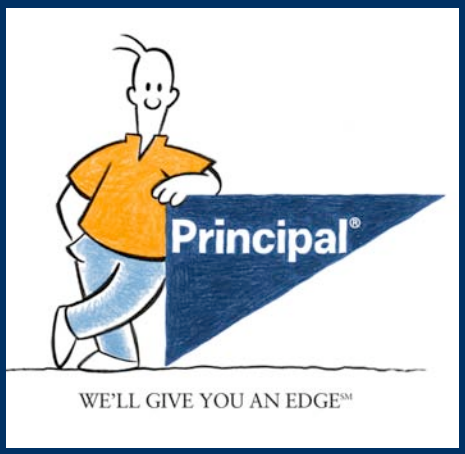
Transactional Lean and the Journey to Engaged Team Performance

LOMA Committee
September 29, 2009



Agenda

- Overview of Lean and DMAIC
  - Concept overview
  - Introduction of the "GPS Case Study"
- Case study organized in the order of phased execution of "DMAIC" approach
  - Define
  - Measure
  - Analyze
  - Improve
  - Control
- Next steps to drive great results!

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Lean Process Redesign

Project Options:

Lean Redesign fits best when:

- Waste or inefficiency exists within process
- Willing/able to assess the whole process
- The intended goals are to reduce *inventory* and/or *cycle time*
- Willing to consider "radical" change

Lean Redesign Steps:

1. Define: agree upon the process scope to be considered; assemble stakeholders; understand customers

2. Measure & Analyze: identify sources of excess work time, cycle time & inventory [remove *variation* if necessary using **Six Sigma DMAIC**]

3. Improve: plan and pilot changes to improve efficiency and align "flow of value" with customer demand

4. Control: document and monitor the process using visual measures

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Background on the GPS Case Study

In March, 2006, the Group Proposal Services department (GPS) at the Principal Financial Group decided to use a "Lean Workout" approach to assess their process efficiencies, particularly with the intention of deploying team performance measures and standards for their work.

The GPS department creates quotes for group health, dental, life, and disability products. They receive approximately 300 requests for quotes daily from their partners in the field sales force. In 2006, the expected turn-around time (TAT) for producing a quote was 48 hours, and the team was fairly consistently able to meet that goal (80-95% of the time, depending on volumes).

In the prior year's "busy season" of 2005 (September-November), however, the team had experienced a drop in their service levels, attributed by leaders at the time to the fact that volumes had exceeded their capacity. They wanted to ensure that 2006 turned out better!

To kick off the engagement, the department leader wrote an e-mail to her leadership team:

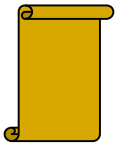
Hey, gang! I wanted to provide an email introduction to each other and high-level expectations around your time availability for the next couple weeks.

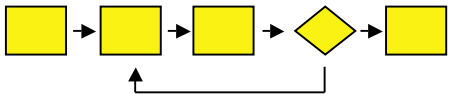
*Dept leaders -- First you are an awesome group! Thanks, once again, for being open to examination. I know your passion in wanting to have a slick process where all of your employees have an opportunity to succeed. It's nice to be able to do this review at a time when your inventory is not out-of-control. But you know it is coming again in the fall so this is the time to figure out the next level of improvements. Your participation is an important element of success in this review so have a calendar that is adjustable over the next couple weeks and also start planning having some of your employees available also.**

** Please make a commitment to availability at any time consulting team is on-site with 24 hours notice in advance.*

Define Overview

1. Charter the project
2. Understand the high-level process
3. Understand customer needs & requirements
4. Map process detail
5. Engage stakeholders





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SIPOC is a framework for viewing a process at a high-level, and its acronym stands for "Suppliers, Inputs, Process, Outputs, Customers."

GPS Case Study: High Level Process

Before going to observe team members doing the actual work, the project team has a discussion about the overall process.

The GPS department creates quotes for group health, dental, life, and disability products. They receive approximately 300 requests for quotes daily from their partners in the field sales force, and they return the quotes to those partners within 48 hours (usually).

When the requests for quotes (RFQs) are received, they are printed and inspected to decide if they are “rush” or “standard” requests. Standard requests go to a queue for processing the next day, and rush requests are sent for immediate processing.

A specialist (SSS) then “preps” a batch of quotes, by checking to ensure that they are actually new (instead of reversions) and looking up some key information (SIC codes, etc).

Next, a specialist reviews the RFQ and creates a “prep sheet” for data entry, using an MS Word template that is designed to capture the appropriate information that will need to be entered into the system.

The prep sheets go into a queue for data entry team members (“CDEs” -- usually temporary employees) to enter into the GPS computer system -- and yes, the system has the same acronym as the department!

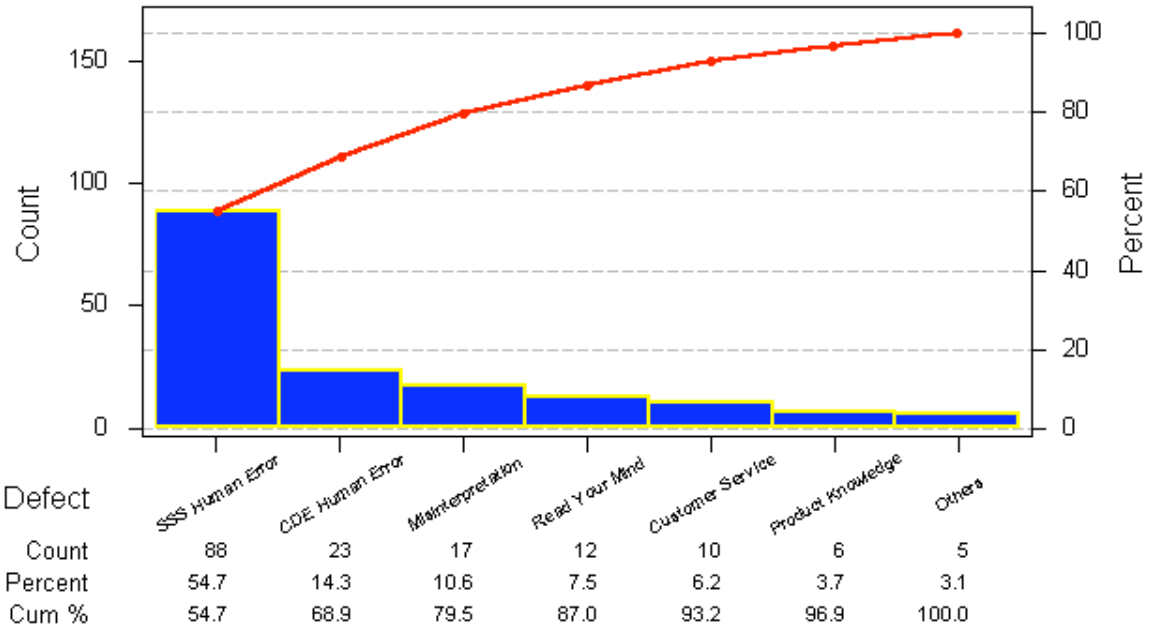
The CDE then places the completed quote in an Outlook folder for the field office to retrieve, and sends an e-mail to them to tell them it’s been completed (attaching any important notes that they need to know).

After the quote is entered into the system, the paperwork is sent to “Post Tracking” (another group of temporary employees), who track the quote and some pertinent performance information that the department needs (turn-around time, etc) in a MS Access database called “Full Service Log”.

GPS Case Study

GPS Case Study: Voice of the Customer

The team struggles to decide how deep to look at VOC issues. Obviously, the customers want their quotes to be timely, accurate, and complete. They seem happy with the 48-hour turn-around, though there are some anecdotal issues about "quality" that are somewhat disputed or debatable.



Defect	SSS Human Error	CDE Human Error	Misinterpretation	Read Your Mind	Customer Service	Product Knowledge	Others
Count	88	23	17	12	10	6	5
Percent	54.7	14.3	10.6	7.5	6.2	3.7	3.1
Cum %	54.7	68.9	79.5	87.0	93.2	96.9	100.0

The pareto chart above shows some of the complaints that the GPS has received lately. They're not sure that every issue is being reported, however.

The team has a passion for discussing the "read your mind" error, and one person explains that every field office wants it to be "Burger King" (have it your way…). The GPS has created a "benefit map" of preferences for each sales rep and/or office, and the expectation seems to be that the SSS will know the office's preferences and apply them appropriately -- for example, even if the Broker has written a request for certain provisions into the RFP, the SSS is expected to know and apply the field office's preferences to override the request as necessary. It seems quite complicated!

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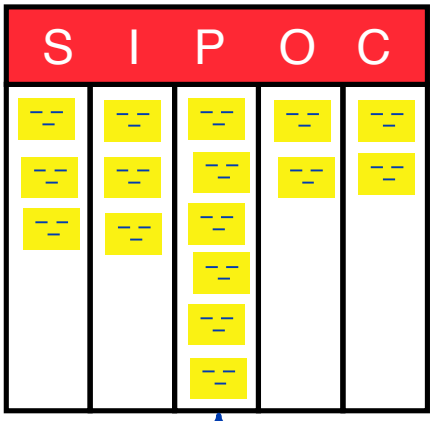
GPS Case Study

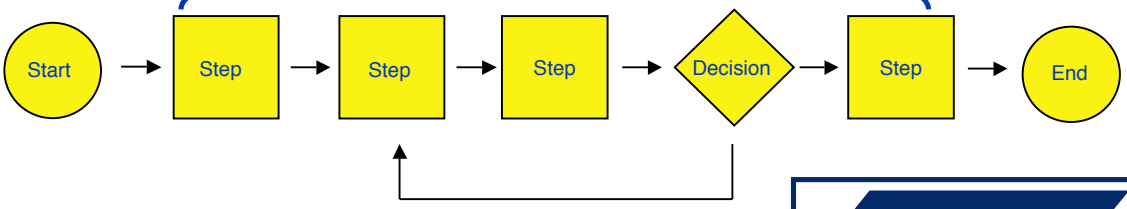
Process Mapping

Builds on the SIPOC to map the process:

- As-is
- In detail



Expands the "process" column



Define

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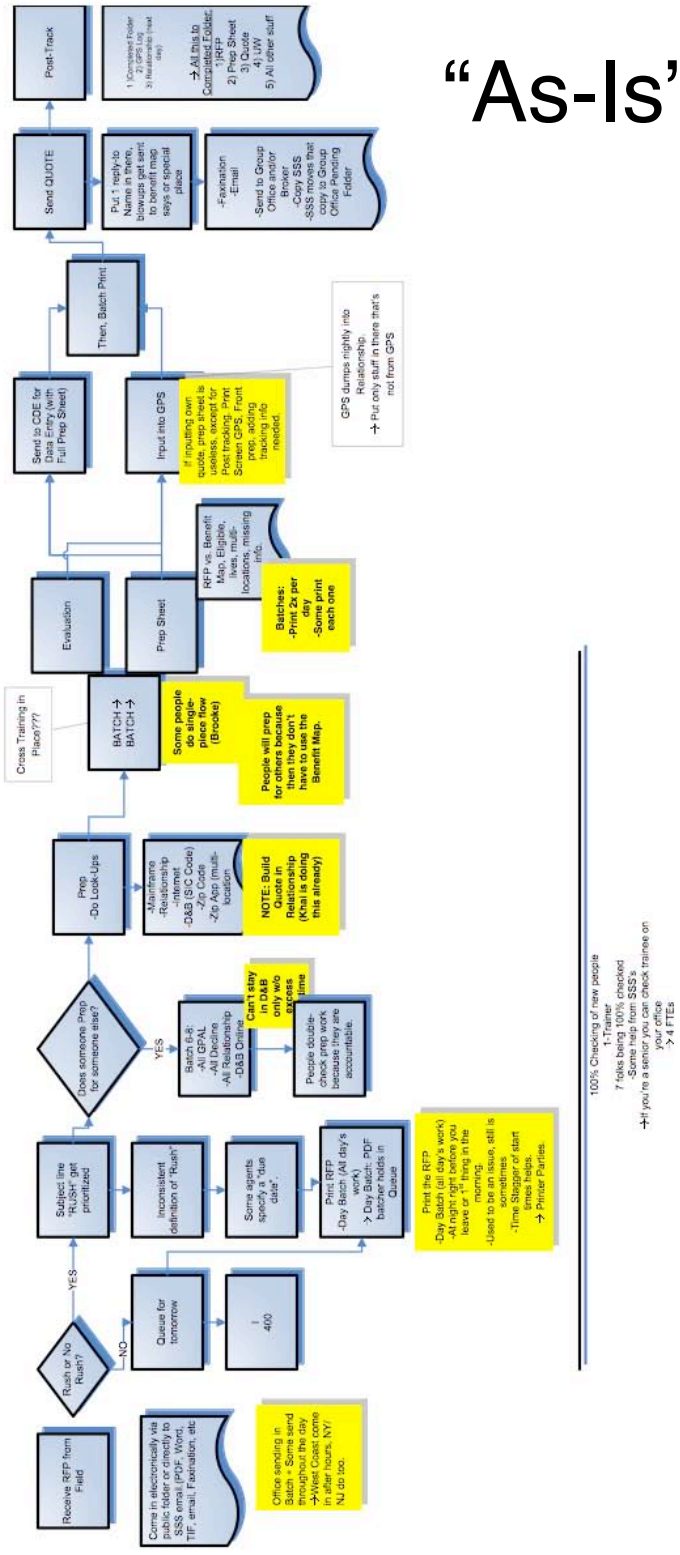
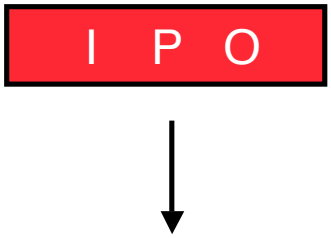
"As-Is" Process Map



GPS Case Study

Measure & Analyze Overview

1. Use standard Lean measures as applicable (including display on a *Value Stream Map*)
2. Plan for data collection
3. Collect data
4. Calculate the overall workforce efficiency



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Value Stream Map

Visualizes process efficiency…

- Adds critical information directly to the process map
  - ***Value*** of each process step
  - ***Staffing*** for each process step (in "FTE")
  - ***Volume flow*** rate (takt rate) of customer demand for products or services
  - ***Work time*** to do each step
  - ***Work in process*** (inventory) before each step
  - ***Wait time*** in each inventory queue
- Standard symbols and more detail can be found in *Learning to See* (LEI*)

* Lean Enterprise Institute

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FTE is an acronym for "full- time equivalent" -- it's calculated by adding up the amount of time each person works in a year, then dividing by the number of work hours in a standard year (2080). This allows comparison of staffing levels when some full-time and some part-time employee schedules are mixed together. For example, two 20 hour-per-week temporary employees together make 1 FTE.

VSM #1: Process Value Analysis

Identify the "customer valued work"

- Value-added (**VA**) activities meet all 3 tests:
  - Transform the unit physically toward completion
  - Customer would be willing to pay for the transform
  - The activity is done once, correctly: (i.e. not rework of a previous error)
- Some activities can be value enabling (**VE**) if they make another value-added activity more efficient or effective
  - Random QC sampling to drive accountability is VE
  - 100% QA inspection is NVA!
- All other activities are "Non-Value Added" (**NVA**)

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VSM #2: Staffing

Identify the people who work in the process

- Use actual organization charts to make sure all of the people are “accounted for”
- Count part-time and temporary employees as “full-time equivalents” (FTE) using their proportion of hours spent vs a 40-hour work week (e.g., a person who works 20 hours per week = 0.5 FTE)
- Count support, supervision, and “special project” people too!
- Put the counts onto the Value Stream Map

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VSM #3: Work Volumes (Takt Rate)

Volume is the "heartbeat" of the process!

- The "takt rate" is the amount of volume demanded by the customer per unit of time
- Need both the "average" volume during an appropriate period of time, as well as seeing the variation
  - "Appropriate time period" should be based on customer needs (e.g., if the customer needs it in 1 or 2 days, we should use daily volume!)
  - The team should use intuition to identify the possible drivers of variation in demand (e.g., day of week, batching of orders, etc) and then use actual system data to validate the variation

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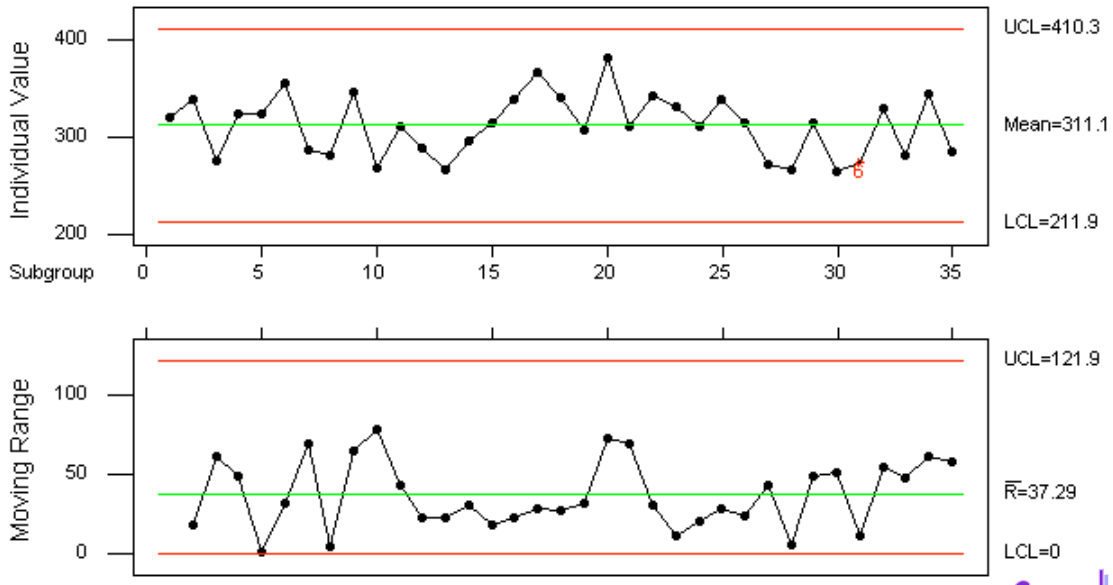
Volume Per Day, Jan-Feb 2006



No significant trends in 2006…

GPS Case Study

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VSM #4: Work Time

- Work time is a function of:
  - ***Complexity*** of the work completed
  - ***Process*** for doing the work
  - Time people spend ***actually working*** vs other activities!
- May NOT be a function of "service level" to the customer (unless that impacts the ***process***)!
- If many team members do similar tasks of similar complexity, we can just use the average work time
- If the team suspects that some team members get tougher work than others, a "time study" can estimate the variation and identify standards for "work time per specific task"

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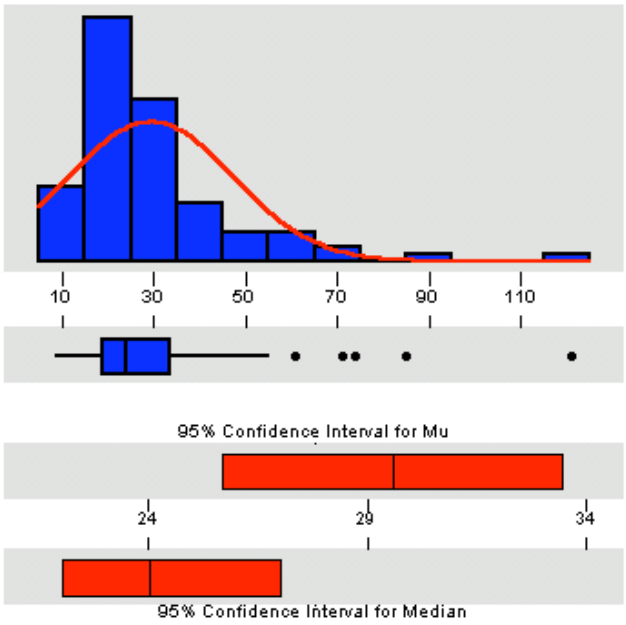
Doing a Time Study

- Identify whether manual or automated data collection will be able to capture actual work time
  - If not, perhaps an "estimate" is appropriate?
- Capture the work time
  - Each row is a specific task
  - For that some task identify any key attributes of the work that might drive variation in the time it takes to accomplish
- Make a histogram to see the variation
- Get help with regression if necessary!

Work Time Distribution (2nd Study)



Variable: Total

Anderson-Darling Normality Test

A-Squared:	4.929
P-Value:	0.000
Mean	29.5765
StDev	17.9903
Variance	323.652
Skewness	2.38408
Kurtosis	7.99520
N	85
Minimum	9.000
1st Quartile	19.000
Median	24.000
3rd Quartile	33.500
Maximum	121.000

95% Confidence Interval for Mu

25.696	33.457

95% Confidence Interval for Sigma

15.633	21.191

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Median = 24 min; Avg = 29.6 min

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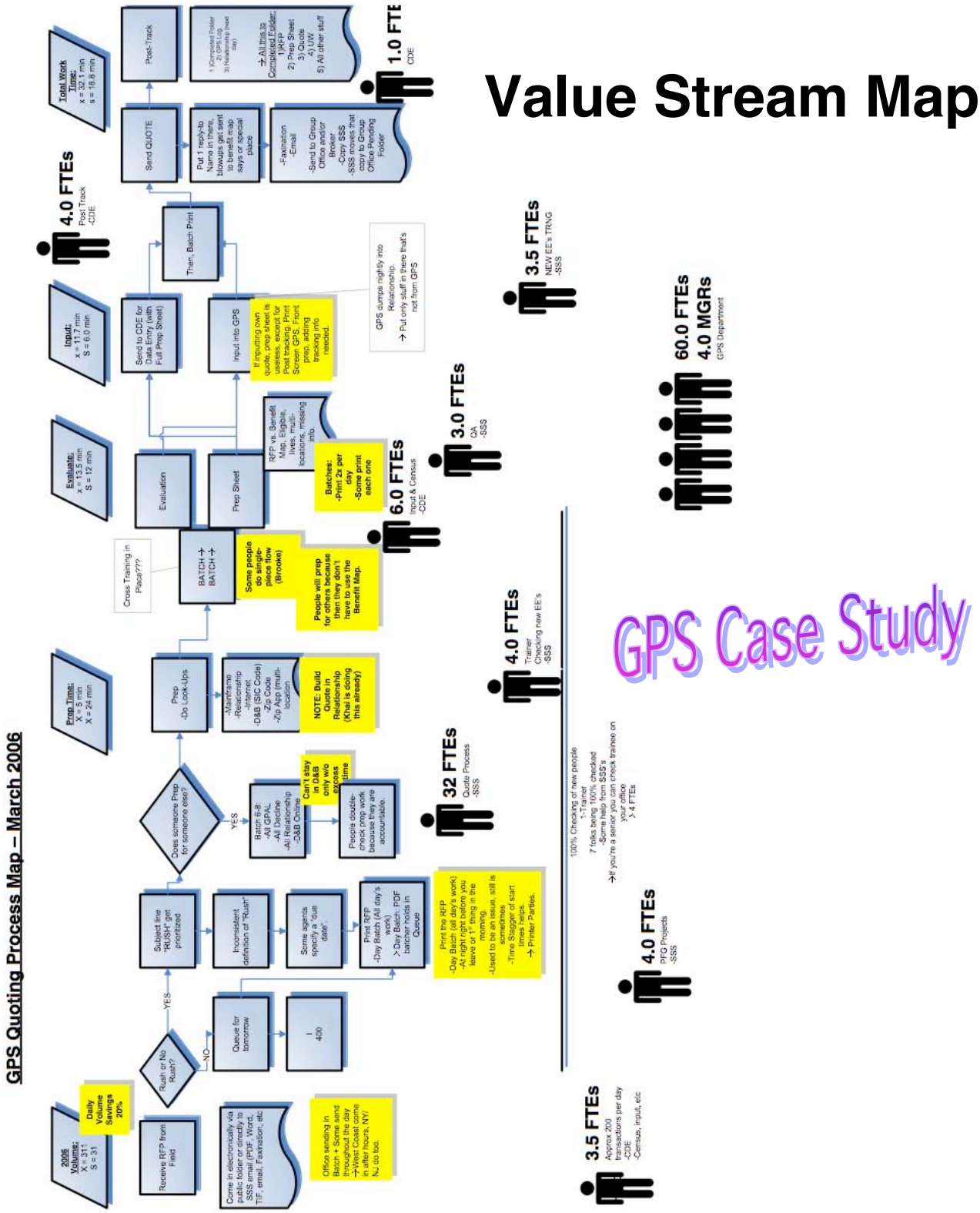
Value Stream Map



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Regression: 2nd Work Time Study

Regression Analysis: Total versus Versions, Lives, ...

The regression equation is
Total = 12.5 + 3.05 Versions + 0.249 Lives + 14.0 Multi-location + 16.9 LTD
+ 14.4 VTL - 6.71 Census Manipulation + 22.4 Benefit Choice
+ 14.9 Missing Info + 8.86 Underwriting

Predictor	Coef	SE Coef	T	P	VIF
Constant	12.544	2.429	5.16	0.000	
Versions	3.047	1.044	2.92	0.005	1.1
Lives	0.24877	0.05817	4.28	0.000	1.7
Multi-lo	13.968	3.266	4.28	0.000	1.5
LTD	16.904	3.020	5.60	0.000	1.2
VTL	14.362	3.136	4.58	0.000	1.3
Census M	-6.711	2.453	-2.74	0.008	1.5
Benefit	22.432	5.884	3.81	0.000	1.2
Missing	14.864	5.526	2.69	0.009	1.5
Underwri	8.863	3.707	2.39	0.019	1.1

S = 8.956 R-Sq = 77.9% R-Sq(adj) = 75.2%

GPS Case Study

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	9	21170.7	2352.3	29.33	0.000

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VSM #5: Inventory and Wait Time

- Wait time is usually unrelated to work time!
- Wait time results from "queues" of work (also called "work in process" inventory, or WIP)
- Queues are often used to ensure that workers are never idle (that's more efficient, right?)
  - Every handoff creates a queue
  - Every queue is one more opportunity to wait
  - "I clear my queue every day" = a 1 night wait per queue!
- Wait time sometimes creates hidden problems:
  - Customer dissatisfaction
  - Work time to answer customers who call to ask where their quote is
  - Additional work time to triage/prioritize "rush" orders to the front of the queue

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Using Inventory to Estimate Wait Time

- Inventory is often measured in units of time:
  - "We have 2.5 days of inventory in the process."
  - "We have 2.5 days of inventory on the shelves."
- Easy calculation for wait time:

$$\text{Wait Time} = \frac{\text{Units in Queue}}{\text{Takt Rate (unit volume per time)}}$$

Example:

$$\text{GPS Wait Time} = \frac{\text{680 units (throughout)}}{\text{311 units per day}}$$

Average wait = 2.2 days!

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The "Magic Equation"

- Also known as "Overall Workforce Efficiency"
- Demonstrates total efficiency and changes paradigms about how efficient we really are
- Need to know 3 three things for ***each type of customer-valued output***:
  - Work time to produce the output (actual weighted average time from a time study)
  - Volume of work received in a relevant period of time (day, week, or month) — use an appropriate period that represents the typical workflow rate, not a "special" period of time!
  - Number of people (full-time equivalents = "FTE") that are assigned to do that work

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"Magic Equation" Calculation

- Do the math for each output:

Hours paid to be working:

FTE x 8 hours per day = _____

Hours "credit" for work:

$$\frac{\text{Work time (minutes)} \times \text{Volume per day}}{\text{60 min/hour}} = \_\_\_\_\_$$

Efficiency = $\frac{\text{Hours Credit}}{\text{Hours Worked}}$ (normally only 15-25%!)

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GPS Case: Sub-Task Level Efficiency

					Standard work times for tasks:				Minutes-		FTE needed
	Numbers of tasks completed				x 7.1 min	x 11.5 min	x 11.0 min	x 5.0 min	Standard	Standard	if working at
Day	Prepped	Evaluate	Input	Grand Total	Prep Time*	Eval Time	Input Time	PostTrack	Total time	Hours	6.5 hour Days
03/01/2006	275	275	266	816	1952.5	3162.5	2926	1330	9371	156.2	24.0
03/02/2006	281	284	284	849	1995.1	3266	3124	1420	9805	163.4	25.1
03/03/2006	247	247	246	740	1753.7	2840.5	2706	1230	8530	142.2	21.9
03/06/2006	298	298	312	908	2115.8	3427	3432	1560	10535	175.6	27.0
03/07/2006	346	346	346	1038	2456.6	3979	3806	1730	11972	199.5	30.7
03/08/2006	326	325	325	976	2314.6	3737.5	3575	1625	11252	187.5	28.9
03/09/2006	236	233	241	710	1675.6	2679.5	2651	1205	8211	136.9	21.1
03/10/2006	267	268	276	811	1895.7	3082	3036	1380	9394	156.6	24.1
Sum	2276	2276	2296								
Average	285	285	287		* includes printing					Avg	25.3
	Prepped	Evaluate	Input								

Work accomplished = 21 to 31 FTEs (25 average),
[assuming workforce is working 6.5 hour days]

FTEs on hand = 38 (doing those three tasks only)
Full department = 60 (w/ training, QA, post-track)

Workforce assigned task efficiency = 66%
Department work efficiency = 42%
[42% of 6.5 hour day = 2.7 hours]

GPS Case Study

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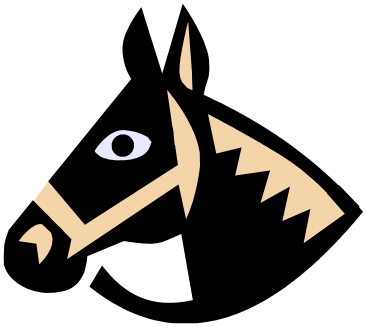
Root Cause Chain—The Five Whys



- The war was lost… WHY?
- The battle was lost…. WHY?
- The message was lost… WHY?
- The rider was lost… WHY?
- The horse was lost… WHY?
- The horseshoe was lost… WHY?
- A nail fell out of the horseshoe…

WHY?

- Billy Joe Bob was using the wrong-sized horseshoe nails.

Analyze

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GPS Case Study: Cause and Effect

The team has some great conversations along the way, as they create the value stream map. Some highlights:

"Prepping is helping without really helping."

"Yeah, I have to admit that I check the information anyway, after someone preps for me. After all, the quote has my name on it, so it's me who gets in trouble if it's wrong."

"But what else could we help with? It's all because of those darned benefit maps. If the offices would just standardize what they want, we'd be able to help each other with complete quotes, but it's so hard to learn each office's preferences that prepping is the only way we can help each other."

"What about the CDEs and the data entry? That template that the SSS fills out is exactly the same as the system that the CDEs use; why didn't we have the SSS just enter it into the system directly?"

"Oh, there was a good reason for that… [there always is!] Originally, the computer system was under-powered and very slow. It didn't make sense for an expensive resource like the SSS to be tied up waiting for screens to update during data entry. And when we ran into capacity issues last fall, we found that we could hire temps and teach them the GPS system pretty quickly, whereas it's hard to teach an SSS their whole job - they really have to know a lot about products. So with the CDEs we can more quickly react to volume changes."

"What happened last fall anyway?"

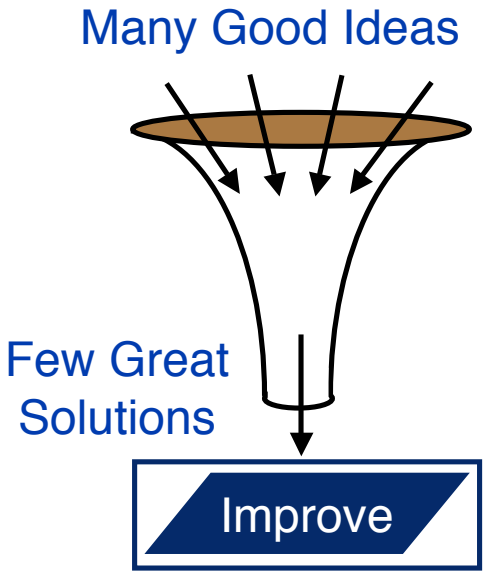
"Well, our volumes increased dramatically, and we got behind. We also had just lost some people and were in the midst of training the people we had hired to replace them. When folks are in training, we check 100% of their work. Other departments like to steal our people."

"Wasn't that also about the same time we started the Quality Quote process?"

"Yeah, that's true too."

Improve Overview

1. Identify all potential ideas for solutions
2. Narrow ideas and develop viable solutions
3. Select the best solutions
4. Pilot
5. Make a transition and implementation plan



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Advanced Solutions for Effectiveness

Some solutions are good and some are better

- **Mistake-proofing:** prevent defects & errors
  - Prevention: eliminate the possibility of a root cause
  - Prediction: statistically predict when defects are likely
  - Shut-down: immediately detect a defect and stop the process so that it can be fixed
  - Warning: alert operators after a defect is made
- **Tools:** create or modify work tools, forms, and systems (IT) to reduce waste and chance of error
- **Accountability:** measure performance of processes so that people can react swiftly to defects or problems

Advanced Solutions for Efficiency

Lean Enterprise theories can be applied to the process:

- **Just in Time:** make only what your customer needs; make it right the first time
- **Single Piece Flow:** make one at a time (minimize batch size), with few or no handoffs
- **Cell Design:** minimize movement of people and product; reduce non-value added work
- **Pull:** a customer order starts the production
- **Visual Control:** share critical real-time process information with all participants

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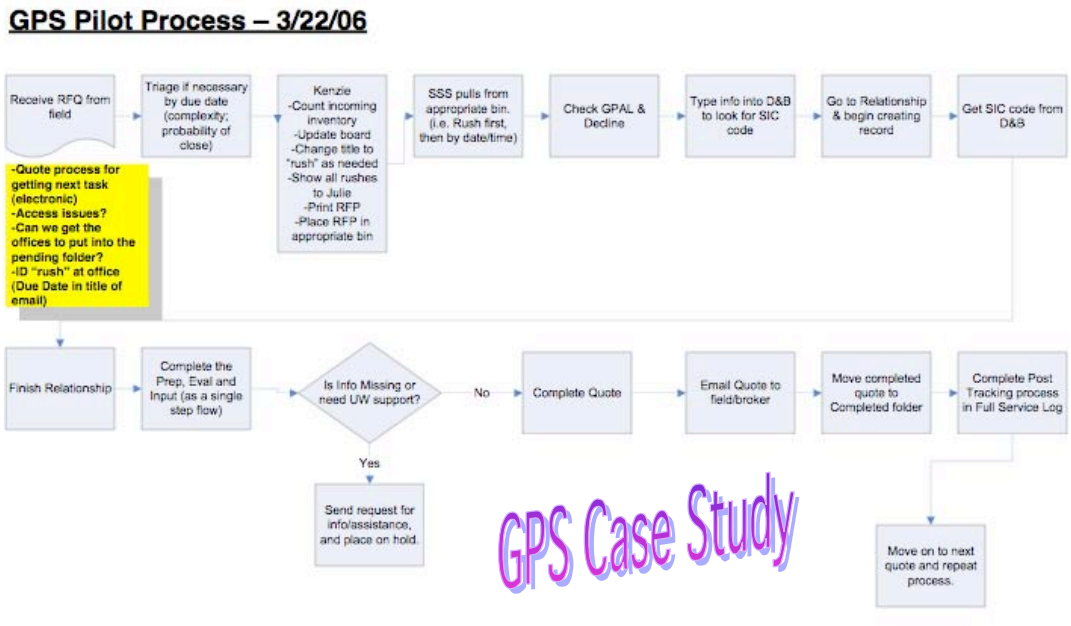
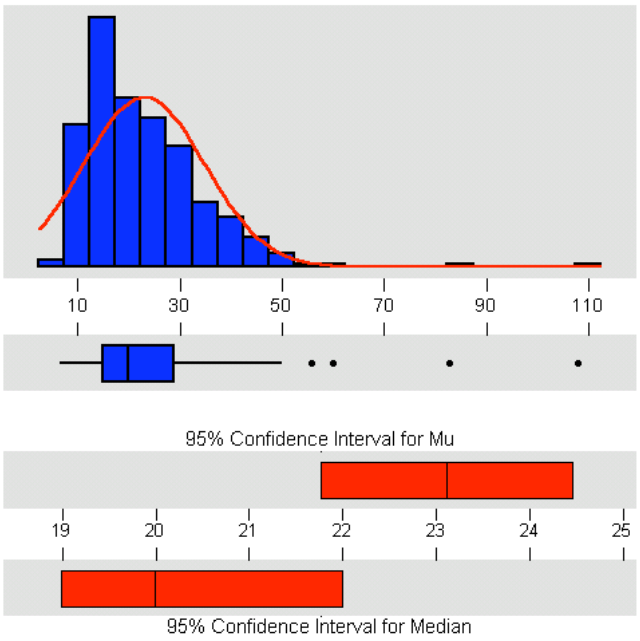
Piloting

- The GPS Team decided to pilot a new process starting with a single 6-person team



Pilot Time (w/o Printing)



Variable: TimeSpent

Anderson-Darling Normality Test

A-Squared:	6.446
P-Value:	0.000
Mean	23.1137
StDev	11.8670
Variance	140.826
Skewness	2.12769
Kurtosis	9.95278
N	299
Minimum	7.000
1st Quartile	15.000
Median	20.000
3rd Quartile	29.000
Maximum	108.000

95% Confidence Interval for Mu

21.763	24.464

95% Confidence Interval for Sigma

10.986	12.903

95% Confidence Interval for Median

19.000	22.000

Pre-Pilot Average = 29.6 + 5 (PTT) = 34.6 min

Pilot Average = 23.1 + 2 (printing) = 25.1 min

GPS Case Study

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Transition and Implementation Plans

How do we get there from here…?

- **Process:** What work will we do? What *won't* we do?
- **Tools:** Which systems will we use, and how will we use them (which capabilities)?
- **Training/Communication:** What information do team members need in order to accept the changes? What training will they need to learn the new process/tools?
- **Measures, Accountabilities, & Incentives:** How will we measure and display performance to people, and what will they be required to achieve?
- **Organization:** Do we have the right structure and staffing to get the work done now, and how will we react to anticipated changes in demand/volume, etc?

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GPS Case Study: Transition Planning

The team decides to create 6 teams, but to reorganize along the following principles:

- Each 5-7 person team will need to be cross-trained such that 2-3 people can know the benefit maps for ***each*** sales office that the team covers… that way, they'll be able to cross-level work when one office sends a lot of quote requests and another doesn't.

- Within each team, there's no more "my office" and "your office" -- all of the customer offices supported by the team are "our offices" and team members are expected to pull the next order either by priority or by "first in first out" from bins that are located in the center of their area. Team members take turns printing (again, as requests come in, not all as a batch at the beginning of the day).

- The teams' assigned office lists are organized ***both*** regionally and by "complexity" so that there are two teams of "high complexity" offices, two team with "lower complexity" offices, and two teams that cover special "business acquisition" offices (that have a slightly different process for doing quotes).

- They run an analysis of the volumes for each team, using the regression model to predict the amount of work time using actual quotes (both from a recent time period and from the previous busy season). They then calculate the necessary staffing levels and adjust the team composition accordingly.

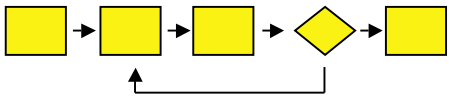
- Although many associates are kept in the same team(s) and/or supporting the same offices, there are some people who have to learn new office preferences, and then the teams need to accomplish the cross-training (mentioned above) before the busy season hits -- they plan to phase the team changes and training over the summer months.

- The manager of the area also commits to an action item to approach field offices that are sending "batches" of quote requests, and ask that they send each request immediately as it's received, to smooth out the incoming flow of work.

GPS Case Study

Control Overview

1. Document the process
2. Plan for ongoing process monitoring (dashboard)
3. Handoff new process to process leadership team
4. Close the project



Control

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Visual Control

Provide measures to the people who need them!

- Process participants:
  - Use "real-time process information" to react to Xs before they become Ys!
  - Hold process *teams* accountable for performance
- Business leaders:
  - Observe performance over time (control charts)
  - React appropriately to "special cause" signals
  - Charter projects to improve "common cause" variation or "random" performance

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Productivity

- A function of:
  - Volume completed per day
  - Complexity of the work completed
  - Process for doing the work
- If many team members do similar tasks of similar complexity, you can just use ***completion counts*** to compare performance
- If some team members get tougher work than others, a time study can identify appropriate standards for ***"time credit per task"***
- Then use system records of tasks completed to calculate the "standard time" and compare that to "actual time" spent

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STD Time Model - March '07

New variable (Benefit Booklet) is significant:

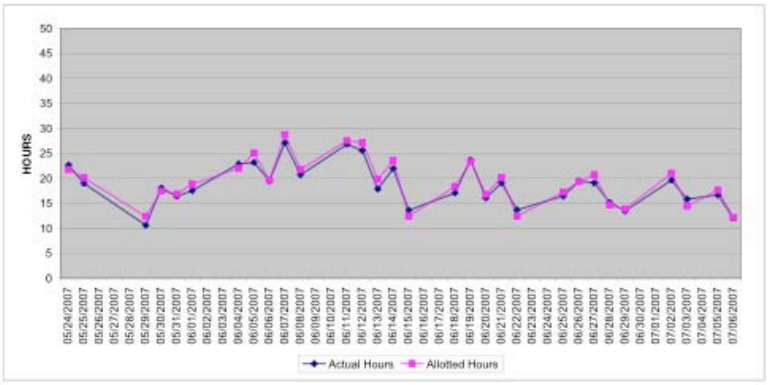
Regression Analysis: GPS Time Spent (minutes)

```
The regression equation is
TimeSpent in min = 2.57 + 9.95 SenttoUnderwriting + 8.18 AdditionalInfoRequired
           + 11.3 PPPC + 2.46 MultiLocation + 4.94 ClassCount + 0.686 ZipCount
           + 2.38 BenefitChoice + 13.2 MultiSIC + 3.00 BackupOffice
           + 2.62 Versions - 1.62 ExistingInRelationship + 4.63 DITakeover
           + 5.19 GPSTemplate + 3.47 Manually Enter Into Excel/Impor
           - 1.03 Manually Enter Into GPS - 0.623 Life + 2.48 VTL + 2.87 STD
           + 7.62 LTD + 1.00 Medical + 3.51 Dental + 3.58 Vision
           + 0.160 Tot_Lvs_Cnt + 11.5 BenefitBooklet

9346 cases used 6 cases contain missing values

S = 11.19       R-Sq = 49.4%     R-Sq(adj) = 49.3%

Analysis of Variance

Source            DF          SS          MS          F        P
Regression        24     1139906       47496     379.26    0.000
```

GPS Case Study

Team Productivity Measures

Team Quote Time



DISPLAYED:
TYPE: QUOTE TIME
RAN: Daily
SLICE: Team: 5
PERIOD: 05/26/2007 TO 07/06/2007

Team	5			
	Data			
Adj Day	Case Count	Actual Hours	Allotted Hours	Difference
05/24/2007	53	22.7	21.8	3.9%
05/25/2007	52	19.0	20.1	-5.5%
05/29/2007	34	10.7	12.4	-14.0%
05/30/2007	48	18.1	17.5	3.4%
05/31/2007	41	16.4	16.8	-2.5%
06/01/2007	40	17.6	18.9	-7.0%
06/04/2007	53	22.9	22.0	4.0%
06/05/2007	57	23.2	25.1	-7.5%
06/06/2007	47	19.6	19.7	-0.7%
06/07/2007	63	27.1	28.8	-5.8%
06/08/2007	54	20.7	21.8	-4.9%
06/11/2007	60	26.8	27.6	-2.7%
06/12/2007	56	25.6	27.1	-5.6%
06/13/2007	47	17.9	19.9	-10.1%
06/14/2007	58	22.0	23.6	-6.8%
06/15/2007	34	13.6	12.4	9.6%
06/18/2007	45	17.1	18.4	-6.9%
06/19/2007	62	23.7	23.4	1.3%
06/20/2007	39	16.1	16.7	-4.0%
06/21/2007	47	19.1	20.2	-5.2%
06/22/2007	32	13.7	12.4	10.1%
06/25/2007	43	16.5	17.3	-4.4%
06/26/2007	49	19.5	19.4	0.6%
06/27/2007	52	19.1	20.7	-7.8%
06/28/2007	36	15.2	14.7	3.7%
06/29/2007	35	13.5	13.9	-2.8%
07/02/2007	48	19.7	21.0	-6.3%
07/03/2007	40	15.9	14.5	9.7%
07/05/2007	46	16.7	17.6	-5.5%
07/06/2007	29	12.1	12.1	-0.8%
Grand Total	1400	561.6	577.8	-2.8%

GPS Case Study

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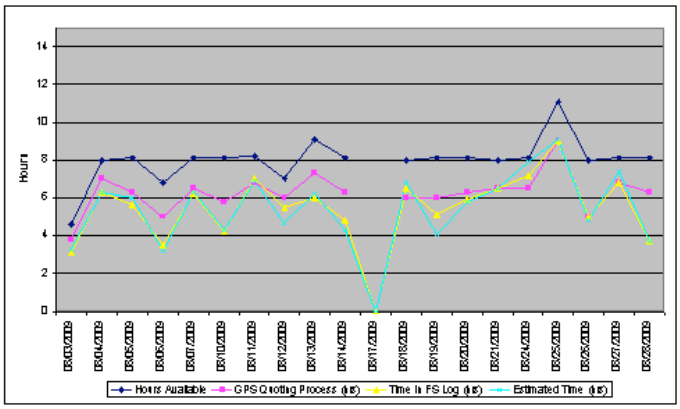
Individual Productivity Measures



DISPLAYED:

SSSName

Adj Days	Data Case Count	Hours Available	GPS Quoting Process (Hr)	Time in FS Log (Hr)	Estimated Time (Hr)	Time in FS Log (Hr)/ GPS Quoting Process (Hr)	Time in FS Log (Hr)/ Estimated Time (Hr)	GPS Quoting Process (Hr)/ Hours Available
08/03/2009	8	4.6	3.8	3.1	3.3	81.6%	93.9%	82.6%
08/04/2009	16	8.0	7.0	6.3	6.3	90.0%	100.0%	87.5%
08/05/2009	13	8.1	6.3	5.6	6.0	88.9%	93.3%	77.8%
08/06/2009	9	6.8	5.0	3.5	3.2	70.0%	109.4%	73.5%
08/07/2009	15	8.1	6.5	6.2	6.3	95.4%	98.4%	80.2%
08/10/2009	8	8.1	5.8	4.2	4.3	72.4%	97.7%	71.6%
08/11/2009	14	8.2	6.8	7.0	6.9	102.9%	101.4%	82.9%
08/12/2009	10	7.0	6.0	5.5	4.7	91.7%	117.0%	85.7%
08/13/2009	14	9.1	7.3	6.0	6.2	82.2%	96.8%	80.2%
08/14/2009	13	8.1	6.3	4.8	4.3	76.2%	111.6%	77.8%
08/17/2009	0			0.0	0.0			
08/18/2009	15	8.0	6.0	6.5	6.8	108.3%	95.6%	75.0%
08/19/2009	12	8.1	6.0	5.1	4.1	85.0%	124.4%	74.1%
08/20/2009	14	8.1	6.3	5.9	5.8	93.7%	101.7%	77.8%
08/21/2009	15	8.0	6.5	6.5	6.5	100.0%	100.0%	81.3%
08/24/2009	16	8.1	6.5	7.2	7.9	110.8%	91.1%	80.2%
08/25/2009	18	11.1	9.0	9.0	9.1	100.0%	98.9%	81.1%
08/26/2009	10	8.0	5.0	5.0	4.8	100.0%	104.2%	62.5%
08/27/2009	18	8.1	6.8	6.8	7.4	100.0%	91.9%	84.0%
08/28/2009	12	8.1	6.3	3.7	3.7	58.7%	100.0%	77.8%
Grand Total	250	151.7	119.2	107.9	107.6	90.5%	100.3%	78.6%
						GOAL 85 -90%	GOAL 90 -110%	GOAL 70 -75%

GPS Case Study

Results

- *Business Area:* Group Proposal Services (GPS)
- *Opportunity:* Streamline work time to produce a quote for Specialty Benefits and Health products
- *Baseline Data:* Delivered 300 quotes per day, with average work-time of 34 minutes per quote; 65 associates were engaged in the process
- *Results:*
  - Reduced work-time to quote by over 25% (to 25 minutes average)
  - Removed three handoffs from the process, going from four people touching a quote to single-touch processing
  - Emplaced process management and data feedback to allow associates to control workflow on their own teams
  - Reduced staffing by 11 FTE
  - Three years later, through strong process controls, the team handles similar volumes with **38** people!

GPS Case Study

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Implementation Partners, LLC

- Recommended reading list:
  - *Good to Great* (Collins)
  - *Learning to See* (Lean Enterprise Institute)
  - *Understanding Variation* (Wheeler)
  - *Lean Thinking* (Womack and Jones)
- Contacts:
  - Tammy Auderer:

    Auderer.Tammy@principal.com

    515-235-9929 (work)
  - Dodd Starbird:

    Dodd@implementationpartners.com

    303-809-5054 (cell)

    www.implementationpartners.com

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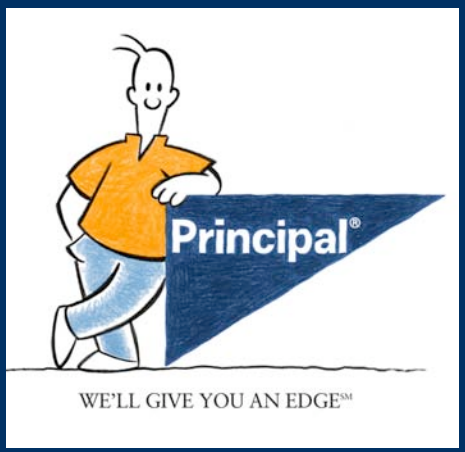
Appendix



Operational Excellence **Vision**

The "Perfect" Process Is Both…

- **Six Sigma:** effective in delivering performance that meets or exceeds critical customer requirements with less than ***3.4 defects per million*** opportunities (DPMO)
- **Lean:** efficient in delivering ***value*** for customers, that ***flows*** at the rate of customer demand, ***pulled*** to create products only when the customer orders them, and striving for ***perfection***

Both methods demand positive control of processes, using tools, systems, documentation, training, communication, measures, accountability, incentives, and organizational design for optimum performance!

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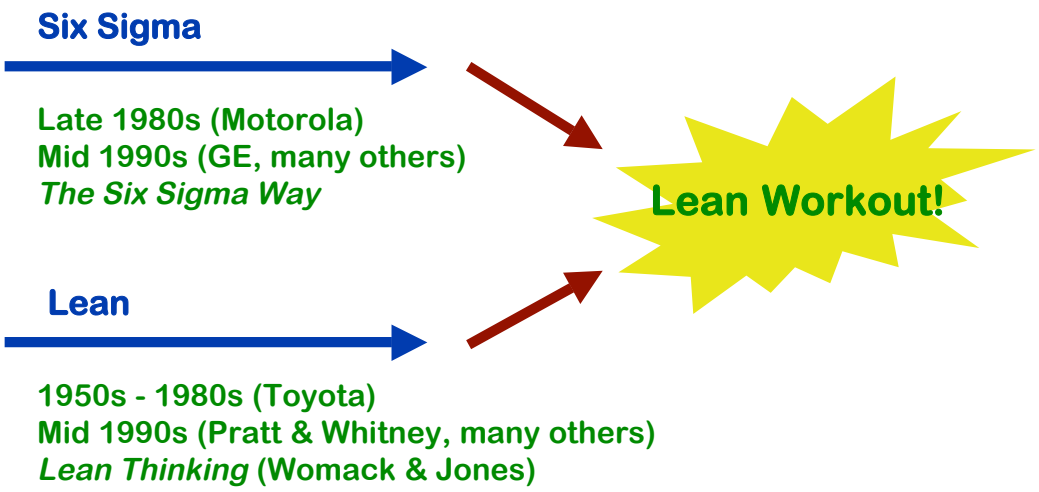
Six Sigma and Lean

Complementary management systems:



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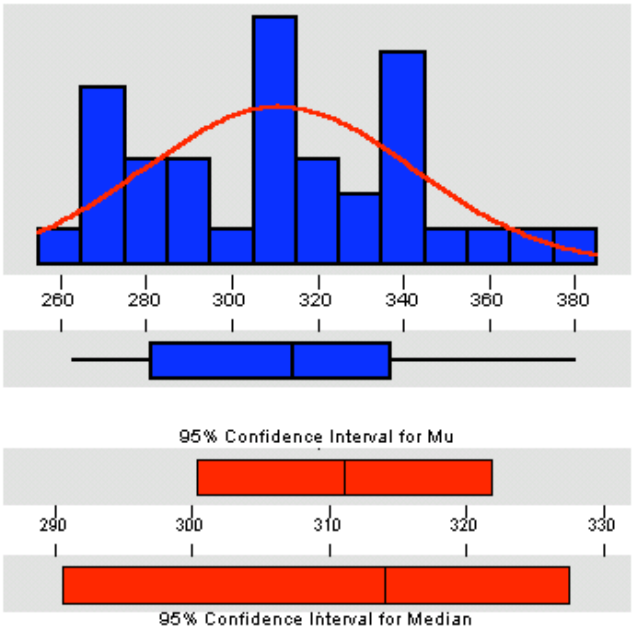
Though they grew up in different companies on different sides of the world, these two "systems" of management share many of the same tools and concepts, including Statistical Process Control (SPC), root cause analysis, and a focus on delivering defect-free products or services to the customer.

Spread by popular management books and consultants in the early 1990s, both management systems gained in popularity. While some companies claim to be doing one or the other, most are actually doing some of both!

In the early 21st century, the two are starting to be combined into a single system that delivers "structured common sense" business process management, improvement, and design methods to a diverse list of organizations of every type.

Volume Rec'd By Day - 2006



Variable: Total Volume

Anderson-Darling Normality Test

A-Squared:	0.466
P-Value:	0.238
Mean	311.086
StDev	31.364
Variance	983.728
Skewness	0.124508
Kurtosis	-8.2E-01
N	35
Minimum	263.000
1st Quartile	281.000
Median	314.000
3rd Quartile	337.000
Maximum	380.000

95% Confidence Interval for Mu

300.312	321.860

95% Confidence Interval for Sigma

25.370	41.094

GPS Case Study

Mean = 311 & St Dev = 31

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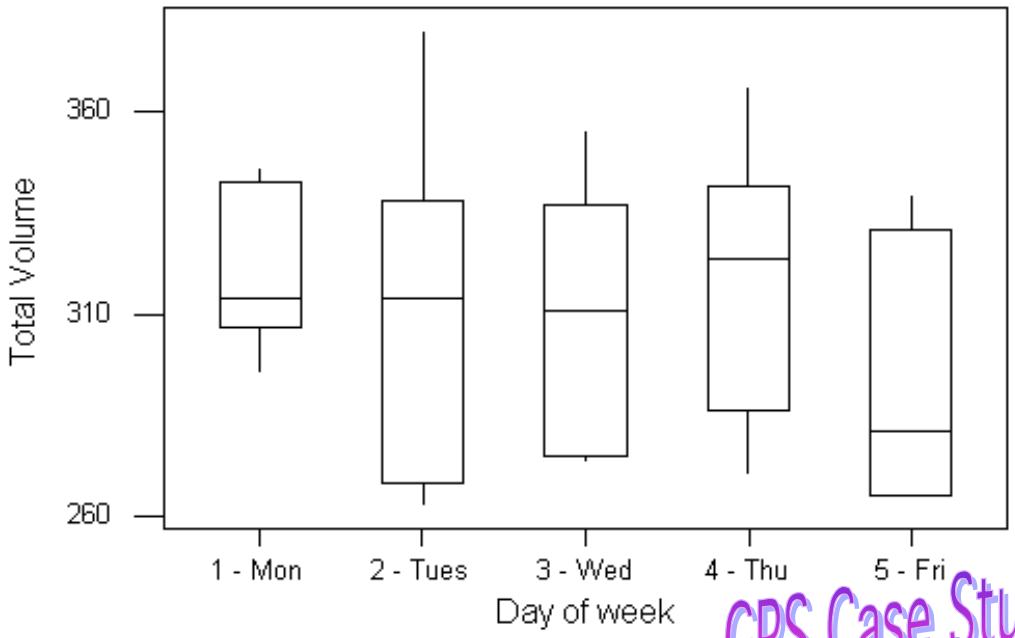
Volume Rec'd Weekday - 2006



GPS Case Study

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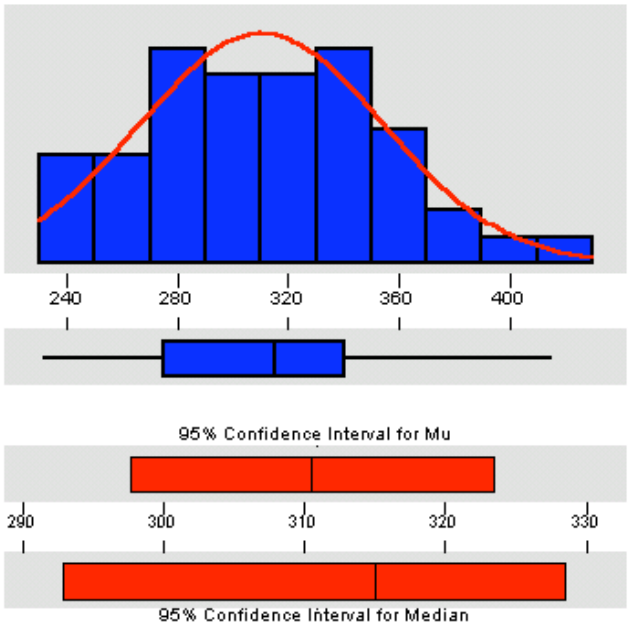
Volume Completed By Day



Variable: Completed

Anderson-Darling Normality Test

A-Squared:	0.188
P-Value:	0.898
Mean	310.511
StDev	44.017
Variance	1937.52
Skewness	0.212936
Kurtosis	-5.2E-01
N	47
Minimum	232.000
1st Quartile	275.000
Median	315.000
3rd Quartile	340.000
Maximum	415.000

95% Confidence Interval for Mu

297.587	323.435

95% Confidence Interval for Sigma

36.577	58.118

95% Confidence Interval for Median

292.758	328.484

GPS Case Study

Completed has **more** variation than *Received*!

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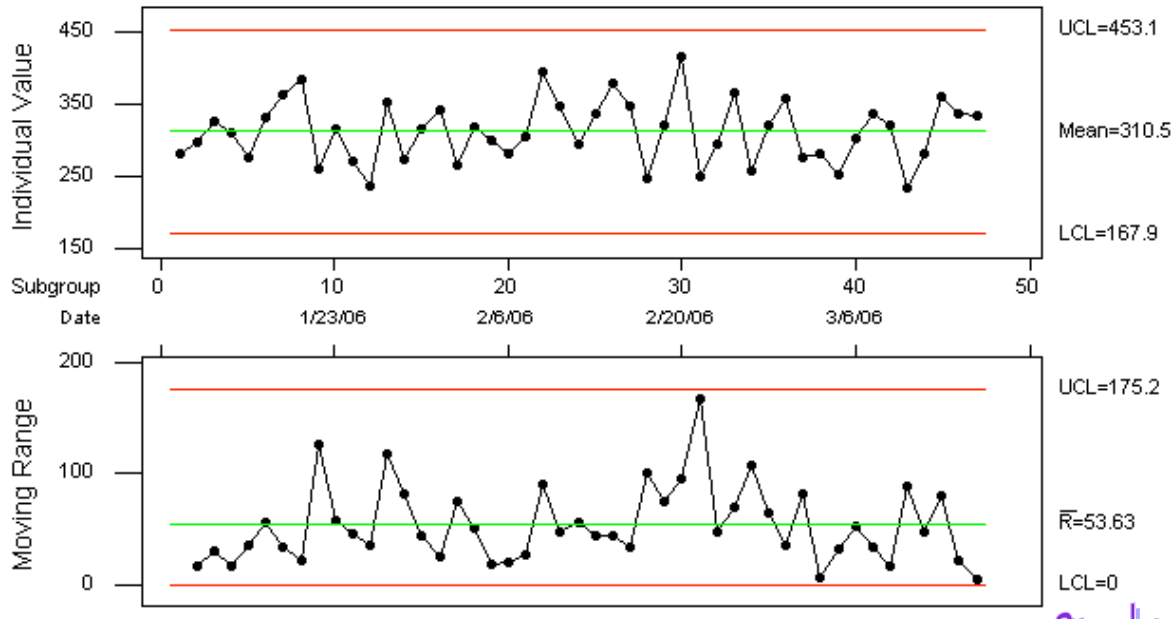
Volume Completed By Day



No shifts -- possible 3-day spike pattern!

GPS Case Study

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Three-Point Data Management

Can lead you to react to variation the wrong way…

- Common ways of looking at data:
  - Green-Yellow-Red
  - Variance to target
  - This month vs last month vs year ago
- What would you conclude?
  - This month: 4.3 defects per 1000 transactions
  - Last month: 4.0 defects per 1000 transactions
  - Year ago: 4.2 defects per 1000 transactions

Control

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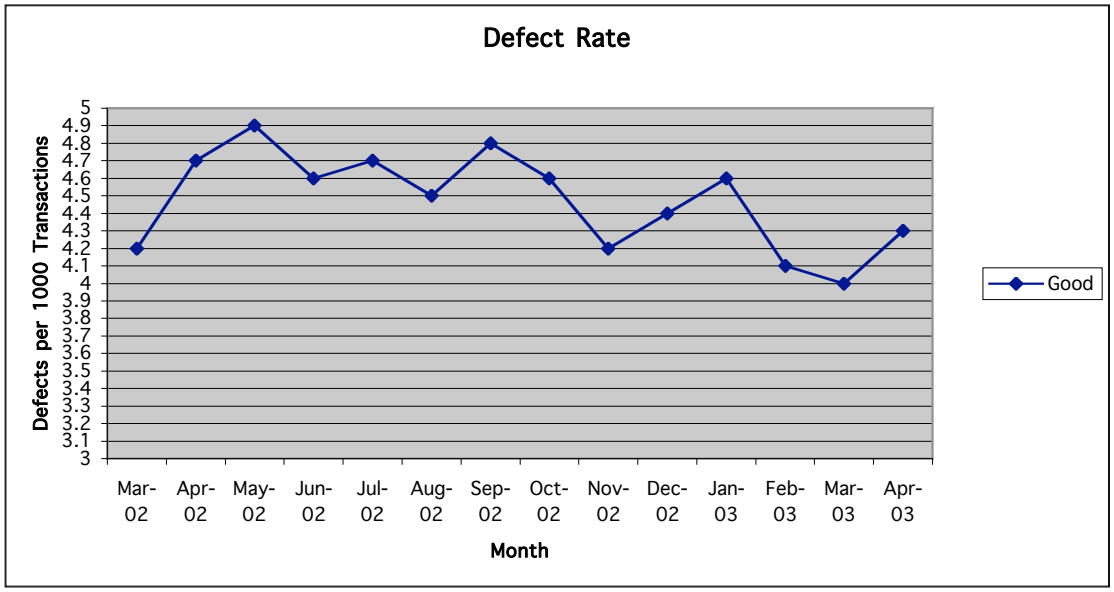
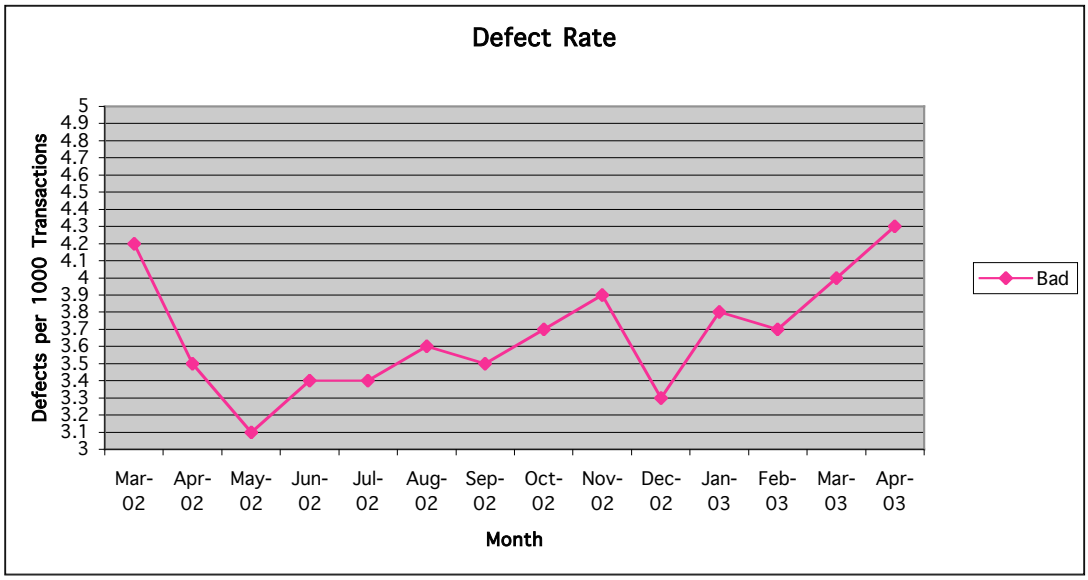
Improving Trend



Control

Deteriorating Trend



Control

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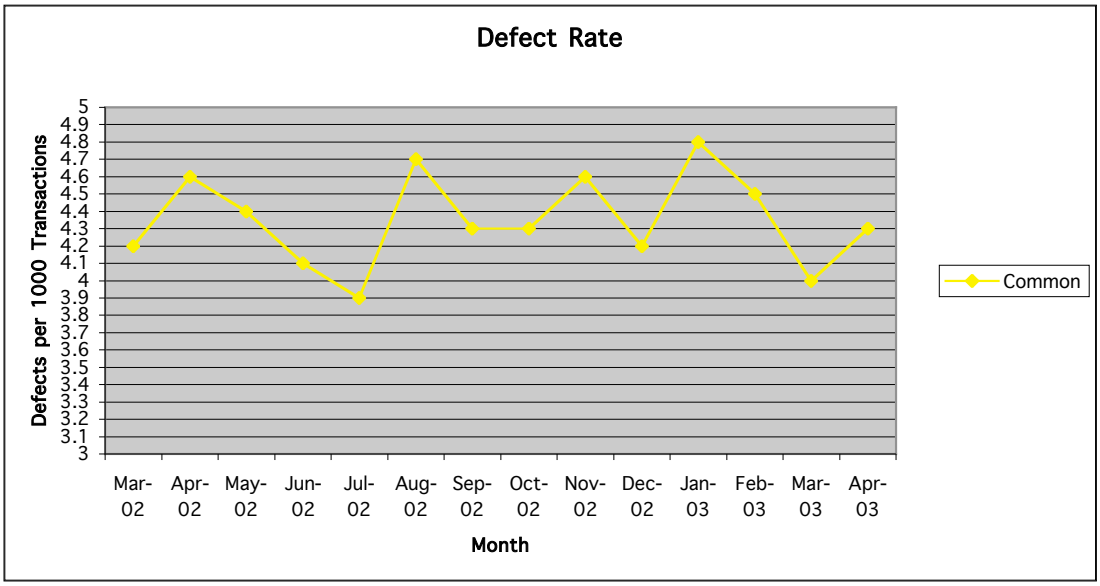
Random Variation



Control

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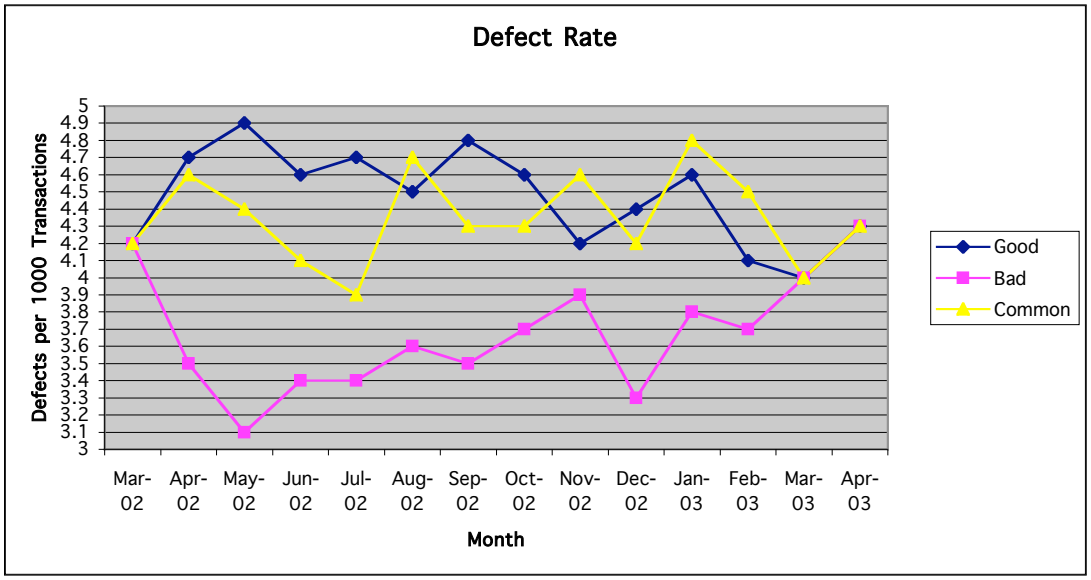
Three Points Can't Tell the Story!



Control

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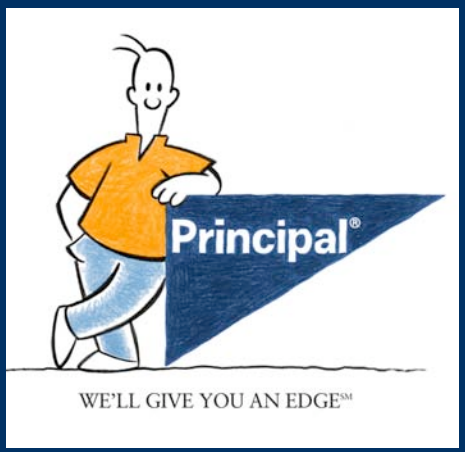
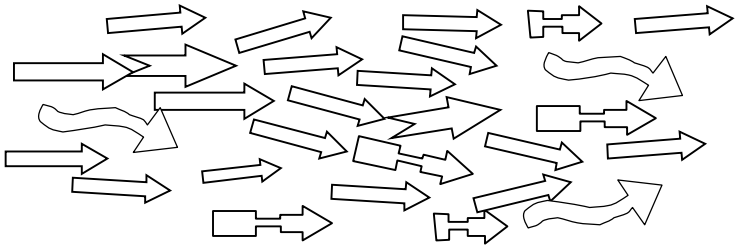
Next Steps: Preparing the Organization for Change

IMPLEMENTATION PARTNERS



Traditional Strategy Planning

- Traditional strategy planning:
  - Too many strategic initiatives



  - Long time frames for execution

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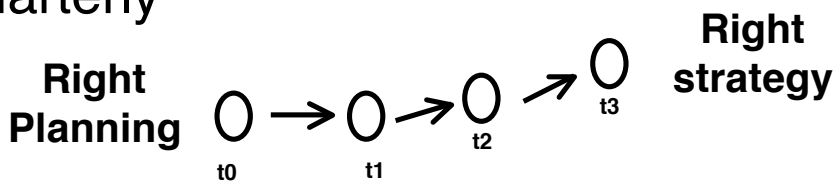
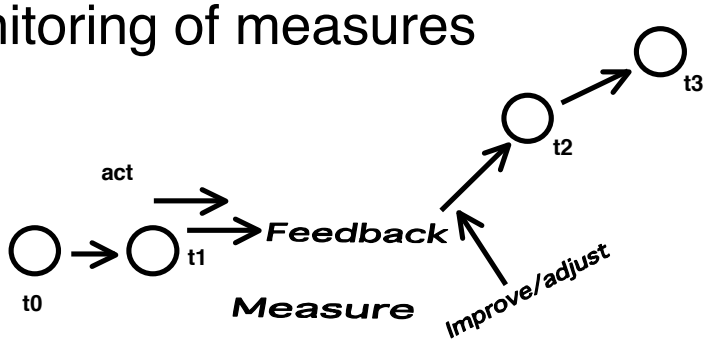
Iterative Strategy Deployment

- Planned at least annually, but updated quarterly



- With frequent progress reporting and monitoring of measures



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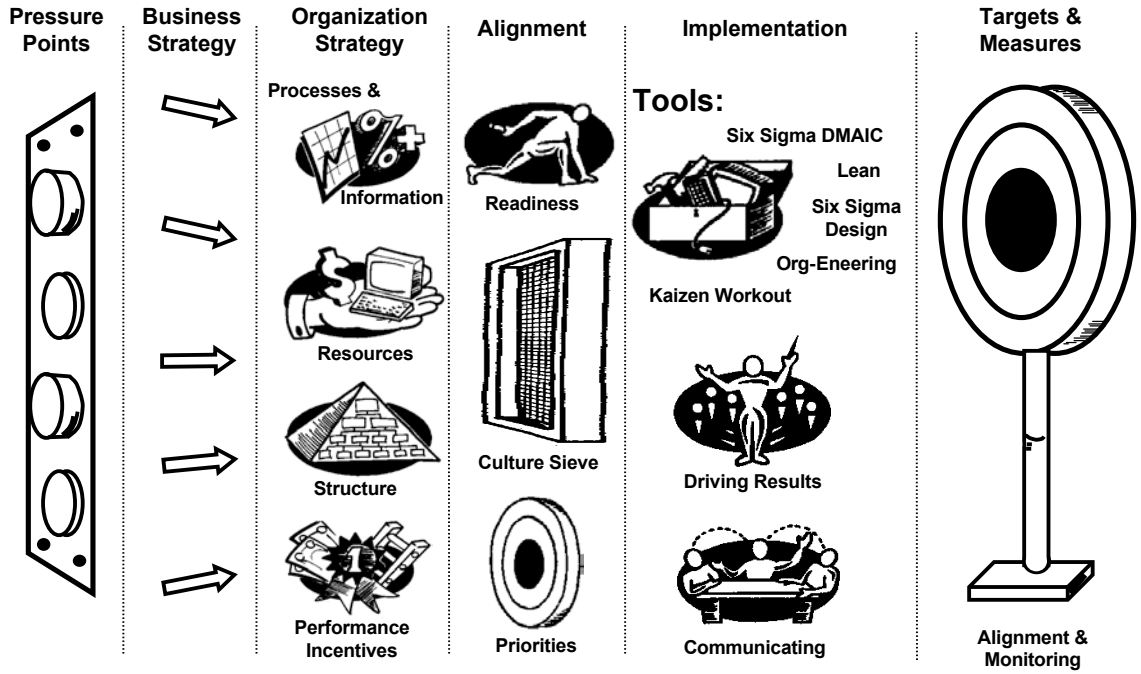
An **Action Strategy** for **Results**



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Typical Lean Timeline - Week 1

- Week 1: 4 days (Define/Focus)
  - Day 1: Define and War Room wall setup
    Business case, Scope, Sponsor meetings
    Approach & Vision - 7 wastes v. perfection
    High-level process (SIPOC) and VOC
  - Day 2: Process and staffing levels (VSM setup)
    Process observation and process mapping
  - Day 3: Overlay typical VSM metrics
    Process steps with value, FTEs, and work-time
    Volumes/takt, WIP/Inventory and wait time
  - Day 4: Homework and action planning
    Initial data collection plan & communication plan

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Typical Lean Timeline - Week 2

- Week 2: 3 days (Measure/Analyze)
  - Day 1: Initial data analysis
    - "Magic Equation" & FTE comparison (VA v. current)
    - Root causes of variation and defects
    - Standard Work (and quantify VA v. NVA work time)
  - Day 2: Value, Flow, & Pull Concepts
    - Reduce NVA work, movement, defects
    - 5S if necessary (immediate organization solutions)
    - Match capacity with demand (flow)
    - Obstacles to capacity and demand control
  - Day 3: Pilot 1 plan
    - Process, tools, training/comm plan, pilot measures

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Typical Lean Timeline - Week 5

- Week 5: 3 days (Improve)
  - Day 1: Pilot data analysis
    - Baseline v. Pilot comparison (work time, wait time)
    - Feedback from pilot team (success, obstacles)
    - Process refinement
  - Day 2: Implementation & transition planning
    - Process, tools, facilities, training, communication
    - Measures, accountabilities, incentives
    - Organization structure, future staffing model
    - Transition plan (phases, HR, job descriptions, etc)
  - Day 3: Pilot 2 plan and/or Implementation

Typical Lean Timeline - Week 8

- Week 8: 2 days (Control)
  - Day 1: Documentation & Monitoring Plan
    - Review of New process map and procedures
    - Design of control chart dashboards*
    - Operational definitions of ongoing measures
    - Process sampling (ongoing sample size)
  - Day 2: Setup of data display area(s)
    - Instant info for process participants
    - Daily performance feedback (participants)
    - Macro performance trending (leadership/teams)
    - Project savings calculation

* Require reading "Understanding Variation" (Wheeler)

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