

# OpExecs

strategic • sustainable OPEX solutions

## Using the Lean Six Sigma approach to drive Operational Excellence

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<https://opexecs.com>

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# Topics

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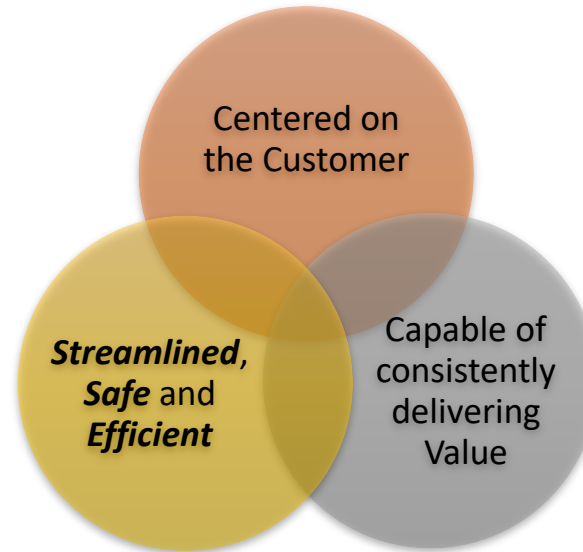
- What is Operational Excellence (OE)
- How does Lean Six Sigma enable OE?
- Benefits of the approach
- Project Flow
- What type of improvement opportunity do I have?
  - “Just go do it”
  - Lean – Kaizen Event or Opportunity
  - Lean Six Sigma Green or Black Belt
  - Agile or Waterfall project
- Synergies between Agile, PMP - PMBOK® & Lean Six Sigma

# What is *Operational Excellence*?

Ensuring customer and business expectations are met on an ongoing basis by continuously delivering, measuring and improving value.

To accomplish this, ***every employee sees the flow of value to the customer and works to drive it towards perfection.***

**Processes must be**



LEAN SIX  
SIGMA  
APPROACH  
HELPS TEAMS  
DRIVE  
OPERATIONAL  
EXCELLENCE



# Lean Six Sigma is growing in popularity and application

Developed by Motorola in the 1980's based upon Walter E Deming's quality leadership

- "Six Sigma" Launched in response to increased complaints from sales force about defective products
- Saved Motorola more than \$18 billion in 20+ years
- Motorola was "surprised" to discover that higher quality resulted in lower cost ...

GE adopted Six Sigma in the mid-1990's

- Phenomenal success and documented benefit to the bottom line ... \$\$\$ saved increased visibility
- Applied beyond manufacturing into service environments
- Every project required define phase & demonstrated financial benefit

Lean Manufacturing caught fire with Toyota Production System (TPS) success in '00's

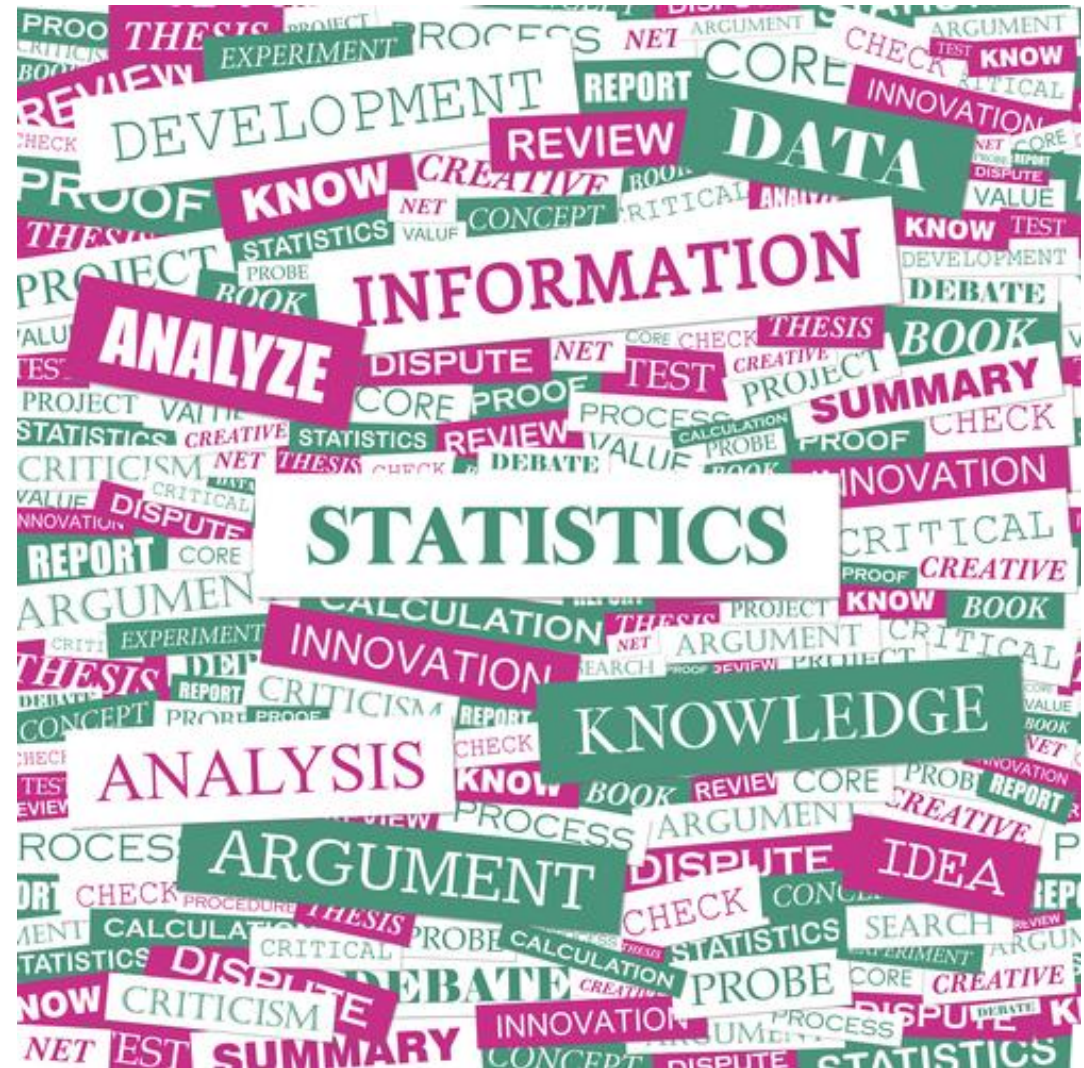
- Led by the automotive industry – Toyota specifically
- Extremely positive impact on operations, customer and employee loyalty
- Growing in popularity due to results & accelerated time to benefit
- Engages all workers to eliminate waste
- Expanded beyond manufacturing to the 'lean enterprise'

Lean Six Sigma success now leveraged across functions, industries and segments

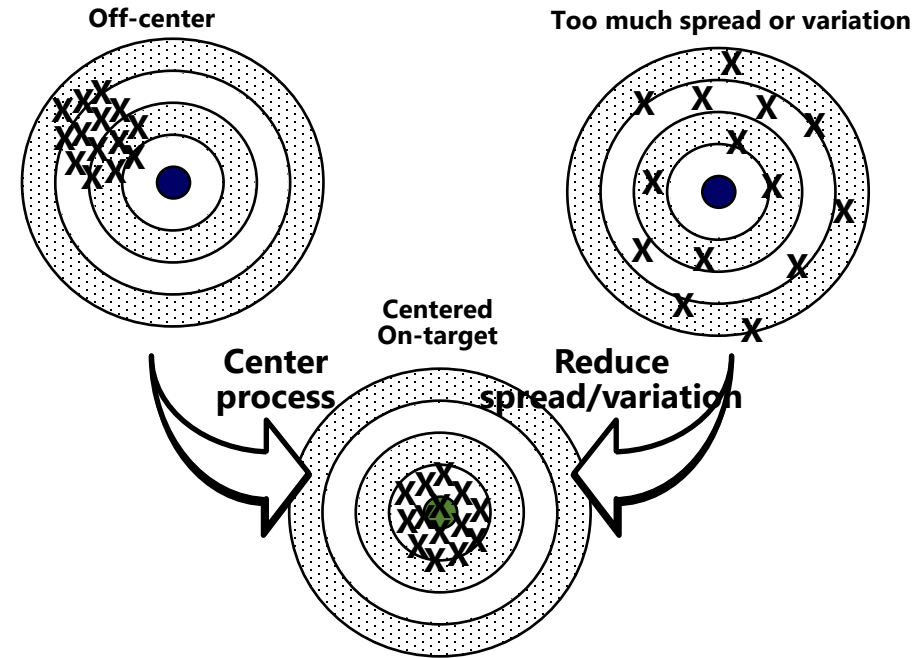
- Manufacturing
- Technology
- Telecomm
- Finance
- Healthcare
- Government

# Six Sigma is ...

- ***Statistical term***
- ***Quality goal***
- ***Methodology***
- ***Management philosophy***

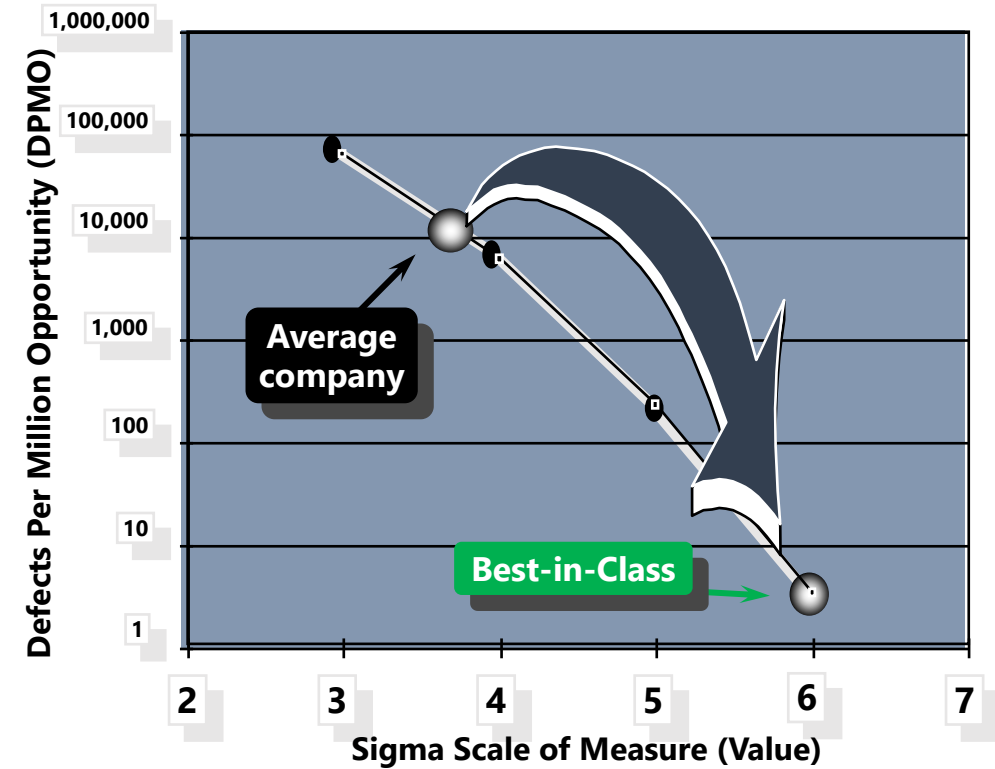


# Six Sigma is a *statistic* which defines variation around a goal



**GETTING TO  $6\sigma$  REQUIRES CENTERING PERFORMANCE AND REDUCING VARIATION TO ACHIEVE THE TARGET TIME AFTER TIME.**

# Six Sigma is a *quality goal* targeting an extremely high level of excellence



**A PROCESS OPERATING AT  $6\sigma$  GENERATES NO MORE THAN 3.4 DEFECTS PER MILLION OPPORTUNITIES**



# What kind of a quality goal is Six Sigma?

**3.8 Sigma**  
**99% Good**

- **20,000 lost articles of mail per hour**
- **Unsafe drinking water for almost 15 minutes each day**
- **5,000 incorrect surgical operations per week**
- **Two short or long landings at most major airports each day**
- **200,000 wrong drug prescriptions each year**
- **6,300 homicides per year in Washington DC**

**6 Sigma**  
**99.99966% Good**

- **7 lost articles of mail per hour**
- **One unsafe minute of drinking water every seven months**
- **1.7 incorrect operations per week**
- **One short or long landing every five years**
- **68 wrong drug prescriptions each year**
- **2 Homicides per year in Washington DC (actual rate in 2019 was 162, or 5.1 sigma)**

# Six Sigma DMAIC is a ***data-driven methodology*** for

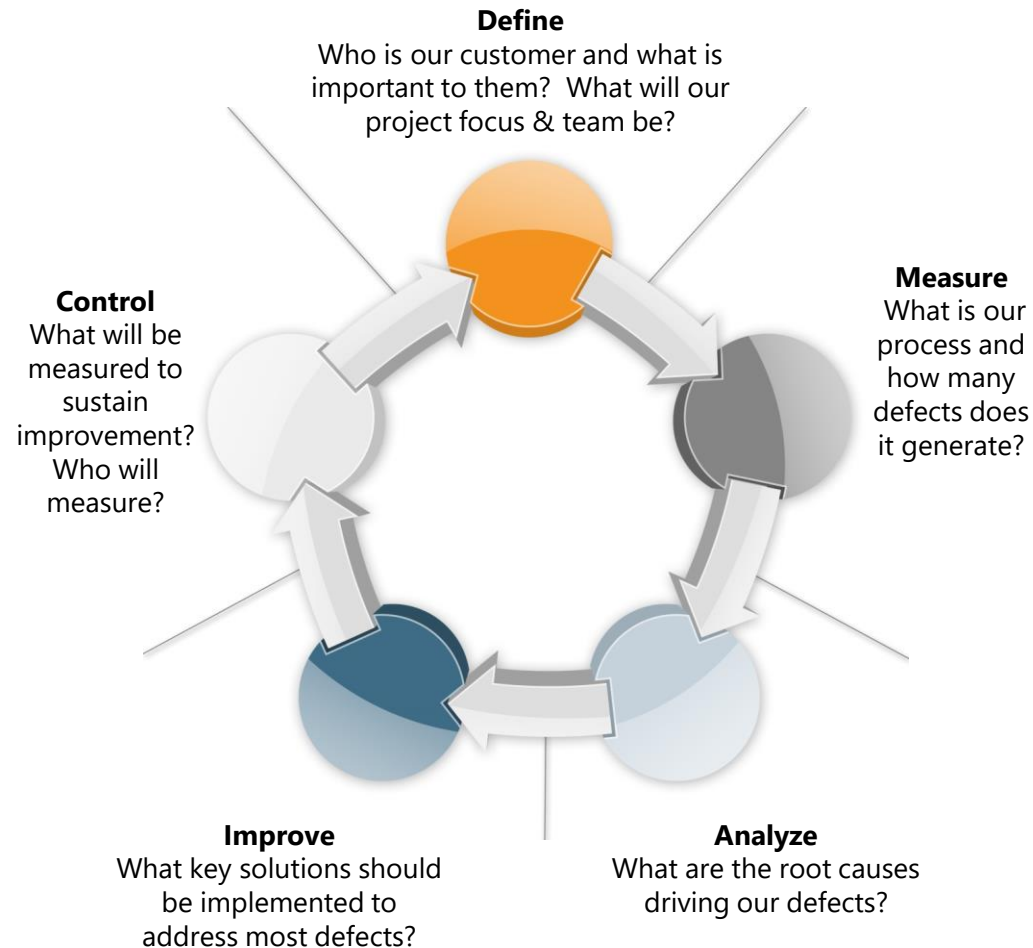


Improving existing products and services

- Achieving ***greater customer satisfaction and loyalty***
- ***Achieving business strategies***
- ***Reducing the cost*** of poor quality
- ***Identifying innovation*** opportunities
- ***Improving employee*** and organization ***morale***

**CONSISTS OF FIVE INTERCONNECTED PHASES WITH SPECIFIC DELIVERABLES**

# Each phase in DMAIC methodology focuses the team on specific outcomes designed to solve problems



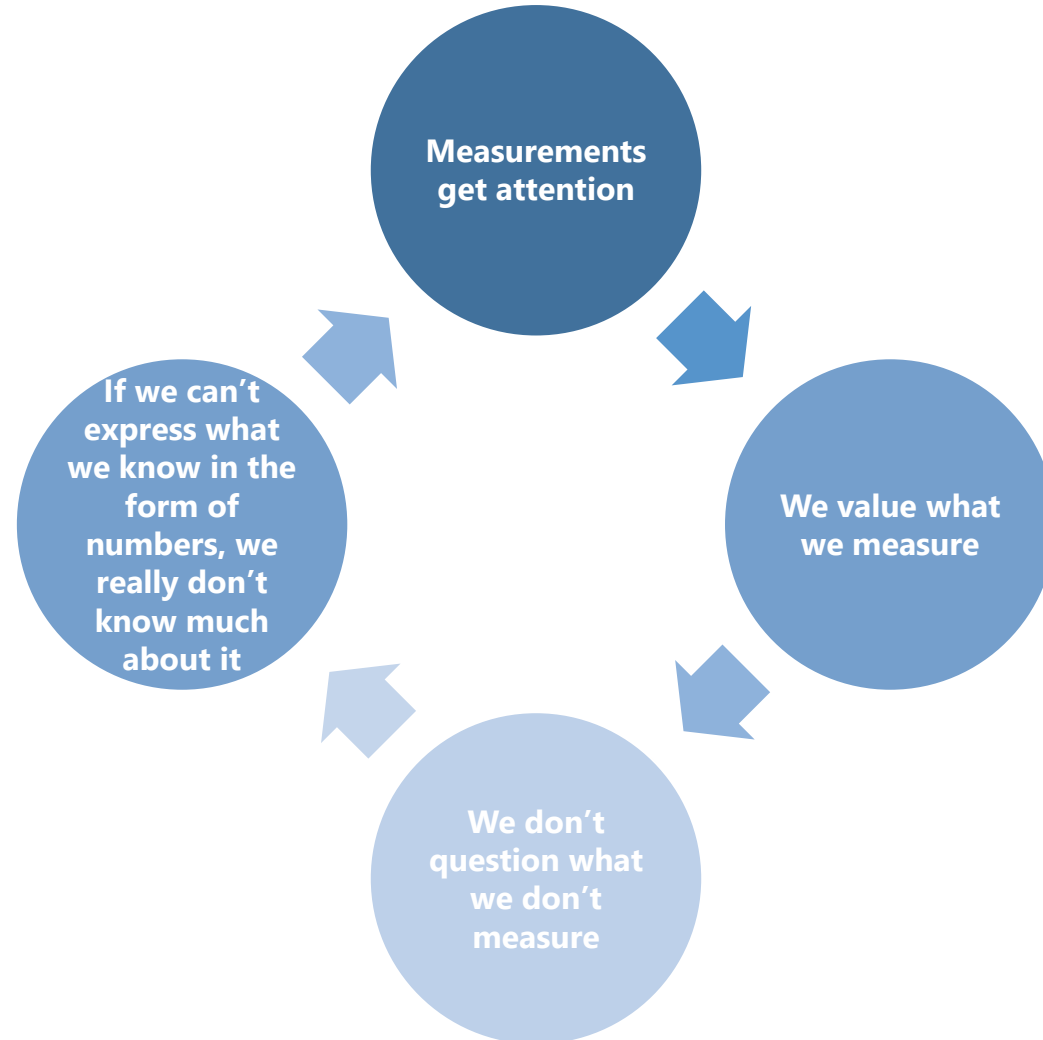
# Six Sigma is a *management philosophy* requiring relentless focus on meeting customers' needs



A customer is the direct or indirect recipient of a product or service. Every process has customers who are internal and external to the business.  
***The customer ultimately determines whether a product or process is operating at an acceptable level.***

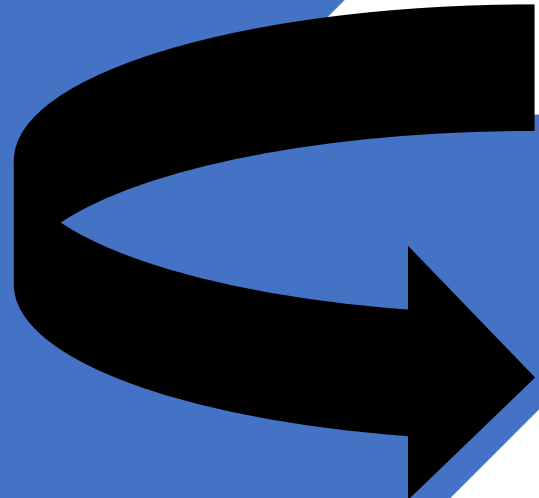
**SIX SIGMA BEGINS AND ENDS WITH THE CUSTOMER**

# The management philosophy requires a focus on data to hold teams accountable to meet customers' needs

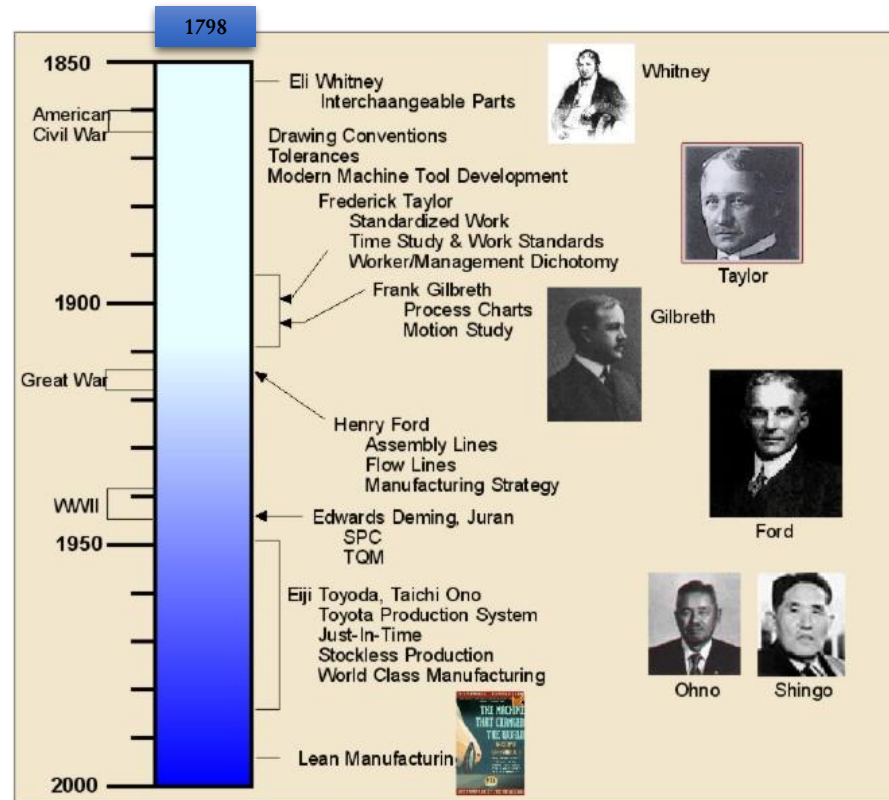


# Lean + Six Sigma

SPEED + A DATA-DRIVEN, PROBLEM-SOLVING APPROACH COLLIDE TO ACCELERATE RESULTS



# Lean thinking has been around for a long time



Lean Manufacturing History Timeline

[http://www.strategosinc.com/lean\\_manufacturing\\_history.htm](http://www.strategosinc.com/lean_manufacturing_history.htm)

Or the history channel

<http://www.history.com/topics/inventions/interchangeable-parts>

- Lean Thinking can be traced to Eli Whitney and a government contract to manufacture 10,000 muskets within an extraordinarily short time frame of less than two years in 1798.
- Eli and his team changed the entire gun manufacturing process by using standard, interchangeable parts and although not all were delivered within 2 years, they did provide 10,000 muskets of higher quality than ever before with an additional 15,000 delivered shortly after this.

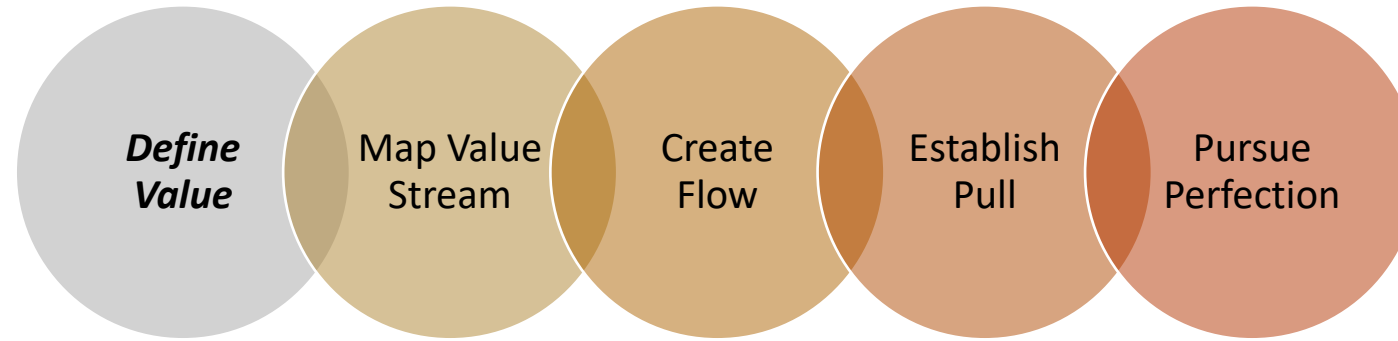
Lean  
techniques  
maximize  
process  
velocity  
by *eliminating  
waste*

- 1.Reduce cycle time and cost
- 2.Improve use of resources
- 3.Increase customer satisfaction
- 4.Those who are closest to the problem identify the solutions
- 5.Facilitated workshops can yield immediate results

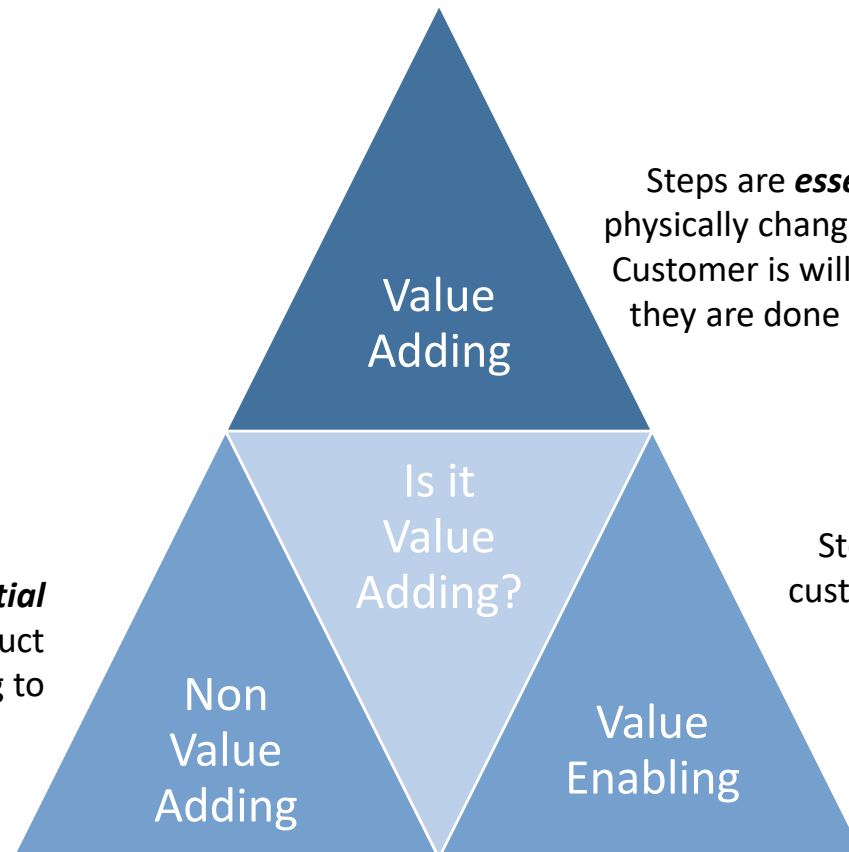
Lean Six Sigma combines Lean principles of ***speed and immediate action*** with Six Sigma focus on ***improving and sustaining quality*** from the customers' perspectives



# Lean principles .. First step is defining what adds value



Steps are considered **non-essential** to produce and deliver the product or service. Customer is unwilling to pay for these steps.



Steps are **essential** because they physically change the product/service, Customer is willing to pay for them & they are done correctly - first time.

Steps are not essential to the customer but do allow the value-adding tasks to be done better/faster.

# Waste is the opposite of Adding Value – Use the “DOWNTIME” acronym to identify

- D** DEFECTS
- O** OVERPRODUCTION
- W** WAITING
- N** NON-UTILIZED TALENT
- T** TRANSPORTATION
- I** INVENTORY
- M** MOTION
- E** EXTRAPROCESSING



# Lean and Six Sigma Toolboxes are complementary



## Lean

***Eliminating waste (time, money, opportunity)***

- ❑ Champion, Sponsor and team
- ❑ Kaizen events
- ❑ Workplace Organization Analysis & Improvement (5S's)
- ❑ Standard Work
- ❑ Lean Daily Management - Metrics
- ❑ Process Analysis and Design/Redesign - Value Stream Mapping
- ❑ Visual controls and Cell Management tools/techniques
- ❑ Pull Systems
- ❑ Takt time
- ❑ Capacity planning
- ❑ SMED – Reduce Set-up Time
- ❑ Plan/Do/Check/Act

## Six Sigma

***Identifying and eliminating customer-impacting defects***

- ❑ Champion, Sponsor and Team
- ❑ DMAIC methodology and project mindset
- ❑ Voice of the Customer and CTQ (Critical to Quality) analysis
- ❑ Project Charter
- ❑ Data Analysis and graphical summary
- ❑ Capability Analysis and Metrics
- ❑ Failure Modes & Effects and Fishbone analyses
- ❑ Solution pilot/ implementation
- ❑ Risk Assessment
- ❑ Control techniques
- ❑ Core Team Meetings and Project Presentations at end of tollgates (DMAIC phases)

# 5S is an example of an easy to apply Lean Tool



Critical basic tool from the Lean Toolbox

Based upon the knowledge that a Lean Process requires a logically organized, continuously maintained workspace

Sometimes known as '6S' with the 6th S of "SAFETY"

Standard Work - defining a process' steps, equipment, safety guidelines and physical layout, goes hand in hand with 5S

## Workspaces after 5S



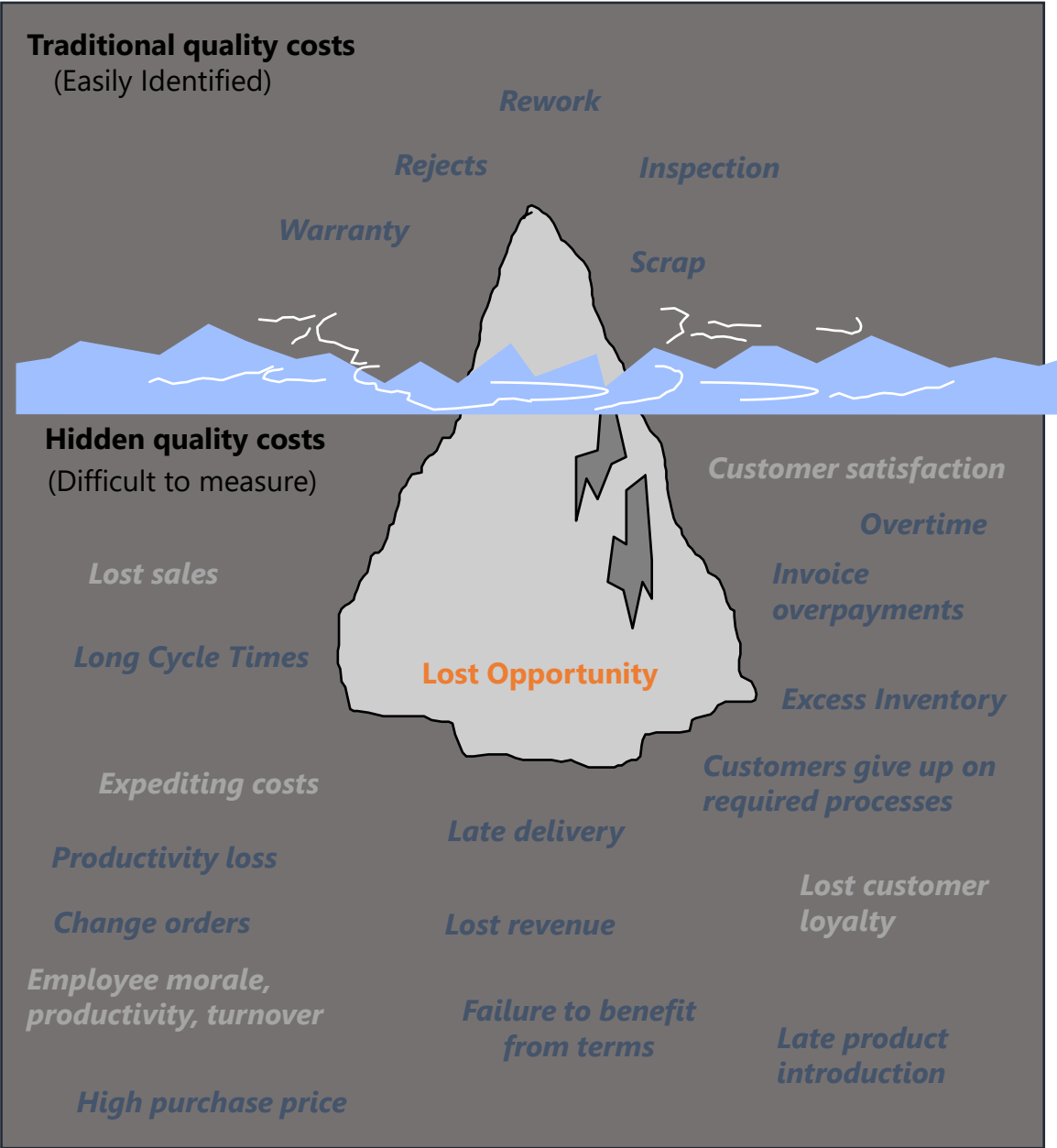
# Lean Six Sigma requires a process focus

*"Eighty-five percent of the reasons  
for failure to meet customer  
expectations are related to  
deficiencies in systems and  
process... rather than the employee.*

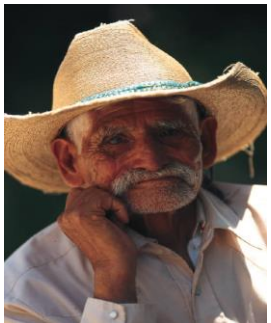
*The role of management is to  
change the process rather than  
badgering individuals to do better."*

*W. Edwards Deming*

# Projects impact both Traditional and hidden costs of poor quality



# Lean Six Sigma also applies to government



- Citizens are customers!
- There is a Cost to Poor Quality
  - Reduced revenue
  - Lawsuits
  - High operating costs
  - Increased cycle time
  - People move out of the local area
  - Developers move business elsewhere
  - Low program participation
- Lean Six Sigma can help
  - Focus on citizens' concerns
  - Increase levels of service and capacity to serve
  - Reduce defects
  - Improve safety & efficiency
  - Simplify and speed up processes
  - Enhance compliance

# Lean Six Sigma organizations are different

Traditional culture	Lean Six Sigma culture
Management by cost and time	Management by quality and time
Process tweaking	Breakthrough process improvement
Problem-solving by gut feel	Problem-solving by data and statistical analysis
Blames people	Blames process
Reactive	Proactive
Company focus	Customer focus
Function focus	Process focus
Hierarchical	Empowered teams
Lack of accountability & responsibility	Clear, defined ownership

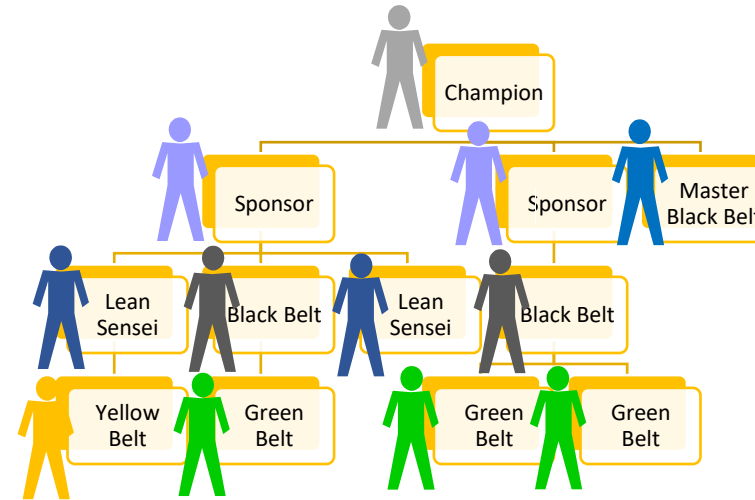


# How should a project be selected?

1. Where is the biggest ***pain-point***?
  - Customers or citizens complaining
  - Cost is substantial/problematic
  - Known problems are easily described
  - Strategic priorities are not being addressed
2. Where are the most ***talented resources***?
  - Leaders
  - Analytical resources
  - Effective teams that work well together
3. In which organization are the ***top leaders willing to try Lean Six Sigma***?
4. Where does ***significant data exist*** that will lead to buy-in?



# Typical Lean and Lean Six Sigma Team Roles



**Champion**

Barrier-buster and project selector

**Sponsor**

Project team backer and/or process owner

**Master Black Belt**

Chief mentor and Instructor

**Lean Sensei**

Experienced Lean facilitator and Coach

**Black Belt**

Experienced Lean Six Sigma project leader

**Green Belt**

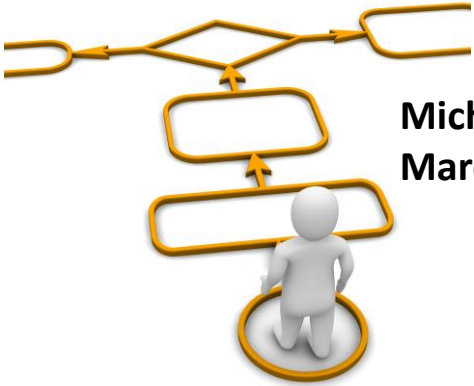
Process expert or team leader

**Yellow Belt**

Project member trained at an overview level in Lean Six Sigma to participate as part of the team

# What type of project do I have?

*“Belt leader troubleshoots a process & designs an improved future state. PMP plans, organizes and manages activities required to drive transformation.”*



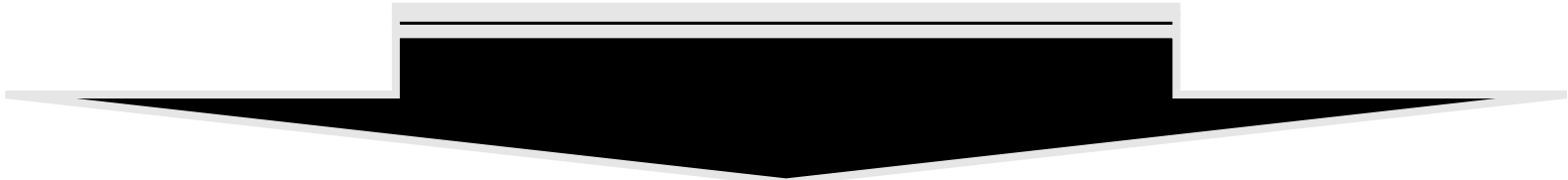
**Michael Hersokovitz,  
March 31, 2020**

**COMBINING SKILLSETS  
ACCELERATES RESULTS**

	Lean	Six Sigma	Agile or Waterfall	Just Go Do It
<b>What do I know?</b>	Waste Identified	Defects present but root cause unknown	Charter & Scope define opportunity	Solution, Root Cause, Metrics
<b>Quick fix tools</b>	Kaizen	Quick Wins	Agile	Kaizen
<b>Teams</b>	Closest to the line or process	Blended across functions	Defined by charter	Short-term
<b>Milestone Management</b>	30-day Kaizen Newspaper	Phase tollgate reviews	Project plan / GANNT	
<b>Methodology</b>	Plan, Do, Check, Act PDCA	Define, Measure, Analyze, Improve, Control (DMAIC)	initiating, planning, executing, monitoring & controlling, and closing	
<b>Problem Focus</b>	Waste & Flow reduction	Root Cause	Critical Path	Solve specific problem
<b>Solution drivers</b>	Production Output	Voice of Customer CTQs	Project Closure	Speed

# Philosophies differ but compliment

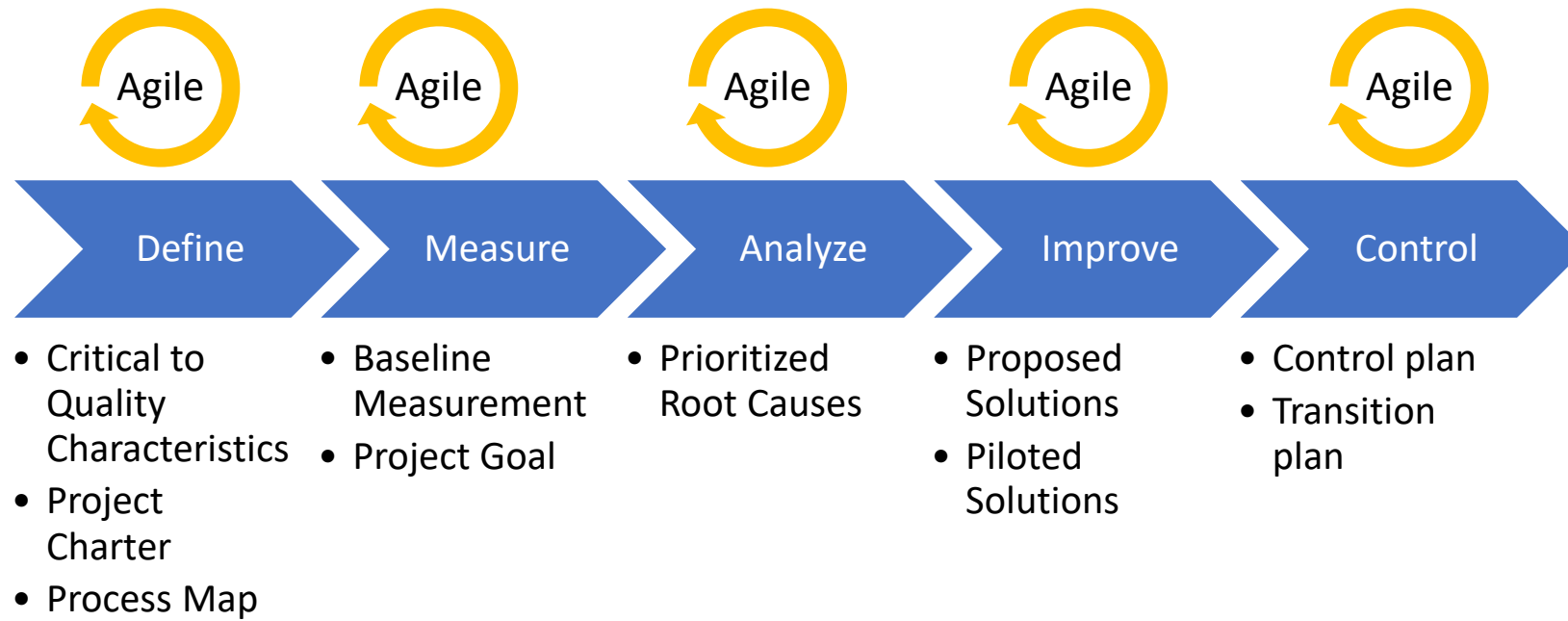
The Agile Manifesto	Lean Six Sigma Philosophy	PMP - PMBOK®
<p>Individuals and interactions over Processes and Tools</p> <p>Working Product over Comprehensive Documentation</p> <p>Customer Collaboration over Contract Negotiation</p> <p>Responding to change over Following a plan</p> <p><i>That is, while there is value in the items on the right, we value the items on the left more.</i></p> <p><small>www.agilemanifesto.org</small></p>	<ul style="list-style-type: none"><li>✓ Start &amp; Finish with the Customer</li><li>✓ Make Decisions based upon Data</li><li>✓ Solve problems by <i>scoping</i> efforts around a specific problem (or type of waste) and <i>addressing</i> root cause</li><li>✓ Use the People closest to the work to drive the solution</li><li>✓ Hold Teams and their champions accountable for sustained results</li></ul>	<ul style="list-style-type: none"><li>• Successful projects require charter, stakeholders and project manager assigned up front</li><li>• Communication and Change Management require agreed-to process up-front</li><li>• Constraints (Budget, Scope, Quality, Schedule, Resources &amp; Risks) must be planned, monitored and controlled</li></ul>



1. Empower people to drive change
2. Flexibility & Innovation are highly valued to respond quickly to change
3. Customer-Focus, validated with data, enables growth
4. Planning is 100% value adding, even if the plan is not



# Lean, Six Sigma, Agile and PMBOK® can be integrated to drive **Operational Excellence**



PMBOK® adds discipline around project schedule, engaging stakeholders, communication, managing risk and change.



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THANK YOU

