Darcy DeClute's Scrum Master CERTIFICATION GUIDE

The Definitive Resource

@scrumtuous

SCAN ME

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Chapter 2: Scrum Theory

Scrum boasts of being built around the concepts of 'empiricism and lean thinking.'

The subject of 'empiricism' is one of the 13 groups into which questions on the Scrum Master certification exam are categorized, so pay special attention to the concept.

> Scrum is founded on empiricism and lean thinking.
>
> Empiricism asserts that knowledge comes from experience and making decisions based on what is observed.
>
> Lean thinking reduces waste and focuses on the essentials.
>
> — 2020 Scrum Guide page 3

Rationalists vs Empiricists

Rationalists say knowledge is best derived through reason, logic and deduction. Mathematics is a very *rational* pursuit.

Empiricists say evidence acquired through experience and experimentation is a better way to solve a puzzling problem.

Pragmatists sit somewhere in the middle and can't make up their mind as to which approach is better.

I actually consider myself a bit of a pragmatist, but when it comes to solving complex problems, Scrum wants nothing to do with wish-washy pragmatism. :)

Scrum is founded upon the concepts of *empiricism* and *lean thinking*.

In the context of Scrum, empiricism means understanding the situation you are in based on knowledge, experimentation, experience, and verifiable facts.

Empiricism also ties in tightly with the Scrum Pillars of transparency, inspection, and adaptation. That is, if you can see exactly what is happening (transparency), you can honestly assess your progress (inspection) and based on this real knowledge, you can adapt.

Empirical analysis of your current situation is always a more effective way to approach a complex problem than following a plan written up six months ago, or making decisions based on trendlines on a historical chart.

Empirical Example

Here's a simple example of empiricism to drive the concept home for you.

Imagine you wanted to know how long it would take for a hockey puck to fall to the ground when dropped from the top of Toronto's CN Tower.

One approach would be to grab a pen and paper, look up the height of the CN Tower, grab Newton's equation for gravity, factor in wind resistance and use the power of math to determine a result.

That's a good approach, but it's very rational. It's not at all empirical.

Scrum Teams place the greatest amount of value on empirical results.

To answer this question, a Scrum Team would have their developers each channel their inner *Spiderman* and climb to the top of the CN Tower with a bag of pucks.

They'd drop the pucks from the tippy top and use a timer to see how long it takes for the black, vulcanized rubber to hit the ground.

The developers would then analyze the results of their experiment and come up with a result that was based on what they observed. Making decisions based on what you observe through your six senses is what empiricism is all about.

In Scrum, we want to base our decisions on empirical observations. That's not to say Scrum developers aren't rational or pragmatic.

In fact, taking a pragmatic approach to many question on the Scrum Master exam will help you get closer to achieving a perfect score on the test. But when given the choice to base an important decision based on rational, pragmatic or empirical analysis, Scrum wants you to prioritize empiricism every time.

Lean Thinking

Lean thinking is also a pivotally important *concept* to master if you want to pass any Scrum exam. You don't have to be an expert on *lean manufacturing* practices, but you do have to master the art of *lean thinking*.

The idea of lean thinking comes from productivity enhancements Toyota discovered in the 1950s and 60s. Obviously Toyota was building cars, but the lessons of lean thinking are universal to all product development domains.

Key concepts of lean manufacturing that manifest themselves in the Scrum framework include:

- The idea that all unnecessary steps in a process should be eliminated
- The belief that all work should be tied tightly to a specific outcome or goal
- The insistence that products should not be over-engineered with unnecessary features
- The need for a direct connection with the customer or stakeholder
- The insistence that teams have strong leaders whose priority is to serve their team
- The desire for workers not to be left idle during the production process
- The fact that improvements should be made in accordance with empirical observations

Empiricism and Lean Thinking

Just looking at this list of lean concepts you can see how:

- The Scrum Master role maps to the lean demand that teams have strong leaders
- The Sprint and Product Goals map to the idea that work should be tied to a specific outcome
- Scrum's Sprint Review embraces the ideas of maintaining a tight connection with the stakeholder

Avoid waste and embrace minimalist thinking when you're working on a Scrum project. That's *lean thinking*.

You are guaranteed to get five or six questions about empiricism and lean thinking on the Scrum Master certification exam. They are easy marks if you just understand what 'empiricism' and 'lean thinking' means.

Test Yourself

Scrum theory emphasizes empiricism. That means a decision made by Scrum teams:
(Choose 3)

- ▢ A) Should be based on factual evidence
- ▢ B) Should be based on intelligent assumptions
- ▢ C) Should be based on verifiable observations
- ▢ D) Should be driven by pragmatic speculation
- ▢ E) Should be based on experience

Options A, C, and E are correct.

Empiricism is all about using your experience, your gained knowledge, and verifiable observations (which is sorta the same as 'experience') to make decisions.

Concepts like 'speculation' and 'assumptions' run counter to the concept of empiricism, even if the speculation and assumptions are pragmatic and intelligent.

> "In empiricism, knowledge is spoken of as a posteriori, or "from the latter," meaning gained from experience. Simply put, empiricism is the idea that all learning comes from only experience and observations.
>
> The term empiricism comes from the Greek word for experience: empeiria. The theory of empiricism attempts to explain how human beings acquire knowledge and improve their conceptual understanding of the world."
>
> — TechTarget WhatIs Definition, Empiricism

Test Yourself

Which of the following are characteristics of lean thinking?
(Choose 2)

- ▢ A) A focus on waste reduction and efficiency
- ▢ B) A command and control approach to problem-solving
- ▢ C) A minimalist approach that removes unnecessary steps
- ▢ D) A methodology made up of individualized, compartmental steps that flow into each other.

In this case, A and C are correct.

Efficiency, waste reduction, and the elimination of unnecessary steps within a process are all hallmarks of lean thinking.

The 'Command and Control' approach that the military takes is the opposite of the collaborative, lean approach Scrum takes to decision making, so option B is incorrect.

The last option describes the Waterfall methodology, which is the antithesis of the Scrum framework.

Empiricism and lean thinking lay the foundation for the Scrum Framework. Be comfortable with these two terms and understand their basic meaning to score a few easy marks on the Scrum Master certification exam.

Predictability and Risk

> Scrum employs an iterative, incremental approach to optimize predictability and control risk.
>
> — 2020 Scrum Guide page 3

This one sentence is a lot to unpack.

Scrum is iterative because it describes a set of steps that get repeated over and over again. The iterative sequence of steps as outlined in the first section of the Scrum Guide are:

1. A Product Owner orders the work for a complex problem into a Product Backlog.
2. The Scrum Team turns a selection of the work into an Increment of value during a Sprint.
3. The Scrum Team and its stakeholders inspect the results and adjust for the next Sprint.
4. Repeat

You just keep repeating this sequence of steps ad infinitum until you either run out of Product Backlog items to work on or the project comes to an end.

The Incremental Nature of Scrum

Scrum is incremental.

> "The Scrum Team turns a selection of the work into an Increment of value during a Sprint."
>
> — 2020 Scrum Guide page 3

The idea of Scrum being incremental means that small victories, small units of value, and small pieces of the final product get created and added together slowly over time until the product is finished.

Piece by piece, through the delivery of value added upon value, the product gets built. That's the incremental process.

By getting these small increments into the hands of stakeholders, and getting immediate feedback from which the Scrum Team can adapt, Scrum reduces risk and allows developers to better service the needs of their clients.

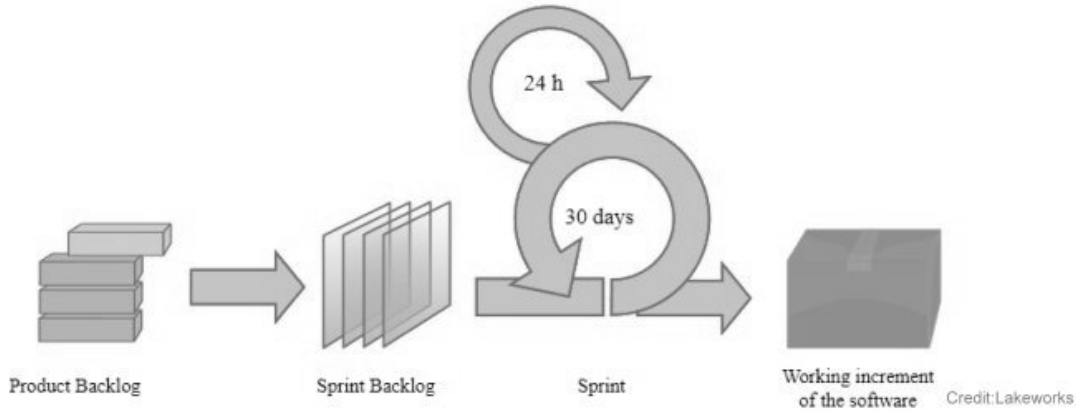

Figure 1. Scrum builds products incrementally through a set of steps that are iteratively repeated throughout the product development lifecycle.(Credit Lakeworks)

Cross-Functional Teams

The idea that teams should be cross-functional and self-managed is a key concept in Scrum, and it's one that you'll be tested on multiple times when you sit for the Scrum Certification exam.

> Scrum engages groups of people who collectively have all the skills and expertise to do the work and share or acquire such skills as needed.
>
> — 2020 Scrum Guide page 3

This is another extremely loaded statement.

Understanding this paragraph will go a long way towards properly answering some of the most challenging questions on the Scrum Master certification exam.

Scrum assumes that the Scrum Team has all the skills required to build the product being

developed.

- Does your project need testers? Then those people are on the Scrum team.
- Does your project need someone to document the product? That person is on the Scrum team.
- Does your project need an architect? That person is on the Scrum team.
- Does your project need people to do quality assurance(QA)? Then those QA people are developers on the Scrum Team.
- Does your project need a performance or security specialist? Then a person with those skills must be on the Scrum team.

And what if your Scrum team doesn't have those skills? Then your team acquires them.

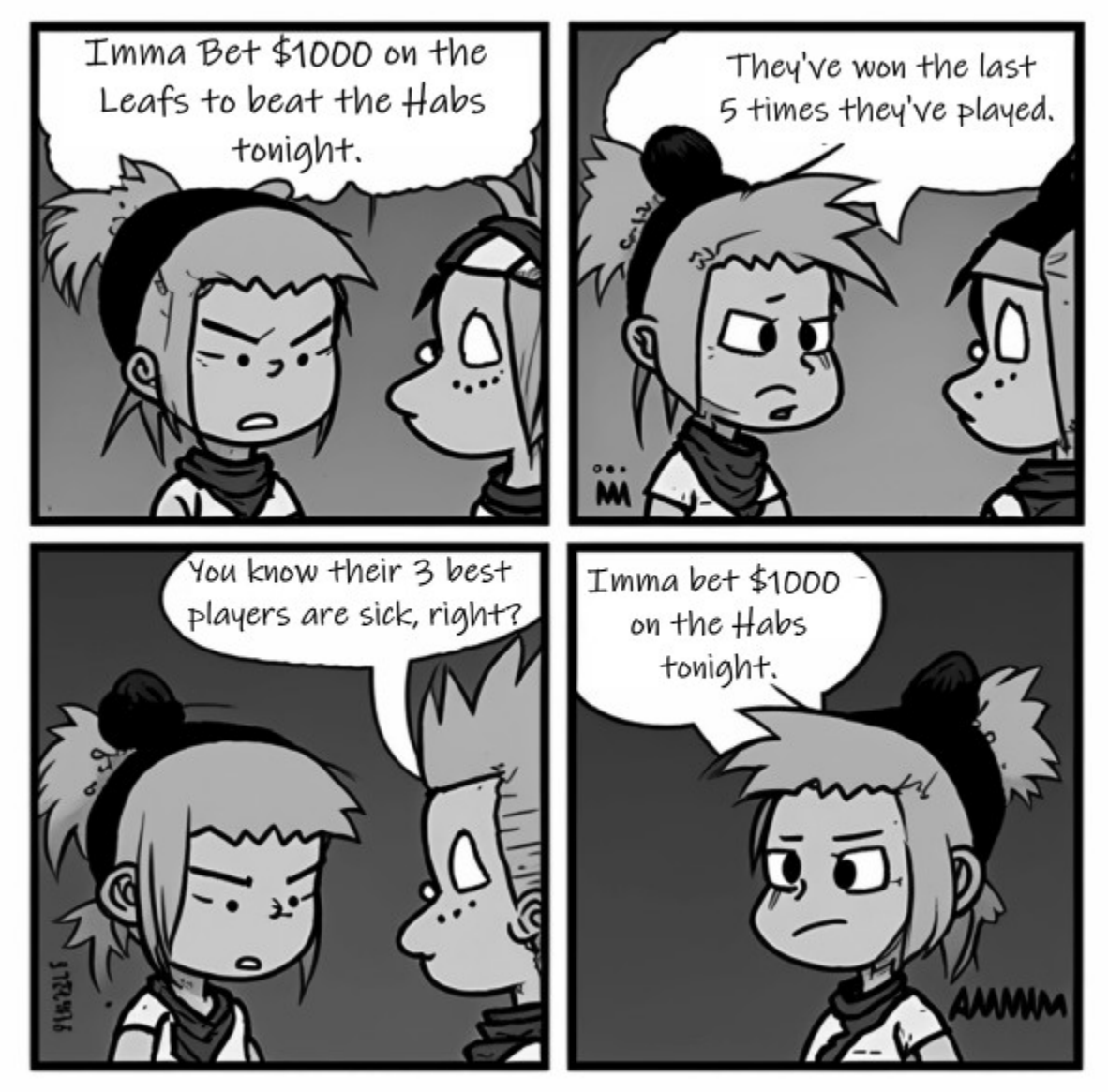

Figure 2. Predictive tools are useful, but they don't replace empirical knowledge acquired through experience and experimentation. Knowledge of pertinent facts should always take priority over charts and trendlines.

Test Yourself

One of the items under development as part of your project is a spaceship to Mars, but nobody on your team knows how to build a spaceship to Mars.

Which one of the following options is the best way for the team to move forward?

- ▢ A) Outsource the development of a spaceship to a third party
- ▢ B) Remove the development of a spaceship from the project's requirements
- ▢ C) Explain to the Product Owner that you don't have the skills to build a Mars spaceship
- ▢ D) Get the team to start learning about how to build a spaceship to Mars

Option D is correct, and yes, this question is silly to the extreme, but it makes an important point.

According to Scrum, all of the skills required to build a project under development exist on your team, or your team will take it upon themselves to acquire the skills needed. If your team outsources work to a third party, then the work in question is no longer within the control of the team, which means it's no longer part of the Scrum process.

That's what the Scrum Guide means when it says "Scrum engages groups of people who collectively have all the skills and expertise to do the work and share or acquire such skills as needed."

The All-Encompassing Sprint

> Scrum combines four formal events for inspection and adaptation *within a containing event,* the Sprint.
>
> — 2020 Scrum Guide page 3

This statement is the source of the most commonly asked trick questions on the Scrum Certification exam, which are:

- Which events happen after the Sprint finishes?
- Which events happen before a Sprint begins?
- When a Sprint ends, when does the next Sprint begin?

Scrum has four timeboxed events that happen within a fifth Scrum event known as a Sprint. Sprint Planning, the Daily Scrum, the Sprint Review, and the Sprint Retrospective all happen within the confines of a Sprint.

- None of the Scrum events happen after a Sprint
- None of the Scrum events happen before a Sprint.
- None of the Scrum events can be left out of a Sprint.

Moving from Sprint to Sprint

Everything in Scrum happens within the boundaries of a Sprint. As soon as one Sprint ends, the next Sprint begins.

There is no buffer time between when one Sprint ends and the next Sprint starts where integration takes place, quality assurance happens or testing is done. If any of those things are part of the development of your product, all of those things have to happen during the Sprint.

Don't get tripped up on any questions that ask what happens before or after a Sprint.

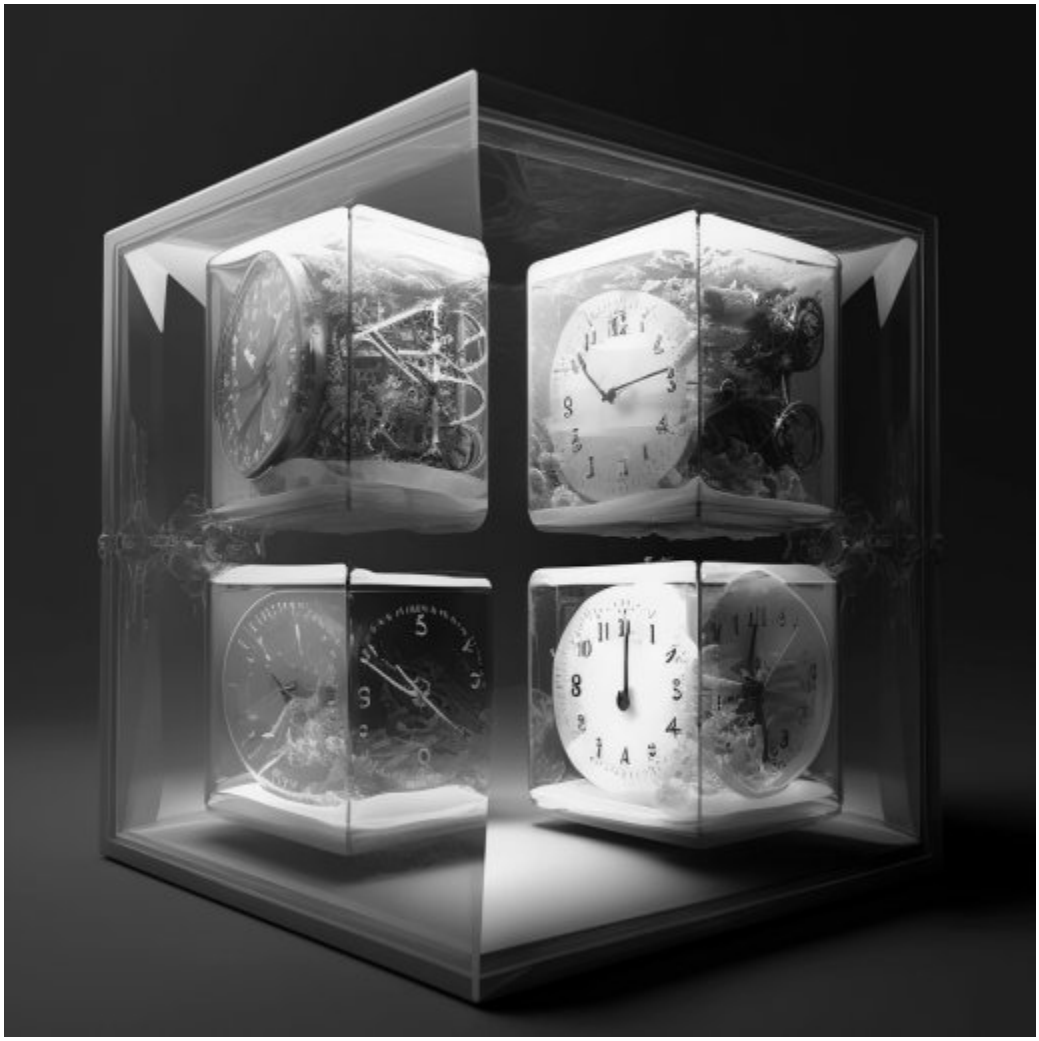

Figure 3. The four timeboxed events in Scrum all occur inside a fifth event known as the Sprint.

Inspection and Adaption

Notice how the Scrum Guide states that the higher purpose of the different Scrum Events, such as the Review, Retrospective, Planning meeting, and the Daily Scrum is to 'inspect and adapt.'

> Scrum combines four formal events for inspection and adaptation within a containing event, the Sprint.
>
> — 2020 Scrum Guide page 3

You will often get questions on the Scrum certification exam about what the purpose of the Sprint Retrospective is or what the purpose of the Daily Scrum is. If any of the listed options include the terms 'inspect' or 'adapt', those will likely be the correct answers.

Test Yourself

Which one of the following options best describes when a new Sprint begins?

- ☐ A) A new Sprint begins when Sprint Planning is completed
- ☐ B) A new Sprint begins when the Sprint Review is completed
- ☐ C) A new Sprint begins when the Product Owner begins the Sprint in JIRA
- ☐ D) A new Sprint begins after Sprint Planning when the Scrum Master declares the start of the Sprint
- ☑ E) A new Sprint begins as soon as the previous Sprint ends

A new Sprint begins as soon as the previous Sprint ends.

Technically speaking, the last event in the Sprint is the Sprint Retrospective, and the end of this event officially marks the end of the Sprint. A new Sprint could be said to start immediately after this event concludes, depending upon how pedantic you want to be about the answer.

> The Sprint Retrospective concludes the Sprint.
>
> — 2020 Scrum Guide page 10

Test Yourself

What is the purpose of the Daily Scrum?
(Choose 2)

- ☐ A) For the Scrum Master to get daily status updates from the developers
- ☐ B) To allow the developers to inspect their progress toward the Sprint Goal
- ☐ C) For the Product Owner to track the development team’s progress on Product Backlog items
- ☐ D) To allow the developers to adapt their Sprint Plan as they work towards the Sprint Goal

Options B and D are correct.

From day to day and hour to hour, conditions change.

Scrum recognizes this reality, which is why it provides several events that allow for the inspection of progress along with the ability to adapt if necessary.

It should be noted that inspection and adaptation can happen at any time during the Sprint, not just during the official Scrum events.

If a computer hosting the Git repo catches fire, you don't wait until tomorrow's Daily Scrum to put it out, nor would you wait to tell the rest of the team about it.

Test Yourself

Which of the following concepts are consistent with a lean approach to product development?
(Choose 3)

- ▢ A) The elimination of unnecessary steps in a process
- ▢ B) Isolated development phases that flow into each other
- ▢ C) The removal of unnecessary features in a product
- ▢ D) Significant up-front planning and design
- ▢ E) The elimination of idle time where developers are not working
- ▢ F) Waiting for a manager to give you permission to proceed with a task
- ▢ G) Waiting for a planned event to discuss an important matter

Options A, C and are E are correct.

These three options are core concepts learned from *lean manufacturing*.

Options B and D represent the waterfall model, which is the antithesis of Scrum and lean.

Forget Everything You Think You Know

Part of passing the Scrum Master certification exam is to first forget everything you *think* you know about Scrum, and then focus on the core concepts contained within the Scrum Guide.

That's why you won't hear me talking about the *Agile Manifesto* or discussing *story points* in this book. Other Scrum Master certification books invest a lot of time in those topics, but I think that does you a disservice.

The Scrum Guide never once mentions the word *Agile* and it never talks about *user stories* or *story points*.

Furthermore, the Scrum Master exam never tests you on these concepts, and whenever a potential answer references a *user story* or a *story point*, those answers will be red herrings trying to trip you up and get you to select an incorrect option.

That's also why you'll often find me repeating myself ad nauseam about certain topics throughout the book. For example:

- I will annoyingly repeat myself about the time allotted to the various Scrum events.
- I constantly emphasize that you don't have to wait for a Scrum event to change your plan.
- Scrum is a framework, it's not a process or a methodology.
- Scrum is not just for software development but for the development of *any product*.

My goal is to get you Scrum Master certified. A *lean approach* to doing so is to not waste your time discussing peripheral topics that will distract and confuse you.

Keep the Focus on the Goal

One of the Scrum values is focus.

Imma try my very best to keep you focused, not waste your time on topics that aren't heavily tested on the exam, and at the same time, constantly re-inforce topics that I know will be tested heavily.

That's how we're going to get you past the Scrum Master certification finish line!

Figure 4. With lean thinking and focus, we're going to get you past the Scrum Master certification finish line. (Image: Joshbdork, GFDL1.2)