

Innovation Through Lean

Rapid Learning Cycles, Knowledge Capitalization
and Convergence

AME Innovation Summit

Katherine Radeka



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About Me



Presenter: Katherine Radeka

Katherine Radeka has a rare combination of business acumen, scientific depth and ability to untangle the organizational knots to remove the barriers to change. In 2012, she published *The Mastery of Innovation: A Field Guide to Lean Product Development*. This book summarizes two years of field research to document the dramatic results that companies achieve with lean product development. It includes 19 case studies, including Ford Motor Company, Scania, Novo Nordisk, Goodyear and Steelcase.

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Agenda

- Alignment
- Rapid Learning Cycles
- Knowledge Capitalization
- Convergence
- The Lean Innovation Process

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Key Takeaways

- Rapid Learning Cycles generate new ideas and build the knowledge you need to bring them to market.
- Knowledge Capitalization helps you access the best customer, market and technical knowledge inside your company to find the shortest path to a successful innovation.
- Convergence helps you evaluate a set of alternatives to identify the best ideas to take forward and then reduce risk on those innovations to get them to market faster.

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Alignment

- What is Innovation?
- The Problem to Solve
- Innovation Through Lean

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A Working Definition of Innovation

The process
of finding novel solutions
to important problems.

From Greg Satell

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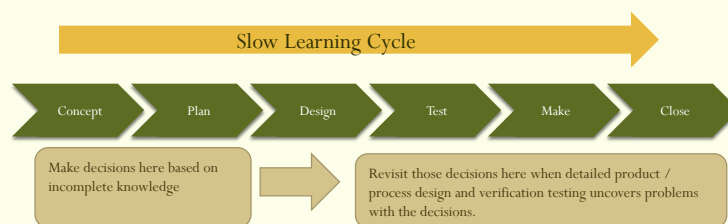
Our Goal

Get Your Best Ideas to Market Faster.

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The Problem: Most Innovation Processes are One Long Slow Learning Cycle



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Problem Statement:

How do we optimize the process of finding novel solutions to important problems so that we can get our best ideas out into the world as fast as possible?

- Find ideas
- Qualify those ideas to find the best ones
- Learn what we need to learn to get them executed with as few unexpected problems as possible.

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Innovation Through Lean: The Core Toolset

- Rapid Learning Cycles
- Knowledge Capitalization
- Convergence

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Rapid Learning Cycles

- What are Rapid Learning Cycles, Key Decisions and Knowledge Gaps?
- Rapid Learning Cycles in the Product Development Process
- Rapid Learning Cycles, LAMDA and A3s

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Rapid Learning Cycles

A synchronized set of systematic problem-solving activities

to remove uncertainty, manage risk and build knowledge

before Key Decisions need to be made

within a product development program.

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Key Decisions

Key Decisions: Decisions that must be made in order to move ahead with the product or process design.

Examples:

- Which motor are we going to use?
- What is the final cabinet design?
- What is the primary market segment for this product?
- Who will be our main channel partner?
- What is an acceptable level of quality risk?
- Will this feature be available on all versions of the product?

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Key Decisions and Knowledge Gaps

Key Decisions: Decisions that must be made in order to move ahead with the product or process Design.

Knowledge Gaps: Something that a team needs to know in order to make a Key Decision.

Examples include:

- What are the available motors and will they meet our needs?
- How does the cabinet size limit our choice of materials?
- Which channel partners have the best merchandizing for this product?
- Which customers are willing to pay a premium for this feature?

A Knowledge Gap is not the same as an ISSUE! An issue is a problem of any kind that is blocking the team's progress.

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Integration Events

Pull events to identify potential conflicts
within the project as early as possible
to avoid late design loopbacks.

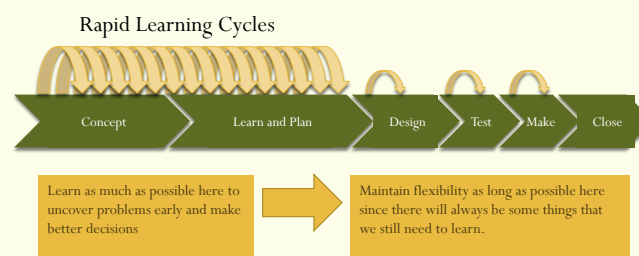
→ Comes out of Set-Based Concurrent Engineering practice but
you don't have to be doing SBCE to benefit from these.

→ They MAY — but do not always — occur on or near another
major project milestone (gate review, prototype build).

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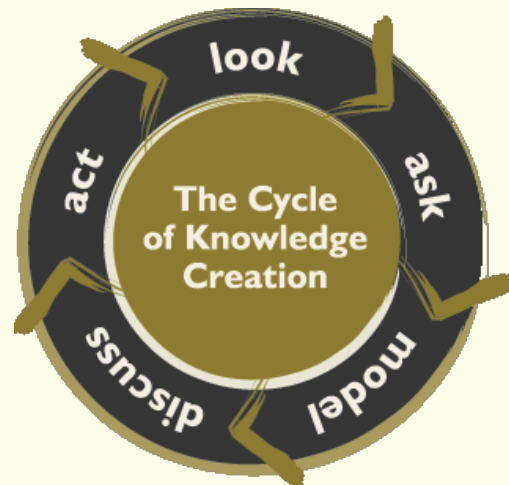
Rapid Learning Cycles in the Innovation Process



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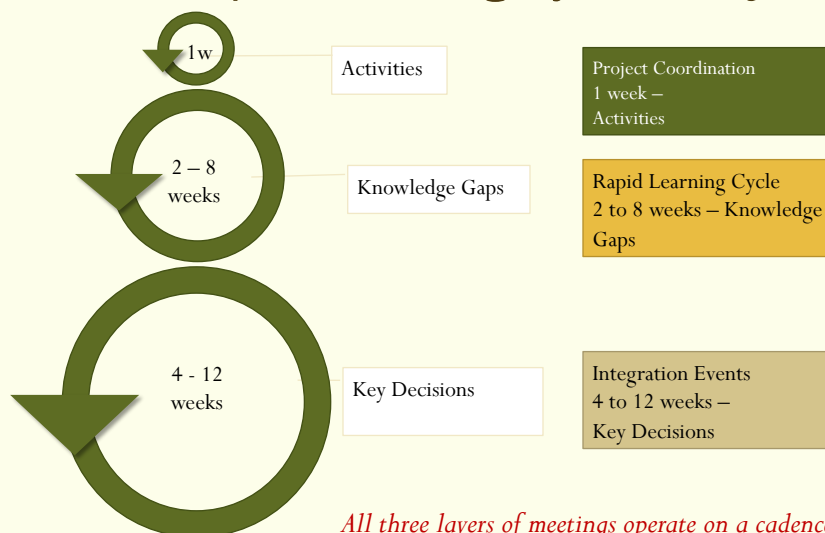
Rapid Learning Cycles are Cycles of Systematic Problem Solving



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The Rapid Learning Cycles Project



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Knowledge Capitalization

- The Cycle of Knowledge Capitalization
- Attributes of Reusable Knowledge
- Types of Reusable Knowledge

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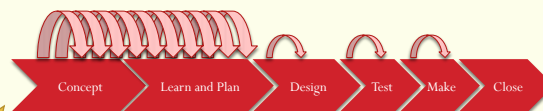
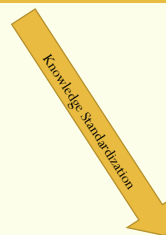
Capture Reusable Knowledge

Rapid Learning Cycles Build Reusable Knowledge . . .



Capture reusable knowledge so that future program teams don't have to re-learn the same things

. . . To Accelerate Future Development Programs

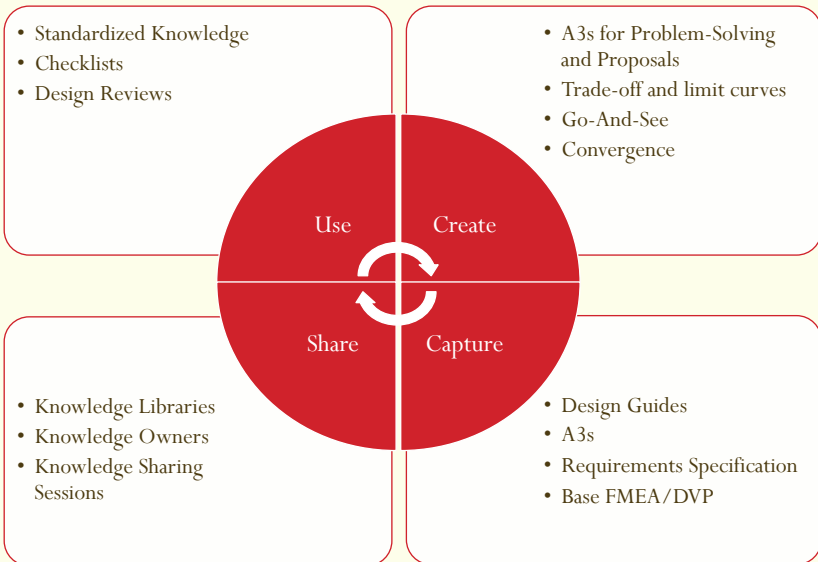


Leverage reusable knowledge to focus a team's rapid learning cycles on new ideas and product-specific details.

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The Cycle of Knowledge Capitalization



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Reusable Knowledge

Knowledge that has significant value beyond the initial situation that prompted knowledge creation.

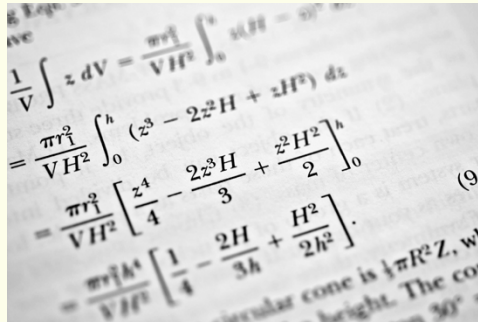
That has been captured so that others may find, understand, believe, adapt and apply it in new situations.



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Characteristics of Reusable Knowledge

- Understood
- Believed
- Actionable
- Generalized
- Accessible



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Areas of Reusable Knowledge



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Convergence

- Convergence and SBCE
- The Convergence Process
- Examples of Convergence for Innovation

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Convergent Decision-making & Set-Based Concurrent Engineering

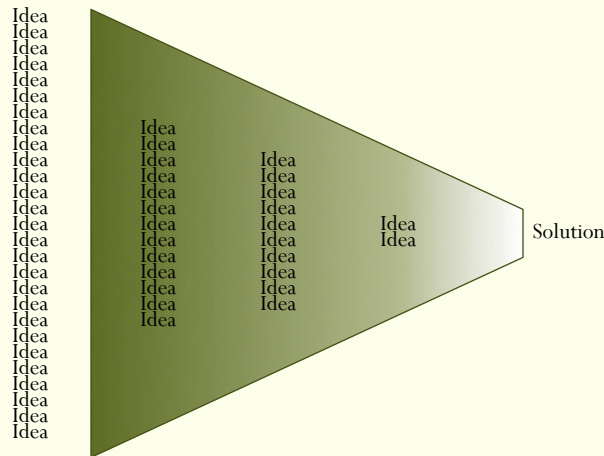
- Set-Based Concurrent Engineering: a mechanical engineering design process that Dr. Allen Ward developed and then discovered that Toyota had already developed and mastered.
- Convergent Decision-making: the same principles applied to increase the effectiveness of complex decisions where the ability to evaluate multiple alternatives and delay final decisions will lead to better outcomes.

They are both SET-BASED approaches to making a decision.

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Convergence



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Convergent Decision-making

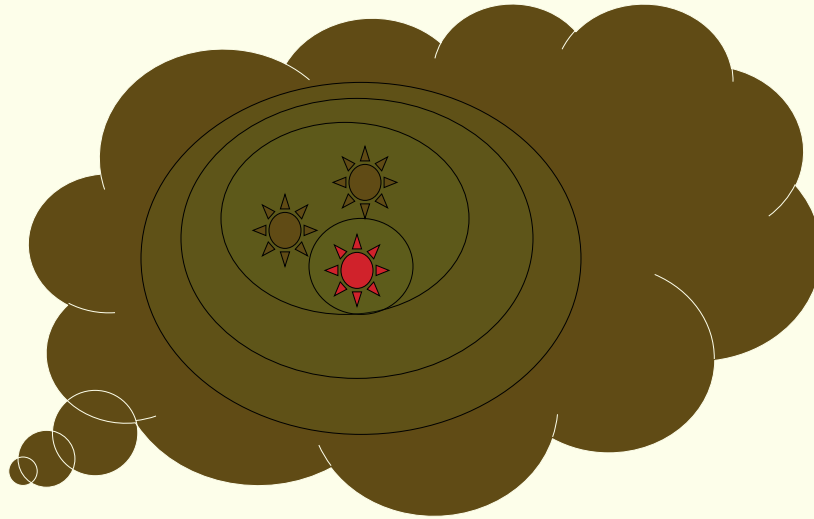
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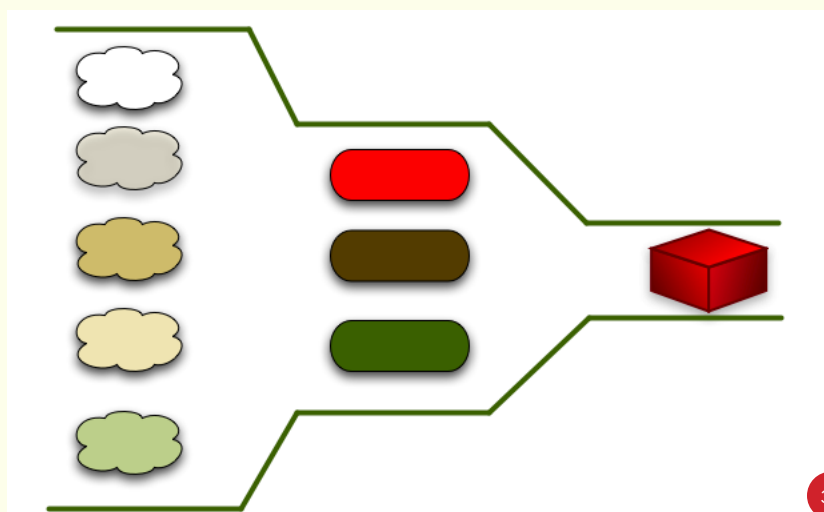
Convergent Decision-Making



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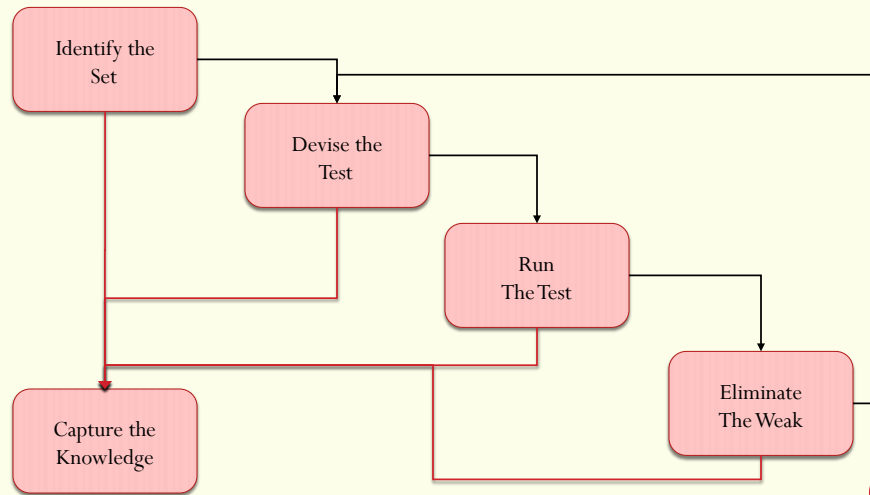
Convergent Decision-Making in Time



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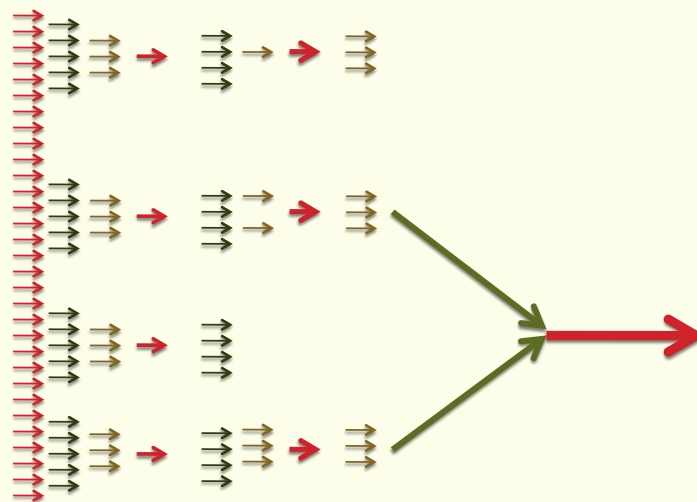
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Narrowing Steps



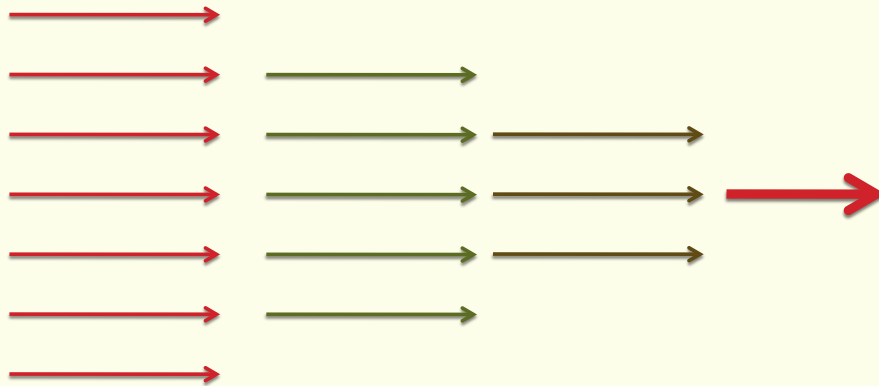
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Convergent Research Pathways



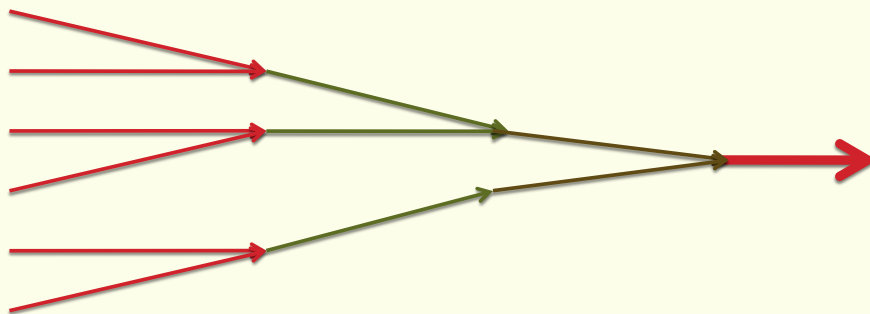
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Concept Competitions



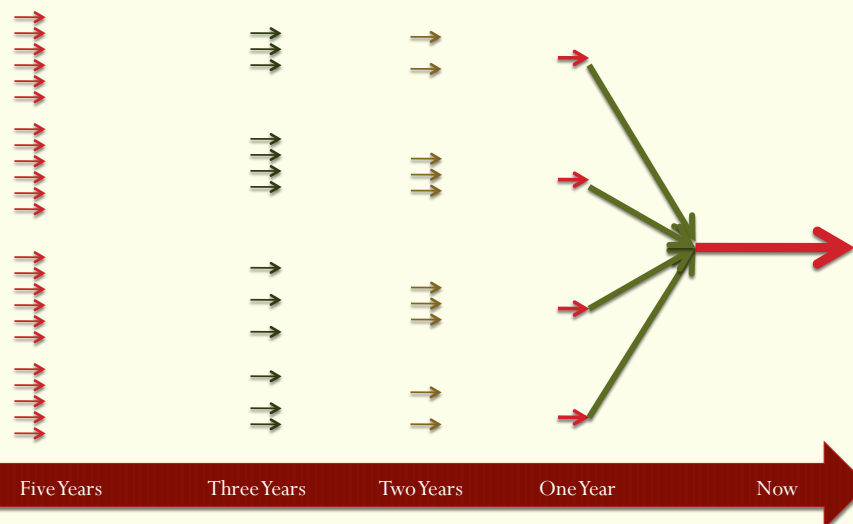
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Design Blitzes



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Set-Based Scenario Planning



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Where To Go Next

- The Problem and the Solution
- Your Next Steps

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Problem Statement:

How do we optimize the process of finding novel solutions to important problems so that we can get our best ideas out into the world as fast as possible?

- Find ideas
 - Rapid Learning Cycles with ideation tools.
 - Knowledge Capitalization to look for leverage opportunities.
- Qualify those ideas to find the best ones
 - Rapid Learning Cycles to close critical Knowledge Gaps so teams can evaluate ideas.
 - Knowledge Capitalization to define filter criteria, classify ideas and capture knowledge.
 - Convergence to identify the best ideas to take into development.
- Learn what we need to learn to get them executed with as few unexpected problems as possible.
 - Rapid Learning Cycles to drive knowledge creation for Key Decisions and reduce risk.
 - Knowledge Capitalization to reduce risk, eliminate reinvention and capture knowledge.
 - Convergence to evaluate execution alternatives and reduce risk.

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Your First Steps

- Use Rapid Learning Cycles to structure your next ideation sessions.
- Pilot the tools of Innovation Through Lean on your next concept evaluation project.
- Define your group's innovation process: make a simple visual model that describes it. Where are your opportunities to incorporate Innovation Through Lean?
- To Learn More:
 - Sign up for the Lean Product Development Resource Center: <http://lpdrc.com>
- then look for the articles tagged "Innovation Through Lean."
 - Sign up for an upcoming web class through the LPDRC:
 - Rapid Learning Cycles starts May 2
 - Innovation Through Lean starts August 8
 - Convergence and SBCE starts October 31
 - Live Class, Self-Study and Custom Group Class options available

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Questions and Answers

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