Six Sigma Kaizen

LEAN SIX SIGMA GREEN BELT

POCKET GUIDE

Your Essential Reference for DMAIC Mastery, Statistical Tools & Process Improvement

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1. What Is Lean Six Sigma Green Belt?

Think of a Lean Six Sigma Green Belt as the Swiss Army knife of process improvement. You're not just someone who knows the theory — you're the person who rolls up their sleeves, leads projects, and actually makes things better. While Black Belts focus on complex, cross-functional initiatives, Green Belts are the operational backbone — driving improvement where it matters most: on the front lines.

A Green Belt certification means you've mastered the DMAIC methodology (Define, Measure, Analyze, Improve, Control), can wield statistical tools with confidence, and — perhaps most importantly — can translate data into action. You typically dedicate about 25–50% of your time to improvement projects while maintaining your regular role.

The Green Belt's Core Responsibilities

- **Lead DMAIC Projects —** Own and execute improvement projects scoped within your department or functional area.
- **Collect & Analyze Data —** Gather process data, identify root causes, and quantify improvement opportunities.
- **Facilitate Team Collaboration —** Bring cross-functional stakeholders together to solve problems and sustain solutions.
- **Support Black Belt Initiatives —** Serve as a subject matter expert and data analyst on larger, enterprise-level projects.
- **Drive Cultural Change —** Champion a data-driven mindset across your organization — one project at a time.

PRO TIP: *The best Green Belts don't just solve problems — they teach others to see problems differently. Your real superpower is building capability in the people around you.*

2. The DMAIC Framework

DMAIC is your GPS for process improvement. It's a structured, five-phase methodology that keeps projects focused, evidence-based, and — most critically — sustainable. Every Green Belt project follows this roadmap. Memorize it. Live it. Love it.

Phase	Goal	Key Activities	Key Deliverables
DEFINE	Identify the problem and project scope	• Project Charter development • Voice of the Customer (VOC) • Stakeholder analysis • SIPOC diagram	Project Charter, Problem Statement, Goal Statement
MEASURE	Quantify the current state	• Data collection planning • Measurement system analysis • Process capability baseline • Process mapping (as-is)	Baseline metrics, Data Collection Plan, Sigma Level
ANALYZE	Identify root causes	• Root cause analysis • Hypothesis testing • Regression analysis • Fishbone / 5-Why analysis	Verified Root Causes, Statistical Evidence
IMPROVE	Implement solutions	• Solution brainstorming • Pilot testing • FMEA (Failure Mode & Effects) • Implementation planning	Piloted Solutions, Before/After Comparison
CONTROL	Sustain the gains	• Control charts • Standard operating procedures • Control plan development • Knowledge transfer	Control Plan, Updated SOPs, Monitoring Dashboard

DMAIC Process Flow

DEFINE ➤ MEASURE ➤ ANALYZE ➤ IMPROVE ➤ CONTROL

"What's broken?" "How bad?" "Why?" "Fix it." "Keep it fixed."

TOLLGATE REVIEWS: *Each phase ends with a tollgate review — a formal checkpoint where you present findings to your sponsor and get the green light to proceed. Think of it as quality control for your quality control project. Ironic? Maybe. Effective? Absolutely.*

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3. Key Tools & Techniques

Your Green Belt toolkit is packed with powerful methods. Here's your cheat sheet — organized by DMAIC phase so you always know which tool to grab and when.

DMAIC Phase	Tool	What It Does	When to Use It
Define	**SIPOC Diagram**	Maps Suppliers, Inputs, Process, Outputs, Customers at a high level	Scoping the project; aligning stakeholders on the process boundary
Define	**Voice of Customer (VOC)**	Captures customer needs and translates them into measurable requirements (CTQs)	Defining what "good" looks like from the customer's perspective
Define	**Project Charter**	Documents the problem, goal, scope, timeline, and team	Kicking off every Green Belt project — non-negotiable
Measure	**Data Collection Plan**	Specifies what data to collect, how, from where, and how much	Before you collect a single data point
Measure	**Measurement System Analysis (MSA)**	Validates that your measurement system is reliable and accurate	Anytime you question whether your data can be trusted (Gage R&R)
Measure	**Process Capability (Cp, Cpk)**	Quantifies how well a process meets specifications	Baselining current performance; a Cpk ≥ 1.33 is generally "capable"
Analyze	**Fishbone Diagram**	Structures brainstorming around categories (Man, Machine, Method, Material, Measurement, Environment)	Identifying potential root causes before narrowing with data
Analyze	**5 Whys**	Drills into a problem by asking "Why?" repeatedly until the root cause surfaces	Quick root-cause exploration; works best for simpler problems
Analyze	**Hypothesis Testing**	Uses t-tests, ANOVA, chi-square to statistically validate root causes	Confirming whether a suspected cause truly drives the defect
Analyze	**Regression Analysis**	Models the relationship between inputs (Xs) and outputs (Y)	Quantifying how much each factor contributes to the problem
Improve	**FMEA**	Failure Mode & Effects Analysis — scores risks by Severity × Occurrence × Detection	Prioritizing which failure modes to address first in your solution design
Improve	**Pilot Testing**	Tests the proposed solution on a small scale before full rollout	Always. Every. Single. Time. Never skip the pilot.
Improve	**Kaizen Event**	Rapid, focused improvement blitz (typically 3–5 days)	When the solution is clear and you need fast implementation

DMAIC Phase	Tool	What It Does	When to Use It
Control	**Control Charts**	Monitors process performance over time; detects special-cause variation	Ongoing monitoring — your early-warning system for backsliding
Control	**Standard Operating Procedures**	Documents the new "best known method" for consistent execution	Locking in gains so improvements survive staff turnover
Control	**Control Plan**	Specifies what to monitor, how often, and what to do if things drift	Every project's final deliverable — the handoff document

4. Statistical Concepts Every Green Belt Needs

You don't need a PhD in statistics — but you do need to speak the language. Here are the concepts that separate a Green Belt from someone who just read a Wikipedia article about quality management.

Normal Distribution (The Bell Curve)

Most process data clusters around the mean in a symmetrical, bell-shaped pattern. Understanding this shape helps you predict process behavior and set realistic specifications. If your data isn't normal, many standard tools won't apply — so always check distribution first.

Standard Deviation (σ)

Measures the spread of your data around the mean. A small σ means your process is consistent; a large σ means it's all over the place. Six Sigma literally means fitting six standard deviations between the process mean and the nearest specification limit — that's 3.4 defects per million opportunities.

Process Capability (Cp & Cpk)

Cp measures potential capability (can the process fit within spec if perfectly centered?). Cpk measures actual capability (how well is it really doing, considering any shift from center?). Target: Cpk ≥ 1.33 for a capable process. Below 1.0? You've got a problem.

Hypothesis Testing

The scientific method for process improvement. You state a null hypothesis (H_0: "nothing is different") and an alternative (H_1: "something changed"), then let the data decide. Common tests: t-test (comparing means), ANOVA (comparing multiple groups), chi-square (comparing proportions).

P-Value

The probability that your observed result happened by random chance. If $p < 0.05$ (the standard threshold), you reject the null hypothesis — the difference is statistically significant. Think of it as your confidence meter: the smaller the p-value, the stronger your evidence.

Correlation vs. Causation

Just because two variables move together doesn't mean one causes the other. Ice cream sales and drowning rates both rise in summer — but ice cream doesn't cause drowning. Always validate correlations with process knowledge and designed experiments.

Regression Analysis

Models the mathematical relationship between your process inputs (Xs) and output (Y). Simple regression uses one X; multiple regression uses several. The R^2 value tells you how much of the variation in Y your model explains — aim for $R^2 > 0.70$ for a useful model.

Sigma Level Quick Reference

Sigma Level	DPMO	Yield (%)	Real-World Analogy
1σ	691,462	30.85%	Two out of three coin flips — basically guessing
2σ	308,538	69.15%	Your morning commute on a good week
3σ	66,807	93.32%	Typical company before improvement efforts
4σ	6,210	99.38%	One lost bag per 160 flights
5σ	233	99.977%	One typo in a stack of books
6σ	3.4	99.9997%	One defect per 294,000+ — world-class

5. Process Mapping & Value Stream Analysis

If DMAIC is your GPS, process mapping is Google Street View. It gives you the ground-level detail you need to see where value flows — and where it gets stuck in traffic.

The SIPOC Diagram — Your 30,000-Foot View

SIPOC stands for Suppliers, Inputs, Process, Outputs, and Customers. It's the first map you create in the Define phase — a high-level snapshot that aligns the team on scope before diving into detail.

Suppliers	Inputs	Process (High-Level)	Outputs	Customers
Raw material vendors	Raw materials	1. Receive order	Finished product	End consumers
IT systems	Customer order data	2. Schedule production	Shipping confirmation	Retail partners
Equipment suppliers	Machine capacity	3. Manufacture product	Quality test results	Internal QA team
HR / Staffing	Trained operators	4. Inspect & test	Invoice / documentation	Finance department
Logistics partners	Packaging materials	5. Pack & ship	Delivery receipt	Distribution centers

Value Stream Mapping (VSM) — Where the Magic Happens

A Value Stream Map takes your SIPOC and goes deep. It visualizes every step in your process, distinguishing between value-added activities (things the customer would pay for) and non-value-added activities (waste). The goal? Maximize flow and eliminate waste.

The 8 Wastes (DOWNTIME)

Remember the acronym DOWNTIME — it's your waste-detection radar:

- **D — Defects —** Products or services that don't meet specifications and require rework
- **O — Overproduction —** Making more than the customer needs, or making it too early
- **W — Waiting —** Idle time between process steps — people, materials, or information stuck in queue
- **N — Non-Utilized Talent —** Underusing people's skills, ideas, and creativity
- **T — Transportation —** Unnecessary movement of materials or products between locations
- **I — Inventory —** Excess raw materials, WIP, or finished goods beyond what's needed
- **M — Motion —** Unnecessary movement of people (walking, reaching, searching)
- **E — Extra Processing —** Doing more work than the customer requires or values

KEY VSM METRICS: *Process Cycle Efficiency (PCE) = Value-Added Time ÷ Total Lead Time. World-class PCE is typically 25%+. Most organizations start below 5%. Yes, that means 95% of your process time is waste. Sobering, right?*

6. Case Study: Reducing Order Fulfillment Cycle Time

Company Background

MidWest Manufacturing Co. is a mid-size industrial parts distributor processing ~2,400 orders per month. Their customers — primarily automotive OEMs — were complaining about late deliveries. The operations manager, freshly minted as a Green Belt, saw an opportunity to put her training to work.

Phase 1: Define

- **Problem Statement:** Average order fulfillment cycle time is 7.2 days against a customer requirement of 5 days. On-time delivery rate has dropped to 68%, resulting in $340K in penalty charges over the past 12 months.
- **Goal Statement:** Reduce average cycle time from 7.2 days to ≤ 4.5 days and achieve ≥ 95% on-time delivery within 6 months.
- **Scope:** Order receipt through shipment confirmation. Excludes product design changes and supplier lead-time negotiations.
- **Business Impact:** Projected savings of $400K annually in penalty avoidance, expediting costs, and customer retention.

Phase 2: Measure

The team collected 90 days of order data (n = 7,200 orders) and mapped the current-state process. Key findings:

Metric	Baseline Value	Target	Gap
Avg. Cycle Time	7.2 days	≤ 4.5 days	2.7 days
Std. Deviation	2.1 days	≤ 0.8 days	1.3 days
On-Time Delivery	68%	≥ 95%	27 points
Defect Rate (order errors)	8.3%	≤ 2%	6.3 points
Process Sigma Level	2.1σ	≥ 4.0σ	1.9σ
Process Cycle Efficiency	12%	≥ 30%	18 points

Figure 1: Baseline Performance Metrics — MidWest Manufacturing Co.

Phase 3: Analyze

Using a fishbone diagram and 5-Why analysis, the team identified 23 potential causes. Statistical testing (ANOVA, chi-square, and regression) narrowed these to four verified root causes:

Root Cause	Evidence	Impact on Cycle Time
Manual order entry errors (8.3% error rate)	Chi-square test: $p < 0.001$ — error orders take 3.2× longer to fulfill	Adds 1.8 days avg. for affected orders
Batch scheduling (orders held for daily batch run)	t-test: batch vs. real-time processing, $p < 0.001$	Adds 1.0 day avg. wait time per order
Warehouse pick-path inefficiency	Regression: $R^2 = 0.74$ — pick-path distance explains 74% of picking time variance	Adds 0.6 days avg. in warehouse operations
No priority routing for expedited orders	ANOVA: $F(2,7197) = 48.3$, $p < 0.001$ — expedited orders treated same as standard	Adds 0.4 days avg. for priority customers

Figure 2: Verified Root Causes — Statistical Validation Summary

Pareto Analysis of Cycle Time Contributors

Root Cause	Days Added	% of Gap	Cumulative %	Pareto Bar
Manual order entry errors	1.8	47.4%	47.4%	47%
Batch scheduling delays	1.0	26.3%	73.7%	26%
Pick-path inefficiency	0.6	15.8%	89.5%	16%
No priority routing	0.4	10.5%	100.0%	11%

Figure 3: Pareto Chart — The top two causes account for 73.7% of the cycle-time gap (80/20 rule confirmed)

Phase 4: Improve

The team designed and piloted four targeted solutions over an 8-week sprint:

☑ **Automated Order Validation —** Implemented barcode scanning + system validation at point of entry → error rate dropped from 8.3% to 1.2%

☑ **Real-Time Order Release —** Eliminated daily batch run; orders now release to warehouse within 15 minutes of receipt → eliminated 1-day batch wait

☑ **Optimized Pick Paths —** Reorganized warehouse zones using ABC analysis and implemented wave picking → reduced pick time by 42%

☑ **Priority Routing Logic —** Built tiered routing rules in the WMS — expedited orders automatically fast-tracked → priority cycle time cut by 55%

Phase 5: Control

Sustaining the gains was non-negotiable. The team implemented:

- Real-time dashboard monitoring cycle time, error rate, and on-time delivery (updated hourly)
- Statistical Process Control (SPC) charts with automated alerts when process drifts beyond ±2σ

- Updated SOPs for order entry, warehouse picking, and priority routing — all version-controlled
- Monthly process review meetings with the sponsor and operations leadership
- Training program for new hires embedded in onboarding (30-minute e-learning + floor walkthrough)

Results: Before vs. After

Metric	Before (Baseline)	After (90-Day)	Improvement
Avg. Cycle Time	7.2 days	3.8 days	**▼ 47% reduction**
Std. Deviation	2.1 days	0.6 days	**▼ 71% reduction**
On-Time Delivery	68%	96.4%	**▲ 28.4 points**
Order Error Rate	8.3%	1.2%	**▼ 86% reduction**
Process Sigma Level	2.1σ	4.2σ	**▲ 2.1σ improvement**
Process Cycle Efficiency	12%	34%	**▲ 22 points**
Annual Cost Savings	—	$462K	Exceeded $400K target

Figure 4: Before vs. After Performance Dashboard — All targets met or exceeded

Control Chart: Order Fulfillment Cycle Time (Days)

Week	1	2	3	4	5	6	7	8	9	10	11	12
Cycle Time (days)	7.4	6.8	7.1	5.9	5.2	4.6	4.3	4.1	3.9	3.8	3.7	3.8
UCL (Upper)	9.3	9.3	9.3	9.3	9.3	5.6	5.6	5.6	5.6	5.6	5.6	5.6
Center Line	7.2	7.2	7.2	7.2	7.2	4.0	4.0	4.0	4.0	4.0	4.0	4.0
LCL (Lower)	5.1	5.1	5.1	5.1	5.1	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Phase	**BEF**	**BEF**	**BEF**	**IMP**	**IMP**	**AFT**	**AFT**	**AFT**	**AFT**	**AFT**	**AFT**	**AFT**

Figure 5: X̄ Control Chart — Process stabilized at 3.8 days after improvement implementation (Weeks 6–12)

KEY TAKEAWAY: *This project succeeded because the team let the data lead. They resisted the urge to jump to solutions in the Define phase, invested in rigorous measurement, and — crucially — built a control system that didn't depend on any single person remembering to check. The process runs itself. That's the Green Belt gold standard.*

7. Tips & Tricks for Green Belt Success

These aren't in the textbook. They're hard-won lessons from Green Belts who've been in the trenches — the stuff that separates "certified" from "effective."

Project Selection & Scoping

- **Pick a project you can finish in 3–4 months.**
  Your first project isn't about solving world hunger — it's about building credibility. A completed small project beats an ambitious stalled one every time.
- **Scope ruthlessly.**
  If your problem statement has the word "and" in it, you probably have two projects. Split them. A focused scope is the single biggest predictor of Green Belt project success.
- **Choose a project with available data.**
  If you'll spend 60% of your timeline building a data collection system from scratch, you've picked the wrong first project. Look for processes that already generate data — even imperfect data.
- **Align with leadership priorities.**
  The best Green Belt project in the world dies without sponsor support. Pick something your VP already loses sleep over.

Data & Analysis

- **Start with a histogram, not a hypothesis.**
  Plot your data first. Let the distribution tell you where to look. More root causes are discovered through visualization than through formal hypothesis testing.
- **Use the "Newspaper Test" for your problem statement.**
  If a reporter wrote about your problem, would the headline make sense to a stranger? "Order errors cause $340K in penalties" works. "Process inefficiency in Subsystem B" does not.
- **Sample size matters — but perfect data doesn't exist.**
  30 data points is usually enough to detect meaningful patterns. Don't let the perfect data set be the enemy of the good-enough data set.
- **Validate your measurement system BEFORE analyzing the process.**
  If your ruler is broken, every measurement you take is worthless. Run a Gage R&R early — it's the least glamorous and most important thing you'll do.
- **Create a data dictionary.**

Define every metric before you start collecting. "Cycle time" means different things to different people — is it calendar days or business days? From order receipt or order confirmation? Nail this down on day one.

People & Change Management

- **Involve the process owners from Day 1.**

  The people who do the work know where the bodies are buried. They're your best source of root causes AND your biggest risk if they feel excluded. Co-creation beats imposition every time.

- **Speak in dollars, not sigma levels.**

  Your CFO doesn't care that you improved from 2.1σ to 4.2σ. They care that you saved $462K. Translate technical wins into business impact — it's how you get your next project funded.

- **Celebrate small wins publicly.**

  Did the pilot show a 20% improvement? Tell everyone. Progress builds momentum, and momentum builds organizational buy-in.

- **Document everything in real time.**

  Future-you will not remember why you excluded those 14 data points. Keep a project journal — even a shared OneNote. Your tollgate reviews will thank you.

8. Mistakes to Avoid

Every experienced Green Belt has a scar from at least one of these. Learn from their pain so you don't have to earn your own.

#	Mistake	Why It Hurts	Severity
1	**Jumping to Solutions ("Solutioneering")**	The #1 Green Belt sin. You're 10 minutes into the Define phase and someone says, "I know exactly what the problem is — we just need a new system." Resist. The whole point of DMAIC is to let data, not gut feelings, identify the real root cause. Solutions implemented without root-cause analysis have a 70% failure rate.	⚠ HIGH RISK
2	**Boiling the Ocean**	Trying to fix everything at once is a guaranteed path to fixing nothing. Scope your project tightly. If you can't explain the problem in one sentence, it's too broad. Remember: a Green Belt project should take 3–4 months, not 3–4 years.	⚠ HIGH RISK
3	**Ignoring the Measure Phase**	Skipping from Define straight to Analyze is like diagnosing a patient without taking their vitals. You need a baseline. You need to validate your measurement system. If you don't know where you started, you can't prove you improved.	⚠ HIGH RISK
4	**Analysis Paralysis**	Yes, data matters. No, you don't need a 47-slide regression deck to prove that the machine keeps breaking. There's a point where more analysis yields diminishing returns. If three different statistical tests all point to the same root cause, stop testing and start improving.	⚠ MEDIUM RISK

#	Mistake	Why It Hurts	Severity
5	**Skipping the Pilot**	"We're confident in the solution — let's just roll it out." Famous last words. A pilot lets you fail small, learn fast, and adjust before you've committed resources to a full-scale implementation. Pilots aren't optional — they're insurance.	⚠ HIGH RISK
6	**Neglecting the Control Phase**	This is where most Green Belt projects die. You implemented a brilliant solution, celebrated the results, and moved on. Six months later, the process has drifted back to its original state. Without control charts, SOPs, and a monitoring plan, improvement is temporary.	⚠ CRITICAL
7	**Using the Wrong Statistical Test**	Running a t-test on non-normal data. Using ANOVA when you should use chi-square. Treating ordinal data as continuous. These mistakes don't just give you wrong answers — they give you confidently wrong answers. Always check your data type and distribution before selecting a test.	⚠ MEDIUM RISK
8	**Making It About the Tools, Not the Problem**	Nobody cares that you made a beautiful fishbone diagram. They care that you found the root cause. Tools are means, not ends. If a simple 5-Why gets you to the answer in 20 minutes, don't spend three days building a multi-variate analysis to validate what everyone already knows.	⚠ MEDIUM RISK
9	**Going It Alone**	Six Sigma is a team sport. The Green Belt who locks themselves in a conference room with a laptop and emerges weeks later with "the answer" has missed the entire point. Process owners, operators, and stakeholders need to be co-investigators, not recipients of your findings.	⚠ HIGH RISK

#	Mistake	Why It Hurts	Severity
10	**Forgetting to Communicate Results**	You saved $462K and improved on-time delivery by 28 points. Congratulations — and if you don't tell anyone, it didn't happen. Present results to leadership, share wins with the team, and document the methodology for the next Green Belt who needs a roadmap.	⚠ MEDIUM RISK

Figure 6: The Green Belt's "Don't Do This" List — ranked by frequency of occurrence and project impact

9. Green Belt vs. Other Belt Levels

Where do you fit in the Lean Six Sigma ecosystem? Think of the belt system like a professional development ladder — each level builds on the last, and each plays a distinct role in driving organizational improvement.

Attribute	White Belt	Yellow Belt	Green Belt	Black Belt	Master Black Belt
Focus	Awareness & support	Team participation	**Project leadership**	Cross-functional programs	Enterprise strategy & coaching
Time on LSS	Ad hoc	5–10%	**25–50%**	75–100%	100%
Project Scope	None (supports others)	Small, local improvements	**Departmental DMAIC projects**	Complex, multi-departmental	Portfolio management & mentoring
Statistical Depth	Conceptual only	Basic analysis & charts	**Hypothesis testing, regression, SPC**	DOE, advanced modeling, multivariate	All + methodology innovation
Training Hours	4–8 hours	16–24 hours	**80–120 hours**	160–240 hours	240+ hours
Typical Savings / Project	N/A	$10K–$50K	**$50K–$250K**	$250K–$1M+	$1M+ (portfolio)
Certification Body	Company-internal	ASQ / IASSC / Company	**ASQ / IASSC / Company**	ASQ / IASSC / Company	ASQ / IASSC / Company
Reports To	Yellow/Green Belt lead	Green Belt lead	**Black Belt mentor**	Master Black Belt / VP	C-suite / VP Quality
Key Skill	Following standard work	Data collection & basic tools	**Leading DMAIC with statistical rigor**	Coaching Green Belts & managing complexity	Designing the deployment strategy

Figure 7: Belt Level Comparison — Green Belt column highlighted (that's you!)

Your Green Belt Career Path

Green Belt isn't a destination — it's a launchpad. Most successful Black Belts started as Green Belts who completed 2–3 projects and discovered they loved the work. Whether you stay a practicing Green Belt (many do — and many organizations value embedded Green Belts more than full-time Black Belts) or pursue the Black Belt path, your DMAIC skills and statistical toolkit will differentiate you in any role.

White Belt → Yellow Belt → GREEN BELT → Black Belt → Master Black Belt

▲ You Are Here

10. Quick Reference Glossary

Keep this handy. When someone throws jargon at you in a tollgate review, flip here.

Term	Definition
ANOVA	Analysis of Variance — statistical test comparing means across three or more groups
Baseline	The quantified current-state performance before improvements are implemented
Cp / Cpk	Process capability indices measuring potential (Cp) and actual (Cpk) performance vs. spec limits
CTQ	Critical to Quality — the measurable characteristics most important to the customer
DMAIC	Define, Measure, Analyze, Improve, Control — the core Lean Six Sigma improvement methodology
DPMO	Defects Per Million Opportunities — the universal quality metric for comparing processes
DOE	Design of Experiments — structured method for testing multiple variables simultaneously
FMEA	Failure Mode and Effects Analysis — risk assessment tool scoring Severity × Occurrence × Detection
Gage R&R	Gauge Repeatability & Reproducibility — validates measurement system accuracy and precision
Gemba	Japanese for "the real place" — going to where the work happens to observe firsthand
Hypothesis Test	Statistical method for determining if observed differences are real or due to random chance
Kaizen	Japanese for "continuous improvement" — small, incremental changes that compound over time
Lean	Methodology focused on eliminating waste and maximizing value flow to the customer
LSL / USL	Lower / Upper Specification Limit — the customer-defined boundaries of acceptable performance
MSA	Measurement System Analysis — ensures your data collection tools and methods are reliable
Muda	Japanese for "waste" — any activity that consumes resources without adding customer value
Normal Distribution	Bell-shaped probability distribution where data clusters symmetrically around the mean
Pareto Chart	Bar chart ranking causes by frequency/impact — visual proof of the 80/20 rule
p-value	Probability that results occurred by chance; $p < 0.05$ = statistically significant
R^2	Coefficient of determination — % of output variation explained by the regression model (0–1 scale)
SIPOC	Suppliers, Inputs, Process, Outputs, Customers — high-level process mapping tool

Term	Definition
Sigma Level	Number of standard deviations fitting between the mean and nearest spec limit (higher = better)
SPC	Statistical Process Control — using control charts to monitor process stability over time
Standard Deviation (σ)	Measure of data spread around the mean — lower σ = more consistent process
Tollgate Review	Formal phase-end checkpoint where stakeholders approve moving to the next DMAIC phase
VOC	Voice of the Customer — structured method for capturing and prioritizing customer requirements
VSM	Value Stream Map — visual diagram of all steps in a process, distinguishing value-added from waste
X̄ Chart	Control chart tracking sample means over time to detect shifts in process centering
Yield	Percentage of units/transactions that pass through the process without a defect

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Remember: You don't become a great Green Belt by memorizing tools.

You become one by solving problems that matter, with data that's trustworthy, alongside people who are invested — and then making sure it sticks.

Now go improve something. 🚀