Understanding Agility.
The Perils and Pitfalls of Agile Transformations

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Reality Check!

At least half of all agile transformations fail.*

My Own History With Agile

October 2008 – Webroot. Objective: Boost productivity to achieve release date for new security suite.

Desired Complete Date: June 2009.

Projected Complete Date: September 2009.

Actual Complete Date: October 2010.

February 2012 – LogRhythm. Objective: New Indexer that is stable at scale.

At least two rounds of agile training focused on Scrum. I certified as a scrum master.

Went from 10% of developer time spent on support to almost 50% dealing with indexer issues.

Both organizations committed to agile. Neither got the results they were hoping for.

None of this was the fault of Agile processes or Scrum. Scrum was not done the wrong way. It was misapplied.

There is a disconnect between agility itself and agile processes like Scrum.

*Jeff Sutheralnd. Scrum Summit, India 2020.

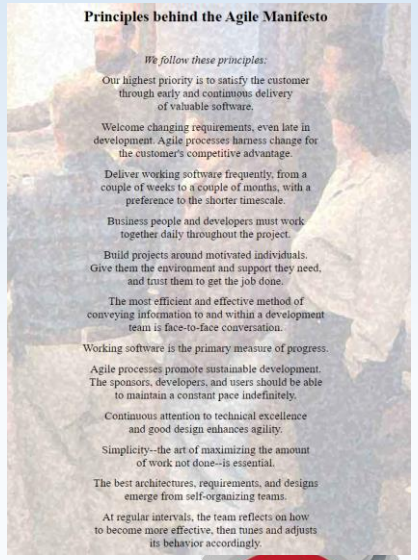
Objectives

Address the disconnect between agile itself and agile processes like scrum

- What does agility mean?
- How is it related to process?

Agenda

- Cargo cult agile and the limits of process.
- What agility is and how we might measure it.
- Process control and SCRUM.
- Tie SCRUM and Agile together.



Cargo Cults

During WWII the US military built air strips on remote pacific islands in order to supply troops for the Pacific war.

Some of the goods brought in would be given to the people who lived on the islands - people who had no knowledge of manufacturing, logistics, or transportation systems.

When the war, and the supply of goods, ended the islanders began to mimic the actions of the servicemen running the air strips in the hope that the planes, and their cargo, would return.

Cargo Cult: Mimicking the actions of a process without understanding the underlying reasons for them.

A More Recent Example: US Auto Manufacturers.

After years of losing market share to Japanese companies, American auto manufacturers tried to replicate Toyota's production system in the 1980s.

They replicated the processes easily enough but not the results. It took them a while to understand *why* Toyota's system worked.

The application of lean principles gave Toyota it's advantage, not the ceremonies it gave rise to in their production environment.

Cargo Cult Agile

Scrum is applied through inertia or simply imposed from on high.

Focusing on efficiency and productivity over effectiveness. Retrospectives focus on burn down charts, points completed, hours per task etc.

Commitments* become *contracts*. Not meeting commitments is treated as a failure on the part of the team rather than an opportunity to learn more.

Individuals concentrate on tasks relevant to them, not tasks relative to the team or the sprint goal.

Constant and continuous collaboration – one of the hallmarks of agile teams – doesn't happen. Teams are only the sum of their parts. Team members often talk to each other only at the daily standup.

The process itself becomes the end goal. The purpose for it is lost.

*The term Commitment was changed to Forecast in the 2020 Scrum guide to address this issue.

The Limits Of Process – You Can't Do It All With Scrum

Process Dependent

Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.

Welcome changing requirements, even late in development. Agile processes harness change for the customer's advantage.

Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.

Business people and developers must work together daily throughout the project.

Agile promotes sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.

Simplicity--the art of maximizing the amount of work not done--is essential.

At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

Process Independent

Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.

The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.

Working software is the primary measure of progress.

Continuous attention to technical excellence and good design enhances agility.

The best architectures, requirements, and designs emerge from self-organizing teams.

Process is necessary for agility but *not* sufficient.

What Is Agility?

"You keep using that word. I do not think it means what you think it means."

agile: adjective
relating to or denoting a method of project management, used especially for software development, that is characterized by the division of tasks into short phases of work and frequent reassessment and adaptation of plans.

Any process, even waterfall, can be squeezed into a short time frame and iterated. A linear development cycle can be planned in short increments with a status check at the end of each.

What's special about agile processes?

Traditional Methods*:* Heavy emphasis on requirements gathering and design. It costs more to make changes later in the project lifetime, than it does in the earlier phases.

Problem*:* No matter what we did, requirements still changed when users got their hands on it.

Agile methodologies were developed, in part, to address this and keep the cost of change constant throughout the project lifetime.

Measuring Agility

agile: adjective

able to move quickly and easily; nimble

The easier it is to change, the more agility you have, so...

$$\textbf{Agility} = \frac{1}{\textbf{Cost Of Change}}$$

Measuring relies on waiting for change to occur, but still better than not measuring.

Cost of Change influenced by **Pivot Time** and **Effectiveness**.

This definition is preferred because…

- ✓ Able to assess the utility of various processes (Scrum, XP, Lean, Kanban, RAD ...)
- ✓ Can track the impact of process changes
- ✓ Can gauge the ROI of adopting a given process (training etc.)

Standups, retrospectives, reviews and backlog refinement will eat up at least 10% of a two week iteration using Scrum. It is important to have a measure of agility *independent of process* to justify that overhead.

The Beginning Of Process Control

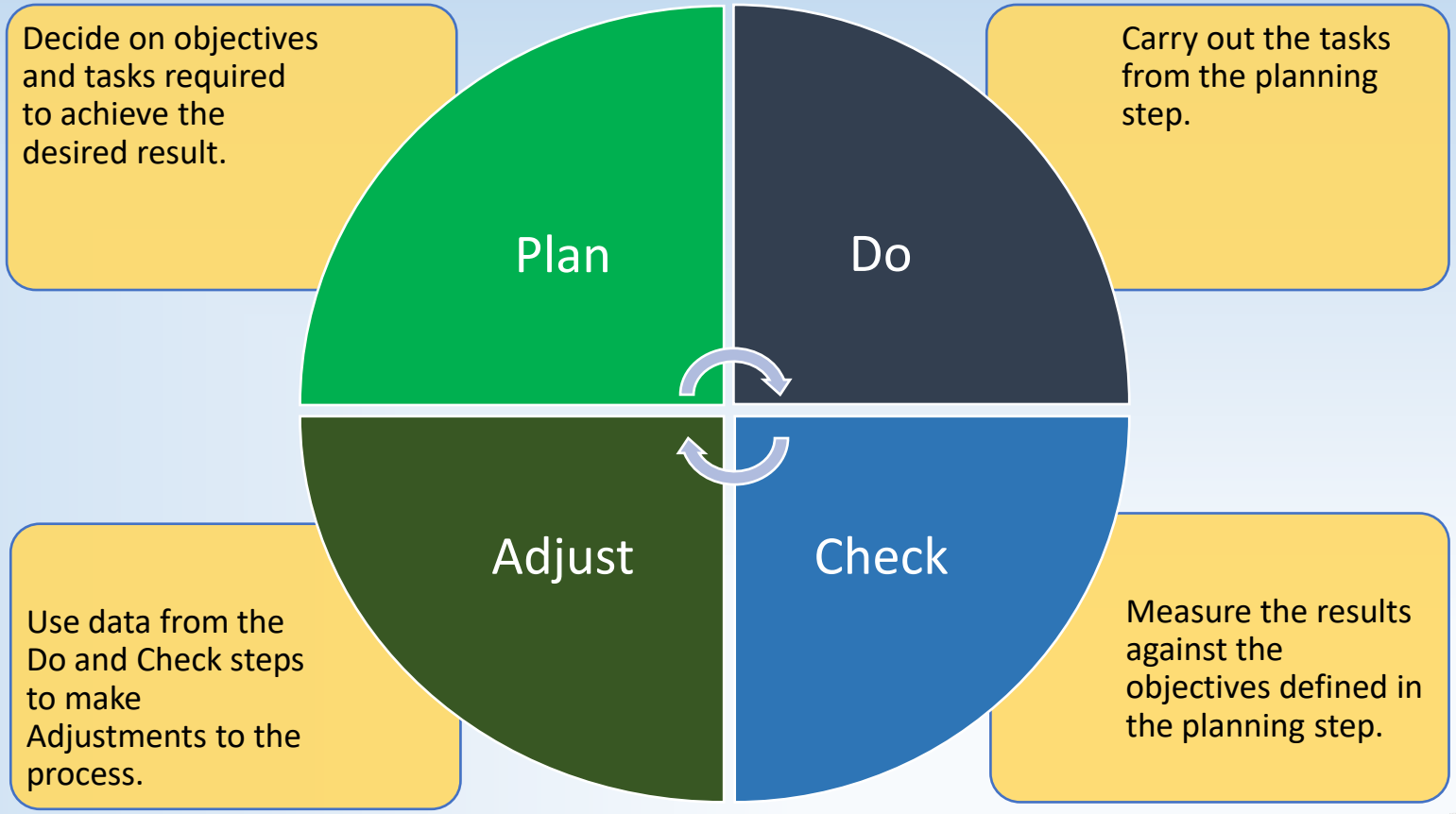
Walter Shewhart

Studied Engineering & Statistics.

Joins Western Electric in 1918. Quality consisted only of inspecting finished product.

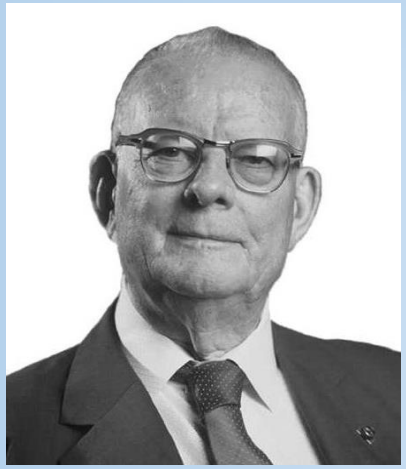
Pioneered *Process* Quality Control beginning in 1924.

Shewhart developed an adaptive process, called the PDCA Cycle, to improve quality at each stage of production.



The Ultimate Goal: Consistent process outputs over each iteration of the cycle.

From Product Manufacturing To Product Development



W. Edwards Deming

Deming meets Shewhart while interning at Western Electric's Hawthorn factory in 1925 and learns about the PDCA cycle.

After WWII Deming is invited to speak to Japanese business leaders about management techniques.

He introduces them to Shewhart's PDCA cycle. Japanese manufacturers quickly learn that quality improvements reduce waste. All of their inputs go into outputs that can be sold since fewer units are returned due to low quality.

Since Japan must import all of it's natural resources, higher quality becomes key to their competitiveness.

Hirotaka Takeuchi and Ikujiro Nonaka

1986. *The New Product Development Game* is published.

They extend iterative processes to design and development.

Teams are not specialized. Instead they are multidisciplinary.

Product development stages, such as feasibility, design, and prototyping overlap since the team as a whole is capable of carrying any one of them out.

The whole team moves product through all the development phases similar to a scrum moving a ball down the field in rugby.

Traditional Product Development Game

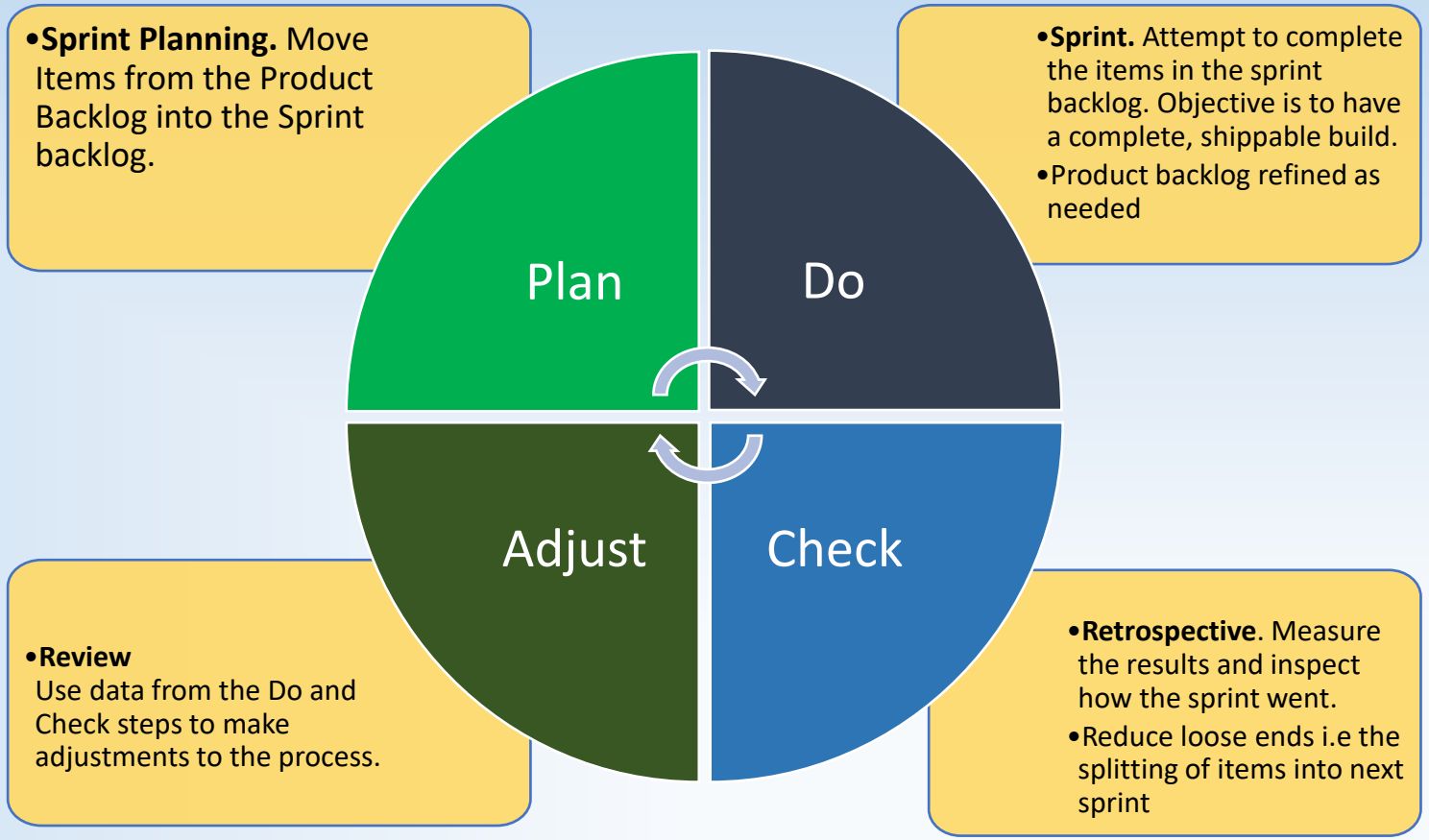
New Product Development Game

The Scrum Process

Jeff Sutherland &
Ken Schwaber

Iterative approach to software development called the Scrum Process.

Software developed in fixed increments called sprints.



The Ultimate Goal: Zero sprint pivot time.

The Scrum Purpose

Scrum is *not* going to increase productivity. There are ways to increase developer productivity, but process isn't one of them.

Scrum uses Shewhart's PDCA cycle to reduce *time* wasted by focusing the organization on adding value with every increment.

Scrum reduces the cost of change cost of change via the following features:

> **Sprint Retrospective** -> Decrease Pivot Time. No partially done items to carry over so easy to switch to different features.
>
> **Sprint Review, Backlog Refining** -> Evaluate effectiveness and update plans and product backlog with the goal of maximizing the value added in the *next* sprint.

Scrum is the process that keeps development teams focused on items that add the *most value* in each sprint and that customers will hopefully pay for!

Before You Invest In Agile & Scrum….

Make sure you actually need it and that you really do need to improve your agility.

- If you need to boost productivity, adjusting your process won't help you*.
- If you only need reliable scheduling then a different process, with less overhead, may be more suitable.
- You can use agile methods with any project but they may not bring benefits in all cases.

Develop a way to measure your Cost Of Change *before* the first change occurs.

- Start with pivot time first – that should be relatively straightforward.
- Effectiveness is harder and more dependent on organizational structure and external factors like the nature of your customers businesses.

Have a plan to assess the value added with each sprint.

- Velocity cannot be used as a proxy for value added until sizing and backlog organization are sufficiently refined.

*See coding wars studies by DeMarco and Lister.

Scrum Is What You Do. Agile Is What You Are.

```
type
  TInverseCost = Double;
  TDevelopementOrg = class
  private
    FAgility: TInverseCost;
  public
    procedure DoScrum(SprintCount: Integer);
    property Agility: TInverseCost read FAgility;
  end;
```

Further Reading

Peopleware. Productive Projects And Teams – 3rd Edition by Tom DeMarco & Timothy Lister. Addison-Wesley Professional.

The other 40% of agility starts here.

The Scrum Guide (https://scrumguides.org/index.html) by Jeff Sutherland & Ken Schwaber. (Latest Edition: 2020).

The New Economics For Industry, Government, Education – 2nd Edition by W. Edwards Deming. MIT Press.

Management theory and system of total knowledge. Quality must be the responsibility of the entire organization. So must agility.

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