Lean process improvement at the Colorado Department of Transportation
Improving Government
You are a bit skeptical, right?

Lean process improvement at the Colorado Department of Transportation?

Improving Government?

REALLY??
Director Of Office Of Research Integrity Resigns, Calls It Worst Job He’s Ever Had

By: DSWright Friday March 14, 2014 9:32 am

The Director of the Office of Research Integrity (ORI), David Wright (no relation), has resigned. His resignation letter reads as a comprehensive indictment of the federal bureaucracy which he worked for and called “remarkably dysfunctional” raising questions over the future of American research and innovation.

Wright had the job for 2 years and came to the position well qualified previously being a consultant to ORI as well as a historian of science at Michigan State University in East Lansing. He said one of his goals upon taking the job was to improve training programs. But what he encountered once taking his post frustrated him immensely.

In a letter to Dr. Howard Koh, Assistant Secretary for Health at the Department of Health and Human Services, Wright detailed his frustrations:

“...The rest of my role as ORI Director has been the very worst job I have ever had and it occupies up to 65% of my time. That part of the job is spent navigating the remarkably dysfunctional resources and, yes, get permission...”

http://news.firedoglake.com
“… Wright explains that the 35 percent of his job that was spent working with science investigators in his department “has been one of the great pleasures of my long career. …”
“… The rest of my role as ORI Director has been the very worst job I have ever had and it occupies up to 65% of my time. That part of the job is spent navigating the remarkably dysfunctional bureaucracy to secure resources and, yes, get permission for ORI to serve the research community. I knew coming into this job about the bureaucratic limitations of the federal government, but I had no idea how stifling it would be…”
“… What I was able to do in a day or two as an academic administrator takes weeks or months in the government …

The academic literature over the last twenty-five years on successful organizations highlights several characteristics: transparency, power-sharing or shared decision-making, and accountability. If you invert these principles, you have an organization … which is secretive, autocratic and unaccountable …”
We have a problem in public service

George this morning:

“our industry is broken”
We in public service **CAN** do something about that problem!

We **MUST** do something about that!
At CDOT, we ARE doing something about that!
What’s inside today

1. CDOT
2. Lean process improvement at CDOT: what we are doing
3. Your questions
Part 1:

CDOT
A (very) little bit about us
Maintain and Keep Transportation Safe
- 23,000 lane-miles of Interstate and State highway system
- 3,400 bridges
- routine maintenance
- bridge repair and resurfacing
- snow removal
- safety improvements
- $1.12 Billion budget
- FLOOD RESPONSE!

Get More Out of the System
- traveler information
- ramp metering
- signal synchronization
- express toll lanes on I-25

Distribute Funding to Local Governments
- aviation
- federal funds to Metropolitan Planning Organizations
- grants to local governments
- transit
Part 2.

Lean process improvement at CDOT: what we are doing
Improving government is a great idea, but why do you need Lean? Can’t you “just do it”?
Let’s try a quick warm-up
Without lifting pencil/pen from paper, draw no more than four (4) straight lines that will cross through all nine dots.
A 4-line solution

Did you think you were NOT supposed to let the pencil go outside an imaginary square drawn around the nine dots?
Again -- Without lifting pencil/pen from paper, **draw no more than three (3) straight lines** that will cross through all nine dots.
A 3-line solution

Did you think the lines must pass through the center of the dots?
BONUS POINTS

Without lifting pencil/pen from paper, draw one straight line that will cross through all nine dots.
A more subtle and more pervasive mental block is the assumption that the problem must be solved within a two-dimensional plane!

One solution: If you think in three dimensions, you can roll the paper to form a cylinder, and it becomes possible to draw a single straight line that spirals through all nine dots.
Some of the most wonderful people are the ones who don’t fit into boxes.
At CDOT, we are accustomed to thinking “inside the box”.

Lean encourages “outside the box” thinking when we improve processes.
Improving government is a great idea, but why do you need Lean? Can’t you “just do it”?
More about Why Mt. Princeton
“Making government more effective, efficient and elegant means listening to our state employees and learning from them how we can do better.”

- Governor John Hickenlooper
“That is why we initiated the Lean program in almost every state agency, where employee teams are now actively identifying waste and inefficiency to create savings.”
“Like any business, CDOT needs to constantly review our processes and procedures, then make needed adjustments and improvements to ensure that we are delivering the best customer service possible. ”

- CDOT Executive Director
Don Hunt
CDOT has 6 strategic focus areas; one is:

“Improve business processes for better customer service and efficiency”
More about Why Mt. Princeton
“The significant problems we face cannot be solved at the same level of thinking we were at when we created them.”

– Dr. Albert Einstein
The number-one challenge facing government is **capacity**.

Simply put, we don't have enough resources to keep up with ever-expanding and ever-more complex workload, **UNLESS** we think and move outside the box.
So, what is Lean when applied to government?

Lean helps us increase our capacity, our ability to do more good.
So, what is Lean government?

Lean focuses on operations.

The whole point of Lean is to rethink the way we produce what we produce, to *increase our capacity* to provide value to those we serve.
So, what is Lean government?

Lean involves **Respect for people** and **continuous improvement**

Specifically, **the people** who work within the system being improved (and, people like customers!)

Lean efforts involve all the key players in a system (including the customers) to analyze the whole “thing”.

Even if the “system” is very small: day-to-day front-line work

Everyone, every day, improving every process and every product, to benefit every customer
Built on a solid foundation
Built on a solid foundation

• Continuous improvement
• Respect for people

Brian Peterson covered this terrifically
Lean at CDOT: Vision

Everyone,
Every Day,
Improving Every Process
and
Every Product,
To Benefit Every Customer
• Everyday Ideas and Everyday Lean Improvement

• Global (cross-functional) Improvement

• Change management: the people side of change
“Drive out fear, so that everyone may work effectively.”

- W. Edwards Deming
Implementing Lean ... And driving out fear

- No one will lose their CDOT employment due to Lean process improvements
  - Lean will change things
  - People may be in different roles and/or different positions after Lean process improvement
  - In no case will someone will lose their CDOT employment due to Lean process improvement

Treat people with respect so that they provide customers with value and management with ideas
“Do the difficult things while they are easy and do the great things while they are small. A journey of a thousand miles must begin with a single step”.

– Lao Tzu
Lean at CDOT:

Lean Everyday Ideas
Everyday Lean Improvement
Larger (cross-functional) Lean Projects
1. Lean at CDOT: Lean Everyday Ideas
“Something is wrong if workers do not look around each day, find things that are tedious or boring, and then rewrite the procedures. Even last month’s manual should be out of date.”

- Taiichi Ohno
Hydraulic Fluid Holding Box
Featured Everyday Idea for October 2013 – over 290 replications to date!

Still implementing - we have about 1,000 pieces of equipment which could benefit
New Toolkit Makes Guardrail Repair Faster, Easier, Safer

Featured Everyday Idea for November 2013
Figuring Out Safer Delineation Repairs

“Our employees used pipe wrenches or whatever other devices they had. Sometimes the tools would slip. I thought we could find something safer.”
Wing cart allows faster, safer removal and installation

CDOT Annual Statewide Safety Innovation Award
Cable guardrail spreader tool improves efficiency and safety

“This is a much better way to do cable rail post repairs,” Heidenreich, a seven-year CDOT employee, said. “It reduces the physical force required to separate the cables, and it keeps them firmly in place while work is being done.”

Bill Heidenreich, Region 4
Template improves efficiency, quality when marking and drilling holes to install signs
Simplification of data entry for Project Managers saves about $400,000 annually

- Entering of pre-construction milestone data for CDOT transportation projects is an important, but historically very time-intensive, task for managing these projects during the pre-construction phase. It often took many hours for a project manager to input data -- as much as eight full hours each month for a single project – due to double data entry requirements
- This improvement, implemented in August, has slashed that to less than 30 minutes per month.
Everyday Lean Innovations & Ideas

At CDOT, the Vision for Lean is: “Everyone, Every Day, Improving Every Process and Every Product, To Benefit Every Customer”. Some of these improvement efforts are larger, cross-functional process improvements projects; the “Lean Case Studies” on this website summarize some of these larger efforts. Many other improvements are more localized, where teams of people are improving the processes within their own functions and workgroups; some examples of these are provided on the “Local Lean” page on this website.

Additionally, CDOT encourages all employees to identify opportunities to make smaller-scale improvements that are within their control. These are innovations and ideas where an employee identifies a problem or opportunity, develops an innovative way of doing something better, does testing and implements the solution. These improvements are the embodiment of the continuous incremental improvement that defines Lean: “Everyone, Every Day, Improving Every Process and Every Product, To Benefit Every Customer”. Some examples of these are listed below.

Putting our Innovation to Work

References for Everyday Ideas

1. Highway Sign Cover Innovation
2. Figuring Out Safer Delineation Repairs
3. Hydraulic Fluid Holding Box
4. Wing Cart Allows Faster, Safer Removal and Installation
5. Improved Drain Assembly Eliminates Deicer Spills
6. Innovation for Removing Wing Towers Makes Job Safer, Improves Efficiency
7. Innovative Shoudering Attachment Improves Efficiency, Quality for Grading Operations
8. Improved Air Lift Exhaust Line Reduces Noise, Improves Personnel Safety
10. Tire Chain Storage Innovation Reduces Costs, Makes Installation Easier
11. Innovation for Highway Debris Removal Improves Safety and Efficiency
12. Water Spray Unit Makes Delineation Washing Easier, More Effective

70+ more online, public at leanideas.codot.gov
Gary’s takeaway today: talk with Brian at Turner, online input of Implemented Ideas, to share with others!
2. Lean at CDOT:

Everyday Lean Improvement
Utilize the Principles of Lean

1. Define Value
   From customer perspective

2. Define the Value Stream
   Mapping information flow and product/service transformation

3. Build in Continuous Flow
   Internally having everything ready as needed for a symphony of service or production

4. Build in Pull
   Provide only when needed

5. Strive for Perfection
   Never give up the chase for perfection
Salt Brine Deicer Innovation Saves $394,030, and Protects the Environment

2012 CDOT environmental award
“Progress is impossible without the ability to admit mistakes.”

– Masaaki Imai
The grant reimbursement process was streamlined to **eliminate 26 low-value-add steps**; this reduces the reimbursement process time to approximately 10 business days (from the previous 45-plus days) – implementation still in-progress.
3. Lean at CDOT:

Larger (cross-functional) Lean Projects
It is not the same thing to talk of bulls as to be in the bullring.

- Spanish proverb
OS/OW Permits process improvement project

Truck drivers on Colorado highways get oversize / overweight permits 30% faster, with 60% fewer errors than previously.

ITEA Finalist, 2013

We Improved This! We Reduced Turnaround Time and the Error Rate for Issuing OS/OW Permits

In 2012, we streamlined how we issue Oversize / Overweight (OS/OW) Permits to truck drivers. We reduced the number of steps in the process from 25 to 11. Doing this reduced the turnaround time by over 30% and also reduced the error rate by 60%!

Since 2012, we have kept the error rate low and the turnaround time fast. And, we continue to make additional improvement: in 2014, we will launch a new OS/OW system that will make the process even easier for our customers!

And, in May 2013, our Team was recognized as a Finalist for the International Team Excellence Award!

The Improvement Team: Kevin Mindenhall, Tanya Davis, Dan Wells, Craig Smith, David Johnson, Phillip Anderle, Jack Stieber, Mac Hasan

Key benefits: Improvement of service to our customer, the truck driver, by reducing turnaround time by over 30% and also reducing the error rate by 60%!

Lean: Everyone, Every Day, Improving Every Process and Every Product, to Benefit Every Customer
OS/OW Permits process improvement project

ASQ Case Study

Lean Project Helps Colorado DOT Provide Disaster Response Following Historical Flood

Construction crews began cleanup on Hwy US 36 in Colorado following the September 2013 floods. When flood waters ravaged portions of Colorado in September 2013 — killing drops, inundating homes, and buckling many miles of roads — countless federal, state, and municipal government workers sprang into action helping citizens. The disaster damaged 300 lanes miles of the state's highway system and damaged 130 bridges. While the Colorado Department of Transportation (CDOT) expected to have its highway system repaired and recovered by winter, the recovery could have taken much longer had it not been for the performance of the Lean Improvement project team.

CASE STUDY AT A GLANCE . . .

Lean Project Helps Colorado DOT Provide Disaster Response Following Historical Flood

- The Colorado Department of Transportation oversize and overweight truck permit writing team initiated a Lean improvement project in May 2012 to quicken response times and remove unnecessary steps for truck drivers.

- By May 2012, the permit team not only streamlined processes, but also reduced its major error rate from 9 percent to 2.4 percent.
Hiring process improvement project

Applicants for CDOT positions spend 60% less total time in the hiring process; reduced the overall time from 180-plus days to 64 days by reducing waste.
“Waste is a tax on the whole people.”
– Albert W. Atwood
Access Permits Process Improvement

1. Reducing total permit cycle time and decreasing variability of on-time delivery
2. Improving visibility and customer communications
3. Establishing tracking of customer satisfaction and a plan to improve this measure over time
Access Permits Process Improvement

Finalist for the 2015 International Team Excellence Awards
4. Lean at CDOT: Outreach

Transportation Lean Forum
(includes Highways Agency in England)

Colorado State Transportation Innovation Council
5. Lean at CDOT: Future Horizons

Lean with construction partners

Policy Deployment (hoshin kanri)

Talk with Turner Construction: online input
CDOT Lean Process Improvement Program Recognized as 2015 Harvard Ash Center Bright Idea in Government

February 18, 2015 - Statewide Transportation Plan - DENVER – The Ash Center for Democratic Governance and Innovation at the John F. Kennedy School of Government, Harvard University, recognized today the Colorado Department of Transportation’s Lean Process Improvement Initiative as a part of the 2015 Bright Ideas program.

To make government more effective and efficient, CDOT launched a Lean process improvement program in 2011. The effort builds the creative and inventive skills of front-line employees to improve larger, cross-functional processes through Lean Rapid Improvement Events and smaller ones through Lean Everyday Ideas.

This year’s Bright Ideas cohort includes 124 programs from all levels of
“Perfection is not attainable, but if we chase perfection we can catch excellence.” - Vince Lombardi
Lean at CDOT

Chasing Perfection,
Catching Excellence
Lean at CDOT

Everyone,
Every Day,
Improving Every Process
and Every Product,
To Benefit Every Customer
More Details about Process Improvement at CDOT

http://www.coloradodot.info/business/process-improvement/

Process Improvement

**Featured Improvement for the week of March 10, 2014:**

**Lean Project Helps Provide Disaster Response Following Historical Flood**


“Everyone, Every Day, Improving Every Process and Every Product, To Benefit Every Customer”.

At the Colorado Department of Transportation (CDOT), we are improving our operations so that we can deliver excellent services and products to all of our customers. We are working to engage everyone, every day at CDOT to make government more effective, efficient and elegant. This is crucial for fulfilling CDOT’s Mission: “To provide the best multi-modal transportation system for Colorado that most effectively and safely moves people, goods, and information”.

However, improvement does not happen magically; it requires focusing on key issues and working systematically to resolve those issues. To do that, CDOT applies continuous improvement tools and techniques, many of which were pioneered in the private sector. This includes the principles and practices of Lean process improvement.

This website provides additional information about Lean process improvement at CDOT.
Everyday Lean Innovations & Ideas

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Including ideas developed and implemented by front-line people
Some resources

- On Your “Takeaways” Handout
Recap

1. CDOT
2. Lean process improvement at CDOT: what we are doing
3. Your questions
"Any intelligent fool can make things bigger and more complex. It takes a touch of genius - and a lot of courage - to move in the opposite direction."

- Dr. Albert Einstein
Do you have any (easy) questions?

Near Silverton
Thank you!