

**LEAN POLICY
DEPLOYMENT
AND THE
MANUFACTURING
EXTENSION
PARTNERSHIP**

- Michael J. Ryan
President and CEO
TUG Technologies Corporation
- Witness to the Science Committee,
Subcommittee on Technology and Innovation
- Importance of MEP role to support American
Manufacturing Productivity

“Order and Progress” – structure,
and then improvement



LEAN THINKING

BANISH WASTE
AND CREATE WEALTH IN
YOUR CORPORATION

James P. Womack
and Daniel T. Jones

Authors of *The Machine That Changed the World*

- **Value**

- Focal Plane – Gemba
 - Design
 - Order Release
 - Plants (parts)
- Look at the “parts”

- **Value Stream**

- Supplier – Plant – Customer
 - Concept to launch
 - Order to delivery
 - Raw material to customer
- Eliminate “Muda”

- **Flow**

- No detours
- No backflows
- No scrap
- No waiting

- **Pull**

- Make only what is wanted when it is needed

- **Perfection**

- Perfection is the complete elimination of Muda; every action and asset creates value, through revolution (kaikaku) and evolution (kaizen).

Action

- Find a change agent.....Leadership
- Get the knowledge.....MEP
- Seize (or create) the crisis.....Leadership
- Map value streams.....MEP
- Begin with something important..Leadership
- Demand immediate results.....MEP
- Expand your scope.....MEP

Action

- Reorganize by product families and value streams.....MEP
- Create a lean promotion function.....MEP
- Deal with people at the outset...Leadership
- Devise a growth strategy.....Leadership
- Remove the anchor-draggers....Leadership
- When you have kaikakued and kaizened, do it again.....MEP

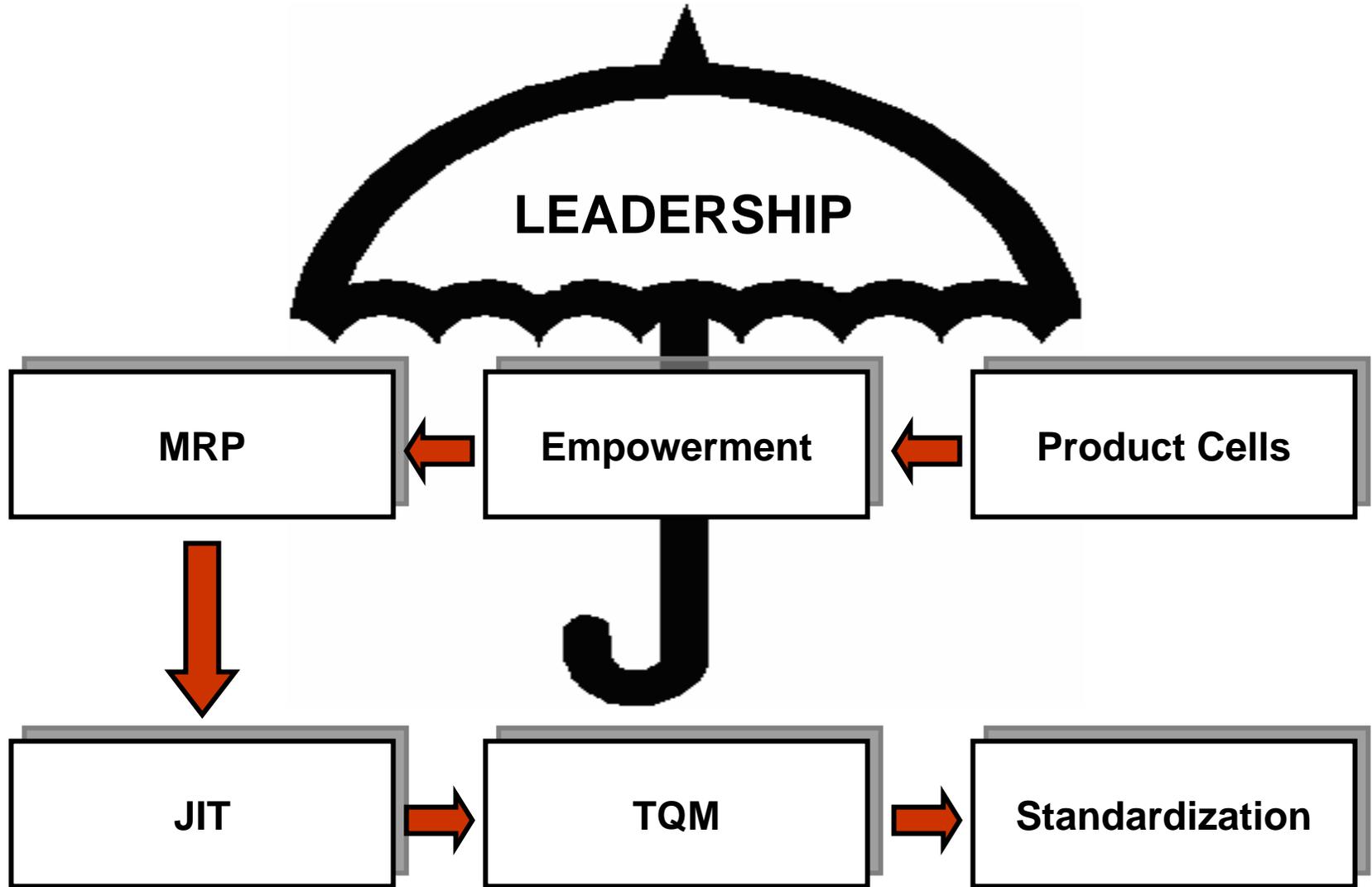
GPS Global Production System

<p>JIT</p> <p>To make product at a time it is sold</p>	<p>Man</p>	<p>Std Work</p>	<p>Takt Time Production</p>	<p>Jidoka</p> <p>Autono- mation stop at every abnor- mality</p>
	<p>Material</p>	<p>Std WIP Kanban</p>	<p>One Piece Flow</p>	
	<p>Machine</p>	<p>ANDON Operation Ratio</p>	<p>Pull System</p>	

Hijunka – Level Loading

The significant problems we face cannot be solved at the same level of thinking we were at when we created them.

- Albert Einstein



Application of MEP Capabilities

<u>Year</u>	<u>Company</u>	<u>MEP Affiliation</u>	<u>Shingijutsu</u>
1994	United Technologies	none	√
1998	Lucas-Varity/TRW	MMTC – MEP #	√
2000	Intermet Corporation	MMTC – MEP #	---
2003	Bobcat Company; IR	North Dakota MEP	√
2005	w/Harley Davidson, Oshkosh, Trane	Wisconsin MEP Wisconsin MEP	--- ---
2005	Ingersoll Rand	North Carolina MEP	√
2006/07	TUG Technologies	Georgia Tech MEP	√

Board Member MMTC 2000/2001

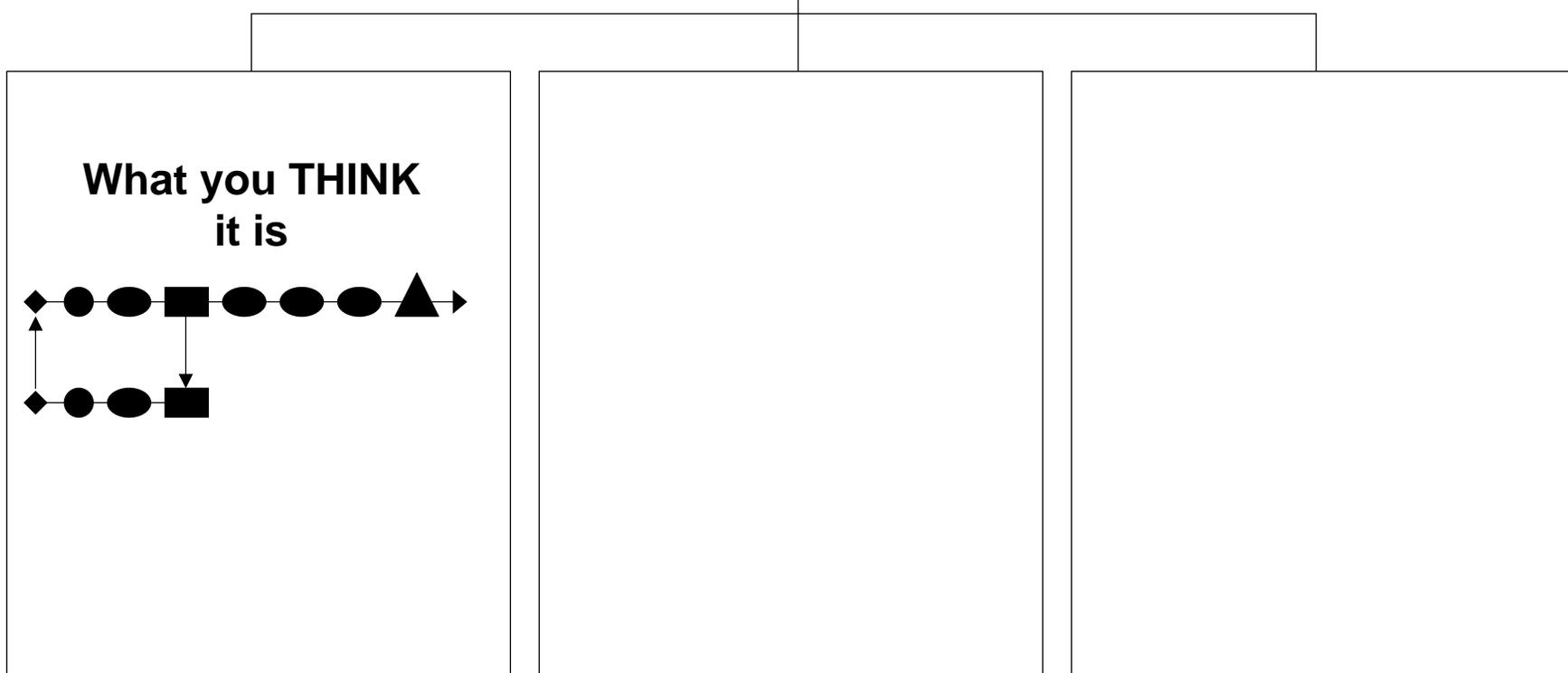
Some of the Benefits from Lean Transformation

- Increased Revenues by 83% and Operating Income by 128% with same factory floor space over a three-year span, creating more jobs.
- Reduced warranty expenses by 64%, and 67%
- Improved, inventory turns from 5 turns to 25 turns and from 2 turns to 16 turns
- Improved operating income by 400 basis points, 500 and 550.

Additional Benefits of Lean

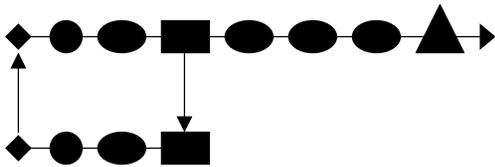
- Reduced customer lead times by 80% and 72%
- Used 3P process to allow flawless new product launches
- Conducted continuous Kaizen process with expert support
- Allowed for continual use of employee intellectual capital
- Georgia MEP trained 79 staff; teaching VSM, office Kaizen & Lean

Any Process Has at Least Three Versions

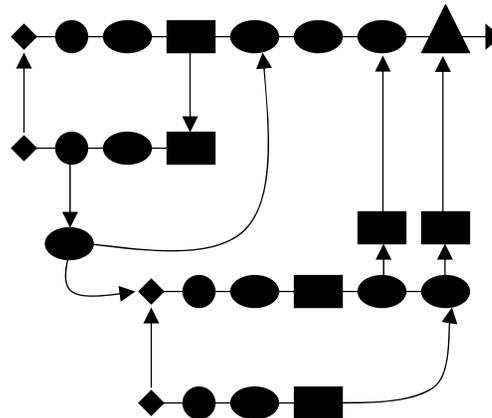


Any Process Has at Least Three Versions

What you THINK
it is



What it
ACTUALLY is



Process described in 1936 by Henry Ford

- *Today and Tomorrow*
- Raw material to finished product in *4 DAYS (1914)*



Japan's Expansion of JIT

- Ford's book reprinted in Japanese
- U.S. Supermarket – model for Kanban
- Deming & Juran (SPC)
- Refined to science (1947 – today)

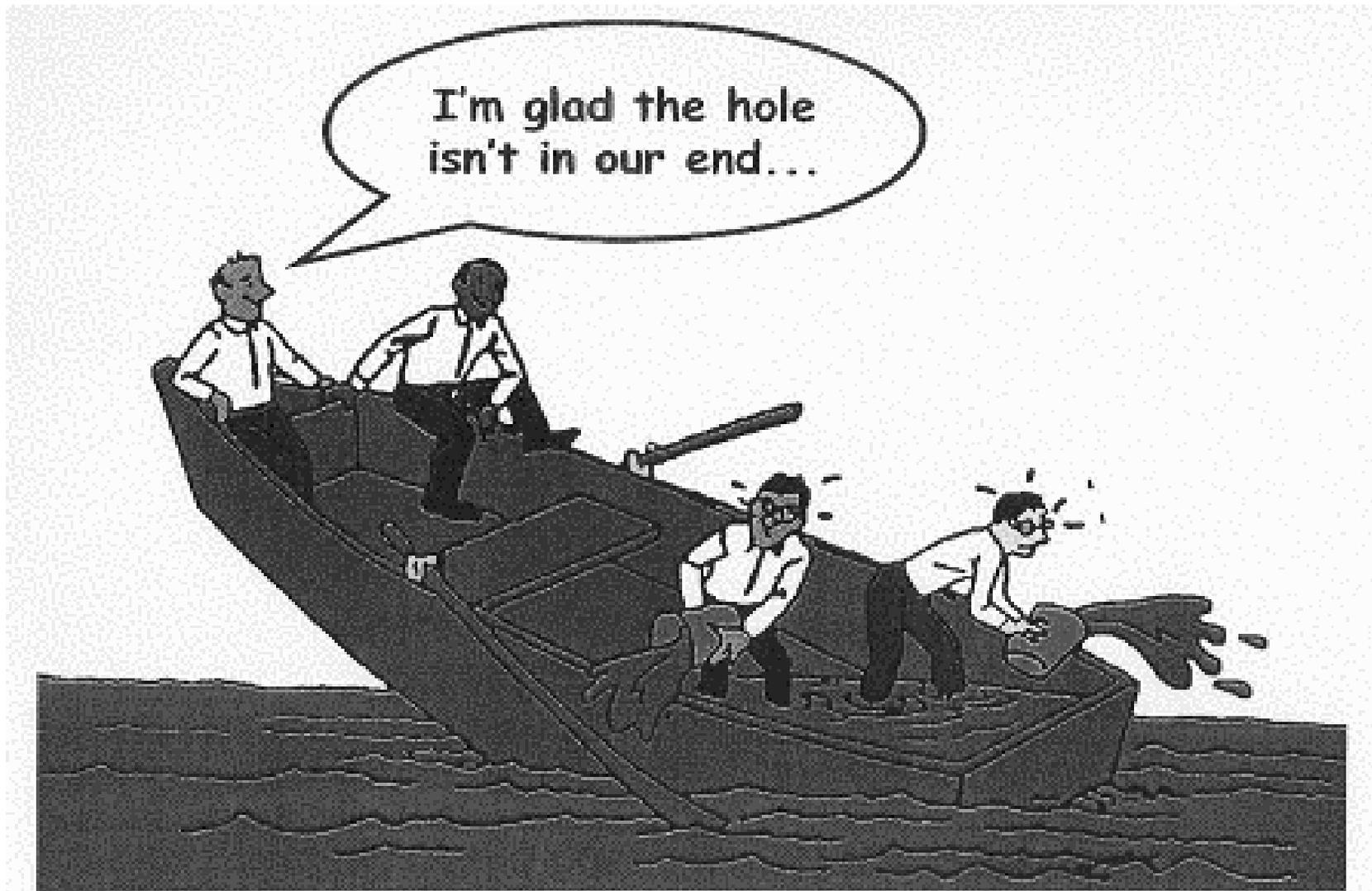


- Union of Japanese Scientists and Engineers
- National Institute of Science and Technology

“Shun the incremental and go for the quantum leap.”

Jack Welch





- A catalyst to drive the change process
- Provides a network across 50 states
- Shows how government can support enterprise
- Allows small and medium manufacturers a skill resource
- We must compete globally, MEP provides education, not training
- Not all good ideas start in the USA
- Congress has the responsibility to provide solutions → MEP is the solution, I have found them in 5 states
- We should expand, indeed, not retract MEP services