Applying Lean Concepts in Project Management

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Presenter Profile.

Mauricio Gomez Meléndez

Mechanical Engineer, MAT, PMP

- Degree in mechanical engineering. Master in technology management. Active member of the associated PMI ® to the chapter of Costa Rica, has a Project Management professional certification.

- Master teacher in the area of project management emphasis on quality management at the University.

- Seventeen years of experience in management of projects, has collaborated articles associated with the PMI ® network, as well as in the magazine of the Chamber of construction of Costa Rica.

- International speaker at conferences in the PMI ®. Made various consultancy in the area of management of projects for the construction sector and currently directs high technology equipment installation operations in the area of projects for the company Intel components of Costa Rica.

Agenda

- Purpose
- Principles
- Roadblocks
- Techniques
- Summary

Purpose

- Introduce you to applying lean thinking
- when circumstances require a more upfront planning approach
- Identify the lean Project development principles
- Provide examples illustrating using lean on plan-driven projects

What is Lean?

Though there are many in the literature… one to offer up:

Lean is the relentless pursuit of adding <u>value</u> for the <u>customer</u>, waste elimination, and continuous improvement from a <u>standard</u> at the point of activity by everyone, everywhere, everyday!

So what is <u>Value Add</u>?

If an activity changes our product, is done right the first time, and our customers are willing to pay for it, then it is value-added

A P - C O N 2 0 0 9

Lean Principles

- Build Value
- Eliminate Waste
- Build Integrity In
- Amplify Learning
- Localize Responsibility
- Delay Commitment
- Deliver Fast
- Optimize the Whole

Why emerge ?

- It is a modern technique to make projects more efficient.
- It is a simple system of organization of work.
- Limiting Hispanic projects (Pablo Lledó):
  - Resources.
  - Time.
  - Changes in the environment.
  - Human capital management.

Is a way of life!!

Lean PM Principles

- *"Companies need to improve their projects with structures and different to the traditional treatments address"*

- *Required doing a re-engineering or a x-engineering if necessary.*

- *Project management needs to evolve and improve with as time passes.*

Principles of Lean Project Development

- Precisely specify the **value of each project**
- Identify the **value stream for each project**
- Allow value to **flow without interruptions**
- Let the customer **pull value from the project** team
- Continuously pursue **perfection**

The Many Facets of Lean

- Foundation
  - Respect People
  - System causes errors
  - Continuously Improve the Process To Support People
- Attitude
  - When errors happen fix the system – no work arounds
- Guidance
  - Think of what you are doing as fast-flexible-flow
  - Remove impediments to flow to remove waste – "Stop the line"
- Principles
  - Optimize the whole
  - Eliminate waste
  - Build quality in
- Practices
  - Agile/Scrum Methods

Lean Thinking: Value

- Value is what the customer wants
    - What they are willing to pay for (or endears you to them if you are not charging them)
- What you are trying to produce
- Information that is used to create value
    - For example, information that helps you decide what your customer needs
- In the context of the business

Lean Thinking: The Value Stream

- The flow from beginning to end of creating the value
- Often cuts across companies, virtually always cuts across organizations
- It should look at the sequence of steps that transform the original idea into value in the customers' hands

Focus on Time

- Time is important
- Focusing on delays uncovers problems
- Ultimately, we want to optimize the whole
- Focusing on:
  - Delays
  - Context/task switching (which cause delays) …gives insights into speeding up the process and eliminating waste

Impediments Are Waste

- Impediments often occur between boundaries
- Are often caused by another area
- Must eliminate impediments to improve flow
- Look for:
  - Delays
    - from time get information until use it
    - from time make an error until discover it
    - From time need information until get it
  - Thrashing (multi-tasking)
  - Pushing more work than have capacity
  - Too many projects

Eliminate Waste
on a Plan-Driven Project

What is Waste?

- Anything the customer would not agree to pay for
  - Ronald Mascitelli

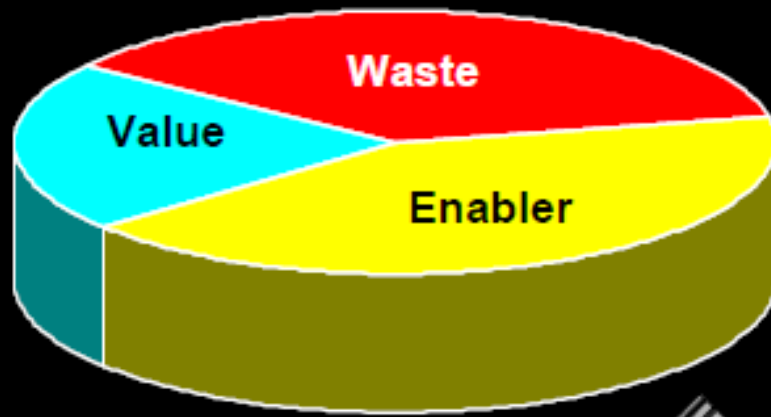- Anything that does not add customer value
  - Mary and Tom Poppendieck,

What is Value?

- Any activity or task is ***value-added if it*** transforms a new product design (or the essential deliverables needed to produce it) in such a way that the customer is both aware of it and willing to pay for it.
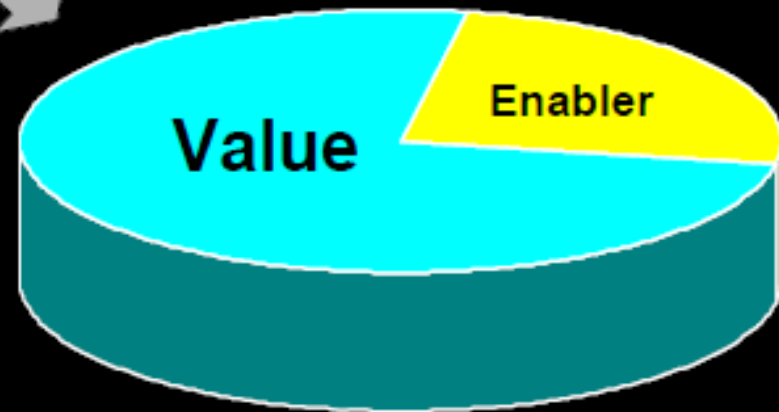
  » Ronald Mascitelli

Three Categories of Activities

Lean's goal
- **Eliminate waste**
- **Reduce effort spent on enablers**
- **Increase value**

Leads to:
- **Increased development capacity**
- **Shorter schedules**

Too Little or Too Much Leads to Waste

Too Little

❖ Missing important tasks or information
❖ Error-prone
❖ Causes confusion, delays, and wasted work

Too Much

❖ Includes non-value added information or tasks (aka Scrap)
❖ Have to filter out the noise
❖ Impedes efficiency, creativity, and innovation

Identifying Waste

- Review Value Stream
- The sequence of activities that create project deliverables
- What activities can be deleted? Streamlined? Beefed up?
- Where are the bottlenecks?
- Is there excessive wait-time?
- Ask your team They know!
- Can you justify each activity and deliverable?

Common Sources of Waste

- Too many projects
- Unnecessary requirements
- Random prioritization
- Inefficient meetings & status reporting
- Unrealistic schedules

- Unnecessary documentation
- Multi-tasking
- Interruptions
- Dysfunctional reviews
- Excessive wait-states
- Insufficient resources

What are common sources of waste on your projects?

Focus on the Bottlenecks

Know where your system's __bottlenecks__ are, and make all other decisions revolve around their limitations.

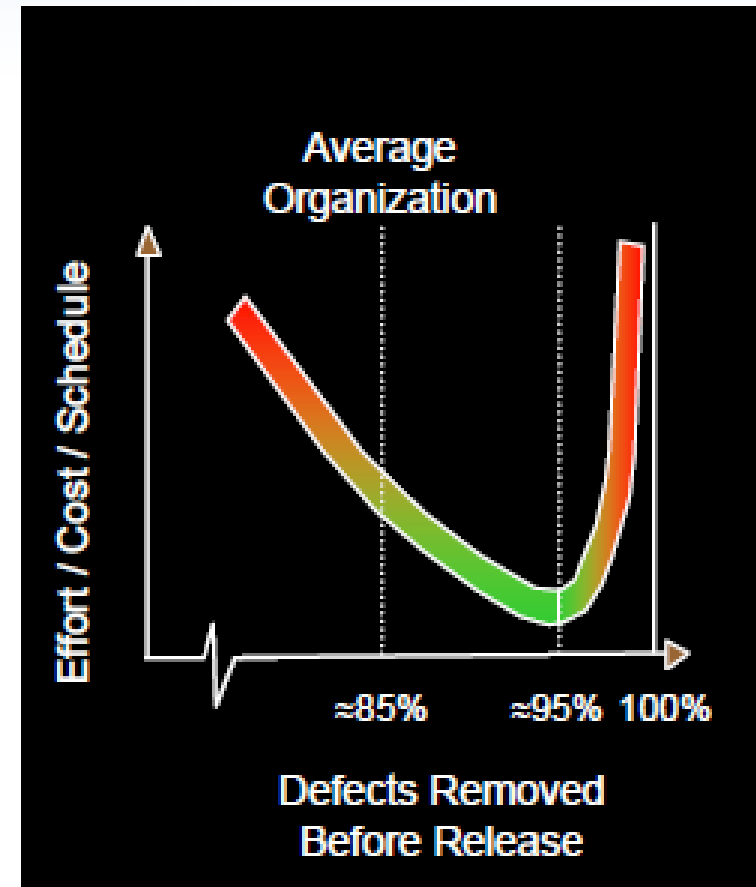*Eliyahu Goldratt,*
The Goal

Avoid non-value added work

- Every activity and deliverable (both what is done and how formally it is done) needs to do at least one of…
    - Help the project satisfy its charter
    - Help control a risk
    - Help maximize an asset
    - Otherwise, do it less formally or don't do it at all
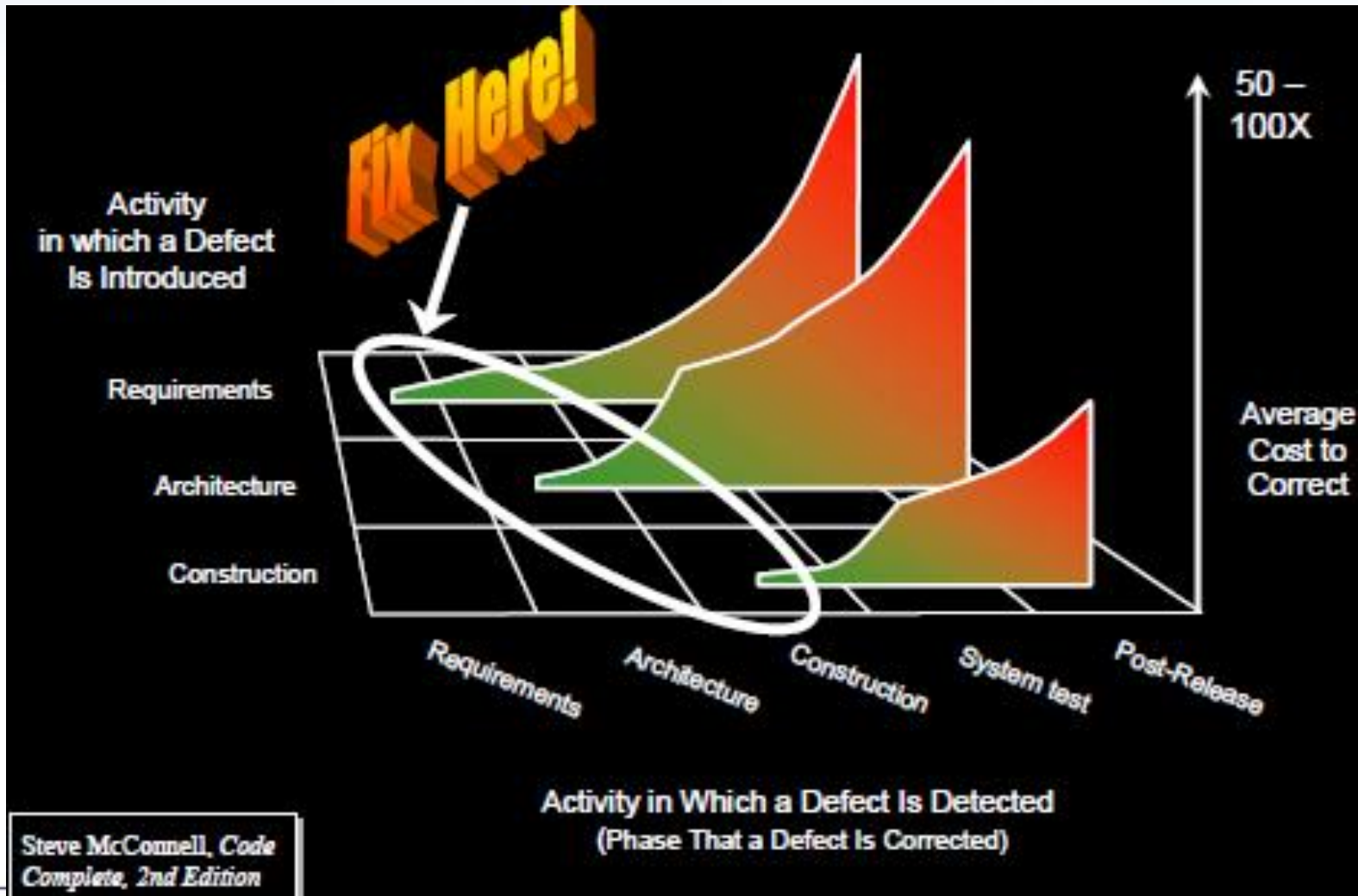
Build Integrity In
on a Plan-Driven Project

Quality as an Enabler

- Focus on quality reduces effort and shortens schedules
- 40-50% of the effort on typical Project is spent on avoidable rework
- Every hour of upstream review saves up to ten hours of downstream work

Average Organization

Effort / Cost / Schedule (y-axis) vs Defects Removed Before Release (x-axis), with markers ≈85%, ≈95%, 100%

Activity in which a Defect Is Introduced

Fix Here!

50 – 100X

Requirements

Architecture

Construction

Average Cost to Correct

Requirements · Architecture · Construction · System test · Post-Release

Activity in Which a Defect Is Detected
(Phase That a Defect Is Corrected)

Steve McConnell, *Code Complete, 2nd Edition*

Use a Combination of Techniques

- Prevention
  - Culture
  - Professional development
  - Toolbox
  - Checklists and templates
  - Audits
  - Quality gates
  - Team structure
  - Continuous process improvement

- Detection
  - Reviews
  - Testing
  - Simulations
  - Real Use
  - Automated
  - Mathematical

Amplify Learning
on a Plan-Driven Project

Interim Retrospectives

- Meet with the team to discuss successes and failures observed during the milestone
    - What did we originally think would happen?
    - What actually did happen?
    - Based on what we know today, if we were able to start over
        - What would we want to be sure to do different?
        - What would we want to be sure to do the same?
- Should the development process be changed for the next milestone?
    - Don't wait for an end-of-project retrospective

Leads to Continuous Improvement
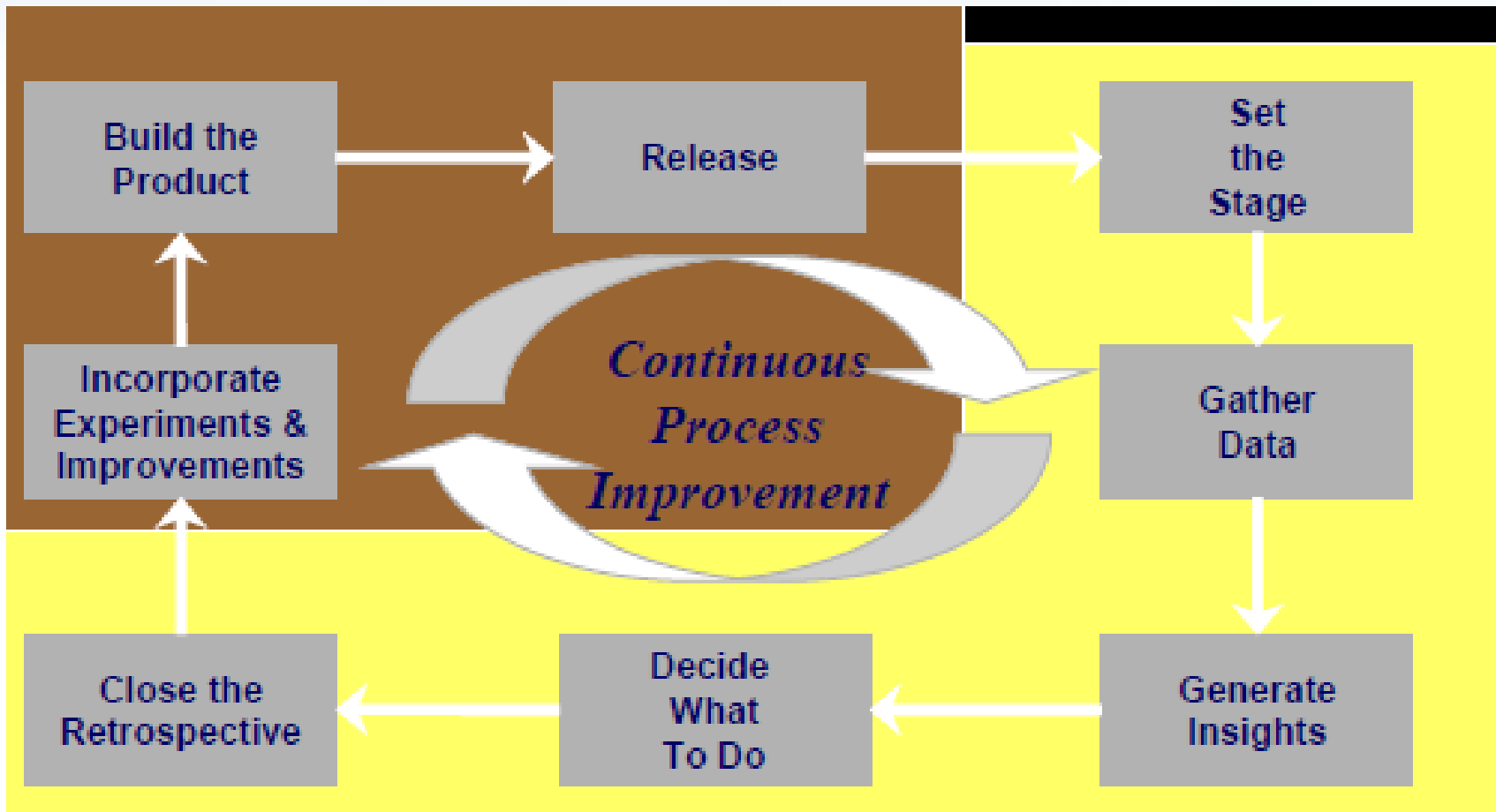
Adapted from: Esther Derby and Diana Larsen, *Agile Retrospectives*

Localize Responsibility
on a Plan-Driven Project

Empower teams

- Clearly defined roles, responsibilities, and authorities

- Push decision making as low as practical

Delay Commitment
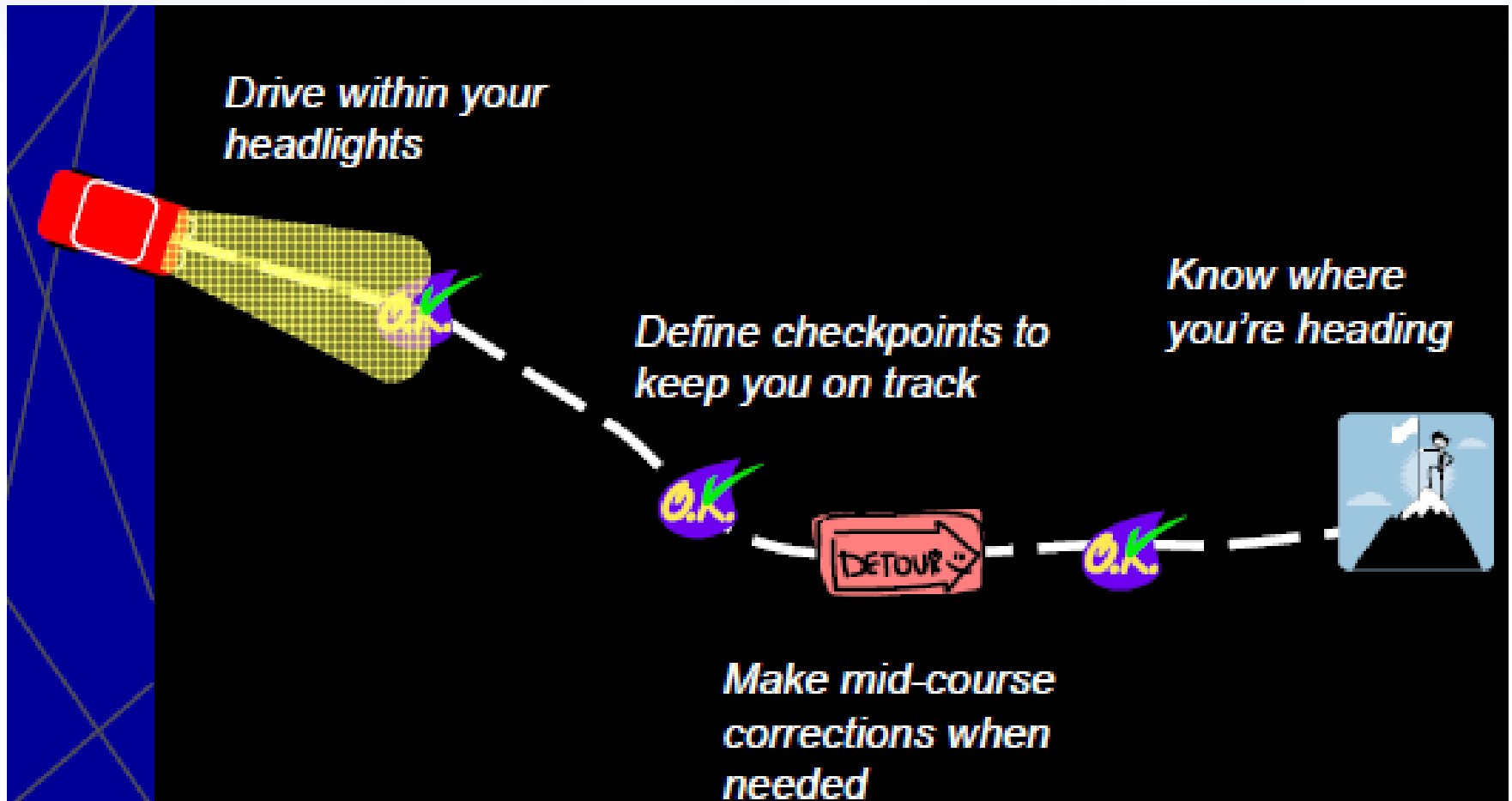## on a Plan-Driven Project

Delaying Techniques

- Focus on the process goals and intentions
  - What you need to do, not how
  - Make decisions based on coarser grained data
- Stage Freezing
  - Freeze the broad-level essentials early
  - Freeze the details later
- Last Responsible Moment
  - Ok not to know yet
  - But know when you got to know
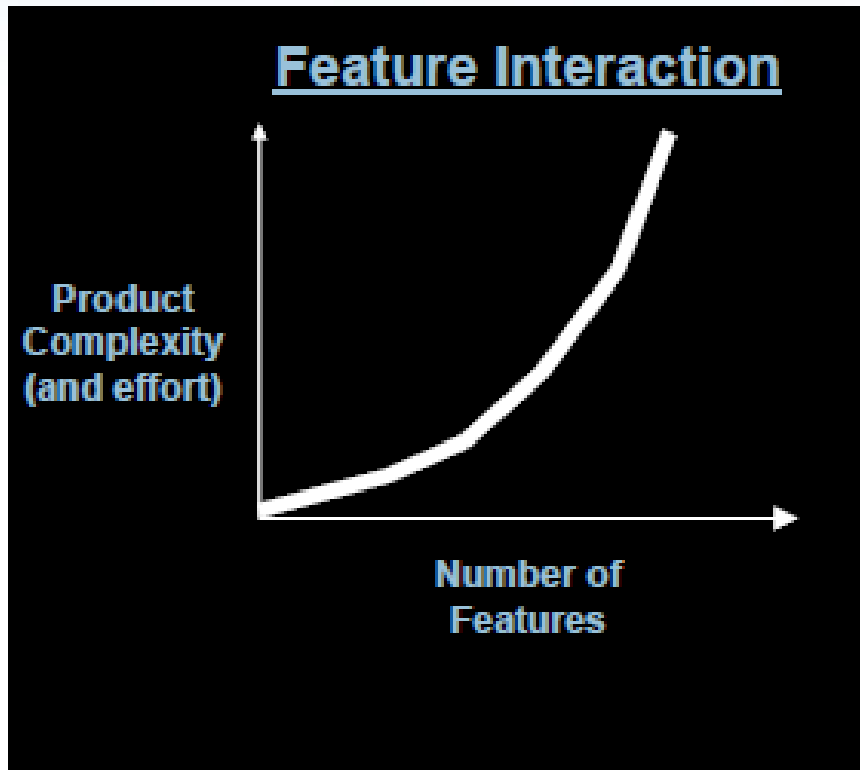
Rolling Wave Planning

A progressive detailing of the project plan by providing the details of the work to be done in the current project phase but also providing some <u>preliminary description</u> of work to be done in later project phases.

Gregory Githens,
Rolling Wave Planning

Rolling Wave Planning

Drive within your headlights

Define checkpoints to keep you on track

Know where you're heading

O.K.

DETOUR

O.K.

Make mid-course corrections when needed

Get to "NO" Quickly

Feature Interaction

Product Complexity (and effort) — Number of Features

- Complexity increases faster than the number of features
- Fewer features will
  - Be easier to build
  - Easier to test
  - Have less risk
- Scrub early and often
  - ~ 64% of features are rarely or never used *
  - Best case – Scrub non-value added projects before they even start!

The Standish Group, Extreme Chaos

Deliver Fast
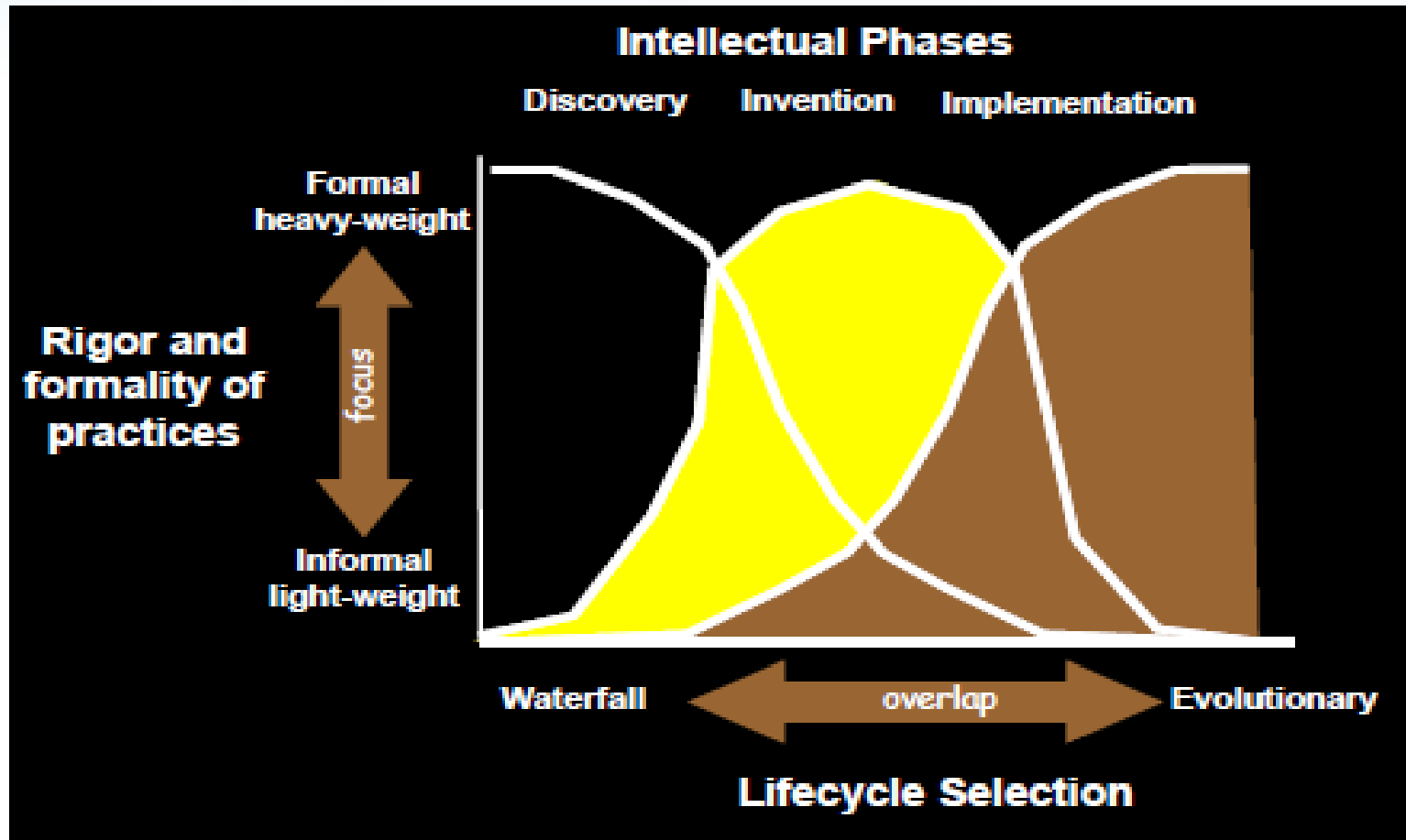# on a Plan-Driven Project

Frequent Releases

- Define releases to be no longer than 6 weeks in duration
  - OK to define interim releases that are not released outside development
  - Forces frequent convergence
  - Can be used for coarse level planning – allows you to handle fine-grain dependencies at team level
- Overall, a clear industry best practice, reduces numerous common risks—virtually always valuable

Optimize the Whole
on a Plan-Driven Project

Conscience Selection of Practices

Adjust rigor of practices

	Discovery	**Invention**	**Implementation**
Low Rigor	Requirements Spec Informal Requirements Reviews	Design Document Informal Design Reviews	System Testing Informal code reviews
High Rigor	Requirements Spec Requirements Inspections User Interface Prototype Use Cases Usability Studies Incremental Delivery More Senior Requirements Developers	Architecture and Detailed Design Docs Design Inspections Proof of Concept Prototypes Outside Reviewers Incremental Delivery More Senior Designers	Automated Testing Full Regression Testing System Testing Formal Code Inspections Use of a Standard Integration Procedure Daily Builds

Myth: Overhead is Waste
Reality: It's an Enabler
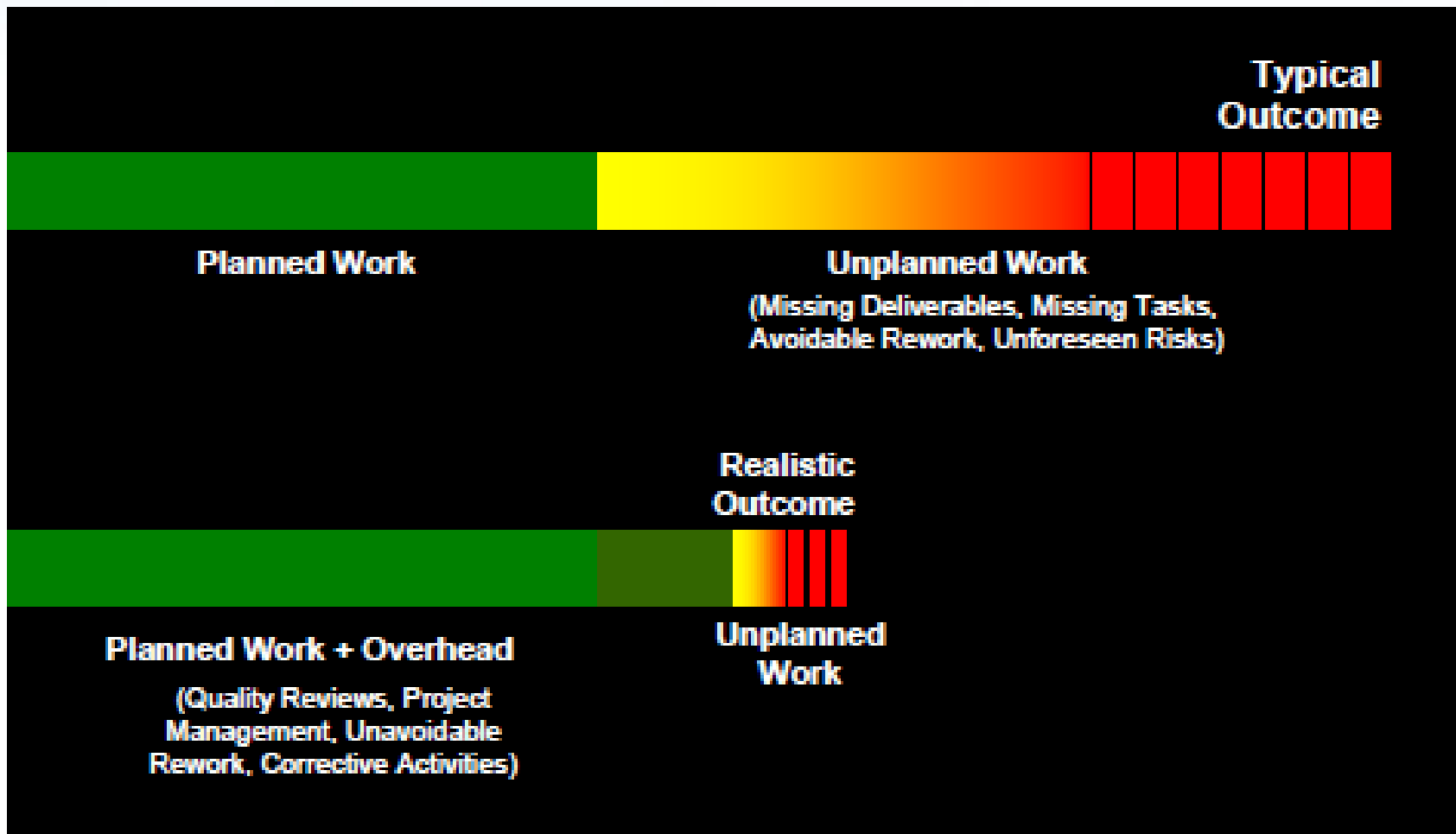
Summary

- Lean is a journey that should enjoy.

- Lean is not a fashion, and must be treated as such.

- Lean is an effort that starts with an individual wanting to improve processes and techniques in continuous commitment.

- Our teams have limited appeal we must constantly ensure that each activity is optimized to promote the value and eliminate waste.

Closing thoughts

Simple, clear purpose and principles give rise to complex intelligent behavior. Complex rules and regulations give rise to simple stupid behavior

Attributed to: Dee Hock,
Founder and former CEO Visa
Credit Card Association

Don't do something stupid just because it's written down.
Attributed to: Frank Marshall,

Former VP of Engineering, CISCO

Remember, things are not always what they seem

Q&A?

Thank you very much for your attention!

Back up

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