E-Enterprise for the Environment Lean and IT Toolkit

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ABSTRACT

Two improvement trends—Lean and information technology (IT)—are transforming how environmental agencies protect human health and the environment. An E-Enterprise Workgroup is developing a Toolkit that provides how-to guidance, resources, and tips to help environmental agencies integrate Lean with new IT approaches that streamline, modernize, and expand the services they provide to customers.

INTRODUCTION

- Toolkit Purpose
- Toolkit Workgroup
- Benefits of Lean and IT
- Highlights of the Toolkit Content
- Case Study Example: EPA Region 1
- Toolkit Status

TOOLKIT PURPOSE

- This **Lean and IT Toolkit** explores how Lean and IT can be used to:
  - Efficiently design new products and services to better meet customer needs (Lean startup)
  - Improve the efficiency and effectiveness of existing processes (Lean process improvement)
  - Reduce the costs and risks of developing new IT products (agile development)

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Lean and Information Technology (IT) Toolkit

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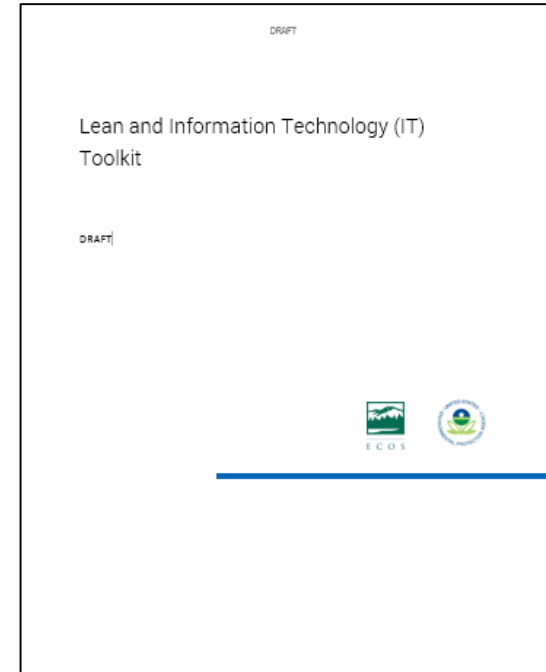
WORKGROUP ACKNOWLEDGMENTS

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- Contractor Support from Ross Strategic

BENEFITS OF LEAN AND IT

- By using Lean tools, an agency can expect to:
  - Eliminate or dramatically reduce backlogs
  - Reduce lead times by more than 50 percent
  - Decrease the complexity of processes and eliminate unneeded process steps
  - Improve the quality and consistency of work products and activities
  - Allocate more staff time to "mission critical" work
  - Improve staff morale
  - Enhance process transparency to internal and external audiences
  - Mitigate overall risk and maximize the efficiency of resources

TOOLKIT FRAMEWORK
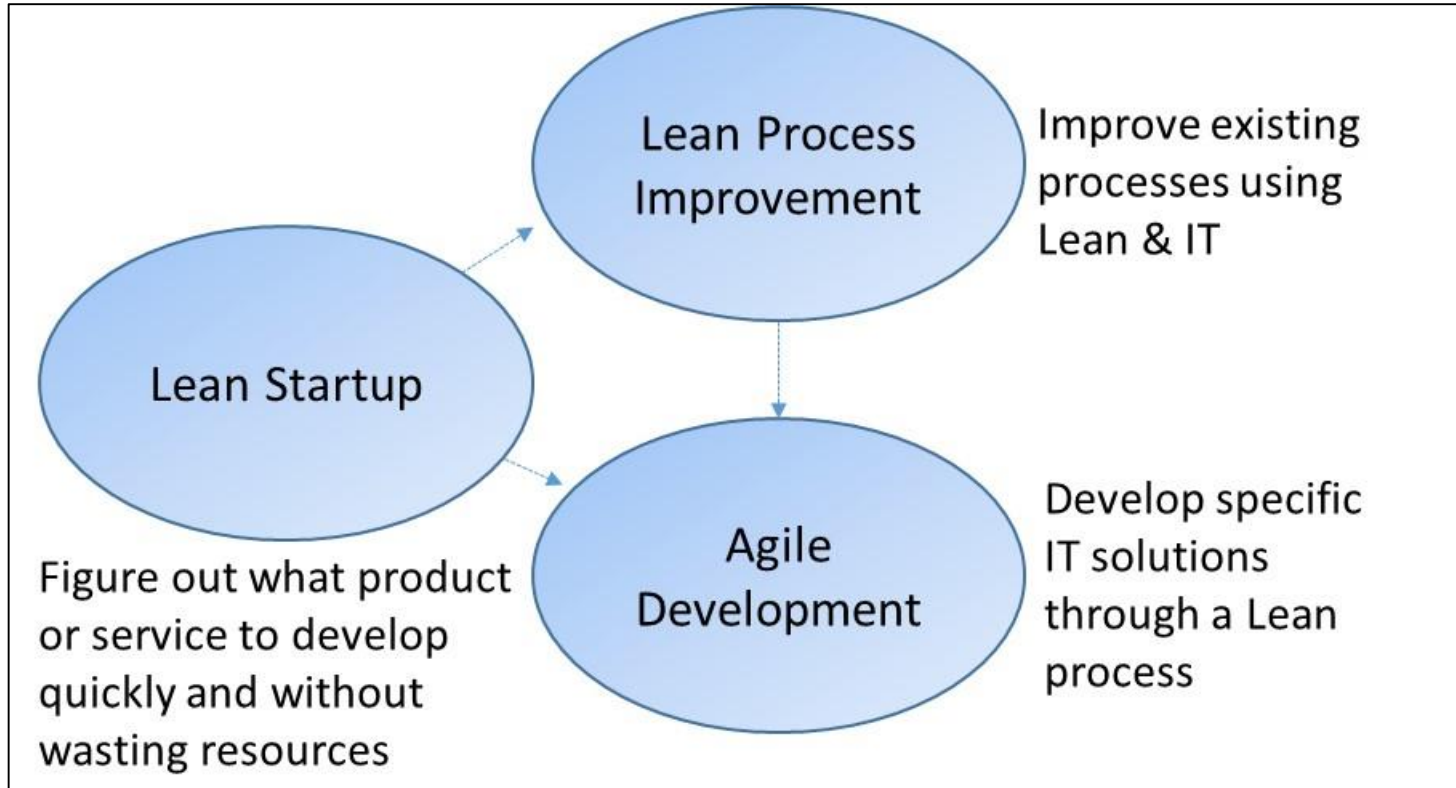
LEAN STARTUP

Lean startup, first conceptualized by Eric Reis, is the use of Lean concepts to determine what products or services to develop to meet customer needs in conditions of high uncertainty.
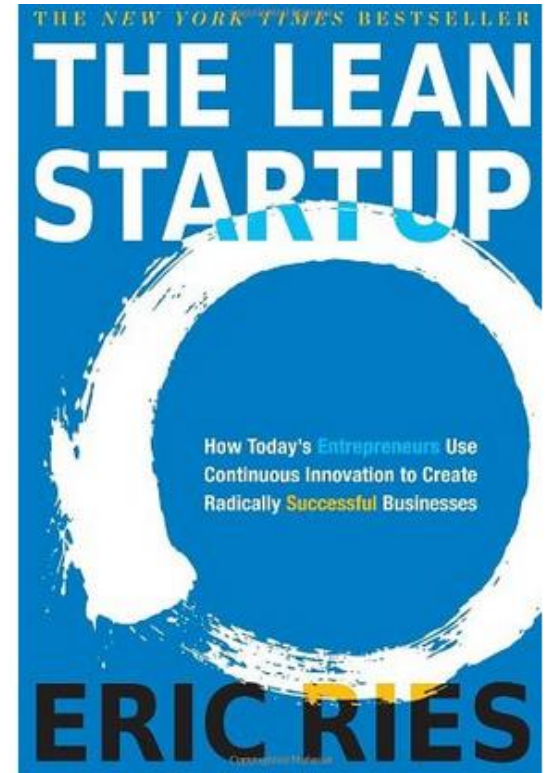
LEAN STARTUP

Identify Potential Product/Service Value:
- What problem are we trying to solve?
- What value are we bringing to the table?
- What are our most critical assumptions and hypotheses, and which of these are most uncertain?

Evaluate User Feedback:
- Did the user recognize the problem and value?
- What did we learn is truly important to the users?
- What might they adopt or at least not resist?
- Did user feedback suggest the need to pivot and rethink the overall product or project assumptions?

Build Minimum Viable Products (MVPs):
- MVPs are simple and not fully developed products – an initial MVP could be just paper and a person talking to customers
- Goal is to interact with customers around something REAL
- Everything is instrumented for learning

Ideas about Value

Learn

Build

User Data

Measure

MVPs First, Then Product Releases

LEAN STARTUP

When to use Lean startup:

- There is a need for new or fundamentally redesigned products or services to meet customer needs, and

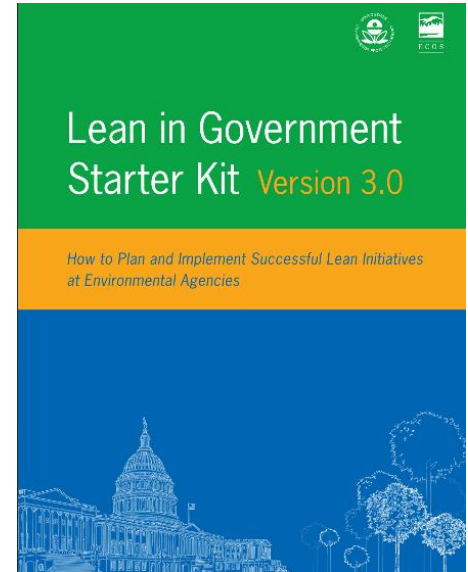- There is little known about what would be most useful to customers.

LEAN AND IT PROCESS IMPROVEMENT

- Use Lean methods to analyze a process and look for ways to eliminate waste

- Lean is often implemented in short bursts of activity known as events, which typically range from 1-5 days

- Consider IT changes along with other process improvements for best results

LEAN AND IT PROCESS IMPROVEMENT

- The Toolkit looks at how to use Lean and IT to increase the efficiency and enhance the effectiveness of existing processes

- It provides "how to" guidance on how to effectively integrate IT in the different phases of typical Lean projects:

  - Planning

  - Process-improvement events or activities

  - Implementation and follow-up

Lean in Government Starter Kit Version 3.0

How to Plan and Implement Successful Lean Initiatives at Environmental Agencies

See the Lean in Government Starter Kit for more on Lean

LEAN AND IT PROCESS IMPROVEMENT

- Key Principles:
  - Involve IT personnel in all stages of process-improvement projects
  - Use creativity before capital to solve problems
  - Streamline processes before automating them
  - Closely coordinate implementation of IT and other changes
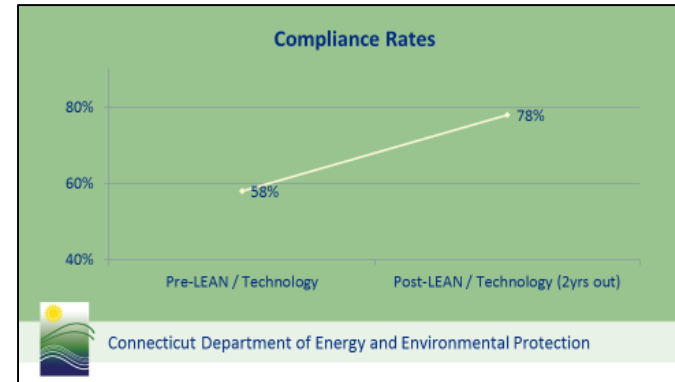
LEAN AND IT PROCESS IMPROVEMENT

Planning for Process Streamlining and Modernization Projects:

1. Understand the Problem
2. Develop a Manageable Scope for Process-Improvement Efforts
3. Assemble a Project Team with the Right Mix of Leadership, Facilitation, and IT Support
4. Sequence Improvements to Streamline Processes Before Automating Them
5. Identify Other IT Impacts That Could Affect the Project

LEAN AND IT PROCESS IMPROVEMENT

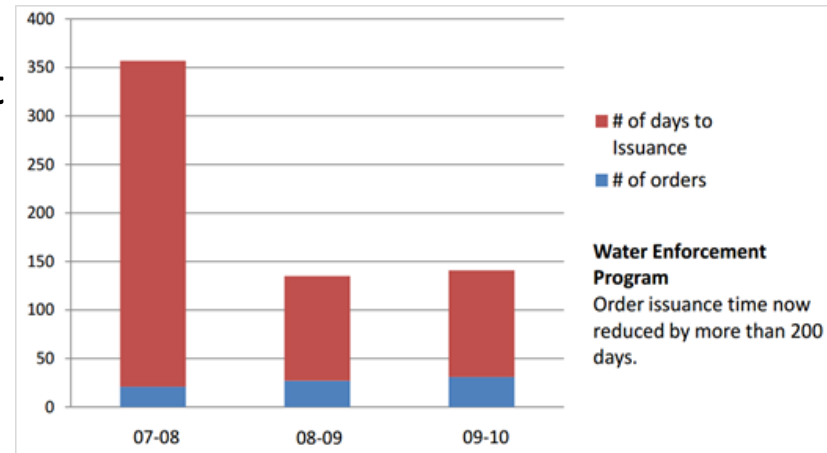Steps to Improve Processes with Lean and IT:

1. Develop a Robust, Data-Driven Understanding of the Current Process

2. Take a "Creativity Before Capital" Approach to Process Improvement

3. Consider Ways IT Solutions Can Enhance Lean Outcomes

4. Engage Stakeholders and Customers Early and Often

5. Develop a Clear Implementation Plan for Future Lean and IT Improvements

Compliance Rates

80% — 78%
60% — 58%
40%

Pre-LEAN / Technology   Post-LEAN / Technology (2yrs out)

Connecticut Department of Energy and Environmental Protection

LEAN AND IT PROCESS IMPROVEMENT

Effective Follow-Up from Lean and IT Projects:

1. Track Action Items and Make Project Teams Accountable for Making Progress

2. Closely Coordinate IT Development Efforts with Implementation of the New Process

3. Evaluate Process Performance and the Need to Make Additional Changes

Legend:
- # of days to Issuance
- # of orders

Water Enforcement Program
Order issuance time now reduced by more than 200 days.

AGILE DEVELOPMENT

- Traditional "waterfall" software development methods are linear
- By contrast, agile uses a rapid, iterative process for developing IT solutions to meet customer needs

Agile Development Process

The Waterfall Method

Steps occur in a linear fashion, one following the next.
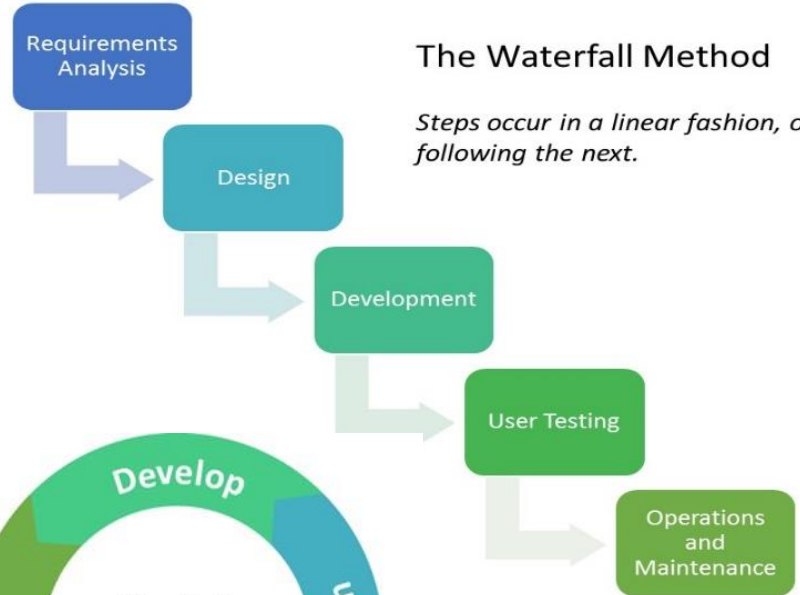
AGILE DEVELOPMENT

- Benefits of Agile:
  - Focuses efforts on user needs
  - Enables IT development typically using less time and resources
  - Builds in learning from any changes or mistakes
  - Works in conjunction with Lean startup to help develop MVPs where there is less certainty around what IT product is needed

# TIPS FOR MULTI-AGENCY COLLABORATION ON LEAN AND IT IMPROVEMENT PROJECTS

- Coordinate with agencies early on

- Limit the size of Lean project teams

- Establish lines of accountability at different agencies

- Be flexible and consider agency differences when designing solutions and planning implementation

CASE STUDY: EPA REGION 1 IMPROVEMENTS TO THE LAB PURCHASING PROCESS

- Goals:
  - Simplify, clarify and streamline the purchase-order process
  - Develop a standard, electronic order, approval and tracking system
  - Reduce the number of individual purchases by 20% by setting up a visual inventory system
  - Evenly distribute purchasing workload

CASE STUDY: EPA REGION 1 IMPROVEMENTS TO THE LAB PURCHASING PROCESS

- Initially, the lab identified an IT solution to reduce paper forms, but realized the need to streamline the workflow first

- Lean events resulted in a better understanding of the process and ways to improve it
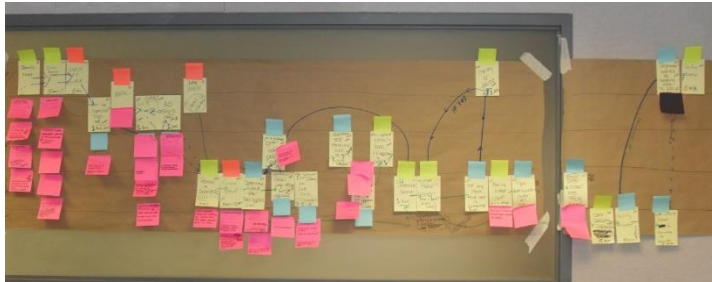
Current Process Map

Future Process Map

CASE STUDY: EPA REGION 1 IMPROVEMENTS TO THE LAB PURCHASING PROCESS

- Results:
  - Shifting and clarifying of roles and responsibilities
  - Reduced total number of orders with visual inventory system
  - Developed an electronic PDF order form and email routing
  - Improved record-keeping
  - SharePoint site with workflow tracking in development

Metric	Old Process	New Process	Percent Change
Days to Complete an Order	12	5	↓60%
Number of Process Steps	27	16	↓40%

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ADDITIONAL CASE STUDIES

- Wisconsin DNR Water Program E-Permitting System Development Process
  - Streamlined permitting application process, cutting review time by 50%, prior to implementing an e-permitting system
- Massachusetts DEP Enterprise-wide Data Management System
  - Lean thinking to simplify processes for e-permitting system
- EPA Region 7 Improvements to the CAFO Inspection Reporting Process
  - Improved quality and timeliness of CAFO inspection reporting process

TOOLKIT STATUS

- The Workgroup is finalizing the Toolkit after EN2015
- Distribution via EN Alert
- For more information, please contact:
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