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Fix a 50,000 dollar per year problem for 2.54 using ACE 3T

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Abstract

Fix a $50,000 per year problems for $2.54 using ACE 3T. ACE 3T analysis is a new problem inquiry tool that lets you find simple answers to difficult problems. It does not ask you to use Lean process assessment tools or apply Six Sigma statistical analysis. You only need to use your eyes and a spread sheet to explore the details that expose the simple options to solve your problem.

Keywords: Accuracy Controlled Enterprise, ACE 3T Analysis (Target, Tolerance, Test), defect elimination, error prevention

It is easy to make mistakes transcribing numbers. Try inputting the sixteen digit credit card number from ten customer order forms into a payment system and see how many errors you make. Even with your fullest attention, in an environment conducive to transcribing, the error rate will be too high. When you have hundreds of forms to transcribe each week there will be a lot of mistakes. Companies typically hire a second person to check for errors and correct them. A clerk of suitable skills and aptitude will cost a company about $50,000 a year.

With a little ACE 3T analysis to understand what is really happening to cause the errors, you can solve the transcription problem with a $2.54 yellow highlighter. That is what was done in one company we helped. A yellow highlighter stopped their $50,000 a year overhead.

What sort of analysis tool would you use to examine clerical transcription errors? There is no suitable Lean tool. If you had weeks of error data you could use Six Sigma analysis tools to identify the problem was due to the transcription step. Yet the problem can be identified and solved in an hour with an Accuracy Controlled Enterprise 3T analysis.

Accuracy Controlled Enterprise 3T Analysis

An ACE 3T analysis of a problem starts with a flowchart. All discrete work process steps are shown on a flowchart that explains how a job is done. Figure 1 shows the workflow for observe and record steps to enter credit card data from a customer order form into a computer.

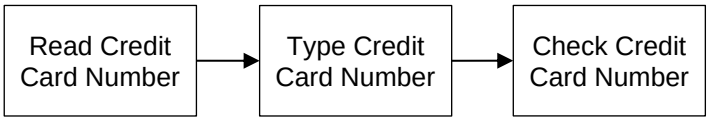
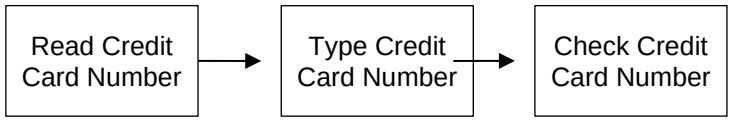


Figure 1 Workflow for Credit Card Number Transcription

There is nothing unusual about the flow chart. It is what you would expect to see when you layout the steps of a work process. Except that the flowchart does not show you how hard it is to get a task right. From the flowchart you cannot gauge task difficulty, but transcription errors happen all the time and they are expensive to fix. You need more than a flowchart to understand where the problems are in this job, and especially how to fix them. The work complexity needs to be made clear. A flowchart alone cannot show you how problems arise. To the flowchart we need to add a means to locate and measure the size of problems. In Figure 2 we set task accuracy parameters known as the 3Ts—Target, Tolerance, Test. Once a task's performance is set by the 3Ts you can readily identify the problems that prevent its achievement.

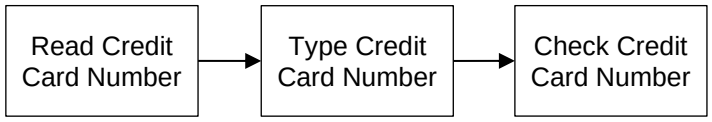


	PROCESS STEPS		
	Read Card Number	**Type Card Number**	**Check Card Number**
TARGET	No errors	No errors	No errors
TOLERANCE	Misread 1 in 10,000 digits	Mistype 1 in 10,000 digits	Not check 1 in 10,000 digits
TEST	One random sample test each day	One random sample test each day	One random sample test each day

Figure 2 Set Work Quality Measures for Each Step

In the perfect world we want no errors and that should be our target. But human error cannot be totally prevented and so a limit is set for us to strive to achieve. An error rate on 1:10,000 digits means there is no more than a digit error for every 625 sixteen-digit credit card numbers. Since we permit a 1:10,000 digit error rate for each step, it is conceivable we will accept three errors for every 625 card numbers, since each step can have an independent error. The final 'T' of the '3Ts' is a proof Test to confirm each task is performed within tolerance. For the test we will take random samples of completed work each day and look for mistakes that got through our error prevention program. The sampling needs to meet rigorous statistical analysis criteria.

Now that we have performance standards, we can identify what will prevent their achievement. A simple risk assessment for each step is added to the 3T table. Figure 3 shows many causes of transcription errors. Recognition of where and how problems occur during the work becomes obvious. It took ten minutes to do the analysis. Had you applied Six-Sigma methods you would still be working on the analysis in two days' time. Six-Sigma will give you a lot of detailed spread sheets and colourful Pareto charts to show to others; none of them being necessary.



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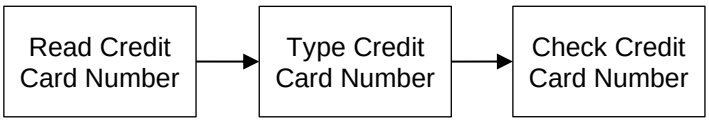
RISK ASSESSMENT **Risk** = Consequence x (Opportunity x [1-Chance of Success at each Opportunity])	Cannot read numeral	Mistype numeral	Misread numeral
	Cannot see numeral	Double type numeral	Presume numeral is correct
	Cannot understand numeral	Leave out a numeral	Overlook an error
	Missing a numeral		
	Overlapping numerals		

Figure 3 Risk Analyses for Each Step

Most is important is to come up with successful solutions for the problems. In Figure 4 a Risk Control portion is added to the table and lists what will be done to prevent task errors.



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RISK CONTROLS	Form design must segregate each digit	Typist to have perfect eyesight	Match individual digit on the form against digit on the screen
	Each numeral must be written clearly legible	Typist to be at world class low error rate	

Figure 4 Add Risk Controls for Individual Work Steps

Form design is critical to successful, error-free transcription. You should put a lot of effort into error-preventing form design and clear form completion. The typing step errors are difficult to prevent since the keystrokes are automatic reflexes of the typist. The skill level and vision accuracy of the typist must be first class. The check-card-number step is where the $2.54 highlighter was identified as a necessary error identification and error correction mechanism. If we were to do the same analysis today we would still recommend good form design, but we would replace the typist with a clerk using voice-activated typing software. The check step would be to have the computer audibly repeat the numbers back to the clerk while they used a highlighter to mark each number as it was said. Any errors are immediately corrected.

ACE 3T defect analysis is an extremely fast way to find and address causes of problems. It sets quality assurance standards and does a risk analysis of why the standards cannot be met. By combining quality assurance with risk prevention an ACE 3T analysis makes simple and powerful solutions become rapidly clear.

My best regards to you,

Mike Sondalini
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