

Poka Yoke
Day 3: Module 4

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Lean Project Roadmap

Preparation	Level Setting	Current State: Make the Invisible Visible	Improvement Design	Implement and Action	Control and Sustain
Scoping and SIPOC	Team Formation	Current Process Map	Brainstorming and Evaluation	Implementation Plans - Action Registries	Reporting - Celebration
Project Charter	Consensus on Project Charter and SIPOC	Identification of Waste	Poka-Yoke →	Poka-Yoke	Project Management
Identify Team	Review Baseline Data	Identification of VA, NVA, NVAN	Clean Sheet Redesign	Visual Management - Dashboard	Change Management
Data Collection Plan (Baseline Data)	Data Analysis	Analysis of Current State	Future State	Project Savings	Monitoring and Follow-up

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Learning Objectives

Participants will be able to:

- Identify ways to error proof a process
- Construct a Pareto chart
- Identify your biggest opportunity for improvement
- Create customer friendly forms

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Poka-Yoke



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Reactions

- "What an idiot!"
- "Most people know enough to remove the hose before they drive off - why should we change things for one fool?"
- "Maybe this is a good way to screen drivers, as he/she is clearly not smart enough to be on the road"
- "There's just nothing that can be done to help some people"
- "What can we do to prevent that mistake from ever happening again?"

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Solution



Equip gas pumps with hose couplings that break-away and quickly shut-off the flow of gasoline.

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Three Rules for Defect Reduction

Your Supplier	You	Your Customer
Don't accept defects	Don't make a defect	Don't pass on a defect



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Poka-Yoke Definition

- **Poka-yoke** is a Japanese term that means "mistake-proofing"
- To correct mistakes before they happen

Mistake Proofing is everywhere from our home, to our car, to our work

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Presidential Limo (Gasoline vs. Diesel Fuel)



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Poka-Yoke Opportunity



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Solution



Markers don't write except on special paper. No more ruined clothing, stained fingers, or messy walls.

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Poka-Yoke Opportunity



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Solution

This Stove burner automatically turns off when a pot or pan is removed



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Poka-Yoke Opportunity



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Solution



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Opportunity & Solution



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Opportunity & Solution

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Ever lose a gas cap?



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Poka-Yoke (Safety)



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How does Poka-Yoke apply to Government work?

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Government Forms

- Government processes involve forms
- Government employees are frustrated that users of their services can't complete a simple form
- During a Kaizen event almost every team identifies waste that involves forms
- **More than 95%** of State of Ohio Kaizen Event teams to date have implemented improvements that reduce mistakes, delays and frustration around forms

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Love/Hate Relationship with Forms

Government Loves	Citizen's Hate
<ul style="list-style-type: none"> The more information the better The bigger the words the more impressive Completely familiar with all the jargon and issues 	<ul style="list-style-type: none"> The longer the form the more frustrating The bigger the words the more likely to confuse Unfamiliar jargon and acronyms

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Use DATA for Mistake-Proofing Forms

- What percentage of times is the form completed with no errors?
- How many errors are made?
- How much time is spent reviewing the form and correcting errors?
- Create checklist to breakdown errors by type or by question
- Create **Pareto Chart**
- Look for Root Causes
- Test / Implement solutions
- Review how many, how often, what kind and how long

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Concentration Diagram

- Concentration Diagrams are great ways to collect data for your forms
- Basketball example

CHRIS BOSH

83 PERCENT!

GRANTLAND

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Concentration Diagram

- Put data in a visual form for all to see
- Entire team sees exactly what is being tracked
- Visibility helps employees prioritize issues and develop ideas to eliminate root causes

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Pareto Chart

A Pareto chart is a bar graph with the bars sorted in order of decreasing frequency. It is used to identify the largest opportunity for improvement.

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Pareto Chart

- The lengths of the bars represent frequency or cost (time or money), and are arranged with longest bars on the left and the shortest to the right
- In this way the chart visually depicts which situations are more significant
- Theory that 80% of the output in a given situation is produced by 20% of the input

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Pareto Chart: When to Use

- When analyzing data about the frequency of problems or causes in a process
- When there are many problems or causes and you want to focus on the most significant
- When communicating with others about your data

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Next Steps

- Review missed questions with employees and with customers
- Review statute, code, rules to see if you really, Really, REALLY need to ask the question
- Use software to test the age level and readability of forms

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How readable are your forms?

- Have you ever tested the reading level of your forms, letters or website?

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Quiz Time!

- Question: What grade level is the New York Times written?
– Answer: 10th Grade
- Question: What grade level are John Grisham’s and Stephen King’s writing?
– Answer: 7th Grade
- Question: What grade level are most State forms, letters and websites written?
– Answer: College Level and Beyond

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Reading Levels: Why you should care

According to the National Adult Literacy Survey:

- The average adult in the U.S. reads at the 7th grade level
- **Nearly 50%** read below the 6th grade level
- **Over 80%** read below the 10th grade level

The largest selling magazines, newspapers and books are written at lower grade levels.

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How to check the reading levels

Microsoft Word has reader level features:

Go to the Spelling and Grammar Page of the Tools/Options Menu and checking “Show Readability Statistics.”



Readability Statistics	
Counts	
Words	1212
Characters	6546
Paragraphs	31
Sentences	45
Averages	
Sentences per Paragraph	3.4
Words per Sentence	24.2
Characters per Word	5.2
Readability	
Passive Sentences	20%
Flesch-Reading Ease	30.4
Flesch-Kincaid Grade Level	15.0

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Understanding Readability Scores


- Looks at # syllables and # words per sentence.
- Flesch Reading Ease Test: the higher the score, the easier it is to understand. You want the score to be between **60 and 70**.
- Flesch-Kincaid Grade Level Test: rates text on a U.S. school grade level. For most documents, aim for a score of approximately **7.0 to 8.0**.

Bulleted Lists are GREAT!

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Potential Improvement Ideas

- Remove unnecessary questions
- Explain questions that may seem unnecessary 
- Eliminate unnecessary typing with pull down menus if online, or boxes to check if a paper form
- With pull down menu, ensure most common answers are first
- Highlight required fields



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Potential Improvements

- **Online forms can't be sent if information is left blank**
- Create an FAQ or checklist to accompany the form that explains to customers exactly what is needed. (Make most frequently missed questions the first thing on the checklist)
- The most important questions are highlighted or in a prominent location

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Poka-Yoke LeanOhio Form

This form is for people who work in Ohio state government.

If you qualify to be a member of the LeanOhio Network, and you have read and agree to the terms of use and participation, please use the following online form to apply for membership. The LeanOhio Program Office will contact you regarding your status. All new members receive a username and password to log in to LeanOhioNetwork.org where they can post comments on the user Network Forum and be responsible blog posts. In addition, you are listed in the online Network Directory, with information from the following form being used to describe your experience, credentials, and know-how.

To complete the form, simply follow the prompts, responding to the terms that apply to you. If an item isn't relevant, just leave it blank and move on to the next item.

Thank you for your interest in becoming a part of the LeanOhio Network, We will respond promptly to your application for membership.

27067462: BASIC INFO

Your first name: Last name: Please fill in the required field.

Your email address: Please fill in the required field. Phone number: (with area code) 514-456-6033 Extension:

Agency where you work: Office or section: Your title:

Street address: Floor or suite number: City: State: Zip code:

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Examples from LeanOhio Projects

Department of Commerce

Unclaimed Funds Form

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Empty and **INCOMPLETE** Fields on Claim Form (50 claims)

Name	
ID	
Business Authority	
Signature	
Joint Signature	
Printed Reported Address	
Business Relationship	
SSN	
Date of Birth	
Probate Court Docs (Current)	
Incomplete Client Info (0)	1

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Examples from LeanOhio Projects

Board of Tax Appeals

Decision writing process

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DTE FORM 4 (Revised 10/07) K.C. 5717.01

NOTICE OF APPEAL FROM A DECISION OF A COUNTY BOARD OF REVISION TO THE BOARD OF TAX APPEALS

Name (Please Print) _____ BOR Case No. _____
Address _____ City _____ State _____ Zip _____ Date Filed At BTA _____
v. _____
Auditor and the Board of Revision
of _____
(Names of other appellants)

FY2010: 2,700 appeals with a cost to the taxpayer of \$520 per decision

READ IMPORTANT THIS FORM

The Appellant appeals the decision on use rooms or accessory use rooms as use rooms in the matter of the complaint against the value for tax year _____ for the real property or manufactured or mobile home described below. The complaint was filed by: _____

Name _____ Address _____ City _____ State _____ Zip _____
The Board of Revision decision was mailed on (date) _____ and a copy is attached as Exhibit A.
Owner's Name _____
Owner's Address _____

PARCEL OR REGISTRATION NUMBER	ADDRESS OF PROPERTY

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Please fill out the following form.

TRANSCRIPT ON APPEAL TO THE BOARD OF TAX APPEALS

(For Appeals of a Final Determination of the Tax Commissioner, Or a Decision of a Municipal Board of Appeal)

Appellant (Please Print) _____ Lower Tribunal Case No. _____
v. _____ Tax Commissioner of Ohio BTA Case No. _____
Or Municipal Board of Appeal and _____

Appellee(s) (All of _____
(Address(es) of all of _____

The _____
(Tax Commissioner of _____
with all evidence offered in connection with that review. _____
return, hereby
I affirm, along

1. This appeal originated with the filing of _____ (type of return) for the tax year(s) _____
2. The taxpayer filed its original challenge on _____ (date) and a copy is attached.
3. The lower tribunal:
A. Issued its determination decision on _____ (date).
B. Mailed it to all parties, including _____ (name of taxpayer) _____
At _____ (address of taxpayer) on _____ (date).
C. A copy of the lower tribunal's decision is attached.

October 2013: 1,200 appeals with a cost to the taxpayer of \$118 per decision

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Examples from LeanOhio Projects

Ohio Department of Transportation

Aircraft Registration process

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Ohio Department of Transportation Ohio Aircraft Registration 2011 Application

2011 Statewide Airplane, Helicopter, STC #252578

Office of Aviation

2018 T'GALDEX
132 W ROCKDALE ST, PO BOX 110
ROCKVILLE, OH 44077

Identification No: 1802
Aircraft Base: GERRISA OHIO
Make and Model: AIRCRAFT
Reg N
Reg

Before: Paper-based mailed in process with fee paid by check

Aircraft Registration Remarks Must be Pasted on Back

Registration Fees: \$100 and below - \$10.00 per aircraft
All Other Aircraft - \$15.00 per aircraft. See instructions section for full rates and fees.

Check Registration Category: General Other Other (Specify) Other (Specify)

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Ohio.gov

WELCOME TO THE ODOT AVIATION REGISTRATION MANAGEMENT SYSTEM (ARMS)

User Name
Password

After: Online registration system and payment. Annual savings of \$33,000 in paper, envelopes, printing and postage

Forgot Your Password? | Register My Aircraft | Public Airmen Accounts | Help | Logout

The Ohio Department of Transportation, 1805 West Broad Street, Columbus Ohio 43223
John B. Fawcett, Governor | Jerry White, ODOT Director | Privacy Statement | Advanced Search | Feedback | Ohio.gov

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Poka-Yoke can be Phased In

Think Rail Road Crossings...

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We started with this...



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Then evolved to this...



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Then moved to this...



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Then to this
(the Ultimate Poka-Yoke)



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Training Activity

Review the Form

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DOP SLOW Form for Renewal Requests

Name:	Agency:
Department:	Agency Reference #:
OAKS ID:	Phone Number:
Program:	Form Type:
Send to:	Approval Date Requested:
Bill to:	Phone Number:
Approval Date Requested:	Form Type:
Phone Number:	SSNE:
Email:	Phone Number:

Additional Information:

Name:	SSNE:
Department:	Phone Number:
Address:	Date of request:
Number of Times Renewed:	Improvement Initiative:
Form Type:	

Approver Signature:
Title:
Date:

Supervisor Signature:
Title:
Date:

Director Signature:
Title:
Date:

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DOP SLOW Form for Renewal Requests

Name:	Agency:
Department:	Agency Reference #: 011 111
OAKS ID: 011 011	Phone Number:
Program:	Form Type:
Send to:	Approval Date Requested:
Bill to:	Phone Number:
Approval Date Requested:	Form Type:
Phone Number:	SSNE:
Email:	Phone Number:

Additional Information:

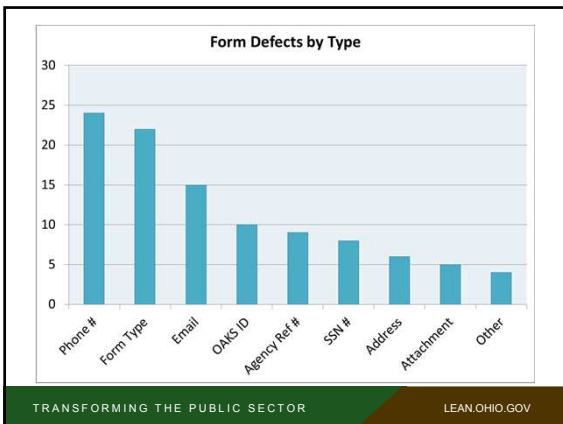
Name:	SSNE:
Department:	Phone Number:
Address:	Date of request:
Number of Times Renewed:	Improvement Initiative:
Form Type:	

Approver Signature:
Title:
Date:

Supervisor Signature:
Title:
Date:

Director Signature:
Title:
Date:

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EXERCISE: Review the Form

1. Prioritize most common errors from concentration diagram
2. Consider the root causes of the errors
3. Develop Poka-Yoke ideas to prevent future errors
4. On a flip chart page, draft a new form that incorporates those ideas
5. Point system will be used to select winning team

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Point Scale

- **1 pt:** Poka-Yoke phone # field by specifying character limit
- **1 pt:** Poka-Yoke date field by using specified date format
- **2 pts:** Specifying address, state, city and zip
- **2 pts:** Specifying Home vs. Work (Phone or Address)
- **5 pts:** Place form on-line

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Point Scale

- **5 pts:** Poka-Yoke form with drop-down list and/or checkboxes
- **5 pts:** Eliminate one or more signature lines
- **5 pts:** Eliminate duplicate fields
- **10 pts:** Poka-Yoke the form using a log-in field and auto-populating other fields
- **10 pts:** Making a field/s required (*)

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Point Scale

- **15 pts:** Prevent form from submitting if required fields are left blank
- **15 pts:** Tested readability of form

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EXERCISE: Review the Form

1. Collect the data and identify the numbers and types of errors being made on the form.
2. Prioritize most common errors
3. Consider the root causes of the errors
4. Develop Poka-Yoke ideas to prevent future errors
5. On a flip chart page, draft a new form that incorporates those ideas

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