Lean Framework, Agile Principles, and CMMI® : Enterprise Agility without the waste

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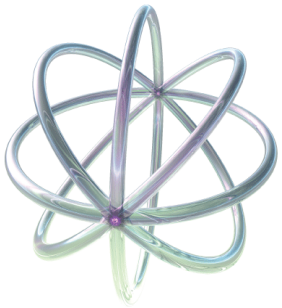
About The Application Development Center

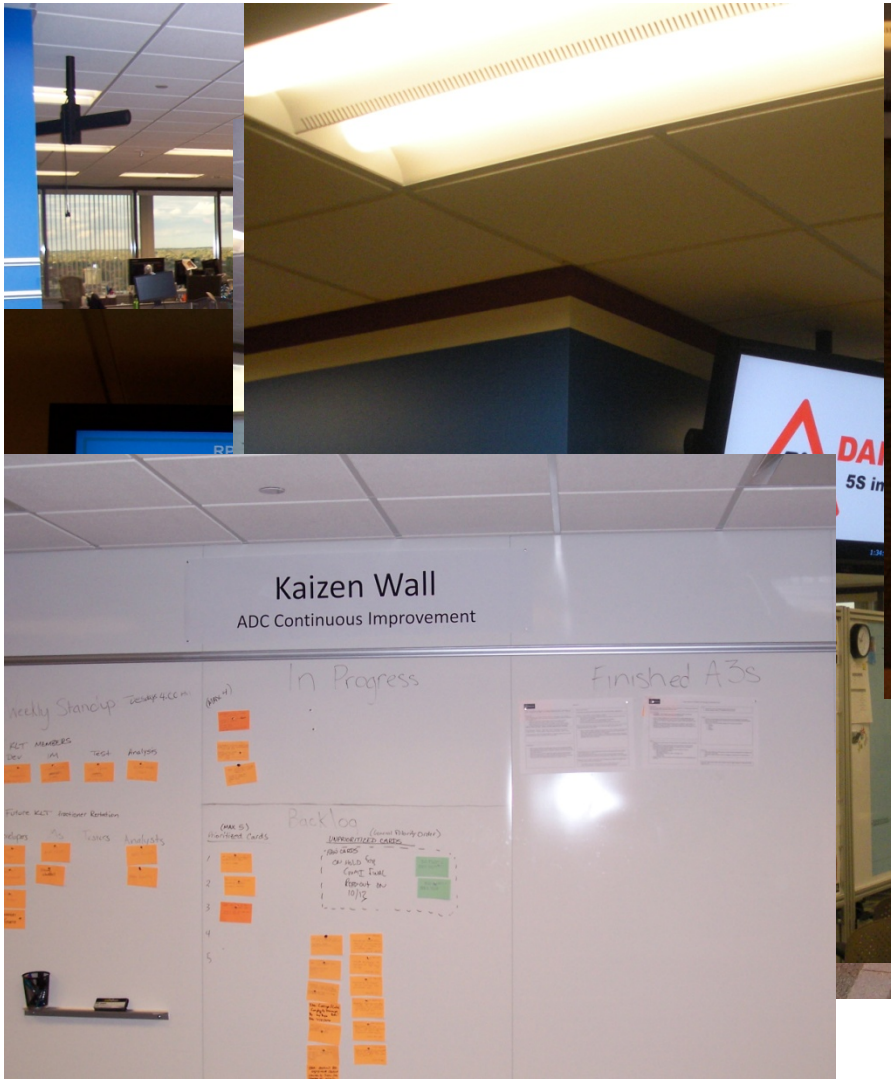
- Centralized software development group focused on process and technical excellence
- Responsible for Nationwide's most strategic application development
- A Lean and Agile software development organization
- Operational Excellence is in our DNA
  - Culture of quality, predictable delivery, continuous improvement
  - Industry leader in software development



Nationwide
Application Development Center

Purpose, Process, and People

Our Path Forward



Let's Get Started on our Journey!

- Grassroots Beginnings
- Lean, Mean, Coding Machine
- Why CMMI?

The Business View of IT

Origins of the Problem

- *Complexity*: IT projects are viewed by the business as extremely complex and hard to understand
- *Misdirection:* IT often fails to grasp the intentions of the business when building applications
- *Project Failure*: projects often run over-budget, late, and fail to deliver the expected benefits
- *Cost Focus*: IT is often viewed as a cost center instead of a business enabler
- *Speed*: the reaction time of IT to changing business environments is perceived as too slow

The IT View of Business

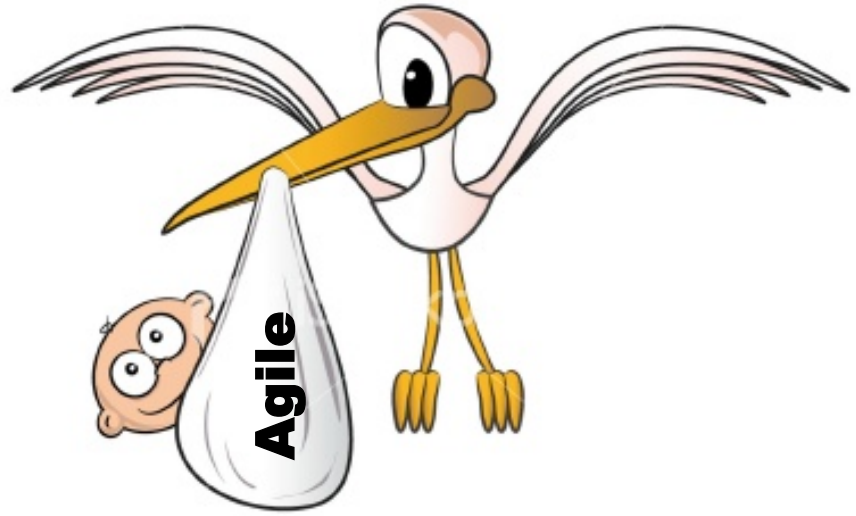
Origins of the Problem

- *Conflicting Priorities*: the business is often unclear on what the priorities are for the IT organization
- *Lack of Inclusion*: IT is often brought into projects late and are not offered the chance for collaboration
- *Multitasking*: too many projects are assigned to IT at once
- *Gold-plating*: excessive automation instead of doing the simplest thing that works adds to complexity
- *Poor quality control*: defect acceptance has become the norm and the business does not want to invest in a quality product

Grassroots Beginning

Attacking the Problem with Agile

- Began in 2004
- Grassroots, practitioner led, extremely successful
- Localized Agile processes
- Lack of communication between Agile teams
- Each saw success, but had limited impact on the overall enterprise



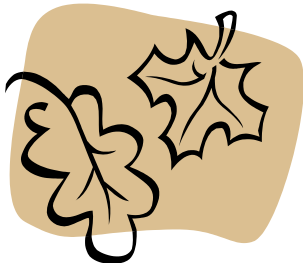
Enterprise Agile

Coordination and Collaboration Begins

- Began in summer of 2008
- Harvested Agile best practices
- Nationwide's leading Agile "activists" together for first time
- Focused on Scrum and XP practices
- Created Nationwide's "21 Agile Tea Leaves"
- Created a common understanding but still lacked the ability to move the entire organization in the same direction

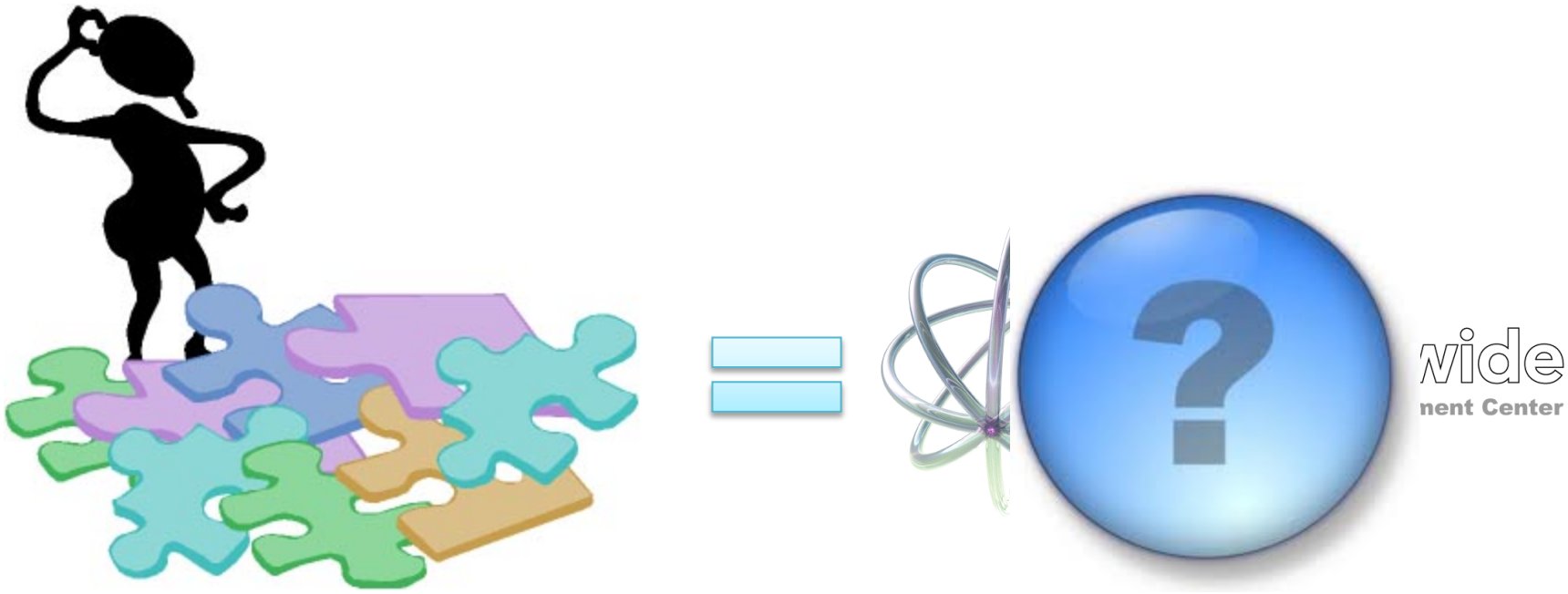
Nationwide's 21 Agile Tea Leaves

Whole Team	**Simple & Evolutionary Design**	**Sustainable Pace**
Open Workspace	**Test Driven Development**	**Iterations/Sprints**
Daily Stand Up Meetings	**Refactoring**	**Iteration Planning Meetings**
Big Visible Charts	**Continuous Integration**	**Show & Tells**
Retrospectives	**Automated Regression Tests**	**Frequent Releases**
Customer Collaboration	**Technical Debt**	**Release Planning Meetings**
Collective Code Ownership	**Pair Programming**	**Story Cards with Acceptance Criteria**



The Application Development Center

Now that we have the pieces, what do we do with them?



How Much Scale?

- Hundreds of millions of dollars spent on building software
- Thousands of IT associates
- Development platforms include distributed, mainframe, mobile, and client-server

IT is the lifeblood of our industry – our products are data and information flows

A Framework for Agile

To Summarize: no common purpose, no standards, inability to replicate agile successes across the enterprise…

How to tackle these problems?

Operational Excellence rooted in a Lean Application Development Center

Why Operational Excellence?

Gaining a Competitive Advantage Through Process

Operational Excellence – the ability to manage value creation processes without waste and better than the competition year after year

The Application Development Center was formed as a centralized internal consulting group serving all of our business partners and focused on **technical excellence** and **process discipline**.

Lean tools and principles are used to implement our vision of operational excellence and extend agile practices across the enterprise.

Employees and managers alike are **empowered** to improve processes, reduce waste, and solve problems.

Implementing Operational Excellence

First, a review of Lean principles…

Traditional Systems	Lean Systems
Authority	Responsibility
Results Focused	Process Focused
Expert "Staff" Functions	Expert Workers
Go Fast (jump to solutions)	Go Slow (root problem solving)
Corner Office Management	Go See Management
Report Analysis (delayed)	Visual Management (real-time)

Portions from LEI presentation "Managing for Operational Excellence", The Ohio State University, James P Womack

Does Lean Apply to Creative Processes?

Lean has had extreme success in the manufacturing and service sector industries, but could we apply the concepts to knowledge workers?

Yes, but our experience tells us…

- More focus required on cultural buy-in
- Process focus to eliminate unnecessary variance, not to control creativity
- Concepts cannot be watered down – concepts should be customized to environment, but principles cannot be violated – a consistent reason for transformation failure (don't just do what is convenient)

Our Strategy

Learn from experience, partner with the best

From our experience with Agile software development, team transformations need three ingredients:

- Base education and philosophy to foster understanding
- Seeding of the teams with experienced practitioners
- Ongoing coaching and reinforcement

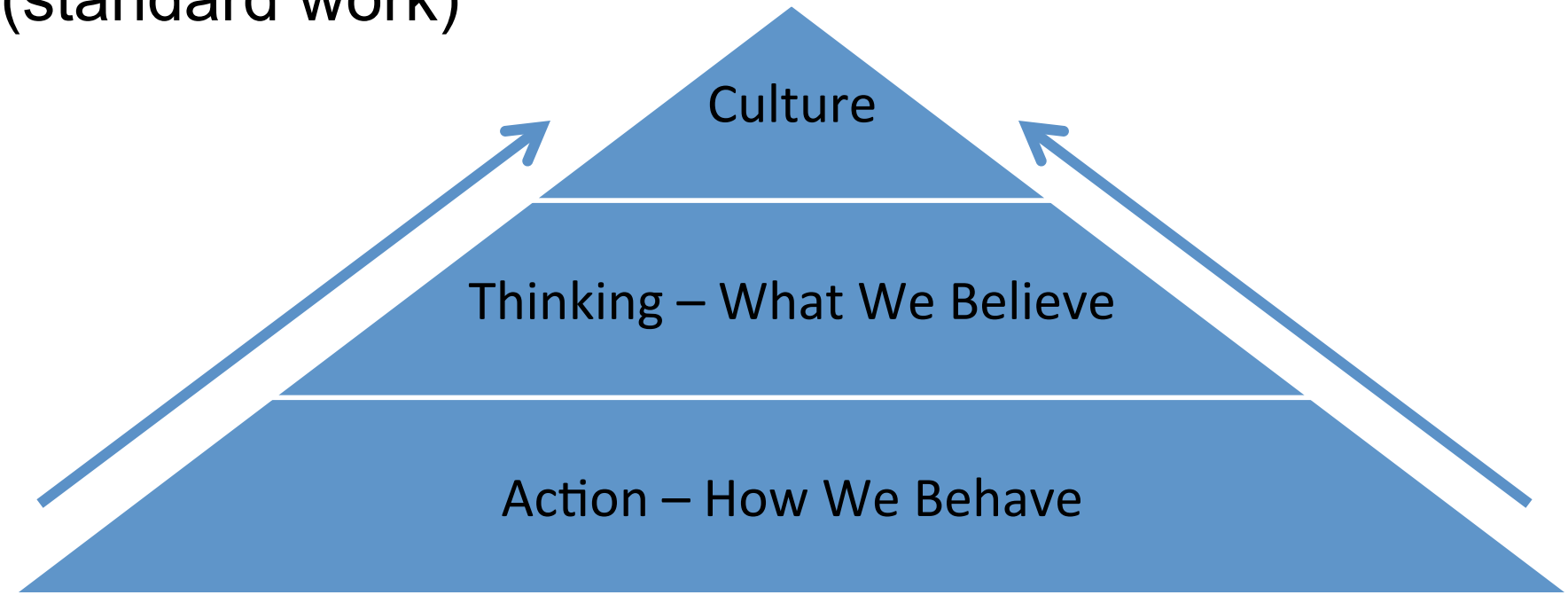
However, these three items would be insufficient for our broad-scale Lean transformation, we added…

- Partnering with the Operational Excellence program at The Ohio State University
- A comprehensive program to transform management as well as staff

So, what did we actually do?

Culture-Driven Transformation

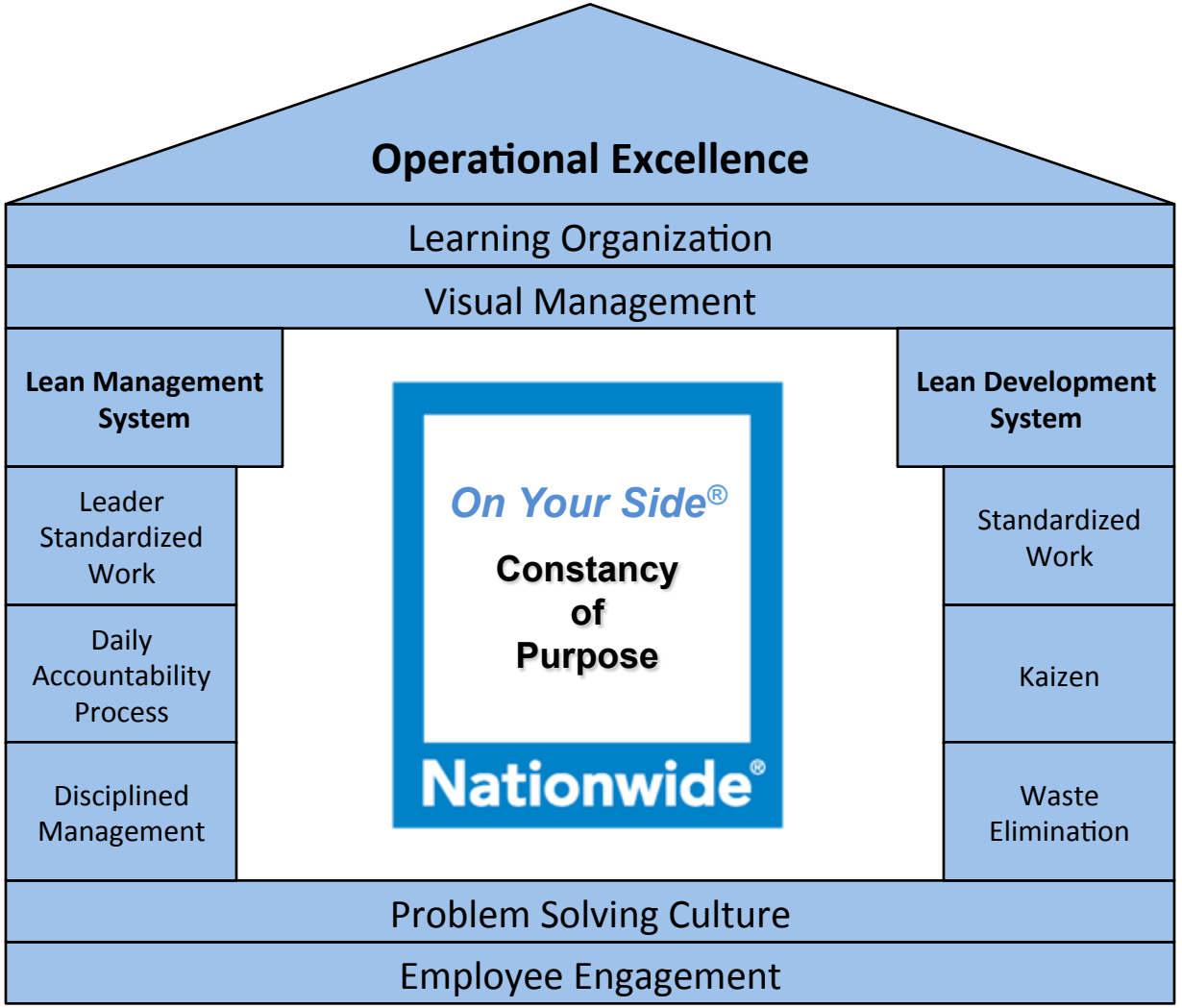
Change how you think by practicing (kata) and reinforcing new behaviors (standard work)



The ADC Lean House

A Framework for Our Transformation

The ADC transformation focused on creating a sustainable system, not implementing a series of tools or techniques. Culture shifts were required in staff and management.



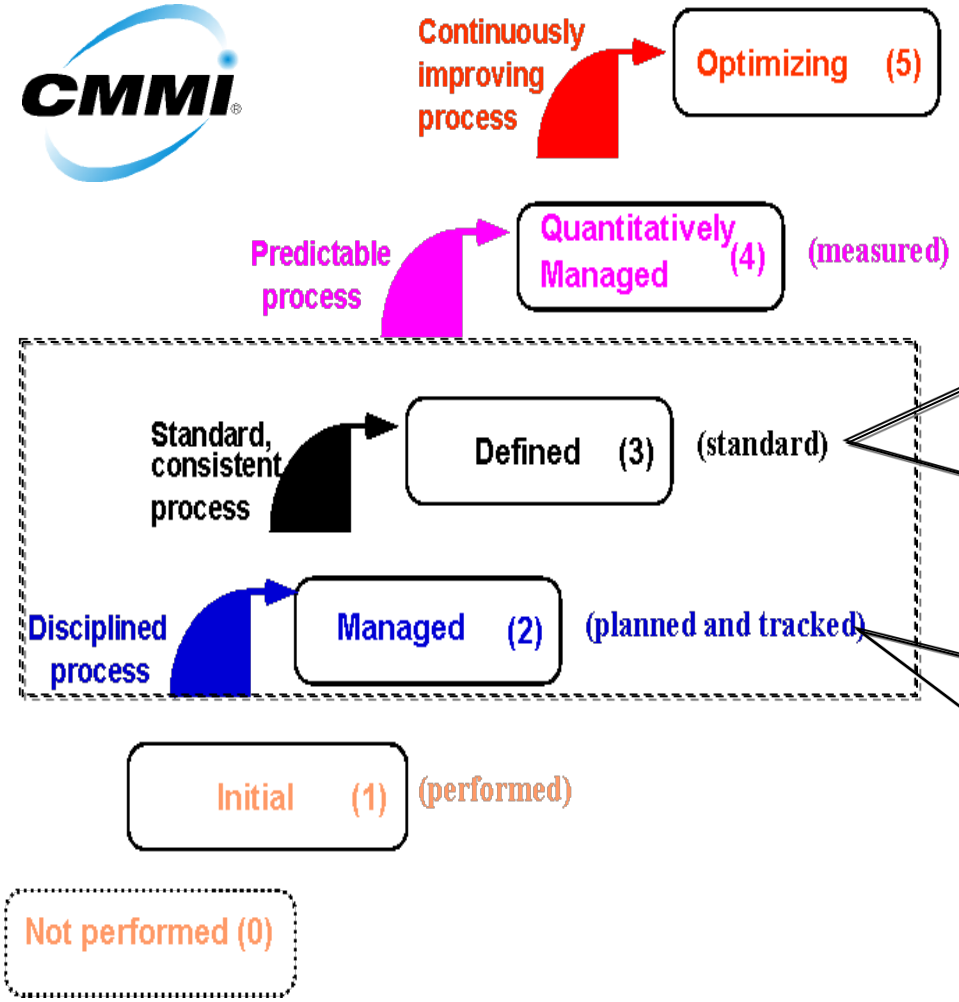
Creating a Burning Platform

Organizational Imperative to Act

- CMMI was leveraged as the measuring stick for our “World Class” Development Center.
- CMMI best practices included engineering, project management, and organizational practices.
- Our goal, to achieve CMMI L3 in ***9*** months.
- Final SCAMPI Assessment done by a 3rd party CMMI lead assessor.

Software Engineering Institute
Carnegie Mellon

CMMI Reference Model



Level 3 Process Areas (11)

- Requirements Development
- Technical Solution
- Product Integration
- Verification
- Validation
- Organizational Process Focus
- Organizational Process Definition
- Organizational Training
- Integrated Project Management
- Risk Management
- Decision Analysis and Resolution

Level 2 Process Areas (7)

1. Requirements Management
2. Project Planning
3. Project Monitoring and Control
4. Measurement and Analysis
5. Supplier Agreement Management
6. Process and Product Quality Assurance
7. Configuration Management

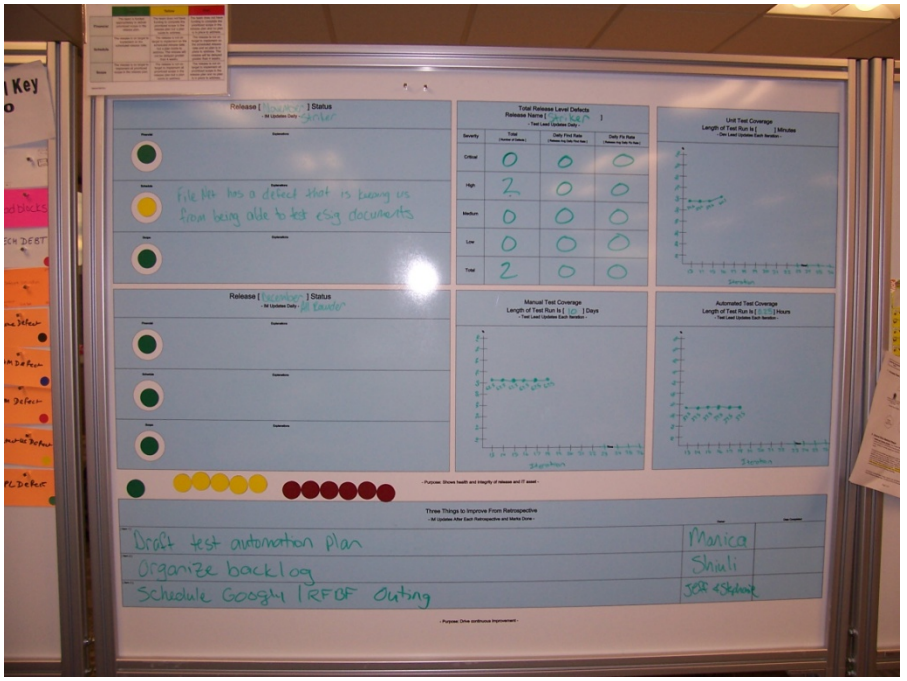
Visual Management

Real-Time Management

Visual Management is the glue holding together the management and development systems. Visual controls allow everyone to see the progress of the work and allow immediate feedback and corrective action into the system.

Why make things visual?

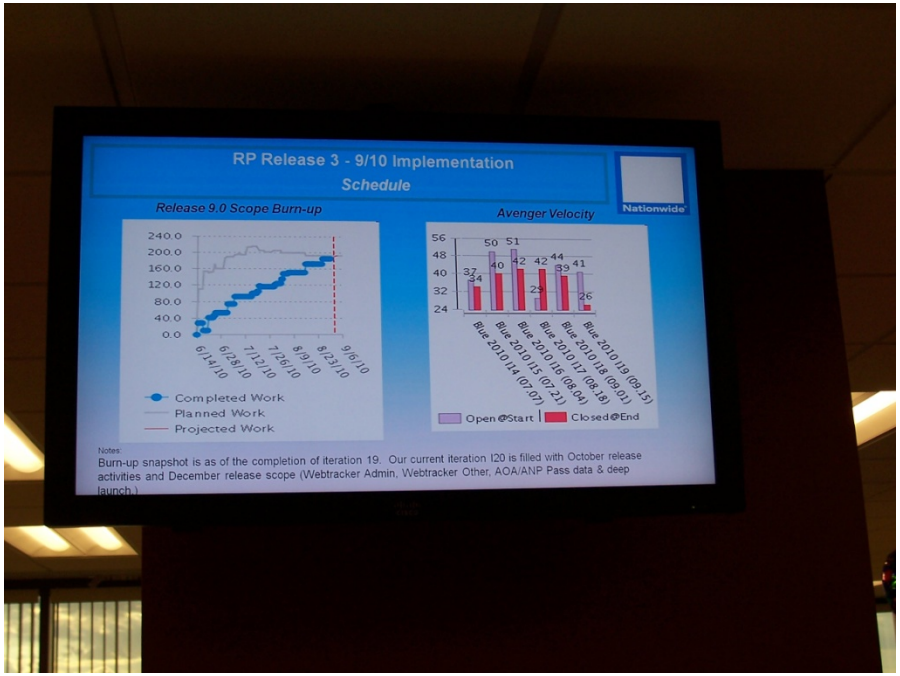
- Encourages ‘go see’ management
- Prevents information hiding
- Common understanding
- Drives accountability
- Focuses the organization on the important measures



Visual Management

Types of Visual Management

Do the simplest thing that works – manual boards for a web development team.



Use technology judiciously and only when it makes sense.

Lean Development System

The Engine of a Lean IT Transformation

The Lean Development System governs how the value-producing work is executed, improved, and monitored in the overall system.

The Development System:

- Creates an efficient process sequence with the lowest possible waste
- Standardizes routine work items to allow our knowledge workers the freedom to concentrate on value-added activities
- Empowers team members to continuously improve upon the standards and improve the entire ADC with their ideas

Standardized Work

Development System Enablement

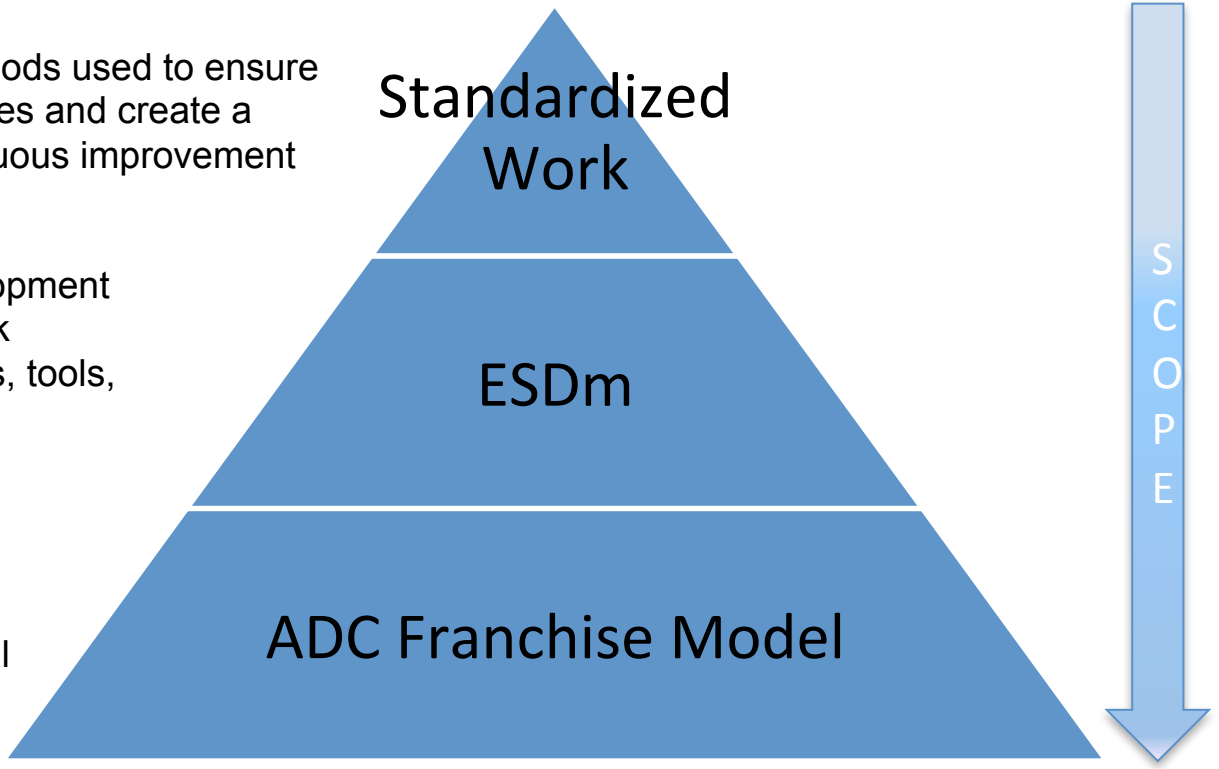
What is Standardized Work?

"A standard is made up of only those elements which, when not followed, result in a predictable defect or waste" Dr. Ryuji Fukada

General work methods used to ensure consistent processes and create a baseline for continuous improvement

Functional Application Development Lifecycle including roles, work products, processes, patterns, tools, and metrics

Entire Application Development Center body of knowledge including ADLC, engagement, and operational practices

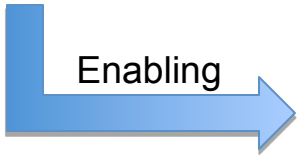


Standardized Work

Basis for Continuous Improvement

Why is standardization in the ADC important?

Maintains a consistent level of quality
Stabilizes the working condition
Allows for the judgment of normal from abnormal conditions



Waste Elimination
Increased Productivity
Improved Morale
Foundation for Improvement Activities

Waste Elimination

IT Examples of the 8 Wastes

Waste	Examples
Defects	Incomplete requirements, Software defects, Change Failure, Production Incidents
Transportation	Multiple steps for approvals for procurement, security barriers to information flow, department handoffs
Overproduction	Producing reports nobody uses, filling out paperwork that is not required, Extra requirements, Underutilized applications, tools (blackberries etc.) that are not used
Waiting	Waiting for skills, funding, Infrastructure provisioning, downtime
Over-Processing	Meetings, Manual Testing, Working without tools, Features no one uses, i.e. gold plating
Motion	Lack of standards, Lack of documentation of how business works, searching for information
Inventory	Excessive WIP, backlog, unbalanced flow
Underutilized talent	Not involving staff in improvements, no continuous improvement program

Lean systems relentlessly pursue waste to root it out and refocus activities and personnel on value-added activities.

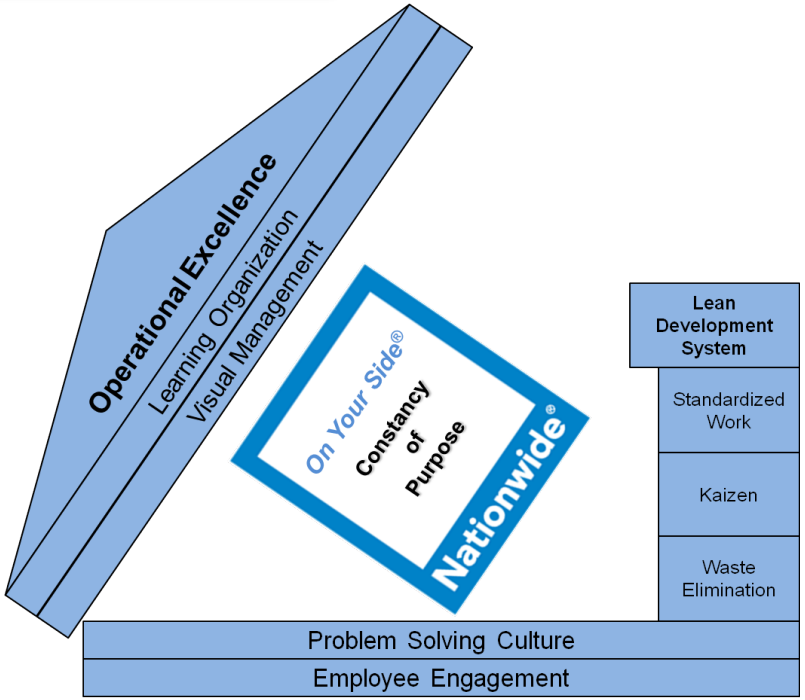
Lean Management System

A Necessary Pillar for the Lean House

We teach our associates how to be lean workers, but forget to teach our managers how to be lean leaders.

Lean Processes Need Lean Management!

Without the Lean Management System, the gains of implementing a Lean Development System cannot be supported and maintained.



Lean Management System

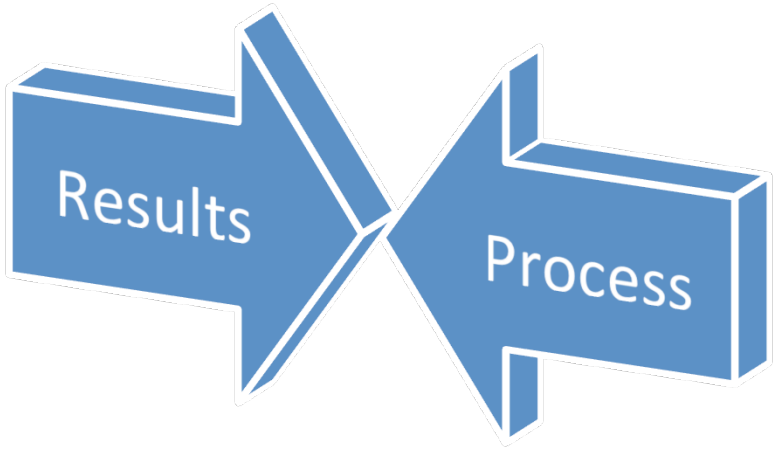
Nothing Changes Until Leader Behavior Changes

Lean culture grows from lean management

- Embedding lean thinking into the organization cannot be done unless we change the way our leaders think
- Lean Managers are focused on value creating activities and building a better system – instead of putting out fires, figure out how to prevent the fires in the first place

But how do you create lean managers?

Leader Standardized Work



Traditional management places emphasis on getting results at the expense of process and system thinking.

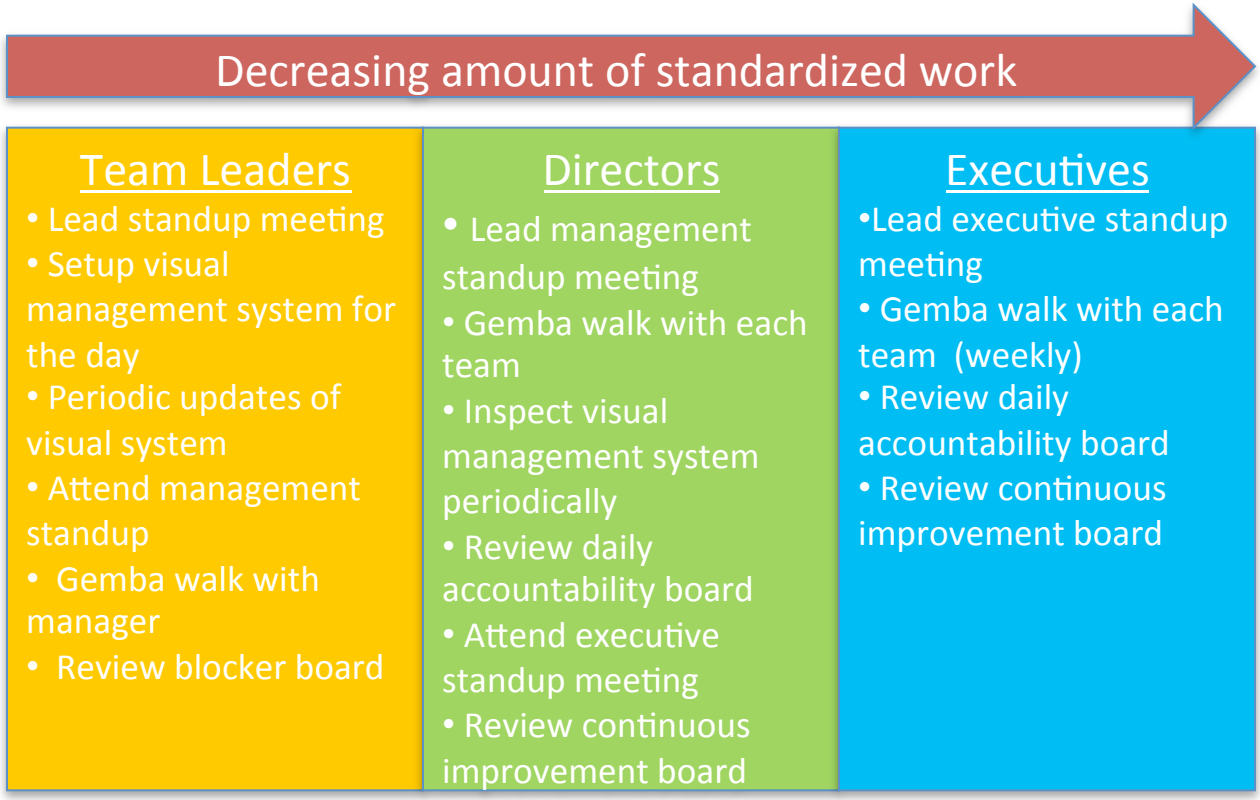
This creates short-term gains, but frequently causes long-term pain.

Leader standardized work ensures leaders use systems thinking and focus on training others, managing flow, and eliminating waste.

Standardized work is the tool used to ensure this focus happens automatically every day in a lean organization.

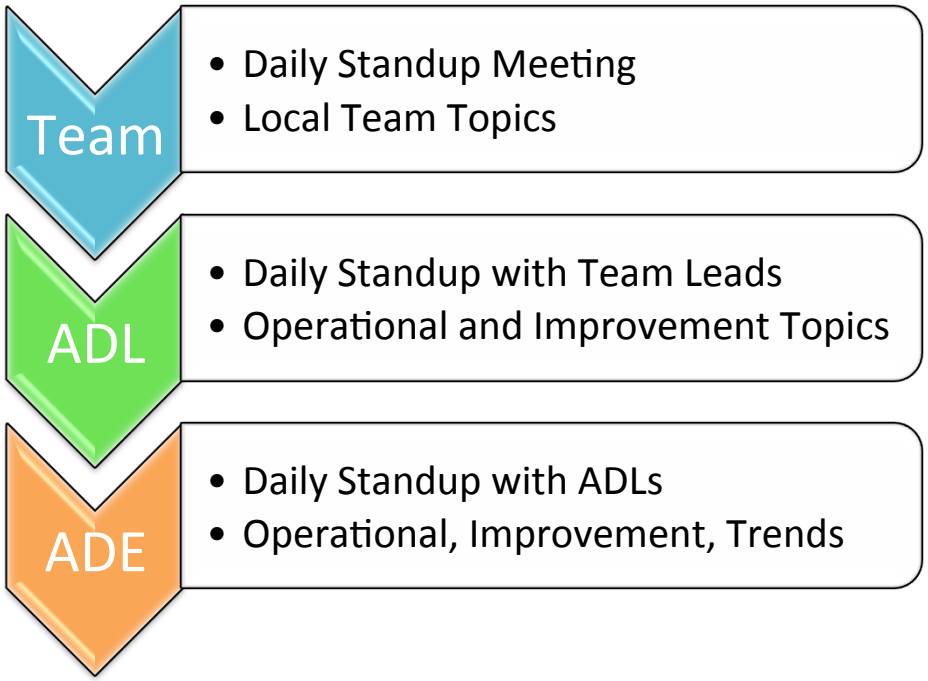
Leader Standardized Work in the ADC

Standardized work is specific and focused on value adding activities. Different levels in the organization have varying amounts of standardized work versus discretionary work.



Daily Accountability Process

Ensuring Leaders are Focused on Value

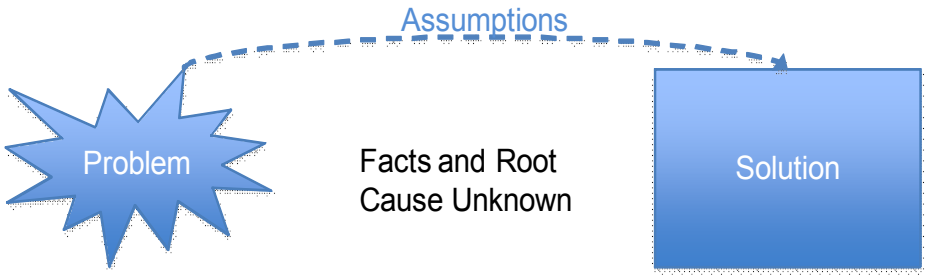


Three interlocking tiered meetings, less than 15 minutes each. Focus is on process and results.

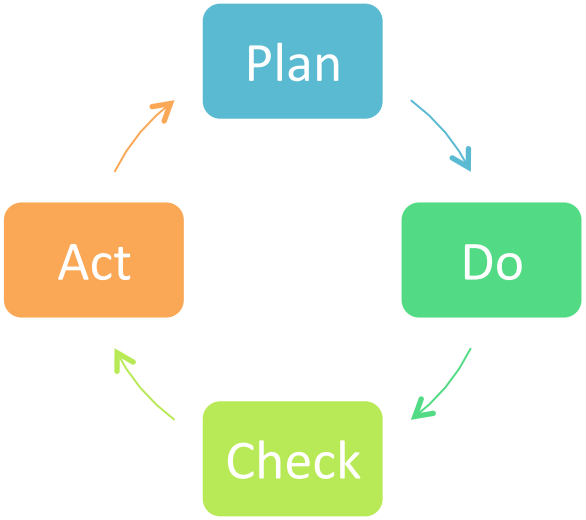
The presence of regular stand up meetings at all levels at the place of work, along with the use of physical visuals is a key characteristic of lean organizations.

Problem Solving Culture

What is a problem solving culture?



Traditional systems can encourage people to hide problems out of fear or simply not knowing what to do about them.



Lean systems stop to address problems and find root causes. Problem solving is a defined method rooted in the scientific approach – not jumping to quick solutions.

Problem Solving Culture

Create a competitive advantage by making every employee a problem-solving scientist

A problem solving culture…

- Empowers associates to tackle problems
- Provides a defined channel and method for solving problems
- Educates associates about problem solving techniques and tools to help identify and solve problems

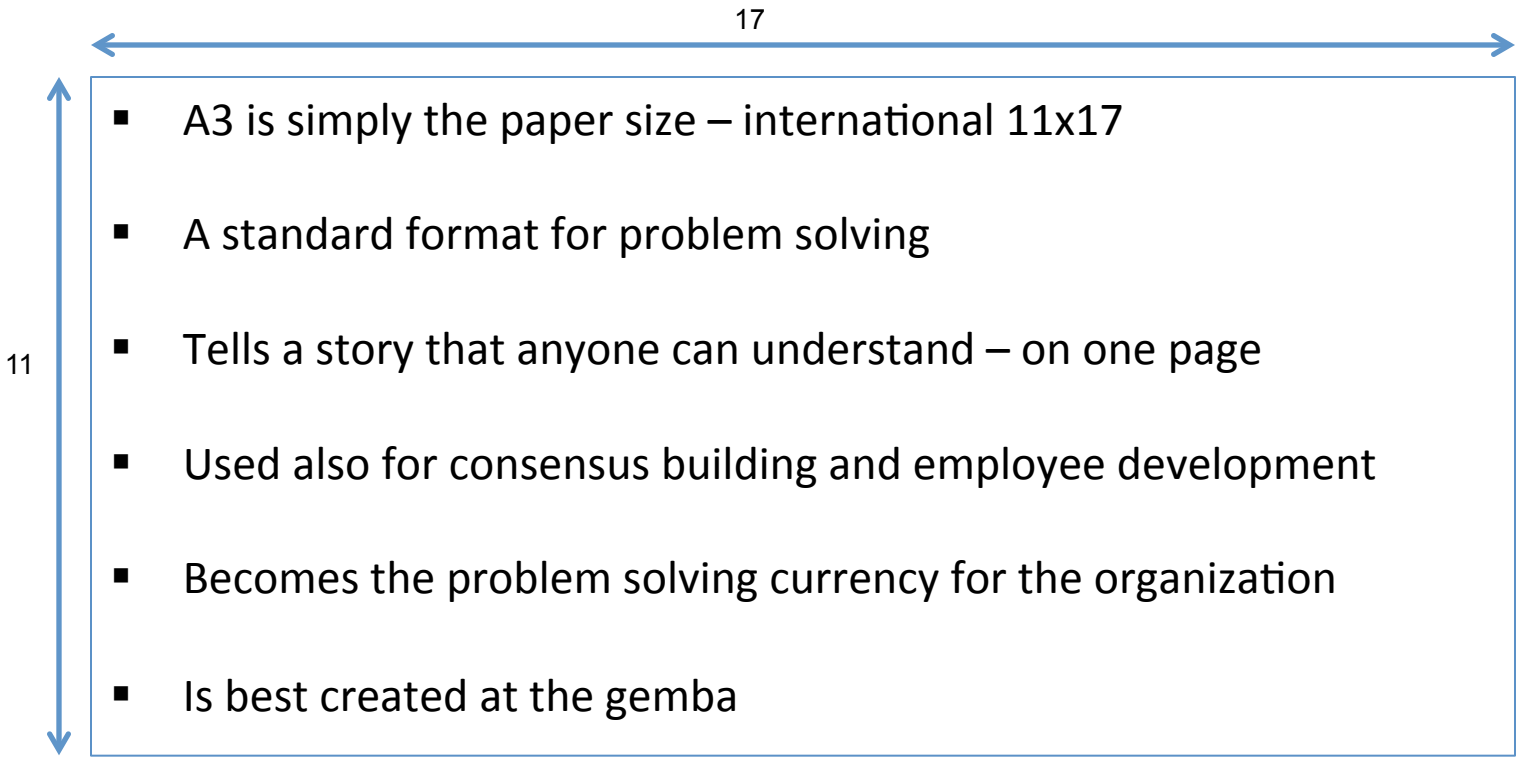
"My team has created a very innovative solution, but we're still looking for a problem to go with it."

How Do We Create a Culture of Problem Solving?

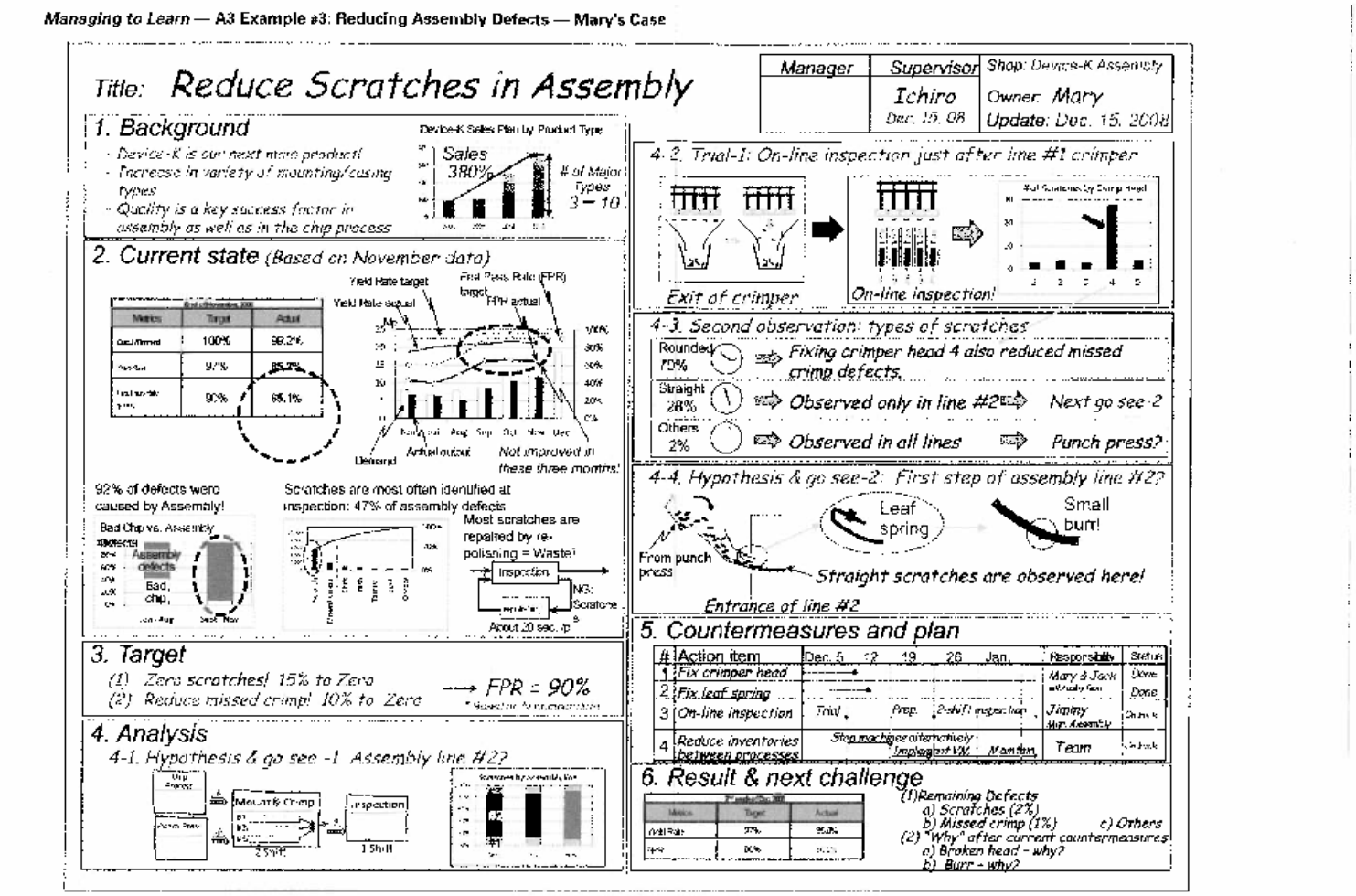
A3 as the Problem Solving Method

Remember…

Action drives Thinking



A3 Example from “Managing to Learn”



Kaizen, Continuous Improvement, and A3s
Relentless Pursuit of Perfection

/kai ˈ zen/ - continuous incremental improvement

Kaizen is a philosophy of continuous improvement that pervades throughout all areas and aspects of the organization. It is embedded in our culture and becomes a part of who we are in the ADC.

Nationwide ADC Continuous Improvement

- Applies to both formal kaizen events and "kaizen eyes" – everyday continuous improvement to root out waste
- Is driven by practitioners
- Provides a governance mechanism for pushing changes into the ADC Franchise Model
- Utilizes A3s to ensure PDCA thinking as well as other lean tools such as 5 Whys, Fishbone, etc.

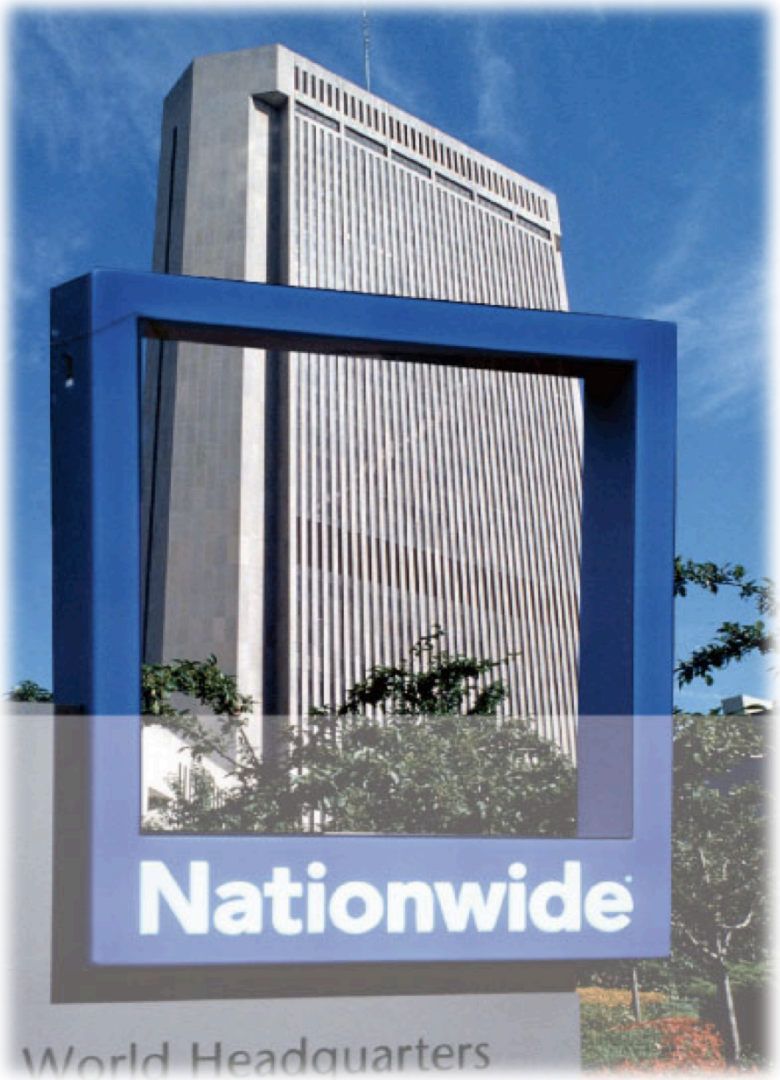
Where are we today?

- Two years into our journey
- Scaled from 6 lines to 26 lines with plans for 6 more this year
- First large-scale CMMI assessed lean and agile development center with zero known deficiencies
- Recognized in the industry as a leader in the lean software development space – conduct regular gemba tours for companies across the US and around the world

- Most importantly…

  - Focus on the processes have led to incredible quality gains, 23 of last 26 releases in 2010 completely defect free
  - Assessment results (audits) of adherence to processes above 4.5 on a 5 scale
  - Continuous improvement process fully operational

About Nationwide



Nationwide is one of the largest insurance and financial services companies in the world with over $135B in statutory assets.

We provide insurance, retirement, investments, and other products to consumers in the US.

Companies include Nationwide Insurance, Titan Insurance, Allied Insurance, Agribusiness, Nationwide Financial, Nationwide Retirement Solutions, Nationwide Bank, VPI, among others

Thank You!