



# *Six Sigma in Higher Education: UW Administrative Process Redesign Project*

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June 12, 2008

# *Agenda*

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- My background in IT and Process Improvement
- What is Six Sigma
- What is the UW Administrative Process Redesign (APR) Initiative
- Examples of APR Six Sigma Projects
- Closing Thoughts

# *ITANA Six Sigma in Higher Education*

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So ... what's a "sigma" and why do I need six of them?

## *Achieving Performance Improvement in Service Organizations*

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### *The Recipe for Implementing Performance Improvement Efforts in Service Organizations*

$$Q \times A = E$$

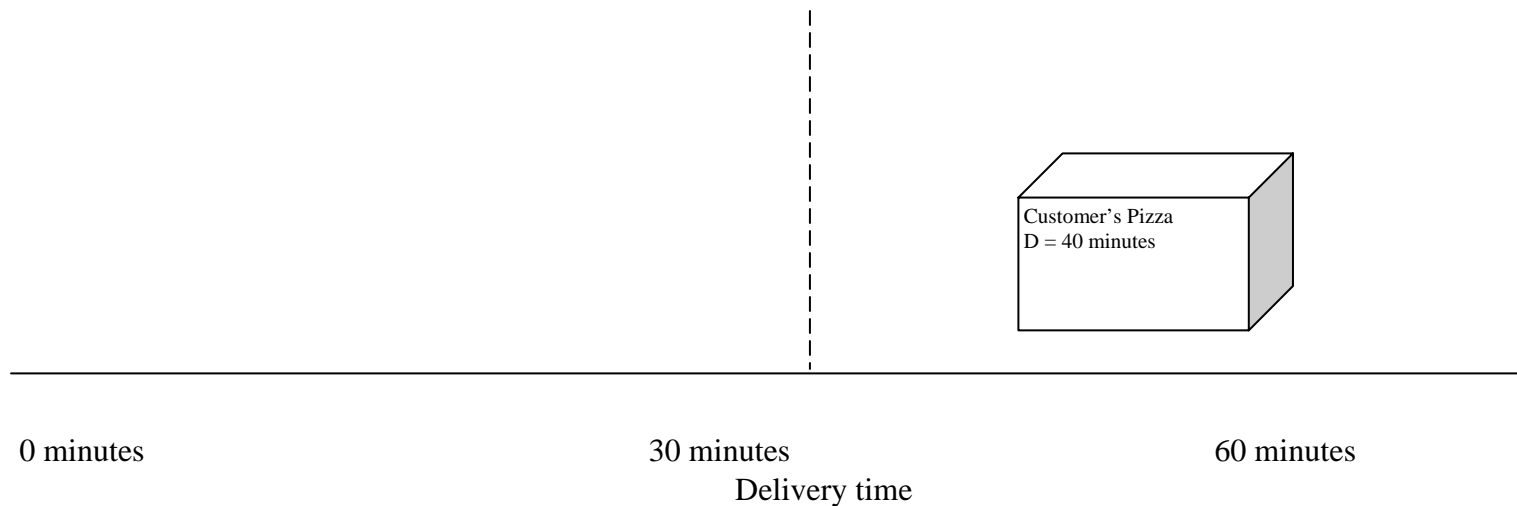


## *Six Sigma Example*

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# Pizza Chain Missing Its Promise

If a pizza chain promises delivery in 30 minutes or the pizza is free, what is the pizza delivery problem shown below?

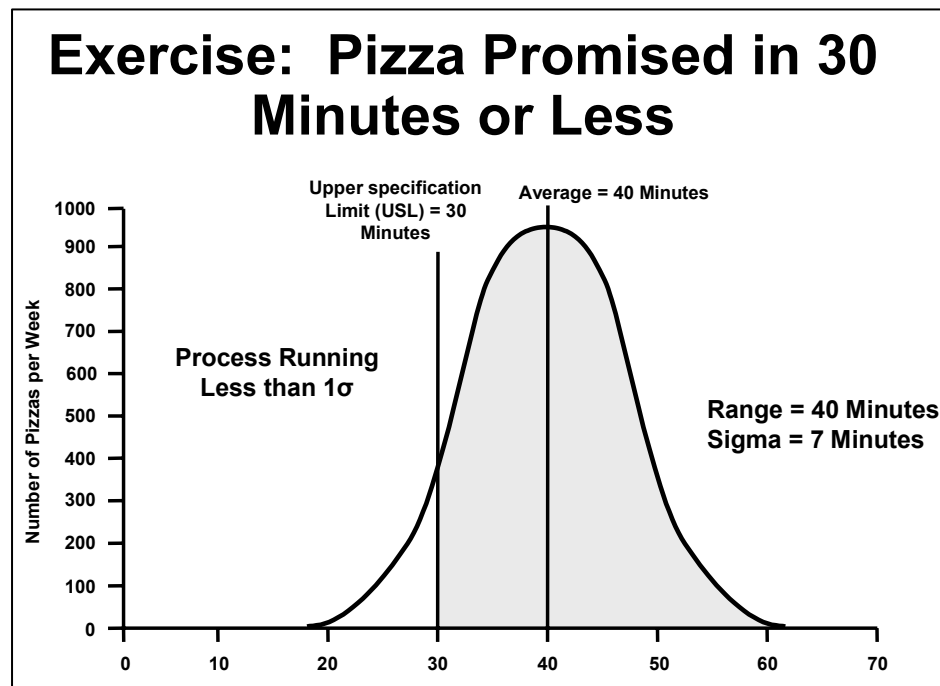


# Six Sigma Example

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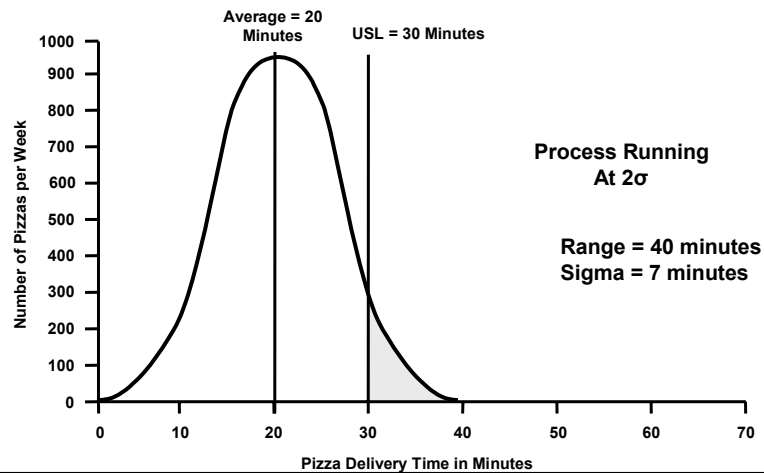
After collecting additional data on the problem, the following histogram was created. Now how would you solve the pizza delivery problem, specifically:

- 1) What should the curve look like for these pizza outlets to be making money?
- 2) Which variables do we need data on to understand the problem—ranked in order of importance?

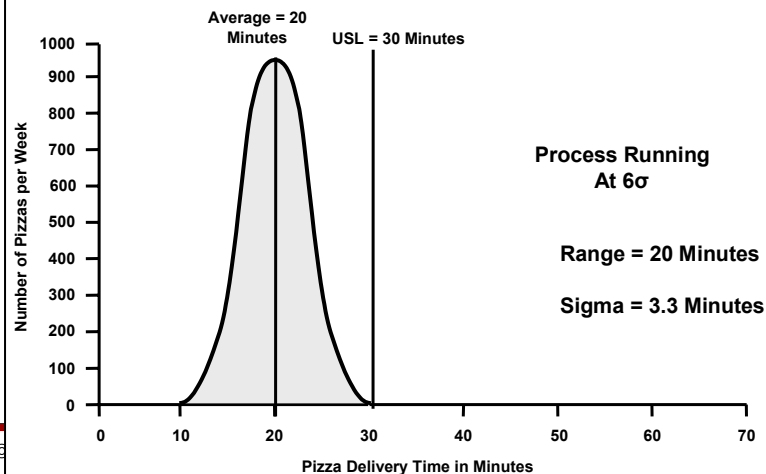


# Six Sigma Example

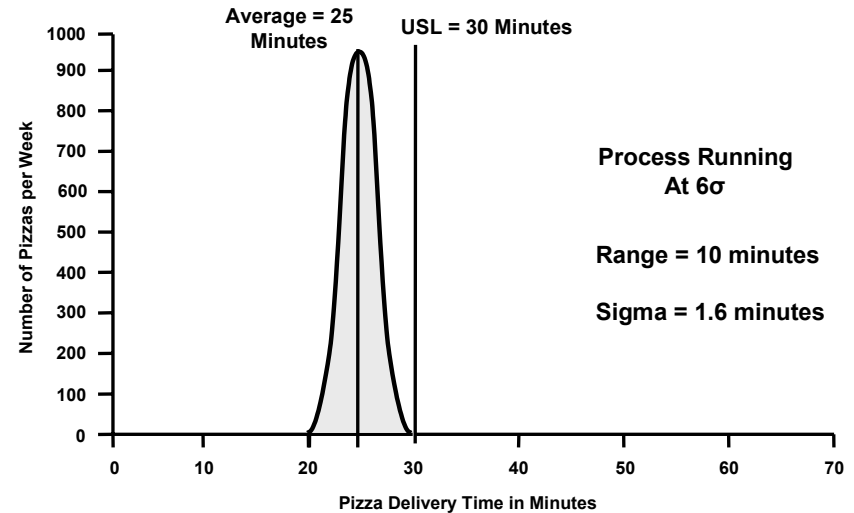
## Solution “A” to 30-Minute Pizza Promise



## Solution “B” to 30-Minute Pizza Promise



## Solution “C” to 30-Minute Pizza Promise



## *Customer-Based Metrics and Whitespace*

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- Lead Time L/T
  - The time it takes one unit of production to move through a process or value stream - start to finish
- Cycle Time C/T
  - The time it takes to complete a sub-process or process within the value stream - start to finish
- Value Creating Time VCT
  - The time within a cycle where work is being done to create value to the customer

$$L/T > C/T > VCT$$



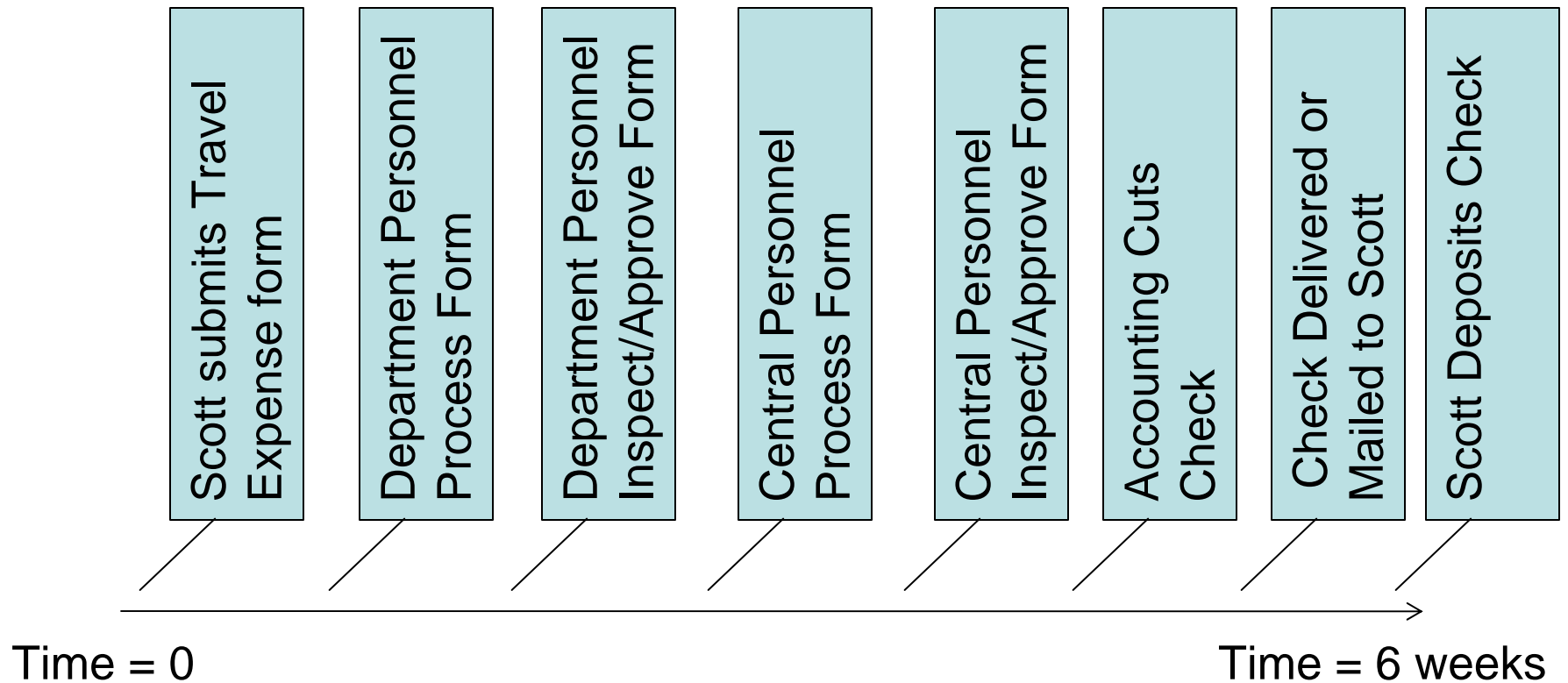
## *Whitespace*

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- White Space is the time *between* process steps
- White Space represents the greatest opportunity for improvement
- Reducing White Space is “neutral” to all parties
- Lead time improvement is best achieved through managing white space

# Whitespace Example

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## *Converse's Observations on Successful Process Improvement Initiatives*

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1. It's a process problem not a people problem
2. Focus on the customer not the process
3. From problem to solution is more than 2 steps
4. Broken processes can't be seen sitting at your office desk;  
Walk the process
5. Process problems speak out in the data;  
Unfortunately that data isn't usually collected
6. Effective results require more than a solution;  
It requires user acceptance
7. Automation and technology are good but see #5
8. A focused, measurable problem goal is the light during a dark journey

# Content Covered in APR Process Improvement Training

## **Change Management Module**

Stakeholder Analysis  
Innovation and Value  
Process Improvement Methodologies  
Leadership Techniques  
Group Dynamics  
Force Field Analysis  
Change Resistance Factors  
Equity Analysis  
Reward and Recognition Systems  
Stress and Yerkes-Dodson Law  
Learning Curves  
Emotional Loss Models  
Change Management Models  
Campaign Strategy for Change  
SC=CC+V+U+S+RR>BB

## **Define and Measure Module**

Six Sigma Overview  
Fathers of Quality Movement  
Process vs People  
COQ – Cost of Poor Quality  
Sigma quality levels  
TQM vs Six Sigma  
Process Selection Matrix  
Team Charters  
Stretch Goals  
VOC Analysis  
Kano Model  
CTQ Analysis  
Affinity Diagrams  
Flowcharting  
Process Mapping  
SIPOC Diagram  
Value Analysis

## **Define and Measure Module (continued)**

Performance Metrics  
QFD  
Functional Activity Flowchart  
Ishikawa Diagrams  
Check Sheets  
Pareto Diagrams  
Multi-voting  
Fast cycle time analysis  
Traveler  
Discrete and Continuous Measures  
Data Stratification  
Gage R&R  
Variation  
Standard Deviation  
Central Tendency Measures  
Histograms  
Statistical Sampling

## **Service, Time, and Queue Based Process Analysis Module**

Service vs. Manufacturing  
Variability Accommodation  
Planned Capacity Utilization  
Throughput/Lead Time Analysis  
L/T vs. C/T vs. VCT metrics  
Batching Systems  
Push vs. Pull Demand Systems  
Queuing Paths  
Customer Focused Time Based Metrics  
Six Sigma vs Lean Tools  
Product Family Categorization  
QxA=E Formula for Change  
Value Stream Mapping  
Service, Information, and Resource Channels  
Queuing Theory Models  
Server Capacity Utilization

## **Process Analysis Module (continued)**

Wait Time and Length Calculations  
Process Capability  
Customer Specification Limits  
Normal Distributions  
Empirical Rule  
Shifting vs. Narrowing Process Curves  
Lean Wastes  
Standard Work

## **Analyze, Improve, Control and Workout Module**

Root Cause Analysis  
Causal Analysis  
Five Why Technique  
OFAT Experimentation  
DOE  
Process Variation Analysis  
Scatter Plots  
Regression Analysis  
Creativity Models  
Brainstorming Techniques  
Design and Creativity Techniques  
Idea Generation  
FMEA  
Implementation Options  
Run Charts  
Common Cause vs Special Cause  
Control Limits vs Spec Limits  
Control Charts  
Standard Operating Procedures  
Sustaining Gains  
Focused Workout Technique  
Nominal Group Technique  
Consensus Building



## *APR Six Sigma Projects*

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- Transferring Funds from Foundation to Department Accounts
  - Checking vs Savings Account
  - Cycle Time Reduction
  - Accuracy, Float, Transparency
- Grant Award-Sub Award Process
- Access to IT Resources
  - New Employee
  - Transferring Employee
  - Exiting Employee

# *Q&A and Closing Thoughts*

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