LEAN SIX SIGMA
FOR SHARED SERVICES

YELLOW BELT
User Guide & Training Textbook

Aligned to ASQ & IASSC Bodies of Knowledge

Finance · HR · IT · Procurement · Customer Operations

ZENITH
ADVISORY PARTNERS

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About This Guide

This textbook is designed as a comprehensive learning and reference guide for Lean Six Sigma Yellow Belt practitioners working in Shared Services, Global Business Services (GBS), and other transactional or service-based environments. The content is aligned with ASQ and IASSC standards while using service-centric language, examples, and case applications.

This guide can be used for:

- Instructor-led training
- Self-study and certification preparation
- Organizational capability building
- Reference during improvement projects

How to Use This Guide

Yellow Belt learners should study all six chapters in this guide. Each chapter builds on the previous, starting with foundational concepts and progressing to practical problem-solving tools. Exercises and examples are written from Shared Services contexts such as Finance, HR, IT, Procurement, and Customer Operations.

Role	Content	Focus
Yellow Belt	This guide (Part I)	Foundations, awareness, and basic tools
Green Belt	Part I + Part II	Advanced analysis and project leadership
Black Belt	Full curriculum + advanced statistics	Enterprise-level improvement leadership

CHAPTER 1

Introduction to Continuous Improvement

Learning Objectives

Explain why continuous improvement is critical in Shared Services
Distinguish between Lean, Six Sigma, and Lean Six Sigma
Describe the DMAIC framework at a conceptual level

1.1 The Shared Services Environment

Shared Services organizations deliver standardized, repeatable services across the enterprise. Typical characteristics include high transaction volumes, multiple handoffs, reliance on technology platforms, and strict service-level agreements (SLAs).

Unlike frontline business units, Shared Services often operate at scale, supporting multiple geographies, business lines, and regulatory environments simultaneously. This complexity increases the likelihood of variation, errors, and delays if processes are not well designed and controlled.

Common Shared Services Challenges:

- High rework rates due to incomplete or incorrect inputs
- Long cycle times driven by queues and approvals
- Customer dissatisfaction caused by lack of transparency
- Rising operational cost from manual workarounds

Real-Life Example: Global Finance Shared Services Center

A multinational corporation consolidated its accounts payable operations from 15 country offices into a single Global Business Services (GBS) center in Manila. The center processes 45,000 invoices monthly across 8 currencies, 12 ERP systems, and 35 legal entities.

Initial challenges included:

- 28% error rate due to inconsistent vendor master data across legacy systems
- Average 12-day cycle time from invoice receipt to payment
- 35% of invoices requiring manual intervention and rework
- Vendor complaints averaging 200 per month due to late payments
- Audit findings identifying $2.3M in duplicate payments over 18 months

After implementing Lean Six Sigma:

- Error rate reduced to 4% (86% improvement)
- Cycle time reduced to 3.2 days (73% improvement)
- Manual intervention reduced to 8% (77% improvement)
- Annual savings of $4.2M through improved cash flow management and eliminated rework
- Vendor satisfaction score improved from 6.1/10 to 8.7/10

Key Insight: *The improvements were achieved not by working harder, but by systematically eliminating waste, reducing variation, and redesigning processes using DMAIC methodology.*

Real-Life Example: HR Shared Services – Employee Onboarding

A technology company's HR Shared Services team in Bangalore supported 12,000 employees across APAC. New hire onboarding involved 23 different steps across HR, IT, Facilities, and Payroll.

Before Continuous Improvement:

- Average onboarding time: 42 days from offer acceptance to full productivity
- Only 52% of new hires had complete access and equipment on Day 1
- 18% of new hires experienced payroll errors in first month
- IT provisioning alone took average 21 days
- New hire satisfaction score: 5.8/10

Root Causes Identified:

- Sequential processing (steps completed one after another, not in parallel)
- No single point of accountability
- Paper-based forms requiring wet signatures
- Each function maintained separate onboarding checklists

After Lean Six Sigma:

- Onboarding time reduced to 12 days (71% improvement)
- 94% of new hires had full access and equipment on Day 1
- Payroll errors reduced to 2% in first month
- New hire satisfaction improved to 8.8/10

1.2 What Is Lean?

Lean is a management philosophy focused on maximizing customer value while minimizing waste. Originally developed in manufacturing (Toyota Production System), Lean has been successfully adapted to service and transactional environments.

In Shared Services, Lean emphasizes:

- Flow of information rather than flow of physical products
- Reduction of delays and queues
- Simplification of processes
- Elimination of non-value-added activities

An activity is considered value-added only if it directly contributes to what the customer expects and is performed correctly the first time.

Real-Life Example: IT Service Desk – Incident Management

An IT Shared Services organization supporting 25,000 employees across North America received 8,500 tickets monthly with average resolution time of 4.2 days and first-call resolution rate of 38%.

Lean Analysis Revealed:

- Wait time represented 87% of total cycle time
- Agents spent only 22 minutes actively working on average ticket
- Remaining 3.8 days was time in queue or waiting for other teams
- 14 handoffs occurred for escalated tickets
- Agents searched for information in 6 different knowledge bases

Lean Improvements Applied:

- Removed requirement for supervisor approval on password resets (saved 4 hours per request)
- Created skill-based routing to reduce transfers from 3.2 to 0.4 per ticket
- Consolidated knowledge bases into single searchable platform
- Enabled Level 1 agents to resolve 15 additional common issues
- Implemented Kanban board with WIP limits to prevent queue buildup

Results:

- Resolution time: 1.1 days (74% reduction)
- First-call resolution: 68% (79% improvement)
- Agent productivity: +45%
- Customer satisfaction: 7.2/10 to 8.9/10
- Escalation rate: -62%

1.3 What Is Six Sigma?

Six Sigma is a data-driven methodology aimed at reducing variation and defects in processes. The term "Six Sigma" refers to a level of performance where processes produce very few defects relative to opportunities — 3.4 defects per million opportunities.

In Shared Services, defects commonly appear as:

- Errors requiring correction
- Missed SLAs
- Customer complaints
- Audit findings

Six Sigma focuses on understanding why defects occur and using data to make informed improvement decisions rather than relying on assumptions or anecdotal evidence.

Real-Life Example: Procurement Shared Services – Purchase Order Accuracy

A global manufacturing company's procurement center in Krakow processed 15,000 purchase orders monthly with a 22% error rate causing significant downstream issues.

Defect Impact Analysis:

- $380K annual cost in rework (manual corrections, communications, system adjustments)
- Average 4.2 days delay per defective PO
- Supplier relationship damage: 15% of suppliers rated service as "poor"
- Business disruption: 12 production delays attributed to PO errors in one quarter

Common Defects:

- Wrong GL code (42% of errors)
- Incorrect quantity/unit of measure (28% of errors)
- Missing required approvals (18% of errors)
- Wrong supplier/contract reference (12% of errors)

Six Sigma Approach: The team collected data on 3,000 POs over 8 weeks.

Data Analysis Revealed:

- 71% of errors occurred in non-catalog purchases
- Baseline Sigma level: 2.1σ (very poor capability)
- Requester confusion: 48% of requesters unclear on GL code selection

Solutions Implemented:

- Created e-catalog for 80% of common purchases (error-proof selections)
- Built GL code validation into requisition system

- Implemented mandatory fields with drop-down menus
- Developed 15-minute requester training module

Results:

- Error rate reduced to 2.8% (87% reduction)
- Sigma level improved to 4.2σ
- Rework cost reduced by $310K annually
- PO cycle time reduced from 6.2 to 2.1 days
- Policy compliance improved to 99.1%

1.4 Lean Six Sigma and DMAIC

Lean and Six Sigma are integrated through the DMAIC framework: Define, Measure, Analyze, Improve, and Control. DMAIC provides a disciplined structure for improving existing processes and forms the backbone of all Lean Six Sigma work.

Phase	Purpose	Key Questions
Define	Clarify the problem, customer requirements, and project scope	What is the problem? Who are the customers?
Measure	Establish baseline performance using reliable data	How are we performing today? What does data show?
Analyze	Identify root causes of defects or delays	Why does the problem occur? What are root causes?
Improve	Develop and implement solutions addressing root causes	What solutions will fix root causes?
Control	Sustain gains through monitoring and standardization	How do we maintain the improvements?

Real-Life Example: Customer Service Shared Services – Order Management

A retail company's customer operations center in Costa Rica handled 125,000 orders monthly across e-commerce and phone channels with a 16% order error rate.

DMAIC Application:

- Define: Order errors defined as any order requiring modification after initial entry. Project charter approved with 6-month timeline and $250K savings target.
- Measure: Baseline error rate confirmed at 16.3%. Data collected for 4 weeks across 800 orders. Error types categorized: wrong item (45%), wrong address (28%), wrong quantity (18%), wrong payment (9%).
- Analyze: Root cause analysis identified top causes: complex product catalog without search functionality, address validation not real-time, no visual confirmation screen.

- Improve: Implemented smart search with auto-complete, real-time address validation API, order summary confirmation page before submission, and agent coaching program.
- Control: Control chart monitoring implemented. Standard work documentation created. Weekly quality review established.

Results:

- Order error rate: 16.3% → 2.8% (83% reduction)
- Customer satisfaction: 6.9/10 → 8.6/10
- Annual savings: $1.8M in avoided rework and re-shipments
- Agent handling time: -22%

☑ Chapter 1 Summary

Shared Services operate at scale with high complexity — making continuous improvement essential.

Lean focuses on eliminating waste and improving flow; Six Sigma focuses on reducing variation and defects.

Lean Six Sigma combines both methodologies through the DMAIC framework.

DMAIC (Define, Measure, Analyze, Improve, Control) provides a structured, data-driven approach.

Both ASQ and IASSC certifications are aligned to DMAIC principles.

CHAPTER 2

Understanding Customers and Value

Learning Objectives

Identify internal and external customers in Shared Services
Explain the Voice of the Customer (VOC) concept and sources
Translate customer needs into Critical to Quality (CTQ) requirements

2.1 Customers in Shared Services

Customers in Shared Services are often internal rather than external. These may include employees, business units, managers, or other functions. External customers may include vendors, applicants, or end consumers depending on the process.

A key challenge in Shared Services is that different customers value different outcomes. For example, Finance leadership may prioritize compliance, while employees prioritize speed and simplicity. Lean Six Sigma requires balancing these expectations through clear requirements.

Real-Life Example: Multi-Customer Process – Expense Reimbursement

A pharmaceutical company's Finance Shared Services center in Dublin processed expense reports for 8,500 employees globally. The process served multiple customer groups with different priorities.

Customer Group 1 — Employees (Submitters):
- Expect: Fast reimbursement, simple submission process
- Measure success by: Days to payment, ease of use
- Pain points: Complex policy rules, frequent rejections, long wait times

Customer Group 2 — Managers (Approvers):
- Expect: Clear policy guidance, fraud prevention
- Measure success by: Compliance rate, audit readiness
- Pain points: Volume of approvals, unclear expense justifications

Customer Group 3 — Finance Leadership:
- Expect: Cost control, audit compliance, accurate reporting
- Pain points: Maverick spending, duplicate payments, reconciliation errors

Challenge: The initial process was optimized for audit compliance but created friction for employees:
- 78-page expense policy document

- 15-step approval workflow
- Average 18-day reimbursement cycle
- 42% rejection rate requiring resubmission
- Employee satisfaction: 4.2/10

Balanced Solution Results:

- Employee satisfaction: 8.6/10 (105% improvement)
- Manager approval time: -72%
- Finance error rate: 1.8%
- Audit findings: Zero major findings in subsequent audits
- Reimbursement cycle: 4.2 days (77% improvement)

Key Insight: *Understanding and balancing multiple customer perspectives leads to solutions that optimize overall value rather than sub-optimizing for one stakeholder group.*

2.2 Voice of the Customer (VOC)

The Voice of the Customer represents the stated and unstated needs, expectations, and perceptions of customers. VOC helps teams understand what truly matters to customers rather than relying on internal assumptions.

Common VOC sources in Shared Services:

- Customer satisfaction surveys
- Complaints and escalation logs
- SLA reports
- Interviews and focus groups
- Audit and compliance findings

VOC data may be qualitative or quantitative. Both types are important for defining improvement priorities.

Real-Life Example: Comprehensive VOC Gathering – Payroll Services

A manufacturing company's payroll center in Bucharest served 15,000 employees across 8 countries. Despite meeting all SLAs, employee satisfaction remained low at 6.2/10.

VOC Collection Strategy — Quantitative Sources:

- Exit survey data: 847 responses over 6 months
- Payroll error log: 2,340 logged incidents reviewed

- Help desk tickets: 1,890 payroll-related tickets analyzed
- SLA metrics: 12 months of performance data

VOC Collection Strategy — Qualitative Sources:

- 45-minute interviews with 24 employees across all countries
- 4 focus groups (6-8 employees each) in key locations
- Manager roundtables in each country
- "Gemba walks" observing payroll team processing

VOC Themes Identified:

- Theme 1: "I don't understand my payslip" — 67% of survey respondents
- Theme 2: "I never know if my query is being worked on" — 58% of respondents
- Theme 3: "My local tax and deductions are always wrong after changes" — 42% of respondents
- Theme 4: "I have to contact payroll multiple times for the same issue" — 38% of respondents

Key Finding: SLAs measured timeliness and accuracy, but employees cared most about understanding and visibility — metrics not captured by existing SLAs.

2.3 Critical to Quality (CTQ)

Critical to Quality (CTQ) requirements are the specific, measurable characteristics of a product or service that are most important to the customer. CTQs translate the Voice of the Customer into precise standards that can be measured and controlled.

The VOC to CTQ Translation Process:

1. Gather VOC: Collect and document customer needs
2. Interpret: Translate vague needs into specific requirements
3. Prioritize: Identify which requirements are most critical
4. Measure: Define specific, measurable CTQ metrics
5. Set targets: Establish acceptable performance standards

Real-Life Example: CTQ Translation – IT Service Desk

Customer Statement: "I need my IT issues resolved quickly and I want to know what's happening."

VOC to CTQ Translation:

- VOC: "quickly" → CTQ: Resolution time ≤ 4 hours for Priority 1 incidents
- VOC: "know what's happening" → CTQ: Status update within 2 hours of ticket creation
- VOC: "not have to call back" → CTQ: First-call resolution rate ≥ 80%
- VOC: "professional and helpful" → CTQ: Customer satisfaction score ≥ 4.5/5.0

Result: Instead of guessing what customers wanted, the team had precise, measurable targets that drove all improvement decisions.

Chapter 2 Summary

Shared Services serve multiple customer types — internal and external — each with different priorities.
Voice of the Customer (VOC) captures both stated and unstated customer needs.
VOC sources include surveys, complaints, SLA data, interviews, and observation (Gemba walks).
CTQ requirements translate fuzzy customer language into specific, measurable standards.
Balancing multiple customer perspectives is key to designing effective Shared Services processes.

CHAPTER 3

Lean Principles

Learning Objectives

Describe the five principles of Lean thinking
Identify the eight types of waste (DOWNTIME) in Shared Services
Apply waste identification to everyday Shared Services processes

3.1 Overview of Lean Thinking

Lean thinking is a management philosophy that focuses on creating more value for customers while using fewer resources. It originated from the Toyota Production System and has been widely adapted to service environments, including Shared Services.

Lean provides the tools and mindset to identify what adds value from the customer's perspective and to systematically eliminate everything else.

3.2 The Five Lean Principles

Principle 1: Define Value

Value is defined from the customer's perspective — not from the perspective of the process owner or the organization. An activity is value-added only if the customer would pay for it and it transforms the service toward what the customer needs.

Example: Defining Value in Accounts Payable

Customer (vendors) value: Payment on time, accurate amount, clear remittance
What vendors do NOT value: Internal approval workflows, system reconciliations, duplicate checks (though these may be necessary)
Key question: "Would the customer pay extra for this step?"

Principle 2: Map the Value Stream

The value stream includes all the steps — value-added and non-value-added — required to deliver a service to the customer. Mapping the value stream makes waste visible and creates a shared understanding of how work actually flows.

Value Stream Mapping reveals:

- Where delays and queues occur
- Steps that add no value for the customer
- Handoff points where errors are introduced
- Total lead time vs. actual touch time

Principle 3: Create Flow

Flow means that work moves smoothly and continuously through the process without interruption, delay, or batching. In Shared Services, poor flow manifests as backlog buildup, work-in-progress sitting idle, and inconsistent processing times.

Example: Creating Flow in HR Onboarding

Before: HR completed all HR steps → IT completed all IT steps → Facilities completed all Facilities steps (sequential, 42 days)

After: All functions work in parallel using a shared checklist and daily standup (12 days)

Flow principle: Eliminate the handoff delays between sequential departments by enabling parallel processing.

Principle 4: Establish Pull

Pull means that work is initiated only in response to actual customer demand rather than based on forecasts or internal schedules. In Shared Services, pull systems prevent overproduction and reduce backlog.

Example: Pull in Customer Service

Push system: Agents work through a queue in order received, regardless of urgency or complexity — leading to SLA breaches on high-priority items

Pull system: Priority-based queue with WIP limits — agents pull the highest-priority ticket when they have capacity, ensuring critical issues are addressed first

Principle 5: Pursue Perfection

Lean is a continuous journey, not a one-time project. Perfection is approached incrementally through ongoing waste elimination, process standardization, and continuous measurement. In practice, this means establishing a culture of improvement where all team members actively look for and eliminate waste.

Key Insight: *The goal is not to achieve perfection immediately, but to make continuous progress toward it. Every improvement, no matter how small, contributes to the journey.*

3.3 Waste in Shared Services (DOWNTIME)

Lean identifies eight types of waste using the acronym DOWNTIME. In Shared Services, waste is primarily found in information flow, processing activities, and human effort rather than physical materials.

Letter	Waste Type	Description
D	Defects	Errors requiring rework, correction, or rejection
O	Overproduction	Producing more than the customer needs or sooner than needed
W	Waiting	Idle time when people, systems, or work items are waiting
N	Non-Utilized Talent	Underusing people's skills, knowledge, or creativity
T	Transportation	Unnecessary movement of information or documents
I	Inventory	Backlog, work-in-progress, or stored data waiting to be processed
M	Motion	Unnecessary movement by people within their work environment
E	Extra Processing	Doing more work than the customer requires

Defects

Defects are outputs that do not conform to requirements and must be corrected, reworked, or scrapped. Defects are one of the most costly forms of waste because they consume resources twice — once to create the defect and again to fix it.

Common defects in Shared Services include:

- Data entry errors in finance systems
- Incorrect payroll calculations
- Invoice processing errors
- HR record inaccuracies
- IT configuration errors

Real-Life Example: Finance Defects – Invoice Processing

A Finance GBS center processing 40,000 invoices/month had an 18% defect rate.

Cost of Defects:

- 7,200 defective invoices/month × $12 rework cost = $86,400/month
- Annual rework cost: $1.04M
- 3.6 FTE-equivalents consumed by rework
- Downstream impact: Late payments, vendor complaints, duplicate payments

Defect Categories:

- Wrong GL code: 42% of defects
- Missing PO reference: 28% of defects
- Incorrect tax calculation: 18% of defects
- Wrong currency: 12% of defects

Root Causes:

- No validation rules in legacy system
- Insufficient training on GL coding
- Manual data entry for non-PO invoices

Solutions:

- Built automatic GL code validation
- Created guided data entry forms
- Implemented mandatory PO linkage for invoices >$1,000

Result: Error rate reduced to 2.1% — saving $762K annually

Overproduction

Overproduction occurs when more is produced than the customer needs, or earlier than needed. In service environments, overproduction appears as unnecessary reports, redundant communications, or premature processing of work items.

Overproduction examples in Shared Services:

- Generating reports no one reads
- Sending approval emails to stakeholders not involved in the decision
- Processing invoices before they are due, consuming capacity needed elsewhere
- Creating multiple versions of the same document

Waiting

Waiting is one of the most visible and widespread wastes in Shared Services. It occurs whenever a person, process, or transaction is idle — waiting for approval, information, system access, or another step to complete.

Real-Life Example: Waiting Waste – Purchase Requisition Process

A Procurement shared services team analyzed their PR-to-PO process:

Total Cycle Time: 14.2 days
Total Touch Time: 2.1 hours (0.9% of cycle time!)

Waiting Time Breakdown:

- Waiting for manager approval: 5.2 days
- Waiting for procurement review: 3.8 days
- Waiting for finance approval: 2.9 days
- Waiting for supplier confirmation: 2.3 days

Solution: Implemented risk-based approval routing (low-value PRs auto-approved), parallel processing for approvals, and mobile approval capability.

Result: Cycle time reduced to 2.8 days (80% reduction)

Non-Utilized Talent

Non-utilized talent occurs when employees' skills, knowledge, creativity, or experience are underused. This is particularly common in Shared Services where highly skilled people spend time on repetitive manual tasks that could be automated.

Examples of non-utilized talent:

- Experienced analysts manually entering data that could be automated via RPA
- Subject matter experts doing routine query handling instead of complex analysis
- Employees with improvement ideas but no forum to share them
- Multilingual team members not used for cross-regional support

Transportation

Transportation waste refers to the unnecessary movement of information, documents, or data between people, systems, or locations. Each handoff or transfer is an opportunity for delay, loss, or error.

Real-Life Example: Transportation Waste – IT Service Requests

An IT Shared Services team analyzed their software access request process:

Transportation Steps (all non-value-adding):

- Email from user to manager (Day 1)
- Email from manager to IT help desk (Day 2)
- Help desk opens ticket and emails IT admin (Day 2)
- IT admin emails security team for approval (Day 3)
- Security emails back to IT admin (Day 5)
- IT admin emails user with confirmation (Day 6)

6 email handoffs for a 5-minute task! Every transfer added delay and risk of loss.

Solution: Self-service portal with automated routing and real-time status tracking
Result: Access provisioning time: 6 days → 4 hours (97% reduction)

Inventory

Inventory waste in Shared Services refers to backlog — work that has been received but not yet processed. Excess inventory hides problems, obscures capacity issues, and increases the risk of errors when items sit unprocessed.

Real-Life Example: Inventory Waste – Finance Invoice Backlog

A Finance GBS center had a standing backlog of 3,200 unprocessed invoices at month-end.

Impact of Backlog:

- 180 invoices past payment due date (late payment penalties: $28K/month)
- 45 invoices from suppliers threatening supply disruption
- 320 invoices creating timing differences in month-end close
- Team working overtime to clear backlog (12 hours/week additional cost)

Root Causes:

- Work arrived in batches (250+ invoices Monday morning)
- No capacity smoothing across the week
- Complex invoices requiring specialist review created bottleneck

Solution: Implemented daily processing targets, cross-training for specialist review, and supplier portal for direct invoice submission
Result: Standing backlog reduced from 3,200 to 180 invoices (94% reduction)

Motion

Motion waste occurs when people have to move unnecessarily within their work environment. In modern Shared Services, motion is often digital — switching between applications, searching for information across multiple systems, or navigating complex menus.

Digital motion waste examples:

- Logging into 5 different systems to process a single transaction
- Copying and pasting data between applications
- Searching through email attachments for reference documents
- Navigating complex multi-level menus to find rarely-used functions

Extra Processing (Overprocessing)

Extra processing occurs when more work is done on an item than the customer requires. This includes redundant reviews, excessive approvals, unnecessary report detail, or quality checks that duplicate each other.

Real-Life Example: Overprocessing – Procurement Redundant Reviews

A Procurement team analyzed their supplier invoice approval workflow:

Approval Steps for Standard Invoices <$5,000:

- Procurement processor (Level 1 check): 15 minutes
- Team lead review: 10 minutes
- Procurement manager approval: 8 minutes
- Finance analyst review: 12 minutes
- Finance manager sign-off: 5 minutes

Total: 5 approval steps for a standard, low-risk invoice

Analysis: Risk assessment showed 99.2% of these invoices had zero issues.

Solution: Implemented risk-based processing:

- <$1,000: Auto-approve against PO (no human review)
- $1,000-$5,000: Single processor check
- >$5,000: Two-level approval retained

Result: Processing time per invoice reduced 74%, capacity freed for higher-value activities

Chapter 3 Summary

The five Lean principles are: Define Value, Map the Value Stream, Create Flow, Establish Pull, and Pursue Perfection.

Value is always defined from the customer's perspective.

DOWNTIME represents the eight types of waste: Defects, Overproduction, Waiting, Non-Utilized Talent, Transportation, Inventory, Motion, and Extra Processing.

In Shared Services, waiting and defects are typically the largest sources of waste.

Waste identification is the first step — elimination of waste drives both efficiency and customer satisfaction.

CHAPTER 4

Process Thinking and Mapping

Learning Objectives

Define a process and its key components
Construct a SIPOC diagram for a Shared Services process
Create and interpret basic process maps and swimlane diagrams
Apply standard process mapping symbols and notation

4.1 What Is a Process?

A process is a series of connected steps that transform inputs into outputs for a customer. Every activity in Shared Services — from processing an invoice to onboarding a new hire — follows a process, whether documented or not.

Component	Definition	Example (Invoice Processing)
Inputs	What enters the process	Invoice from vendor, purchase order, receipt
Activities	The steps performed to transform inputs	Validate PO match, code GL account, obtain approval
Outputs	What the process produces	Approved invoice, payment instruction
Customer	Who receives the output	Vendor (receives payment), Finance (receives data)
Controls	Rules and standards governing the process	Payment terms, approval thresholds, tax requirements

Real-Life Example: Invoice to Pay Process

A Finance GBS center mapped their Invoice-to-Pay process:

Inputs: Vendor invoice, purchase order, goods receipt, vendor master data
Process Steps (14 steps):
1. Invoice receipt and logging
2. PO matching validation
3. Exception handling (if mismatch)
4. GL coding assignment
5. Approval routing based on value
6. Manager approval

7. Finance review (>$10K)
8. Payment scheduling
9. Payment processing
10. Remittance advice generation
11. Vendor notification
12. Reconciliation
13. Month-end accruals
14. Archiving

Outputs: Payment to vendor, GL posting, audit trail, management reports
Customers: Vendors, Finance, Procurement, Audit

Process Analysis: Only 6 of 14 steps were value-added. 8 steps were identified as waste candidates — reducing to 9 steps after improvement.

4.2 SIPOC Diagrams

SIPOC stands for Suppliers, Inputs, Process, Outputs, and Customers. A SIPOC diagram provides a high-level view of a process and its boundaries, ensuring that all team members share a common understanding of the process scope before diving into detailed mapping.

When to use SIPOC:

- At the beginning of a project to define scope
- To identify all stakeholders and their roles
- To clarify process boundaries (start and end points)
- To create alignment among team members with different perspectives

SIPOC Components

Component	Questions to Ask	Shared Services Examples
Suppliers	Who provides inputs to this process?	Employees, managers, vendors, other departments
Inputs	What materials, data, or information enter the process?	Forms, requests, invoices, data files, approval emails
Process	What are the 5–7 high-level process steps?	Receive → Validate → Process → Approve → Deliver
Outputs	What does the process produce?	Payments, reports, access rights, onboarding packages
Customers	Who receives the outputs?	Employees, vendors, business units, regulators

SIPOC Example: Employee Expense Reimbursement

Suppliers: Employee (submitter), manager (approver), Finance policy team, ERP system

Inputs: Completed expense report, receipts, policy guidelines, GL codes, employee bank details

Process (high-level steps):
1. Employee submits expense report
2. Manager reviews and approves
3. Finance validates against policy
4. GL coding assigned
5. Payment processed
6. Remittance sent to employee

Outputs: Reimbursement payment, GL posting, compliance record, audit trail

Customers: Employee (receives payment), Finance (receives GL data), Auditors (receive documentation)

4.3 Basic Process Maps

Process maps are visual representations of the steps in a process, showing the sequence of activities, decision points, and the flow of work. They help teams see the current state of a process and identify opportunities for improvement.

Real-Life Example: IT Incident Resolution Process Map

An IT Shared Services team mapped their incident resolution process to understand handoffs:

Start: User reports IT issue (phone/email/portal)
↓ Level 1 Support: Agent logs ticket and attempts resolution
↓ Decision: Can Level 1 resolve? → Yes: Resolve and close ticket
→ No: Escalate to Level 2
↓ Level 2 Specialist: Diagnoses and works the issue
↓ Decision: Resolved? → Yes: Document solution and close
→ No: Escalate to vendor or Level 3
↓ Resolution communicated to user
↓ User confirms resolution
↓ End: Ticket closed and satisfaction survey sent

Mapping revealed: 14 distinct handoff points, creating 14 opportunities for delay and error.

Process Mapping Symbols

Standard process mapping uses consistent symbols so that maps can be understood by anyone. The most common symbols used in Shared Services process mapping are:

Symbol	Name	When to Use
Oval / Rounded Rectangle	Start/End (Terminator)	Marks the beginning or end of a process
Rectangle	Process Step / Activity	Any task or activity performed by a person or system
Diamond	Decision Point	A yes/no question that creates two paths
Parallelogram	Input / Output	Data, information, or documents entering or leaving
Arrow	Flow Direction	Shows the sequence and direction of process steps
Rectangle with wavy bottom	Document	A physical or electronic document produced or used
Circle	Connector	Links parts of the process across pages or sections
D-shape / Half-oval	Delay / Wait	A point where work is delayed or waiting

Swimlane Diagrams

Swimlane diagrams organize process steps by the person, team, or system responsible for each step. Each "lane" represents a different actor, making handoffs, responsibilities, and potential gaps clearly visible.

Swimlane diagrams are ideal for:

- Processes involving multiple departments or teams
- Identifying handoff points between functions
- Clarifying who is responsible for each step
- Finding gaps where no one owns a step

Swimlane Example: Purchase Order Process

Lanes (Actors):

- Requester | Procurement Team | Finance | Vendor | ERP System

Requester lane:

- Creates purchase requisition in system
- Provides business justification
- Reviews and accepts delivery

Procurement Team lane:

- Reviews and validates requisition
- Selects vendor and negotiates terms
- Issues purchase order

Finance lane:

- Validates budget availability
- Approves orders >$10,000
- Processes payment upon receipt

Vendor lane:

- Receives purchase order
- Delivers goods/services
- Submits invoice

Key Insight: Swimlane revealed 3 steps where work crossed organizational boundaries without a documented handoff protocol — a major source of delay.

Chapter 4 Summary

A process is a series of connected steps transforming inputs into outputs for a customer.
SIPOC (Suppliers, Inputs, Process, Outputs, Customers) provides a high-level view of process scope.
Process maps visually represent process steps using standard symbols (ovals, rectangles, diamonds, arrows).
Swimlane diagrams organize steps by actor, making handoffs and responsibilities visible.
Process mapping is the foundation for waste identification and improvement design.

CHAPTER 5

Basic Metrics and Performance

Learning Objectives

Identify and calculate key Shared Services metrics
Distinguish between touch time and wait time in process analysis
Create and interpret basic performance visualization tools

5.1 Key Service Metrics

Common metrics in Shared Services include cycle time, touch time, first pass yield, backlog size, and SLA compliance. These metrics provide insight into efficiency, quality, and responsiveness of service delivery.

Metric Category	Metric	Definition	Example Target
Quality	Error Rate	Defective items / total items processed	<5%
Quality	First-Time-Right	Items processed correctly without rework / total items	>95%
Quality	Duplicate Rate	Duplicate transactions / total transactions	<0.5%
Speed	Cycle Time	Total time from start to finish (including waiting)	<3 days
Speed	Touch Time	Active processing time (excluding waiting)	<30 min
Productivity	Throughput	Number of items processed per period	200/day
Productivity	Cost per Transaction	Total cost / number of transactions	<$12
Customer	On-Time Delivery	Transactions completed within SLA / total transactions	>95%
Customer	CSAT Score	Customer satisfaction survey score	>8.0/10
Capacity	Backlog Size	Unprocessed items waiting to be worked	<500

Real-Life Example: Finance Shared Services Comprehensive Metrics

A Finance GBS center tracked comprehensive metrics across invoice processing:

Baseline Performance:

- Error rate: 18% → Target: <5%
- First-time-right: 82% → Target: >95%
- Cycle time: 8.2 days average → Target: <3 days
- Touch time: 18 minutes average
- Wait time: 8.0 days (97.8% of cycle time!)
- Throughput: 3,200 invoices per month
- Cost per invoice: $18.50 → Target: <$12
- On-time payment: 78% → Target: >95%
- Vendor satisfaction: 6.4/10 → Target: >8.5
- Standing backlog: 2,100 invoices → Target: <500

Key Insight: 97.8% of cycle time was waiting — not processing. The improvement opportunity was not in making people work faster, but in eliminating the queues and delays.

After Lean Six Sigma:

- Error rate: 4.2% (77% reduction)
- Cycle time: 2.8 days (66% reduction)
- Cost per invoice: $11.20 (39% reduction)
- On-time payment: 96%
- Vendor satisfaction: 8.7/10
- Backlog: 280 invoices (87% reduction)

5.2 Touch Time vs. Wait Time

Touch time refers to the time spent actively working on a request, while wait time refers to delays between activities. In many service processes, wait time represents the vast majority of total cycle time — often 80–95%. Understanding this ratio is critical for identifying improvement opportunities.

Process Efficiency Formula

Formula: Process Efficiency

Process Efficiency = (Touch Time ÷ Total Cycle Time) × 100%

Example: Touch Time = 1 hour, Cycle Time = 4.2 days (100.8 hours)
Process Efficiency = (1 ÷ 100.8) × 100% = 0.99%

World-class service processes typically achieve 25–50% efficiency.
Most Shared Services processes start at 1–10% efficiency.
The gap between current efficiency and world-class represents the improvement opportunity.

Real-Life Example: IT Service Desk Touch Time vs. Wait Time

Total Cycle Time: 4.2 days (100.8 hours)

Touch Time Breakdown (Total: 60 minutes):
- Level 1 troubleshooting: 12 minutes
- Research in knowledge base: 8 minutes
- Level 2 specialist work: 25 minutes
- Testing solution: 10 minutes
- Documenting resolution: 5 minutes

Wait Time Breakdown (Total: 99.8 hours):
- Waiting in Level 1 queue: 18 hours
- Waiting for specialist assignment: 36 hours
- Waiting for user response: 12 hours
- Waiting in Level 2 queue: 24 hours
- Waiting for change approval: 9.8 hours

Process Efficiency: 60 minutes ÷ 100.8 hours = 0.99%

This means 99% of the time, the ticket was just sitting waiting. The team focused improvement on reducing queue times, not on making agents work faster.

5.3 Visualizing Performance

Data visualization transforms raw numbers into actionable insight. For Yellow Belt practitioners, the most important visualization tools are run charts, bar charts, and Pareto charts.

Chart Type	Best Used For	Example Application
Run Chart	Tracking a metric over time to spot trends and patterns	Daily error rate over 4 weeks to see if improving
Bar Chart	Comparing categories or groups	Defects by type: GL code errors vs. PO errors vs. tax errors
Pareto Chart	Identifying the "vital few" causes that account for most problems	80% of errors caused by 20% of root causes
Box Plot	Showing distribution and spread of data	Cycle time variation across different processing teams
Histogram	Showing the frequency distribution of a dataset	Number of invoices by processing time range

The Pareto Principle (80/20 Rule)

The Pareto Principle states that approximately 80% of problems come from 20% of causes. In Lean Six Sigma, this principle guides teams to focus improvement efforts on the vital few causes that will have the greatest impact.

Pareto Example: Invoice Error Analysis

Total errors analyzed: 500 invoices in one month

Error Type Frequency (Pareto ordered):
1. Wrong GL code: 210 errors (42%) — Cumulative: 42%
2. Missing PO reference: 140 errors (28%) — Cumulative: 70%
3. Incorrect tax rate: 90 errors (18%) — Cumulative: 88%
4. Wrong currency: 40 errors (8%) — Cumulative: 96%
5. Other: 20 errors (4%) — Cumulative: 100%

Pareto Conclusion: Fix the top 2 error types (GL codes and PO references) and you eliminate 70% of all errors.
Without Pareto analysis, teams might spread effort equally across all 5 categories — missing the biggest opportunities.

☑ Chapter 5 Summary

Key Shared Services metrics span quality (error rate, FTR), speed (cycle time, touch time), productivity (throughput, cost), and customer (CSAT, on-time delivery).

Touch time is active processing; wait time is idle delay. Most processes are 1–10% efficient.

The difference between touch time and cycle time represents the primary improvement opportunity in Shared Services.

Process Efficiency = Touch Time ÷ Cycle Time × 100%.

Pareto charts help identify the vital few causes (20%) driving most problems (80%).

Data visualization turns raw numbers into actionable priorities for improvement teams.

CHAPTER 6

Basic Problem Solving

Learning Objectives

Distinguish between symptoms and root causes
Apply the 5 Whys technique to identify root causes
Facilitate a Fishbone (Ishikawa) diagram analysis
Select the appropriate problem-solving tool for a given situation

6.1 Root Cause Thinking

Root cause thinking is the discipline of looking beyond symptoms to find the underlying reason why a problem occurs. Treating symptoms without addressing root causes leads to recurring problems, short-term fixes, and wasted resources.

Symptoms vs. Root Causes

Symptom: What you observe — the visible effect of the problem
Root Cause: The fundamental reason the problem exists

Example:

- Symptom: "Invoices are being paid late"
- Intermediate Cause: "The approval process takes too long"
- Root Cause: "Approvals require manual routing via email with no escalation mechanism"

Fixing the symptom: Hire more people to process invoices faster
Fixing the root cause: Implement automated approval workflow with escalation rules

Only root cause fixes are sustainable.

W. Edwards Deming famously stated that 94% of problems are caused by the system, not the people. Root cause thinking redirects focus from blaming individuals to improving the process and systems they work within.

Key Insight: *When you blame people, you get better at blaming. When you fix systems, you get better at delivering results. Root cause thinking is always about the process, never the person.*

6.2 The 5 Whys

The 5 Whys is a simple but powerful technique developed by Sakichi Toyoda at Toyota. It involves asking "Why?" repeatedly — typically 5 times — to drill down from a symptom to its root cause. The name comes from the observation that 5 questions is usually enough to reach the actionable root cause.

How to apply the 5 Whys:

6. Start with a clear problem statement
7. Ask "Why does this happen?" and write down the answer
8. Ask "Why does THAT happen?" about the previous answer
9. Repeat until you reach an actionable root cause
10. Verify: "If we fix this, will the problem go away?"

5 Whys Example: Payroll Processing Errors

Problem Statement: Employees are receiving incorrect pay in their first month

Why 1: Why are employees receiving incorrect pay?
→ Because payroll data entered for new hires contains errors

Why 2: Why does new hire payroll data contain errors?
→ Because HR submits new hire data using an Excel spreadsheet with free-text fields

Why 3: Why does HR use an Excel spreadsheet with free-text fields?
→ Because the payroll system doesn't have a direct interface with the HR system

Why 4: Why doesn't the payroll system interface with the HR system?
→ Because when the payroll system was implemented 8 years ago, HR used a different system, and the integration was never built when HR changed platforms

Why 5: Why was the integration never built?
→ Because there was no formal change management process to assess downstream impacts when HR changed platforms, and payroll was not consulted

Root Cause: Absence of a cross-functional impact assessment process for system changes

Root Cause Solution: Build HR-to-Payroll system integration AND implement a cross-functional change impact process for future system changes

Verification: "If we build the integration, will new hire payroll errors go away?" — Yes, for data entry errors. The process improvement prevents future integration gaps.

5 Whys Best Practices:

- Focus on processes, not people — ask "why did the system/process allow this?" not "who made this mistake?"
- Use data to verify each answer — don't assume, confirm with evidence
- Involve those who do the work — they know the real causes
- Stop when you reach an actionable root cause — going too deep is counterproductive
- Consider multiple paths — sometimes one symptom has multiple root causes

6.3 Fishbone Diagrams (Ishikawa/Cause-and-Effect)

The Fishbone Diagram, also called the Ishikawa Diagram or Cause-and-Effect Diagram, is a structured brainstorming tool that helps teams identify, organize, and display the potential causes of a problem. The diagram resembles a fish skeleton — the problem statement sits at the "head," and potential causes branch off as "bones."

The 6 Ms Framework

The most common framework for organizing causes in a Fishbone uses the 6 Ms, adapted for service environments:

Category	Service Adaptation	Examples in Shared Services
Manpower (People)	Skills, training, workload, experience	Insufficient training, high turnover, unclear roles
Method (Process)	Standard operating procedures, workflows, policies	Missing SOPs, inconsistent procedures, unclear policies
Machine (Technology)	Systems, tools, automation, software	System errors, poor UI, lack of automation, integration gaps
Material (Data/Input)	Data quality, information completeness, input accuracy	Incomplete forms, poor data quality, missing approvals
Measurement	Metrics, data collection, performance monitoring	Wrong KPIs, no feedback loops, inaccurate measurement
Mother Nature (Environment)	External factors, regulatory, organizational context	Regulatory changes, organizational restructuring, seasonality

Real-Life Example: Finance Month-End Close Delays

Problem Statement: Month-end financial close takes 12 days — target is 5 days

Fishbone Analysis (key causes identified per category):

People (Manpower):
- Staff lack advanced Excel and accounting system skills
- No backup for key specialist — single point of failure
- Month-end workload spike — 3× normal volume in 5-day window

Process (Method):
- No documented close checklist — each team member works from memory
- Sequential task completion — no parallel processing
- No escalation protocol when issues are found

Technology (Machine):
- Manual journal entry required for 340 recurring entries
- ERP report extraction takes 45 minutes per run
- 3 legacy systems not integrated — manual reconciliation required

Data/Input (Material):
- 30% of business unit inputs arrive on Day 4 instead of Day 1
- Currency conversion data arrives from treasury after business hours
- 12% of submissions contain errors requiring clarification

Measurement:
- No daily tracking of close progress
- No visibility into which tasks are blocking the critical path

Environment (Mother Nature):
- Quarter-end adds 2 additional days of required reporting
- Tax deadlines coincide with financial close in 3 key markets

Root Causes Selected for Action (validated with data):
1. No documented close checklist (Method) — addressed with Standard Operating Procedure
2. 30% late business unit inputs (Material) — addressed with hard cutoff and consequence protocol
3. Manual recurring journal entries (Machine) — addressed with automated journal template

Result: Close time reduced from 12 to 6 days (50% improvement) after 3-month implementation

Fishbone Diagram Best Practices

Before the session:

- Write a clear, specific problem statement (avoid vague statements like "things are slow")
- Gather relevant data — the diagram should be based on fact, not just opinion
- Invite participants who actually do the work (not just managers)

During the session:

- Brainstorm freely — capture all ideas first, evaluate later
- Use the 6 Ms to ensure comprehensive coverage
- Drill deeper on each cause with "Why?" questions
- Mark causes that are most supported by data

After the session:

- Validate the most likely causes with data before choosing solutions
- Prioritize causes by frequency, severity, and ease of fix
- Use the Fishbone output to guide 5 Whys analysis on top causes

Tool	Best For	Team Size	Time Required
5 Whys	Single, focused problem; quick analysis	2–5 people	30–60 minutes
Fishbone Diagram	Complex problems; multiple potential causes	5–10 people	1–2 hours
Both Combined	Comprehensive analysis (Fishbone to identify, 5 Whys to drill down)	5–10 people	2–3 hours

☑ Chapter 6 Summary

Root cause thinking distinguishes between symptoms (what we see) and root causes (why it happens).

94% of problems are caused by systems and processes, not people.

The 5 Whys technique drills down from a symptom to an actionable root cause by asking "Why?" repeatedly.

Fishbone diagrams organize potential causes using the 6 Ms: Manpower, Method, Machine, Material, Measurement, and Mother Nature.

Always validate causes with data before selecting solutions.

Yellow Belt practitioners should be comfortable facilitating 5 Whys and contributing to Fishbone sessions.

YELLOW BELT GUIDE

What You Have Learned

Congratulations on completing the Lean Six Sigma Yellow Belt Guide for Shared Services. You have built a solid foundation across six core chapters:

Chapter	Topic	Core Competency
1	Introduction to Continuous Improvement	Understand Lean, Six Sigma, and DMAIC
2	Understanding Customers and Value	Apply VOC and translate needs to CTQs
3	Lean Principles	Identify DOWNTIME waste types in processes
4	Process Thinking and Mapping	Create SIPOC, process maps, and swimlanes
5	Basic Metrics and Performance	Measure and visualize process performance
6	Basic Problem Solving	Facilitate 5 Whys and Fishbone analyses

Key Insight: *As a Yellow Belt, you are equipped to support improvement projects, identify waste in your daily work, gather and analyze basic data, and contribute meaningfully to DMAIC teams. The next step on the Lean Six Sigma journey is the Green Belt, which builds on these foundations with advanced statistical analysis and project leadership skills.*

Yellow Belt Certification Readiness Checklist

- I can explain the difference between Lean and Six Sigma
- I can describe each phase of DMAIC
- I can identify internal and external customers in a Shared Services context
- I can translate VOC into CTQ requirements
- I can name and recognize all 8 DOWNTIME waste types
- I can create a SIPOC diagram for a process I work in
- I can draw and interpret a basic process map or swimlane
- I can calculate process efficiency (touch time ÷ cycle time)
- I can apply the 5 Whys to a real problem
- I can contribute to or facilitate a Fishbone diagram session