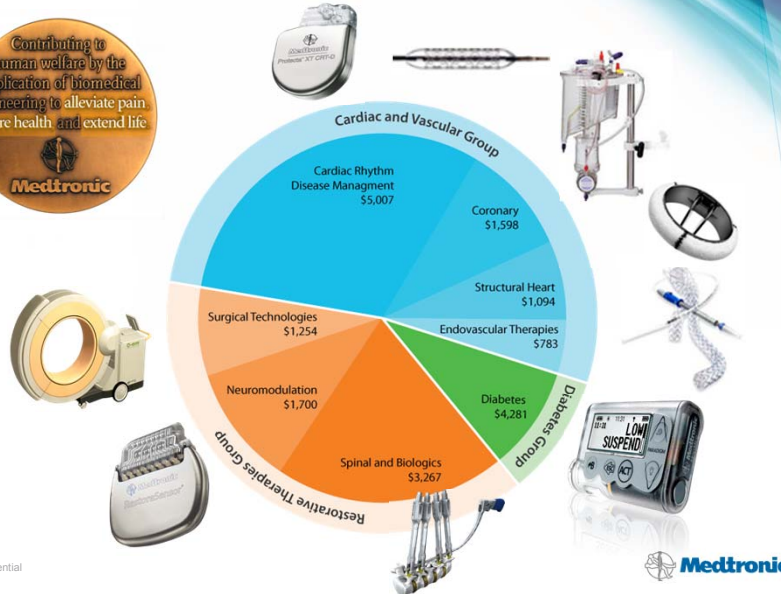


43% | sales from international markets, representing more than 120 countries

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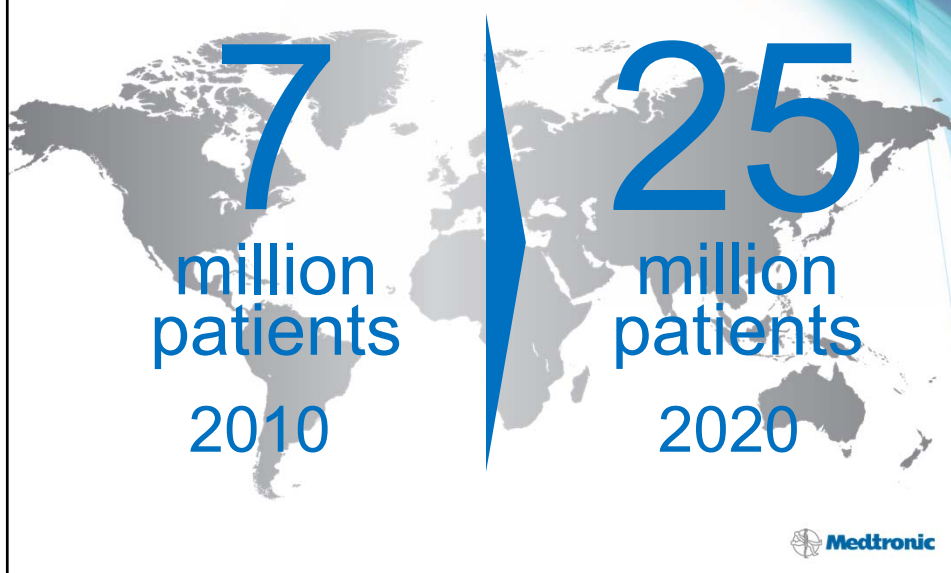


Mission Driven to Improve Lives



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Our Global Growth Aspiration



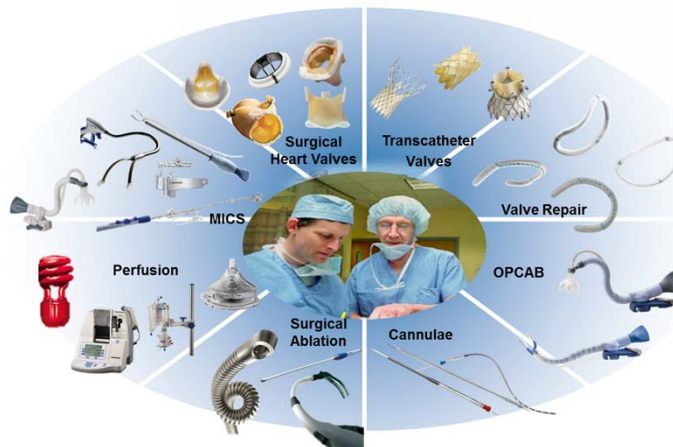


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Medtronic Structural Heart

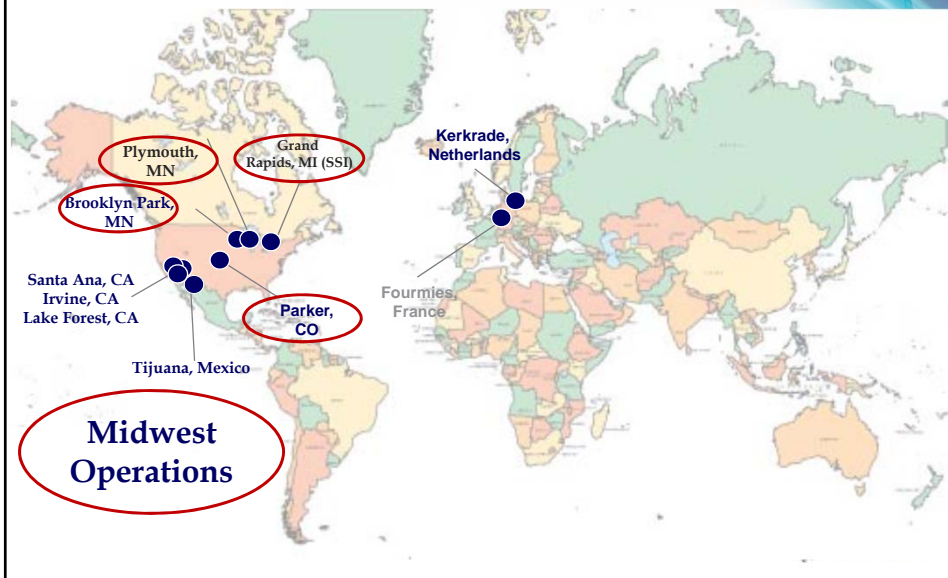
Our Vision: "To be the Trusted Leader in the treatment of patients with structural heart disease"



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Medtronic Structural Heart Sites



A3 Deployment Overview

- Setting the stage
- What we did
- What we are doing now
- Where we are going

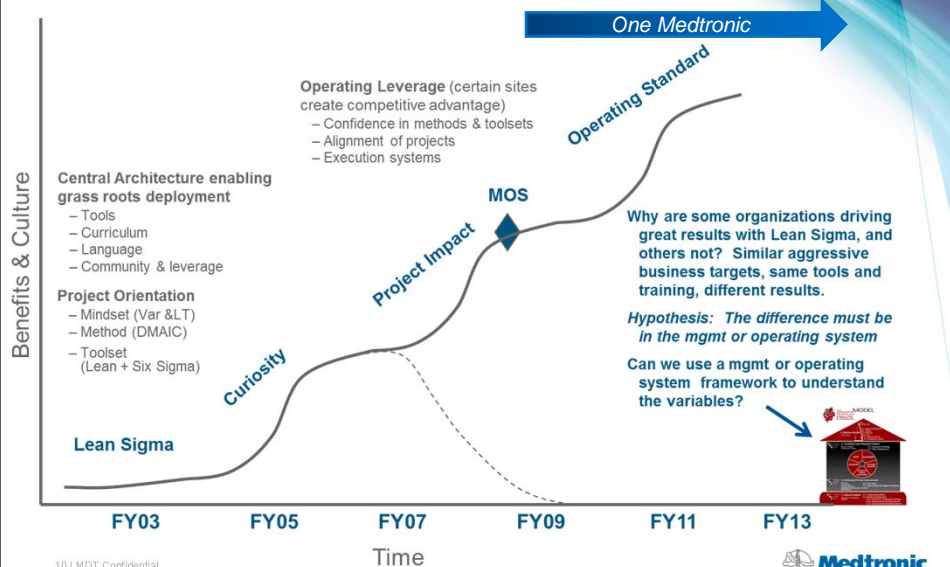


Setting the stage

- Structural Heart Leadership
 - How do we accelerate the rate of improvement?
 - Shift from operations focus to enterprise focus
 - Systems thinking versus tools thinking
- Me, personally
 - Attended 3 day workshop
 - Lean Leadership
 - Strategy Deployment
 - The A3 process
 - Had Lean Leadership and Strategy Deployment content repeated for cross-functional staff prior to first round of A3 training



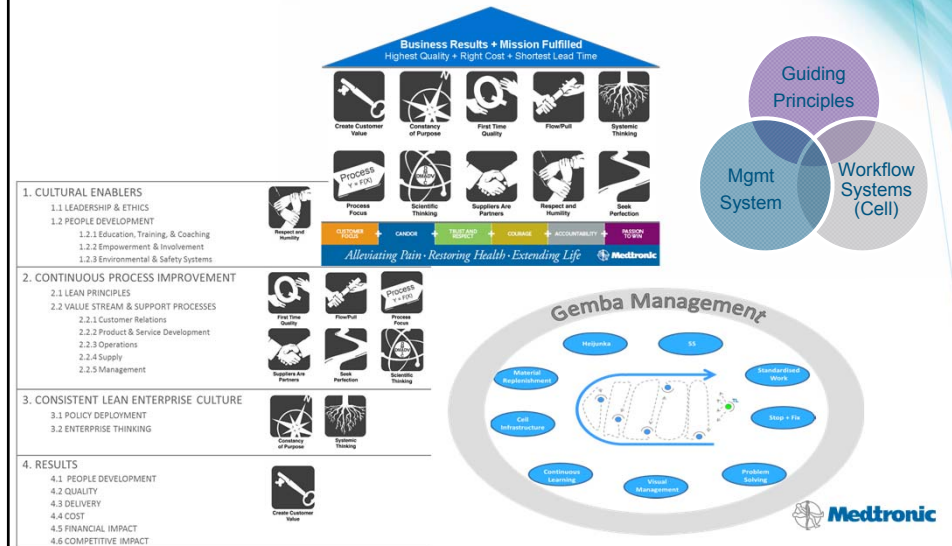
Medtronic Continuous Improvement Journey



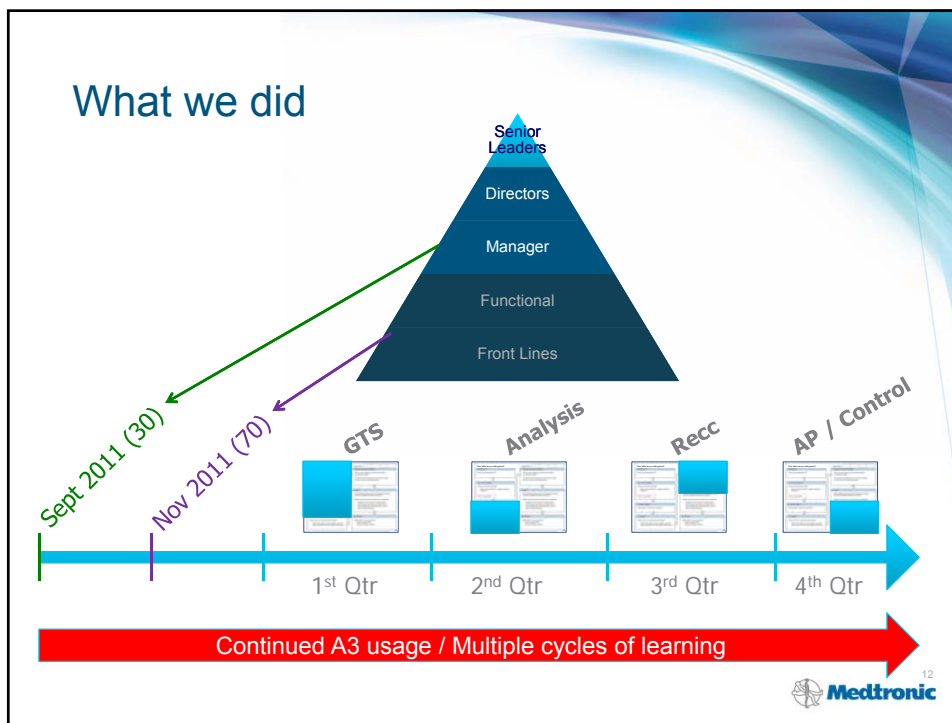
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Medtronic Operating System

Accelerating the rate of improvement and right first time quality



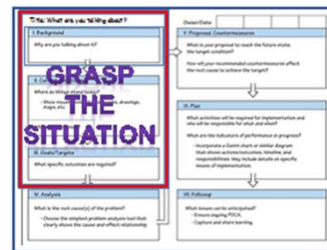
What we did



Example: Grasp the Situation (GTS) refresher training



- 90 minute agenda
- Clarified each section of the A3 in GTS
 - Background
 - Current Situation
 - Goals / Targets
- Practiced presenting & mentoring

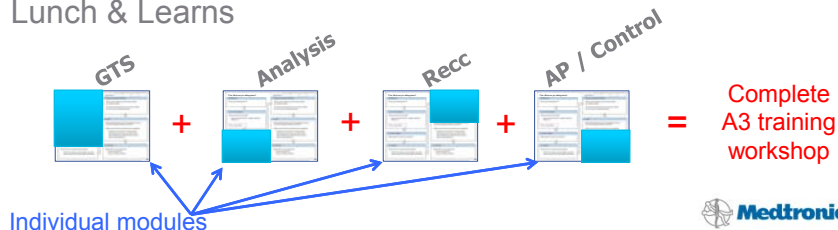


- LEI developed #1
- Medtronic developed #2, #3 and #4 with oversight



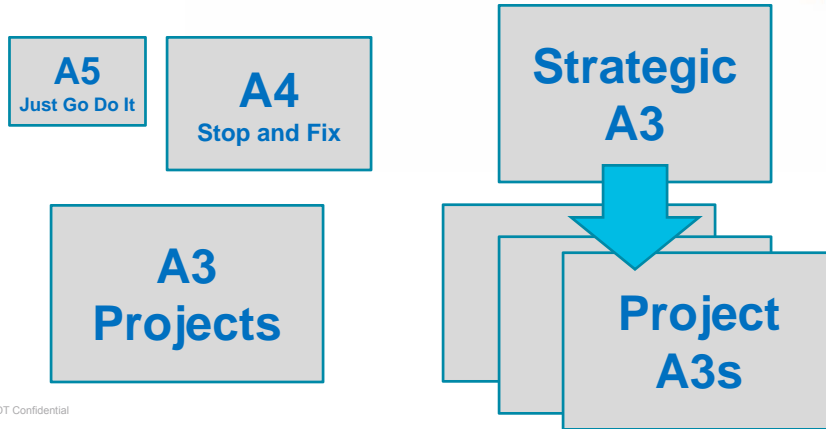
Where we are now

- Used at all levels in Structural Heart
- Front Lines using an A4
 - Improvements to problematic work
 - Used to document and control the “experiment”
 - Short lead time, low cost, low risk “experiments”
- Lunch & Learns



Going Beyond Traditional Projects

- The bigger the problem, the bigger the paper
- Same method and thought process



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Strategic A3 Example

- Commercialization of New Products

Next Gen. Perfusion Knowledge Transfer to Operations

Owner: Allen Team: Tom Val John Anthony 2/5/13 v.4

1. Background:
Next generation perfusion products, replacing legacy. Phase gate 4 completed midQ2, now in Phase gate 5, Commercialization, manufacturing readiness/knowledge transfer

Current conditions: Phase gate 5 does not define transfer plan

2. Project:
TSS
AME
Core Team Leader
DAE
Comp Eng

Transfer:
CYOSP-230, Checklist TBS

3. Goal:
PRC metrics: 1) 95% Yield 2) LE (Oxy) = .3001 (.2413) 3) delivery to schedule = 99%
Deliver Phase Gate 5 Checklist

4. Analysis:
Operations Team Alignment (SST: Supplier → BPR)
John Focht SQE
Allen Kline Team Leader ME
Val Navato Production
Tom Liron Quality

Plan

- Robustness
- Stability
- Evidence
- Scope of work (close gaps)

Operations A3

- ME - A3
- SC - A3
- SQE - A3
- Production - A3
- Quality - A3

5. Countermeasure:

- Resource plan: Align operation's resources to Next Gen.
- Evaluate existing SOPs for applicable checklist reqts
- Assess Next Gen. project team functional deliverables
- Transition existing metrics to Next Gen. (AOP, detail by dept.)
- Define Next Gen. project team member's role during and after the transfer process
- Address capacity goals: 6, 12, 18 months out?

6. Plan (Q4)

- Review and refine A3s in key functional areas – "the Plan"
- Define current state, establish metrics (secondary level)
- Reset schedule to close gaps by MAR
- Migrate primary responsibility to Operations

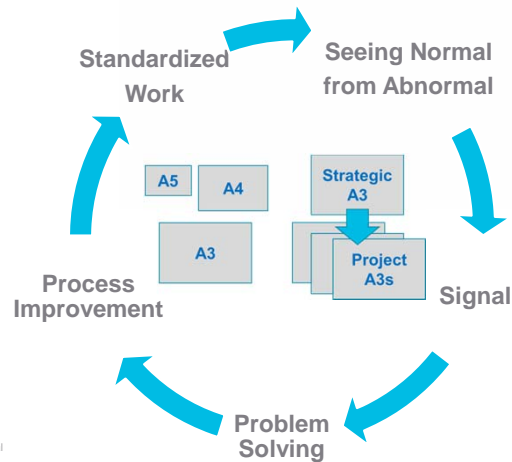
7. Follow-up (2-4 weeks out)

- Establish and measure dept. metrics
- Re-evaluate Next Gen. Friday Board, convert to Operations focus v Project focus, incorporate PRC metrics
- Execute child A4s

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Increasing Employee Engagement

- Reawakening our inquisitive instincts
- Combining with the rigor of the scientific method

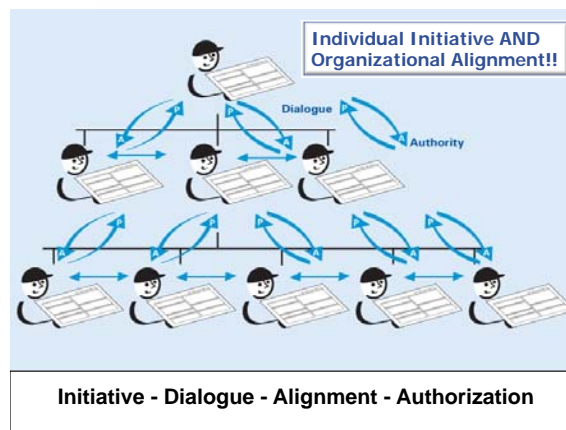


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Where we are going

- Stronger link to Strategy Deployment



Problem Solving within Strategy Deployment

Cell Board:



Equipment Support:



Mfg Engineering: A4s

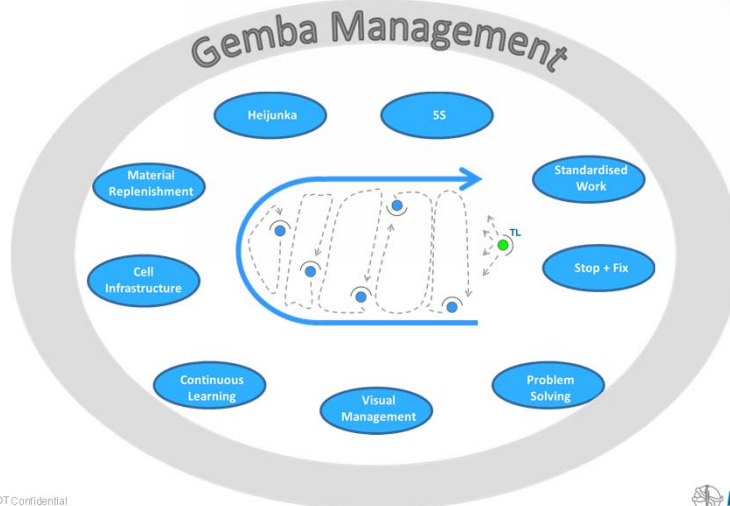


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Where we are going

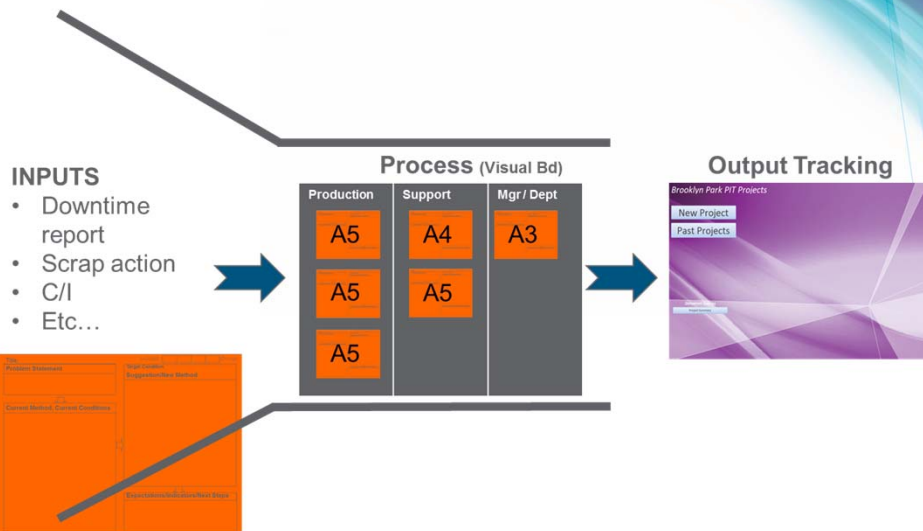
- Stronger Link to Cell Operating System



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COS Problem Solving and Stop + Fix



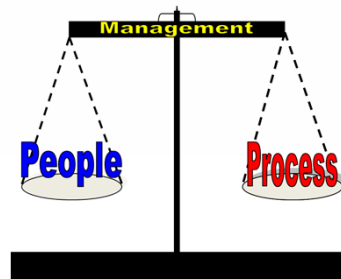
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Lean Leadership and Systems Thinking

How do we ensure that employees have a good day

- Enterprise Alignment
- Principles and Culture
- Employee Engagement
- People Development
- Tools and Process



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Creating a High Performance Culture



- It's not what you know but what you do that counts
- Practice, practice, practice
- If you don't do it right it's painful. If you do it right it hurts less and the results are much more satisfying

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Summary



Focus Group Feedback: How have A3's been useful to you?

- They make people think more
- Stops me from jumping to solutions
 - "I'm an engineer & I know what to do"
- Forces me to include only the pertinent information
- Not that different than DMAIC, but easier to use with others
- Portable!
- Easy to get the team engaged around
 - We take them right to the floor
- Creates a good record of what was done
 - I use to read through lots of emails to extract project history
- Saves me time when juggling many projects
 - It takes me less time to figure out where I left off
- Team discussions have become more of a dialogue versus me asking questions and getting answers
 - **How have discussions changed?**
 - Previously it was about getting a result – now it is about the process of getting to the result

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What challenges have you experienced using A3s to solve problems and how did you overcome them?

- Limited space on the one page
 - I have to **DECIDE** what to include
 - I can't just "hoard" information and keep writing smaller
- Making it a habit
 - **Practice!**
- Knowing what item fits where
 - **Practice!**
- Not really understanding the goal
 - **Make it measurable**
- Sometime the problem you start with is not your real problem
 - **If you are flexible, objective and let the process work, problem will reveal itself**
- People thinking it is "for manufacturing only"
 - **Practice on all types of problems**

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What have you learned in coaching others through A3's?

- Look for linkage from one section to another
- Approach like a 3rd grader – ask why, why, why
- Makes me better at being sensitive to what others might need when reading my A3's. Has made me a better writer.
- What have you learned by being coached?
 - A visual story leads to a better understanding
 - It gave me an awareness of how much I assume that others know
 - I can get “clingly” to my story, my data, my pictures

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What benefits have you seen personally and to the greater organization from using A3's

- We have actually solved problems; they don't come back
- Forcing us to define the business benefit of focusing on a particular problem
- Make learning from each other easier
- Everyone gets a voice in the countermeasures!
- Keep us from jumping to knee-jerk solutions
- Provides a common language at all levels
- Better communication and relationships on the floor
 - Operators used to be leery when I would ask them for information. Now that they can see and understand the whole context they offer up information freely.

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What advice would you offer to others adopting the A3?

- Your first thought won't be your best – what you first write down will change
- It is OK to be wrong
- Don't get stuck on the stupid stuff
 - Get your story out. As you review it with others it will become clear what goes where
- Just start and practice
- Reach out to your cross-functional team members
- Meet at the gemba of the problem
- When starting an A3, approach the problem objectively. Step back. Forget your preconceived ideas.

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Improving Healthcare

“Across the world, we are in a continuous quest to improve healthcare. People everywhere want better outcomes, fewer errors, quicker recoveries, and fewer side effects. We're developing medical technology solutions that not only improve healthcare, but do so while delivering better economic value.”

| **OMAR ISHRAK**, Chief Executive Officer



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Questions & Discussion