

Annual Conference & Exhibition
March 1-4, 2010 | Atlanta | Georgia World Congress Center
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Which Improvement Philosophy is Most Appropriate for Your Organization and Why

transforming healthcare through IT™

Conflict of Interest Disclosure

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Has no real or apparent
conflicts of interest to report.

Background

- In the past three decades productivity among US manufacturing firms has nearly tripled, while US service company productivity is up only 40%.
- The root cause of problems with manufacturing /products is in one or more of the processes that design or develop the products.
- Service industries (i.e., healthcare, insurance, financial services, hospitality, real estate, etc) are pure process.
- Businesses and improvement philosophies identified originally in manufacturing can be applied across service industries as well.

Question: Which improvement philosophy makes the most sense for your organization/industry and Why?

Objectives/Scope of Discussion

The objectives of today's discussion will focus on:

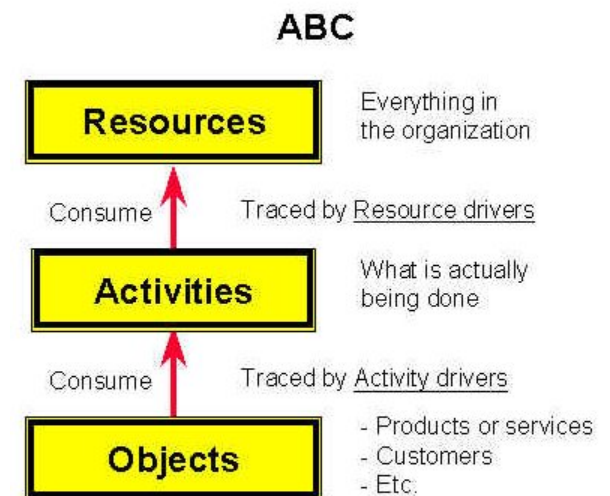
- Introducing different improvement philosophies
- Defining the unique characteristics of each approach
- Communicating the origin of each approach
- Providing education on the intended purpose or focus of each philosophy

The following philosophies will be discussed:

- Activity Based Costing
- Six Sigma
- Lean
- ISO 9000
- Malcolm Baldrige National Quality Award (NQA)

Activity Based Costing

- Activity-Based Costing (ABC) is a method of allocating costs to products and services.
- Generally used as a tool for planning and control.
- Helped to alleviate the arbitrary adding of broad expense percentages to all products (direct costs) to cover indirect costs.
- ABC was developed for manufacturing in the 70's and 80's to better calculate the true costs of production at the production level.
- Seeks to identify cause and effect relationships to objectively assign costs.
- The cost of each activity is attributed to each product to the extent that the product uses the activity.
- Often identifies areas of high overhead costs per unit and so directs attention to finding ways to reduce the costs or to charge more for costly products.



Activity Based Costing

Industry Applicability: Where precise profitability measures around specific products or services would be beneficial.

Pros:

- Alleviates arbitrary adding of broad expense percentages to all products/services to cover indirect costs
- Attempts to overcome the perceived deficiencies in traditional costing methods by more closely aligning activities with products
- A product is only charged with the cost of capacity utilized

Cons:

- Not an improvement method per se, but more of a cost tracking or allocation mechanism
- May produce results that differ from those required under generally accepted accounting principles (GAAP)
- A company that wishes to benefit from ABC must develop two costing systems -- one for external reporting and one for internal management

Focused on expense allocation

Activity Based Costing – Case Study

Background:

- Crozer-Keystone Health System, a 1,213-bed facility in Springfield, PA teamed up with Owens and Minor to determine if the ABC methodology could assist with lowering distribution costs.

Activities:

- Identified over 250 activity-driven costs that hospitals should consider
- Met with personnel to determine appropriate product costs and allocation percentages
- Looked for ways to cut slow-moving items and to reduce costly, unnecessary worker behavior (i.e., costs associated with a particular product)
- Focused on quantifying the activity value of processing purchasing orders, line items and freight.

Activity Based Costing – Case Study

Results:

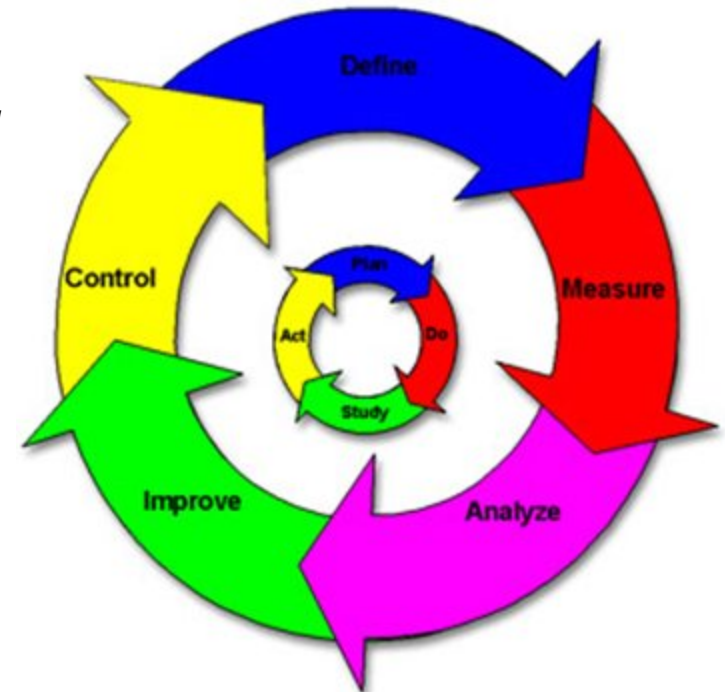
- The hospital saved \$50,000 between January and August.
- Reduced distribution fees to 4.9% vs. 6% percent under the previous cost-plus system.
- Saved money while offering a better handle on actual distribution costs.
- With more accurate cost information, material managers were able to eliminate non-essential activities to reduce internal expenses.

Six Sigma

- Six Sigma is a set of practices originally developed by Motorola to systematically improve processes by eliminating defects. A defect is defined as nonconformity of a product or service to its specifications.
- Heavily inspired by six preceding decades of quality improvement methodologies such as quality control, TQM, and Zero Defects.

Design
Measure
Analyze
Improve
Control

- The term "Six Sigma" refers to the ability of highly capable processes to produce output within a predefined specification.
- Processes that operate with six sigma quality produce at defect levels below 3.4 defects per (one) million opportunity (DPMO). The goal is to improve all processes to the 3.5 level of quality or better.



Six Sigma

Industry applicability: Cross industry (e.g., Healthcare, Financial Services, General Business, Engineering and Production processes) where data can be collected and reviewed to statistically improve process.

Pros:

- Heavily inspired by its predecessor quality movements (TQM, Zero defects, quality control).
- Integrates the human and process elements of improvement.
- Six Sigma emphasizes the importance of data and decision making based on facts and data rather than assumptions and hunches.

Cons:

- Critics say Six Sigma is “narrowly designed to fit an existing process” and does not help in “coming up with new products or disruptive technologies”.
- Difficult to have sufficient quality data available especially in processes where no data is available to begin with.
- The right selection and prioritization of implementation projects is one of the critical success factors of a Six Sigma program. Currently no tools are available to assist with this decision making it subjective.

Focused on defect reduction

Six Sigma - DMADV

To combat one of the drawbacks that Six Sigma focuses too much on existing process, a new addition to the methodology was developed:

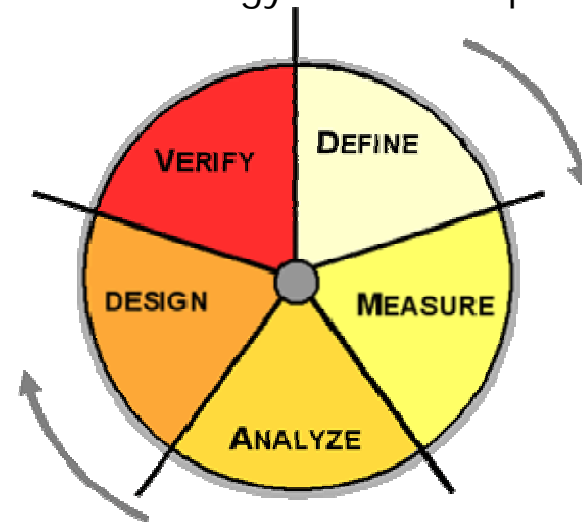
Define

Measure

Analyze

Design

Verify



- Strives to generate a new process where none previously existed or where an existing process is deemed to be inadequate or in need of replacement.
- Builds the efficiencies of Six Sigma methodology into the process *before* implementation.

Six Sigma – Case Study

Background:

- Cardiac catheterization labs represent a significant capital investment for many hospitals and a ROI is increasingly challenging due to advanced technologies and limitations in reimbursements
- New York-Presbyterian Hospital initiative aimed at improving throughput in the cardiac catheterization labs at several of their sites.
- The initiatives focused on the various sub-cycle times impacting throughput including:
 - Case start time
 - Room turnaround time
 - Patient preparation time

Activities:

- Determined which initiative would begin the 3-phase project
- Developed a charter that was approved by senior leadership
 - Created a Project Scope
 - Created a Business Case
 - Create a Problem Statement
- Developed a baseline of metrics
- Implemented DMAIC principles along with several key Six Sigma tools (fishbone diagrams, process mapping, statistical analysis of processing)
- Performed regression analysis
- Implemented process controls

Six Sigma – Case Study

Results:

- Analysis revealed that the time in which the cardiac assessment was completed was a key driver in whether the first case would be completed on time.
- Raised departmental productivity by improving first case start times.
 - Increased on-time First Case Start from 38% to 83%
- Process control mechanisms were implemented to ensure the changes could be sustained, and that the gains achieved from improvement activities would not be lost over time.
- The hospital gained 312 hours of procedure time without incurring any additional capital expense.

Lean

- Lean manufacturing is a process management philosophy derived mostly from the Toyota Production System (TPS) but also from other sources.
- Toyota's steady growth from a small player to the most valuable and the biggest car company in the world has focused attention upon how it has achieved this, making "Lean" a hot topic in the first decade of the 21st century.
- Lean is the set of TPS 'tools' that assist in the identification and steady elimination of waste (muda), the improvement of quality and production time, and cost reduction.
- Renowned for its focus on reduction of the original Toyota 'seven wastes' in order to improve overall customer value.
 - Defects: "Stuff" that's not right & needs fixing
 - Inventory: "Stuff" waiting to be worked
 - Processing Waste: "Stuff" we have to do that doesn't add value to the product/service

Lean

- Seven wastes (*continued*)
 - Overproduction: "Stuff" too much/too early
 - Waiting Time: People waiting for "Stuff" to arrive
 - Motion: Unnecessary human movement
 - Transportation: Moving people & "Stuff"
- Lean is often linked with Six Sigma because of Six Sigma's emphasis on reduction of process variation (or its converse smoothness).
- A second approach to Lean Manufacturing exists which is also promoted by Toyota in which the focus is upon improving the 'flow' or smoothness of work (thereby steadily eliminating mura, unevenness) through the system and not upon 'waste reduction' per se.

Lean

Industry Applicability: Healthcare, automotive, aerospace, insurance, construction, energy and government.

Pros:

- Focuses solving the problem of waste but also on improving the “flow” or smoothness of work
 - Aims to eliminate most if not all forms of waste
- Minimizes the overhead fixed cost to 30%.
- Aims to reduce operational costs, targets to boost, restore and raise the competitiveness of a company

Cons:

- Most common cause for failure in recent Lean initiatives can be attributed to poor development of the business case to launch the project
- In order to make lean completely successful you must have the support of everyone from employees to upper management
- Training for lean is a constant ongoing process, and when first starting out it takes a lot of time and effort on everyone's part

Focused on eliminating “waste” and improving the “flow” or smoothness of the operation

Convergence of Lean and Six Sigma

How are Lean and Six Sigma complementary?

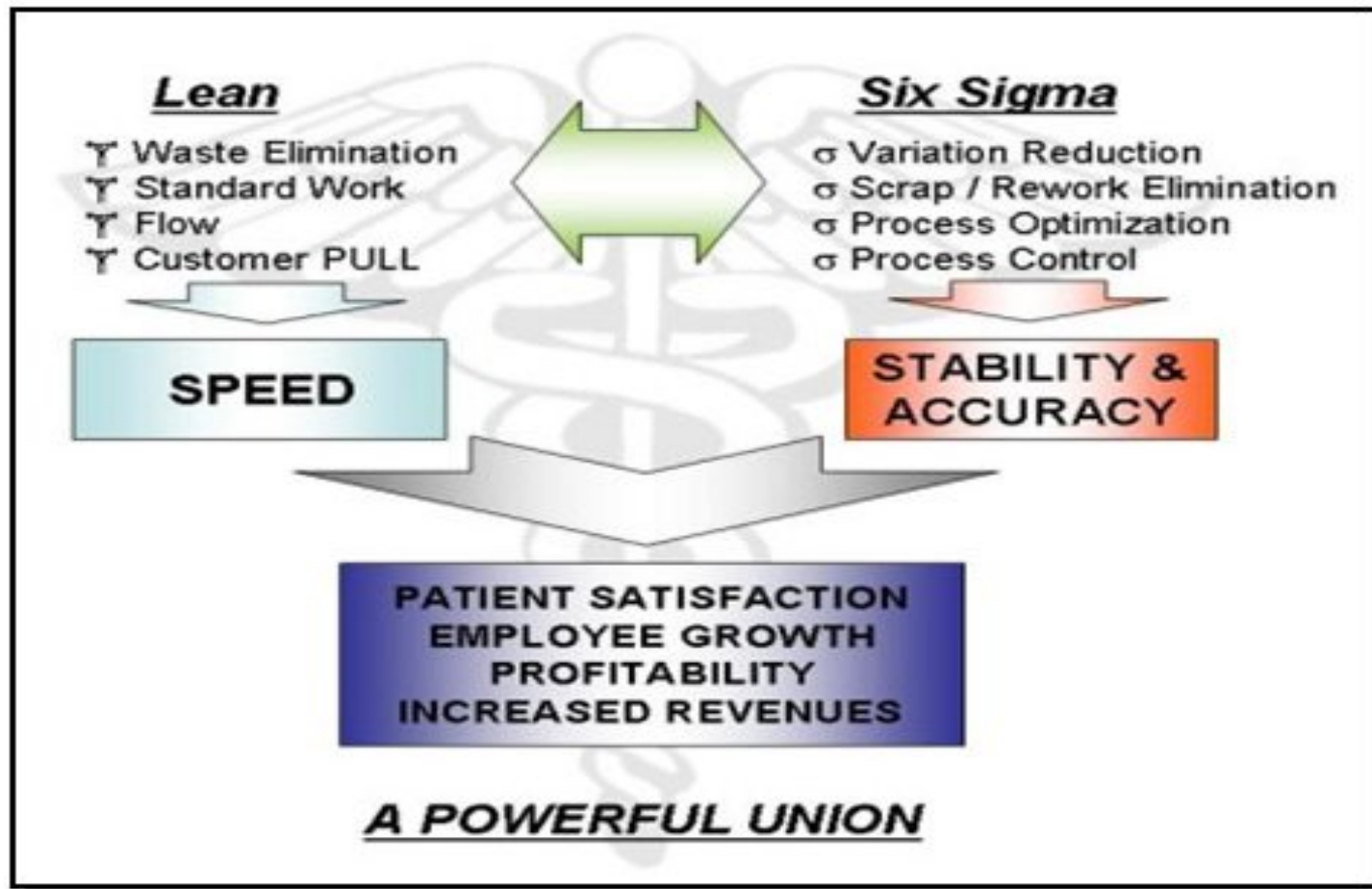
Lean:

- Focuses on maximizing process velocity (eliminating waste, focus on creating smoothness in processes).
- Provides tools for analyzing process flow and delay times at each activity in a process.
- Centers on the separation of "value-added" from "non-value-added" work with tools to eliminate the root causes of non-valued activities and their cost:
 - The 7 types of waste / non-value added work

Six Sigma:

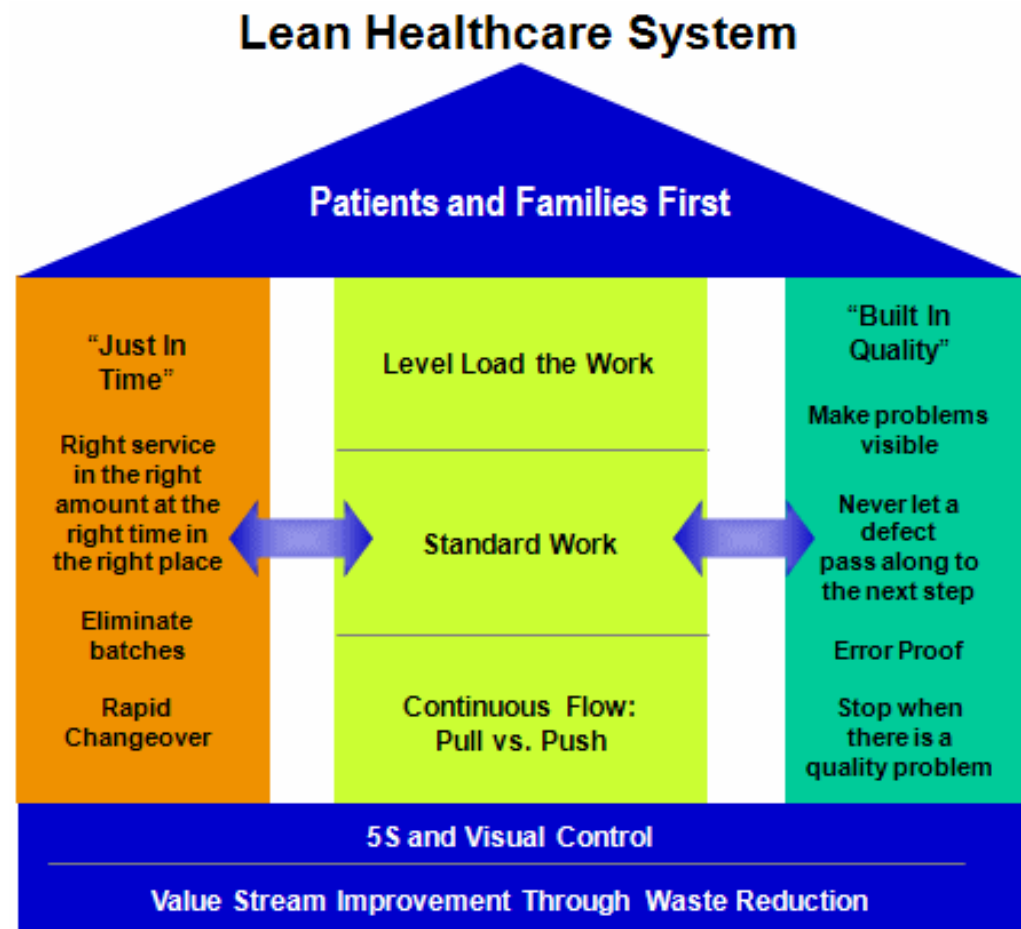
- Emphasizes the need to recognize opportunities and eliminate defects as defined by customers.
- Recognizes that variation hinders our ability to reliably deliver high quality services.
 - If we cannot perform a function consistently, how can we expect consistent output or quality?
- Requires data driven decisions and incorporates a comprehensive set of quality tools under a powerful framework for effective problem solving.
- Provides a highly prescriptive cultural infrastructure effective in obtaining sustainable results.

Convergence of Lean and Six Sigma



Lean Healthcare

- Lean Healthcare is an extension of Lean manufacturing.
- Incorporates *Kaizen* (continuous improvement) into daily activities of work at every level of the organization to optimize the science, technology and compassion that comprises healthcare today.
- A systematic methodology used to redesign point of service operations and patient care.



Lean Healthcare – Case Study

Background:

- Operating room staff of a 250 bed community major medical center wanted to reduce the changeover and setup between surgical cases in their inpatient surgery department
- In hopes to:
 - Reduce changeover
 - Reduce setup between surgical cases
 - Improve patient care
 - Improve physician satisfaction
 - Increase O. R. capacity without increasing staff

Lean Healthcare – Case Study

Activities:

- Conducted value stream analysis of the O.R. suite turnover process
- Identified lack of standardization in task performance
- Highlighted areas of waste (or “MUDA”) using key Lean tools:
 - 5 S: used for organizing, cleaning, developing and organizing a work environment
 - Current reality trees: problem analysis tools used to examine cause and effect
 - Inventory turnover rate: used to calculate number of cycles or turns over the year
 - Kaizen: Japanese for continuous improvement involving all resources
- Created detailed process maps, observation forms and action lists
- Identified value added movement of patients and supplies

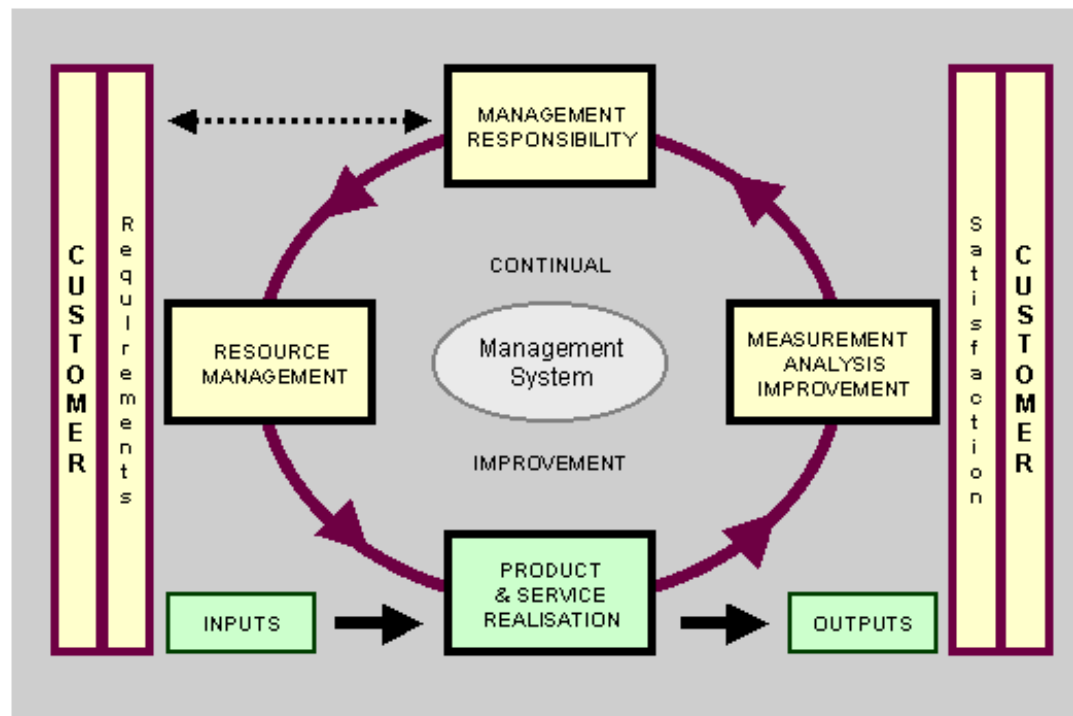
Lean Healthcare – Case Study

Results:

- The O.R. staff realized an initial reduction of 46% of time dedicated to the O.R. turnover process
- Since inception of LEAN HEALTHCARE, efficiency has grown to 60%
- Reduction of time needed in the O.R. changeover process
- Overall reduction in setup between surgical cases
- Improved overall efficiency
- Improved patient care
- Improved Physician satisfaction
- Improved O.R. capacity

ISO 9000

- ISO 9000 is maintained by ISO, the International Organization for Standardization and is administered by accreditation and certification bodies.
- Standards originated in manufacturing but they are now employed across a wide range of other types of organizations.



ISO 9000

- Certification to an ISO 9000 standard does not guarantee the compliance (and therefore the quality) of end products and services; rather, it certifies that consistent business processes are being applied.
 - According to ISO in 2004, "service sectors now account by far for the highest number of ISO 9001:2000 certificates - about 31% of the total"
- Some of the requirements in ISO 9001 would include:
 - A set of procedures that cover all key processes
 - Monitoring processes to ensure effectiveness
 - Keeping adequate records
 - Checking output for defects, with appropriate corrective actions
 - Regularly reviewing individual processes and the quality system itself for effectiveness
 - Facilitating continual improvement

ISO 9000

Industry Applicability: ISO 9000 originated in manufacturing, but now applied across a wide range of organizations especially those working directly with government entities.

Pros:

- Administered by accreditation and certification bodies applying a consistent standard across geography and industry.
- Certification in ISO 9000 is third-party recognition/ acknowledgment that your company's processing is consistent and documented.

Cons:

- Certification does not guarantee the quality of end products or service; rather, it certifies that consistent business processes were applied.
- The ISO 9000 standard is generalized and abstract. Its parts must be carefully interpreted, to make sense within a particular organization.

Confirms that a repeatable and documented process exists but doesn't comment on degree of efficiency or quality in the process

ISO 9000 – Case Study

Background:

- Major healthcare provider faced with growing its business in an environment of stiff competition with its primary customer being the federal government.
- Even though historically successful in both new and renewal contracts, its leadership felt the need to improve its demonstrated performance level as a way to differentiate itself.
- ISO 9000 certification was selected from among other options because:
 - It has proved effective in other companies
 - The federal government will recognize it in making contract award decisions in the future.

Activities:

- Identified the high-level business processes, and used these as a guide to define the sub-processes.
- Created a living Quality Manual document.
- Defined and documented each process in conjunction with process owners.
- Gathered and analyzed performance metrics of each process to determine compliance to goals.
- Prepared for the ISO Registrar who performed the audit resulting in certification.

ISO 9000 – Case Study

Results:

- There is a documented process for all key functions certified by an outside third-party.
- The studied area is now ready to compete for new profitable business
- Implemented quality programs have been proven to result in lower costs and more satisfied customers, resulting in additional new business.
- Employee satisfaction is expected to rise as a result of a more supportive and more clearly focused work environment, resulting in lower turnover.
- Happier and experienced staff will help the company provide superior customer service.

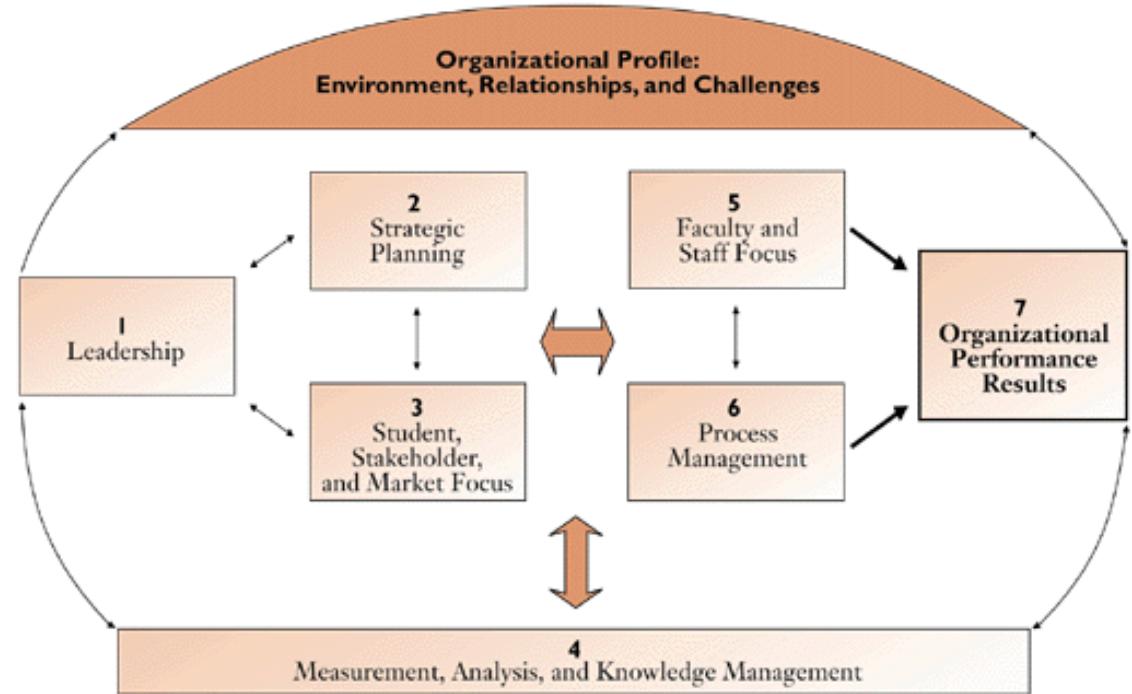
Malcolm Baldrige NQA

- Who is Malcolm Baldrige?
 - Secretary of Commerce from 1981 until his death in a rodeo accident in July 1987.
 - Proponent of quality management as a key to this country's prosperity and long-term strength.
 - Took a personal interest in the quality improvement act that was eventually named after him and helped draft one of the early versions.
 - In recognition of his contributions, Congress named the award in his honor.
- The Baldrige Award is given by the President of the United States to organizations that apply.
- Congress established the award program in 1987 to recognize U.S. organizations for their achievements in quality and performance and to raise awareness about the importance of quality and performance excellence as a competitive edge.

Malcolm Baldrige NQA

- Focus is on:
 - Leadership
 - Strategic Planning
 - Customer/Market focus
 - Measurement/Analysis
 - Workforce focus
 - Process Management
 - Results
- The award is not given for specific products or services.
- Between 3 and 5 awards given annually across many industries.

Baldrige Education Criteria for Performance Excellence Framework: A Systems Perspective



Malcolm Baldrige NQA

Industry Applicability: Awards given annually in each of these categories: Healthcare, Manufacturing, Service, Small Business, Education and Nonprofit

Pros:

- Relies on a framework that addresses the entire organization
- Established a national standard of quality, with hundreds of corporations using the application criteria as a basic management guide

Cons:

- Not every industry is effectively represented, although all companies can apply
- The Award is not meant to be a measure of financial success. It does not address some key elements of business success--innovation, financial performance, and long-term planning

Provides a framework to evaluate an entire organization on a point system providing a baseline for improvement

2009 Malcolm Baldrige Recipients

AtlantiCare - a nonprofit health system in southeastern New Jersey, delivers acute and chronic care, preventive and at-risk services, and health information. Recognitions include:

- Achieved the Centers for Medicare and Medicaid Services (CMS) national top 10 percent performance for patient care measures related to congestive heart failure, acute myocardial infarction, and pneumonia.
- Ranked seventh out of 4,200 hospitals in 2006 by the Commonwealth Fund for clinical results in care of patients, based on CMS data
- Dramatic growth continues at an 11% annually growth rate every year for the last 8 years.
- Increased its market share in the primary service area to a six-year high of 62% in the second quarter 2008 and improved its market share in the regional service area by 57% from 2000 to 2009.
- Recognized in the top 100 out of 8,222 agencies in the country for Home Health earning the status of Home Care Elite for the past four consecutive years

2009 Malcolm Baldrige Recipients

AtlantiCare *continued*

- Used a five-phase "Voice of the Customer" inquiry process to understand patient and stakeholder requirements, and identify and innovate health care service offerings.
- Survey responses from 2007 to 2009 show customer satisfaction for multiple service lines above the Professional Research Consultants 90th percentile national benchmark, including those for the surgery center, the spine institute, urgent care, and clinical labs.
- In customer preference, AtlantiCare was the 2008 market leader over competitors for the overall system.
- Current employee loyalty index score equals that of the health care leader, and results from the 2009 HR Solutions survey of key drivers of workforce engagement are equal to or approaching 90th percentile national performance levels.
- The turnover rate for nurses declined from 2006 to 2008, significantly outperforming the New Jersey Hospital Association average.
- Leveraging EMRs and its Connected Community Health Information Exchange to improve patient safety and quality and to capture/share all health information electronically

2009 Malcolm Baldrige Recipients

Heartland Health (HH) - an integrated, not-for-profit, community-based health care delivery system that serves a 22-county market, including portions of Missouri, Kansas, Nebraska, and Iowa.

- Achieved 90% ratings in overall outpatient satisfaction and in key drivers of outpatient satisfaction between 2006 and 2009.
- Members have rated HH's Community Health Plan above the National Committee for Quality Assurance (NCQA) 90th percentile for health care and specialists' care.
- HH consistently maintains its Moody's and Fitch Bond ratings of A and A2, respectively.
- HH is ranked in the top 15% of hospitals nationally for patient safety according to the HealthGrades (an independent health care ratings organization) "Best Hospital Scores."

2009 Malcolm Baldrige Recipients

Heartland Health *continued*

- Incorporates an electronic medical record system into its Lewis and Clark Information Exchange (LACIE) program, an innovation that establishes a lifetime medical record for patients in the region and provides health care professionals with an aggregated view of a patient's health care information across multiple providers and states.
- Applies Six Sigma methods within its Process Improvement Model to control costs, prevent rework and errors, and minimize the costs of inspection, tests, and audits. Cost savings have increased from \$8M/2005 to \$25M/2009.
- Uses its Performance Management Program to deliver a repeatable system to support high performance work.
- Numerous recognitions for its outstanding accomplishments: Missouri State Quality Award (2x), "Best in Value" for quality, affordability, efficiency, and satisfaction in 2009.
- Heartland Health has achieved 90% ratings in overall outpatient satisfaction and in key drivers of outpatient satisfaction between 2006 and 2009.

Conclusion

- Different improvement philosophies accomplish different objectives.
- Determining what you want to achieve before you commit to an improvement philosophy may be the most critical first step in your improvement initiative.
 - Quality improvements
 - Consistency in process
 - Cross company improvement
 - Validation by a recognized third-party for consistency
 - All of the above?
- Rooted historically in manufacturing, some of the previous methodologies all have a place in today's services industries, especially in healthcare.
- Follow the guidelines on the following page before you start your project to ensure the usage of the proper improvement methodology.

Conclusion

Measure	Use this improvement philosophy if your goals is to:	Cost to Implement
Activity Based Costing	Identify a <u>fair and equitable distribution of costs</u> based on resource consumption	Low
Six Sigma	<u>Improve your process through detailed analytic evaluation.</u> This will require the availability of existing data to act as a baseline measure for comparison purpose.	High
Lean	<u>Identify and eliminate waste</u> in your core business processes. Integration of healthcare principles into the Lean methodology makes this especially appealing to healthcare organizations.	High
ISO 9000	Leverage recognition by a third party of your company's ability to <u>perform certain processes predictably and repeatedly.</u>	Med
Malcolm Baldrige NQA	<u>Holistically modify the way your organization operates today</u> from the top down with a goal of aligning everything from Strategy to Leadership to Process.	High

Conclusion – Pro/Con Summary

Measure	Pros	Cons
Activity Based Costing	<ul style="list-style-type: none"> Alleviates arbitrary adding of broad expense percentages to all products/services to cover indirect costs. 	<ul style="list-style-type: none"> Not an improvement method per se, but more of cost tracking mechanism.
Six Sigma	<ul style="list-style-type: none"> Heavily inspired by its predecessors in quality movement. Very fact based and data driven 	<ul style="list-style-type: none"> Initial design not focused on new products or disruptive technologies, but on improving what you have. Requires existing data to effectively measure "before" and "after"
Lean	<ul style="list-style-type: none"> Focuses not only on solving the problem of waste (a.k.a. "defects" in other measurement philosophies) but also on improving the "flow" or smoothness of work. 	<ul style="list-style-type: none"> Most common cause for failure in recent Lean initiatives can be attributed to poor development of the business case to launch the project.
ISO 9000	<ul style="list-style-type: none"> Administered by accreditation and certification bodies applying a consistent standard across geography and industry. 	<ul style="list-style-type: none"> Certification does not guarantee the quality of end products or service; rather, it certifies that consistent business processes were applied.
Malcolm Baldrige NQA	<ul style="list-style-type: none"> Relies on a framework that addresses the entire organization. 	<ul style="list-style-type: none"> Not every industry is effectively represented, although all companies can apply. Currently additional categories of awards are being considered.

Which Improvement Philosophy is Most Appropriate for Your Organization and Why

- Questions?
- For further information, please contact:

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