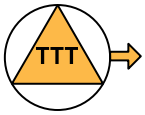
# State of Connecticut Commission on Enhancing Agency Outcomes

## Public Hearing
## Hartford, CT
## December 14, 2009

**Tom Nelson**




TTTransformations, LLC
124 Great Plain Road
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December 14, 2009

State of Connecticut
Commission on Enhancing Agency Outcomes
Public Hearing
Hartford, CT

Dear Commission Members,

Thank you for permitting me to testify today on the use of Lean Six Sigma TOC to improve state government. Lean Six Sigma TOC consists of organization improvement methods that initially were used in manufacturing, then in business services and more recently in government. Included in this package are short descriptions of possible projects using Lean, Six Sigma and TOC (Theory of Constraints).

To assist the State of Connecticut in evaluating how Lean Six Sigma TOC may be useful to improve state government, TTTransformations will provide consulting for 5 days at no charge. The intent is a mutual discussion where the state identifies areas needing improvement and TTTransformations proposes how Lean Six Sigma TOC can be applied to make these improvements. If you have any questions, please call me at 203-992-9108 office phone or 203-748-5969 home.

Yours truly,

Tom Nelson

## Possible Lean Six Sigma TOC Projects for Proposed Areas of Focus

On Thurs. Apr. 30, 2009 I testified to the State of Connecticut Commission on Enhancing Agency Outcomes in the Danbury, CT City Hall. My written testimony describing the use of Lean Six Sigma TOC for CT state government is posted on http://www.cga.ct.gov/gae/CEAO/hearings.asp

On Tues. Oct. 28, 2009 I met with CT State Senator McLachlan and Kimberly Anderson, Legislative Aide to discuss the use of Lean Six Sigma TOC to improve CT state government efficiency and effectiveness. We discussed in detail a methodology to determine labor levels in state agencies that were affected by the early retirement program. This project is discussed in more detail below.

The preliminary document "Proposed Areas of Focus" by the Commission on Enhancing Agency Outcomes lists 33 possible activities for improving CT state government. After review of each of these 33 opportunities, it is my opinion that the following can most benefit by using Lean Six Sigma TOC methods (My recommendation is that the DMAIC method that I will outline below be considered for all 33 areas of focus.).

1. Review delivery of state human services focusing on being more consumer driven, efficient, accountable and transparent.
3. Overhaul DMV functions focusing on consumer needs (esp. reducing lines at DMV), efficiency, accountability and transparency.
6. Streamline licensing and permitting processes.
15. Implement lean processes in all executive branch agencies.
16. Consolidating the "steering" function1 – across existing state agency lines. Consolidate administrative hearings and/or use judge trial referees to provide administrative hearings for all agencies, as is recommended for CHRO.
24. Enhancing community prevention and intervention efforts by DCF, to support and preserve families, keeping children at home when safe, and using foster care, rather than congregate care, when children must be removed from their families.
31. Streamline economic development agencies, processes and functions for simpler access, greater focus and reportable outcomes.

The recommended structure to use Lean Six Sigma TOC is DMAIC, which is summarized below. DMAIC is a framework for defining the problem/opportunity, gathering data, analyzing data, improving the process and controlling the results to ensure consistent long term savings

### DMAIC

The basic method consists of the following five steps:

- *Define* high-level project goals and the current process.
- *Measure* key aspects of the current process and collect relevant data.
- *Analyze* the data to verify cause-and-effect relationships. Determine what the relationships are, and attempt to ensure that all factors have been considered.
- *Improve* or optimize the process based upon data analysis using techniques like Design of experiments.
- *Control* to ensure that any deviations from target are corrected before they result in defects. Set up pilot runs to establish process capability, move on to production, set up control mechanisms and continuously monitor the process.

## Proposed Project Outline

Although there are many possible projects using Lean Six Sigma TOC that were reviewed above, 2 potential projects are discussed below a) Labor levels in state agencies that were affected by the early retirement program and b) 15. Implement lean processes in all executive branch agencies.

Labor levels in state agencies that were affected by the early retirement program

According to a news article in the Danbury News Times dated 8/24/09, 3,800 CT state employees in 50 agencies elected early retirement. This news article also stated that many agencies were looking to refill many of these open positions with new employees.

This project's purpose is to study the current work load and determine using Lean Six Sigma TOC capacity analysis what is the actual number and skill of employees needed after the work process is modified to an improved future process. Work process mapping and value add analysis will be the key methods to improve the work process. The steps for the project are shown below.

a) Select an agency for a demonstration project.
b) Work with the agency and department manager to determine what work needs to be improved based on early retirements.
c) Form a team with the consultant as the project leader, the department manager as the process owner and team members from the specific department.
d) The project team uses the DMAIC structure to 1) develop the current state work process maps, including times needed to complete work tasks, 2) perform a value add analysis to simplify the work process, 3) develop the future state process map including the reduced time needed to complete work tasks, 4) perform a capacity analysis to determine labor and skill level savings from the current to the future state work process
e) Provide a final report to the department manager that shows a) the improvements made in the future state work process and b) likely savings from these improvements.

Likely Benefit: Ability to run the department more efficiently and effectively with no or minimal staff additions. Savings are salary & benefits from labor savings.
Direct Cost: TTTransformations will project lead a demonstration project for the state of CT, no consulting fee with CT paying expenses. For later projects, the estimated cost is $5,000/week for consulting fee + expenses. Typical projects will take 1 to 2 weeks.

15. Implement lean processes in all executive branch agencies.

This project's purpose is to develop a Lean Six Sigma TOC program for all CT state executive branch agencies. This program will provide CT state government personnel to run projects within their agencies. The steps for the project are shown below.

a) Determine the agencies to be included in this program.
b) Form a program team with the consultant as the program leader, the CT state person who will be the Lean Six Sigma TOC director as the process owner, and agency or department leaders as team members.
c) Identify critical work processes within each agency for improvement.
d) Work with Lean Government Services in the CT Department of Labor to develop a Lean Six Sigma TOC training plan and then train process owners and project leaders so that these agencies can run projects.
e) Provide a final report to the CT state person who will be the Lean Six Sigma TOC director that shows a) personnel needed within each agency to run the Lean Six Sigma TOC program, b) determine a training plan and cost for personnel identified in (a), and define a project schedule to implement the program.
f) Run critical projects to start the program using the methodology suggested for the labor levels project shown above.

Likely Benefit: Ability to run agencies more efficiently and effectively at reduced cost. Savings are determined for each project.
Direct Cost: TTTransformations will provide no charge consulting services for 1 week with CT paying expenses to complete this Lean Six sigma TOC program development plan. For other projects requiring TTTransformations consulting, the estimated cost is $5,000/week for consulting fee + expenses. Typical projects will take 1 to 2 weeks. It is expected that after completion of the training program, most projects will be led by CT state personnel.

The following 3 pages contain information from http://www.ctdol.state.ct.us/LEAN/default.htm

# Connecticut Department of Labor



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Many of the documents and forms contained on this web site were created using PDF, Word, and Excel software. Viewer software is required to open these documents. Links to this free software is available on our **browser information** page.

## Welcome to LEAN Government Services!

- Information Listing

LEAN Government Services was established in May 2004. The Center assists government agencies, municipalities, and nonprofit organizations in streamlining their work processes resulting in significant cost and resource savings.

Lean Government Services adopts waste-reducing concepts typically used in a manufacturing environment and applies the principles to procedures in government.

We offer:

- experienced facilitators
- proven track record of successful internal and external Lean efforts
- knowledge of government processes
- Immediate on-site consultation availability

*We believe if you don't manage your business processes, they will manage you!*

**Questions and Answers -** Do you have any questions regarding Lean or Continuous Improvement? Please E-mail Stephen Dombrowski, Lean Program Coordinator at stephen.dombrowski@ct.gov

### INFORMATION LISTING



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# LEAN Government Services
# The LEAN Team

Last Updated:



## The Lean Team

The Center is comprised of individuals from a variety of units within the Department of Labor who are dedicated to quality process improvement.

We invite staff members of all work experience backgrounds to participate at various levels depending on their interest and willingness to take on new skill sets. Workloads and scheduling always must be accounted for and accommodated. Training sessions for new facilitators is an ongoing staff development procedure. Capacity building for lean trainers for both internal and external processes is ongoing. A champion of each work unit throughout the Department is chosen voluntarily to expedite quality reviews and continuous improvement processes for their particular unit.

If you are interested in becoming a Lean trainer, please contact Stephen Dombrowski, Lean Program Coordinator at stephen.dombrowski@po.state.ct.us.

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# LEAN Government Services Projects

Last Updated:



## Projects

### Internal

- Apprenticeship
- Benefit Payment Control Unit (BPCU) Cross Match
- Business Management Procurement
- Business Management Telephone Work Order
- Call Centers
- Claims Examination Combined Wage
- Customized Job Training Contract and Invoice (workplace/non-workplace based)
- Danielson *CTWorks*
- Delinquent Accounts Examination
- Hamden *CTWorks*
- Hartford *CTWorks*
- Information Technologies and Facilities Hardware/Software Tracking
- Merit Rating Form 1002 Flow
- New Britain *CTWorks*
- New London *CTWorks*
- Norwich *CTWorks*
- Payroll Unit
- Quality Program Review
- Shared Work
- Trade Adjustment Assistance (TAA)
- Veterans
- Welfare-to-Work
- Waterbury *CTWorks*
- Willimantic *CTWorks*

### Outside DOL

- *Department of Environmental Protection*
- *Department of Economic and Community Development*
- *Board of Education Services for the Blind*

Published by the Connecticut Department of Labor, Project Management Office

The following 2 pages discuss Lean Six Sigma TOC consulting services provided by TTTransformations, LLC

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## Increase Your Organization's Performance Using Lean, Six Sigma & TOC

TTTransformations, LLC is a consulting practice established to eliminate waste, improve operational consistency, increase on time delivery, lower inventory and increase capacity. The benefits for your organization are lower costs, improved profits, higher quality and improved customer satisfaction.

Tom Nelson has worked as a Lean Six Sigma Theory of Constraints (TOC) Program Manager and Master Black Belt. He has over 30 thirty years global experience at Praxair, including Asia and Europe with a proven record of results using Lean Six Sigma TOC. From 2005 to 2008, the Praxair Electronics Division exceeded the productivity plan for financial benefits by 24% to 48%. His expertise includes Lean Specialist, Certified Six Sigma Black Belt, and TOC Production and Distribution Expert.

| **Benefits for Your Organization** | **Tom Nelson Lean Six Sigma TOC Skills/Experience** |
|---|---|
| Lower manufacturing and administrative costs through process improvements. | ⇨ Eliminated 90% of ceramic chuck parts outsourcing costs by reducing manufacturing time which increased internal production capacity. |
| Improve on-time delivery by reducing cycle time. | ⇨ Achieved 50% order fulfillment time reduction for gas equipment replacement parts. Performed Value Add analysis on the order process and removed non-value add steps from the work process. |
| Lower inventory carrying costs by reducing inventory levels for work in progress and finished goods. | ⇨ Lowered finished goods inventory 25% and improved on-time delivery 30% for semiconductor cylinder gases. Performed Value Stream Mapping for key operations and distribution processes.<br>⇨ Reduced cylinder valve inventory 25%. Implemented Lean kanbans and make to stock and make to order methods for replenishment. |
| Decrease product cost and meet customer requirements | ⇨ Reduced product cost by 40% for semiconductor gas systems equipment. Analyzed customer needs & satisfaction requirements, then determined product features to meet customer needs. |
| Increase production capacity to meet market demand while minimizing labor and capital costs | ⇨ Increased capacity 30% for liquid fill products to meet higher market demand with minimal capital cost. Used TOC five step methodology to analyze production capacity.<br>⇨ Increased production capacity 40% for semiconductor targets. Used Value Stream Mapping and bottleneck analysis to determine options for capacity increase. |
| Establish a Lean Six Sigma TOC program in your organization. | ⇨ Trained Black/Green Belts and Lean Practitioners on Six Sigma, Lean and Theory of Constraints methods. System administrator for savings database, led annual forecast planning and provided savings reports. |

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Shown below is a partial list of the Lean, Six Sigma and TOC tools and methods that TTTransformations can provide to increase your organization's performance.

| Lean | Six Sigma | TOC |
|---|---|---|
| 5S (Sort, Straighten, Shine, Standardize & Sustain) | DMAIC (Define, Measure, Analyze, Improve & Control) Method | Five Focusing Steps (Identify, Exploit, Subordinate, Elevate, Go Back to Step 1) |
| Kaizen Events | Problem/Opportunity Statement | Capacity Constraints Analysis |
| Value Add/NonValue Add Analysis | SIPOC (Supplier Input Process Output Customer) Diagram | Constraint Identification (Internal & External) |
| Process Value & Cycle Time Analysis | Process & Population Sampling | DBR (Drum Buffer Rope) Production Scheduling |
| VSM (Value Stream Mapping) | DPMO (Defects per Million Opportunities) | Inventory Levels: [RRI (Reliable Replenishment Interval), RRT (Reliable Replenishment Time) & Customer Demand (including demand variations] |
| Pull Systems (Replenishment: Production, Purchase & 2 Bin) | MSA (Measurement Systems Analysis/Gage R&R) | |
| Kanban Signals | Hypothesis Testing | |
| Setup Reduction | Regression & Correlation | Buffer Sizing (Production & Inventory) |
| Standardized Work | ANOVA (Analysis of Variance) | |
| Spaghetti (workflow) Diagrams | FMEA (Failure Mode Effects Analysis) | Buffer & Inventory Zone Control |
| TPM (Total Preventive Maintenance) | DOE (Design of Experiments) | MTS (Make to Stock) & MTO (Make to Order) Products |
| Visual Process Controls | Control & Response Plans | TOC Accounting (Throughput, Inventory & Operating Expense) |
| Metrics & Dashboards | Control Charts | |

**Credentials**

- Lean Six Sigma TOC Program Manager
- Master Black Belt & Lean Specialist
- Quality Systems Manager
- Customer Focus Manager
- Quality Manager
- International Business Development Manager
- Technology Program Manager
- Merchant Products Manager
- Technical Applications Market Manager
- Region Sales Engineer

**Education**

- MBA, Western Connecticut State University, Danbury, CT
- BS with engineering major, Illinois Institute of Technology, Chicago, IL
- BS with chemistry major, University of Nebraska, Lincoln, NE

**Certificates**

- ASQ (American Society for Quality) Certified Black Belt
- ASQ Certified Quality Engineer