DrupalCon

SEATTLE 2019

APRIL 8-12

改善 Kaizen! How to Convert Team Failures into Victories

Amin Astaneh, DrupalCon Seattle

About Me

- Employee of Acquia since Dec 2010
- Served in Cloud Operations for 5 Years
- Built and Lead Site Reliability Engineering
- Starting a Performance Engineering Team

FAILURE

Shame

Disappointment

FAILURE

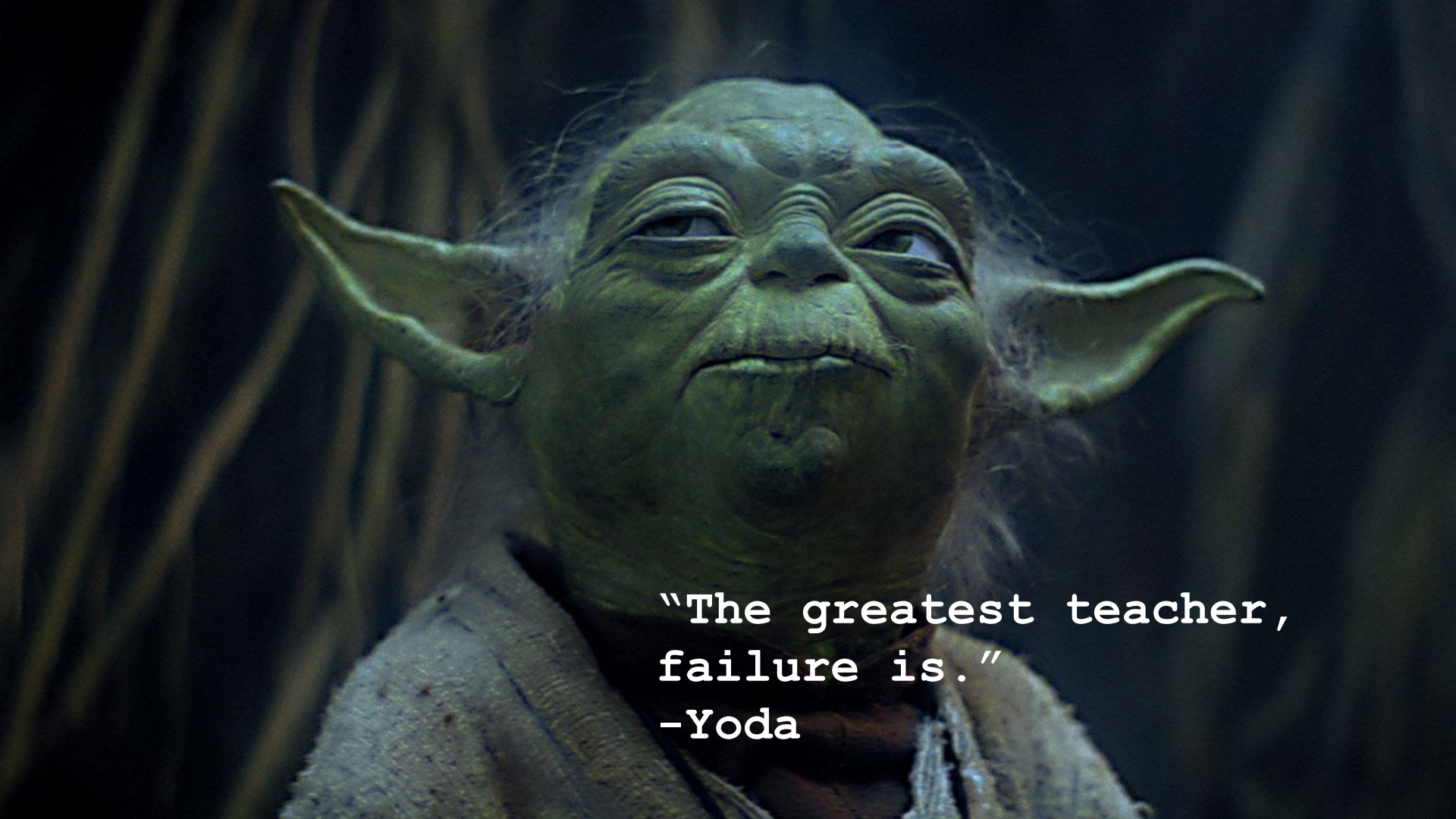
Fear of blame or judgement

Embarrassment

Guilt

FAILURE

OPPORTUNITY


“The greatest teacher,
failure is.”
-Yoda

改善

改善

(kaizen)

改善

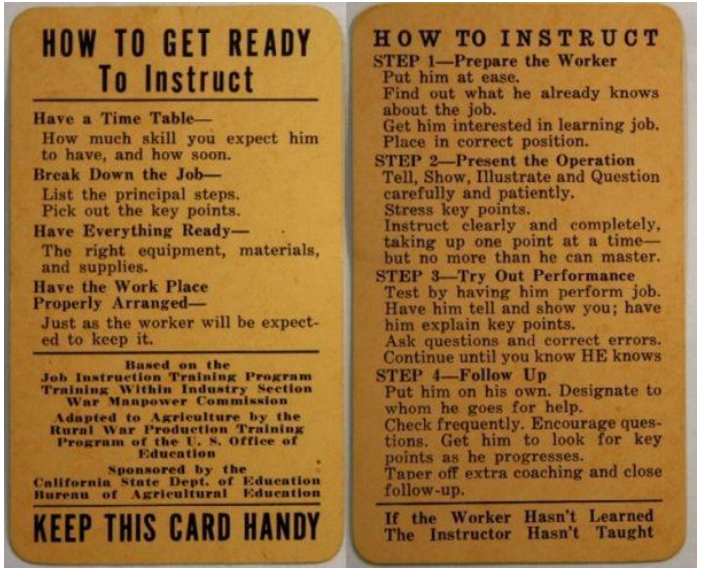
(change) (good)

Primary Characteristics of Kaizen

- **Continuous improvement** of all functions of a team/department/business
- Universally applicable- from the CEO to line employees
- Emphasis on **small** improvements that can be implemented immediately and monitored for results via the scientific method
- Eliminates waste and inefficiency in processes
- Humanizes employees

改善

TWI
Training Within Industry



HOW TO GET READY To Instruct

Have a Time Table—
How much skill you expect him to have, and how soon.

Break Down the Job—
List the principal steps.
Pick out the key points.

Have Everything Ready—
The right equipment, materials, and supplies.

Have the Work Place Properly Arranged—
Just as the worker will be expected to keep it.

Based on the Job Instruction Training Program Training Within Industry Section War Manpower Commission

Adapted to Agriculture by the Rural War Production Training Program of the U. S. Office of Education

Sponsored by the California State Dept. of Education Bureau of Agricultural Education

KEEP THIS CARD HANDY

HOW TO INSTRUCT

STEP 1—Prepare the Worker
Put him at ease.
Find out what he already knows about the job.
Get him interested in learning job.
Place in correct position.

STEP 2—Present the Operation
Tell, Show, Illustrate and Question carefully and patiently.
Stress key points.
Instruct clearly and completely, taking up one point at a time—but no more than he can master.

STEP 3—Try Out Performance
Test by having him perform job.
Have him tell and show you; have him explain key points.
Ask questions and correct errors.
Continue until you know HE knows

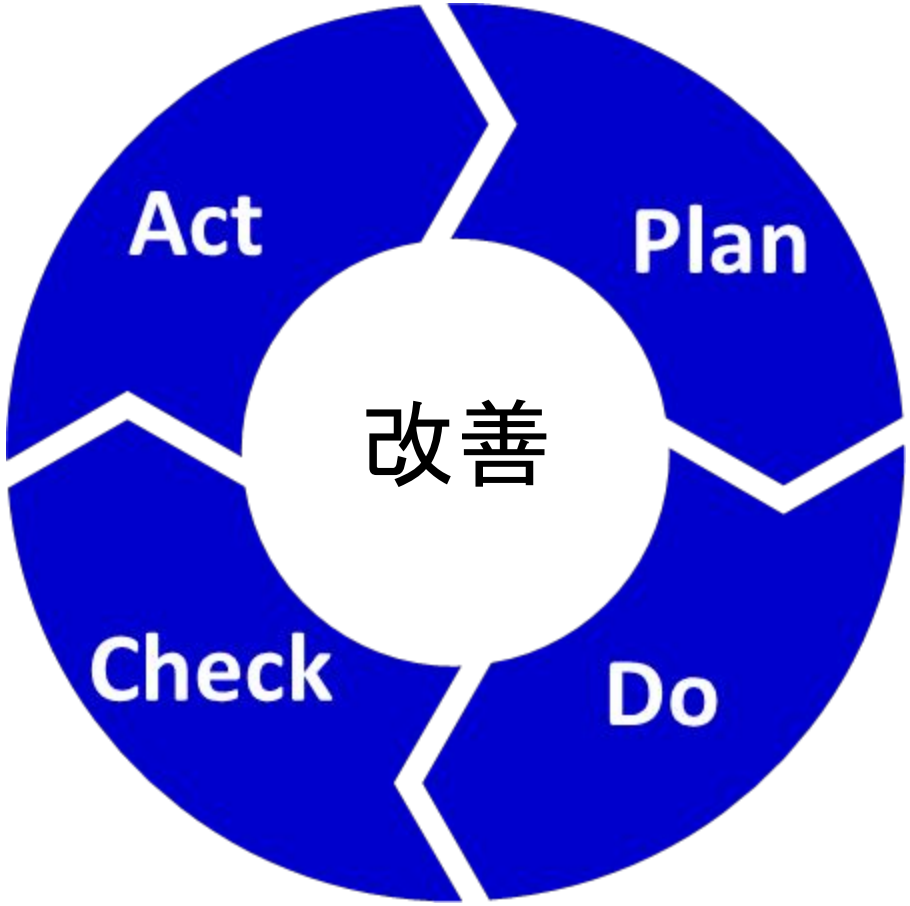
STEP 4—Follow Up
Put him on his own. Designate to whom he goes for help.
Check frequently. Encourage questions. Get him to look for key points as he progresses.
Taper off extra coaching and close follow-up.

If the Worker Hasn't Learned The Instructor Hasn't Taught

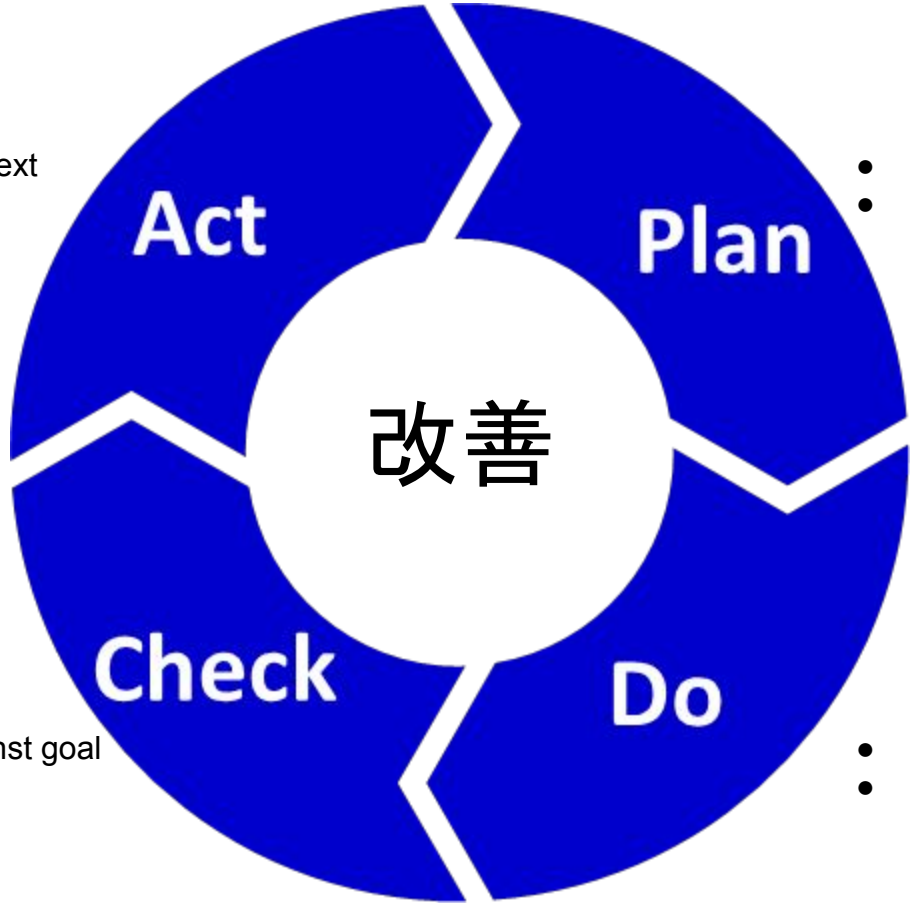
“Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.”

- W. Edwards Deming


TOYOTA


Act
Plan
改善
Check
Do

- Identify new issues for next cycle
- Accept/reject process
- Adjust goal



- Define a goal
- Define process to meet the goal

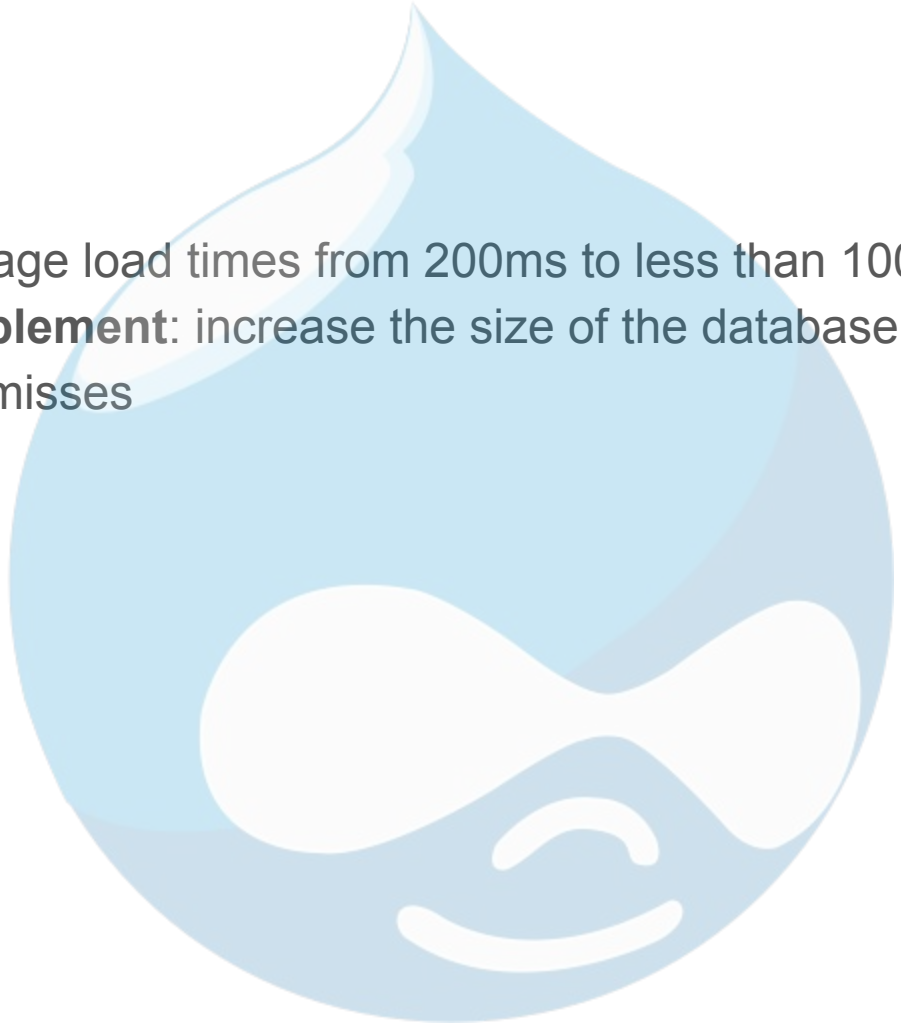
- Compare data against goal conditions

- Execute the plan
- Gather metrics

Example Scenario: Drupal Site Performance

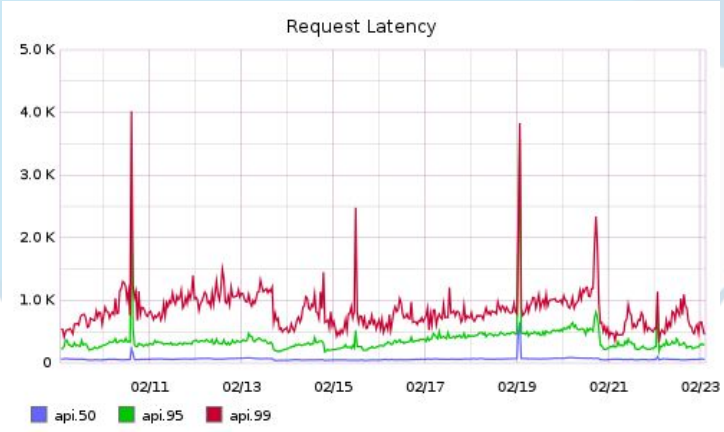
Plan

- **Goal**: reduce page load times from 200ms to less than 100ms on average.
- **Process to Implement**: increase the size of the database server to eliminate InnoDB cache misses



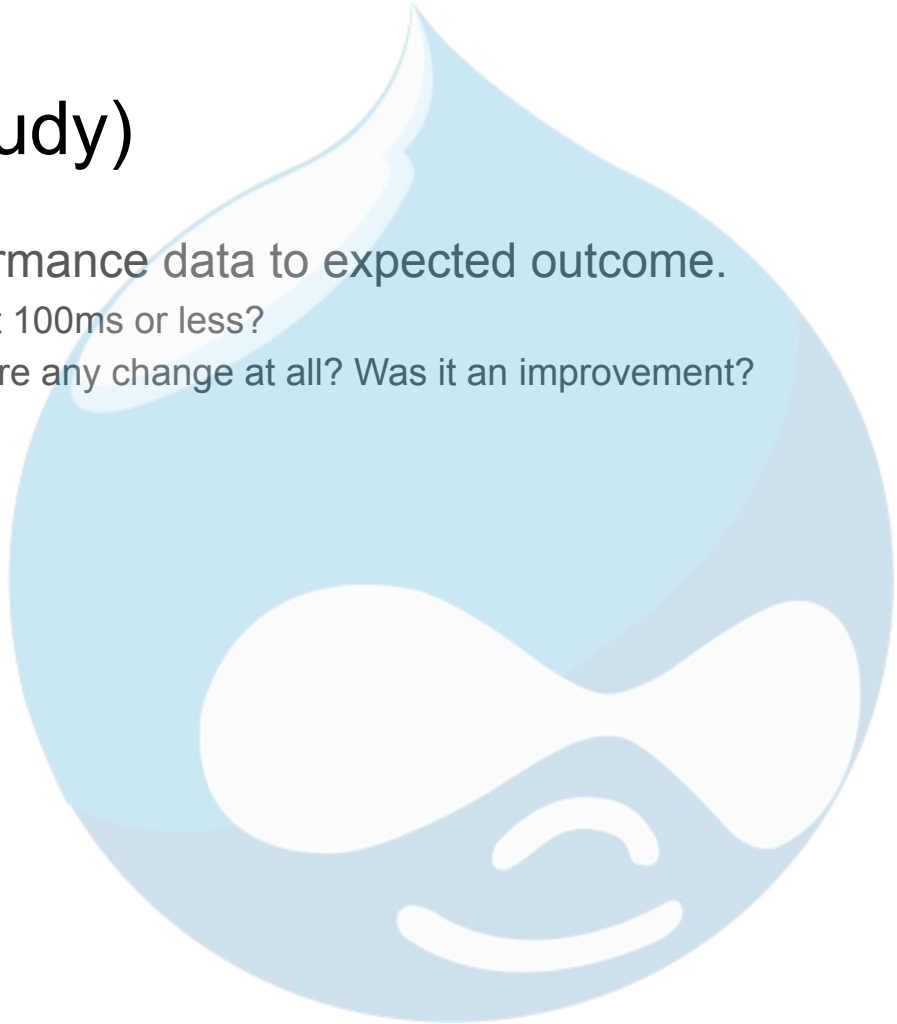
Do

- Perform a scheduled change to increase the size of the DB server
- Gather data (measure page load times). **Do you have monitoring in place?**



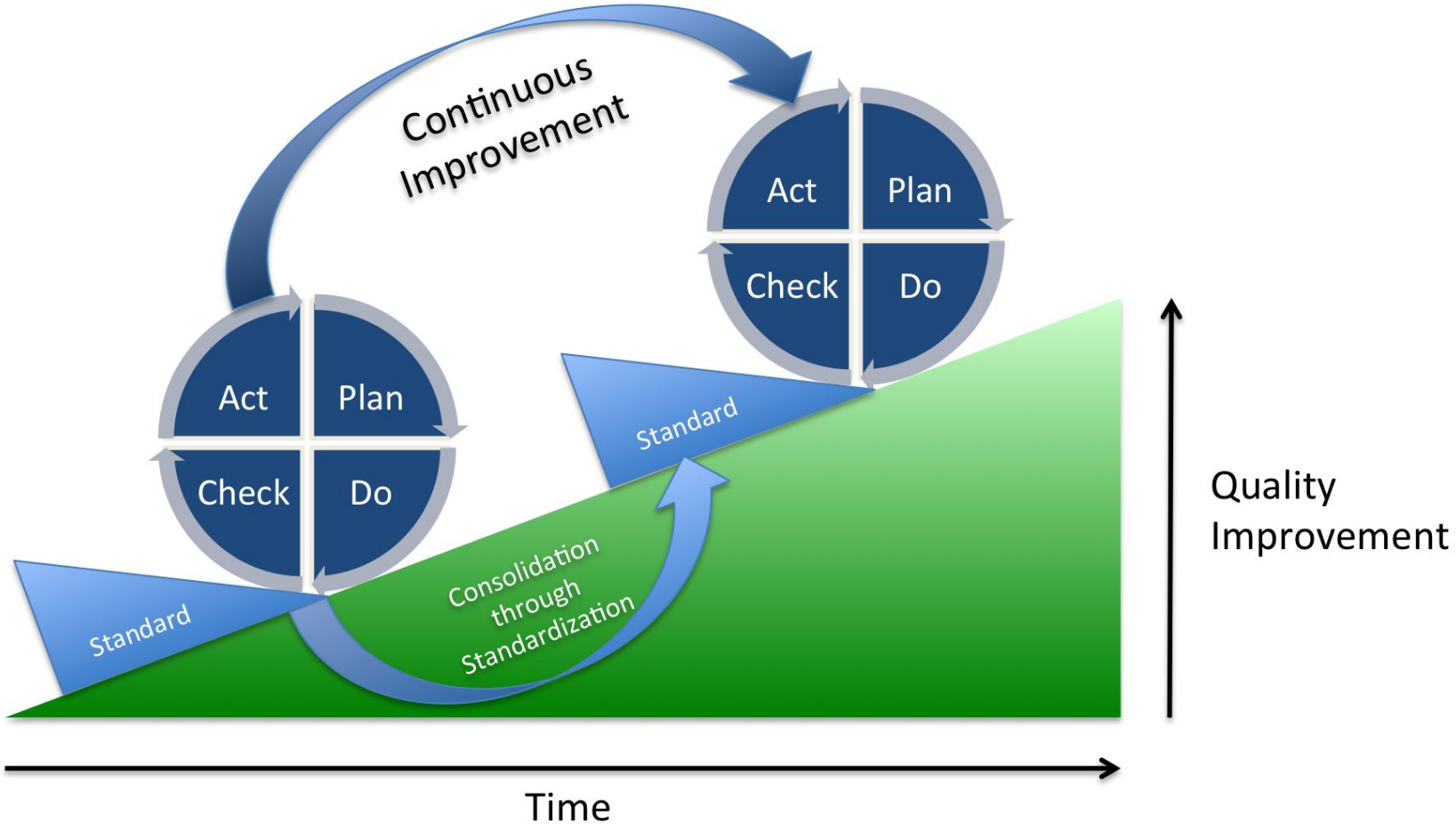
Check (or Study)

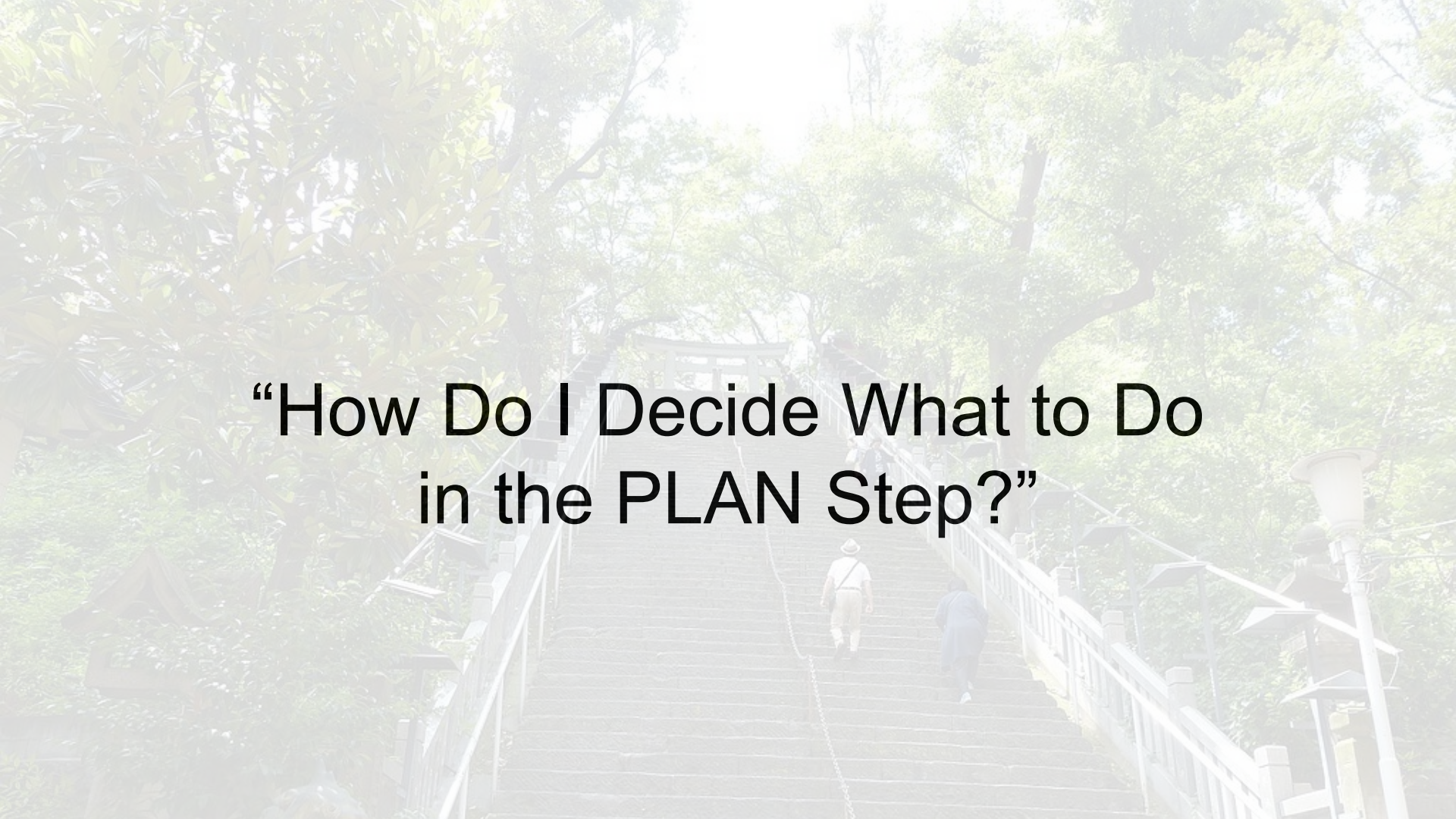
- Compare performance data to expected outcome.
  - Are we now at 100ms or less?
  - If not, was there any change at all? Was it an improvement?



Act

- Let's say that we're now at 150ms on average.
- We decide that we will keep the larger database server as our new 'baseline', as it did provide a performance improvement.
- We also decide to create a new Plan to continue towards the 100ms goal (install and configure a CDN)


Continuous Improvement
Act
Plan
Check
Do
Act
Plan
Check
Do
Standard
Standard
Consolidation through Standardization
Quality Improvement
Time



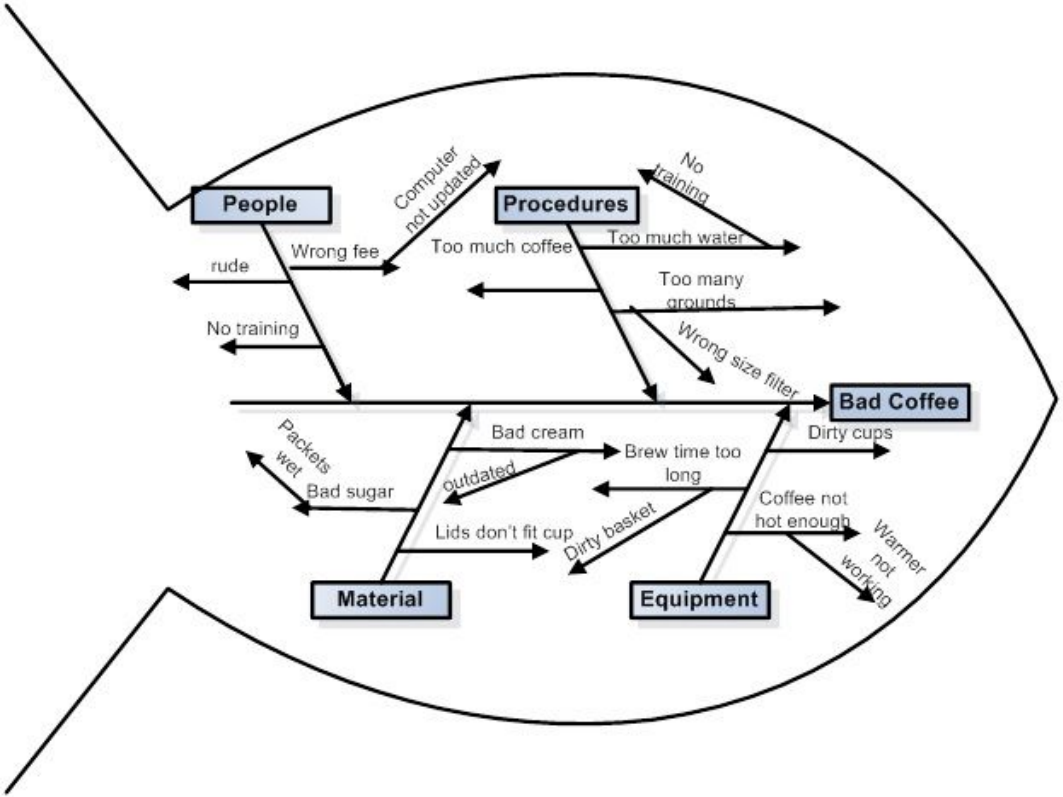
“How Do I Decide What to Do in the PLAN Step?”

Causal Analysis
“Why Things Happen”

The Basics: The 5 Whys

- **Why** did the site go down?
- All of the PHP processes were in use and web requests queued up. **Why**?
- We ran `drush cc all` to clear caches on the site and requests stampeded the backend. **Why**?
- We needed to make new content immediately available and the purge module was not yet installed/configured to selectively purge the affected paths. **Why?**
- We didn’t prioritize the installation and configuration of the purge module. **Why?**
- An approaching deadline for a new feature delayed the relative priority of installing/configuring the purge module.

Ishikawa (Fishbone) Diagram



Some Guidelines

- Remember that such analysis should inspire **learning**, not blame.
- Focus on process and technology, **not people**.
- There can be multiple ‘root causes’ for a failure.
- ‘Why?’ may not be the right question, but ‘How?’. https://www.oreilly.com/ideas/the-infinite-hows

PDCA enables cycles of experimentation, so if a change doesn’t work, simply revert and try something else in the next Plan step.

How to Introduce Kaizen to Your Team or Process

Sprint Retrospectives

- Kaizen is built into SCRUM!
  https://www.scrum.org/resources/what-is-a-sprint-retrospective
- Identify what didn't go well in the sprint
- Discuss contributing factors/root causes
- File kaizen stories into the team backlog
- **Prioritize at least one next sprint!**

Scrum.org

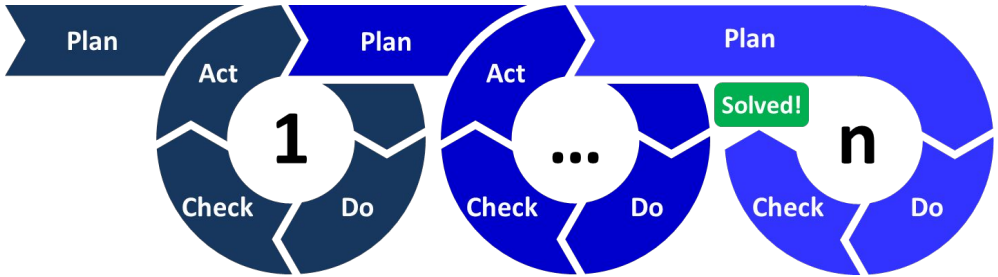
The Home of Scrum

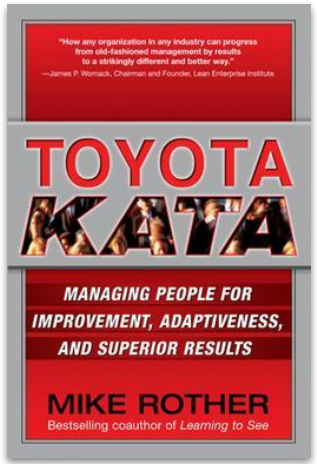
Blameless Post Mortems

- Performed after a production incident (outage)
  - Put together a timeline of the event
  - Use causal analysis to identify root cause(s)
  - Identify what went well, what didn't go well, and what was circumstantial about the incident response effort
  - File kaizen stories to address every issue found
  - Prioritize kaizen stories based on risk (severity x likelihood)
- **Again, process and technology, not people**
- Review post mortems periodically to create culture of learning
- Example: https://landing.google.com/sre/sre-book/chapters/postmortem/

Target Conditions

- In addressing a primary organizational challenge, a **target condition** describes a desired set of circumstances(metrics) for a team to achieve with a completion date *which lies beyond current knowledge of how to achieve it*.
- Example: **Reduce our test runtime by 50% in 90 days without increasing rate of defects to production.**





Andon/Jidoka

- **How stopping work boosts productivity**
- Allowing your employees to stop a process when a problem is found, *and thanking them for doing so*
- Process:
  - Detect the abnormality.
  - Stop.
  - Fix or correct the immediate condition.
  - Investigate the root cause and install a countermeasure. (Kaizen)
- ‘Autonomation’ is automation with this principle in mind.
- Example: CI/CD stoppage due to test failures (‘breaking the build’)


"Always pass on
what you have learned."

Thank You!

Amin Astaneh
Senior Manager, SRE and Performance Engineering
Acquia Inc.
@aastaneh

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