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The Scrum Guide

The Definitive Guide to Scrum: Rules of the Game

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Purpose of the Scrum Guide

Scrum is a framework for developing and sustaining complex products. This Guide contains the definition of Scrum. This definition consists of Scrum's roles, events, artifacts, and the rules that bind them together. Ken Schwaber and Jeff Sutherland developed Scrum; the Scrum Guide is written and provided by them. Together, they stand behind the Scrum Guide.

Scrum Overview

Scrum (n): A framework within which people can address complex adaptive problems, while productively and creatively delivering products of the highest possible value. Scrum is:

- Lightweight
- Simple to understand
- Extremely difficult to master

Scrum is a process framework that has been used to manage complex product development since the early 1990s. Scrum is not a process or a technique for building products; rather, it is a framework within which you can employ various processes and techniques. Scrum makes clear the relative efficacy of your product management and development practices so that you can improve.

Scrum Framework

The Scrum framework consists of Scrum Teams and their associated roles, events, artifacts, and rules. Each component within the framework serves a specific purpose and is essential to Scrum's success and usage.

Specific strategies for using the Scrum framework vary and are described elsewhere.

The rules of Scrum bind together the events, roles, and artifacts, governing the relationships and interaction between them. The rules of Scrum are described throughout the body of this document.

Scrum Theory

Scrum is founded on empirical process control theory, or empiricism. Empiricism asserts that knowledge comes from experience *and* making decisions based on what is known. Scrum employs an iterative, incremental approach to optimize predictability and control risk.

Three pillars uphold every implementation of empirical process control: transparency, inspection, and adaptation.

Transparency

Significant aspects of the process must be visible to those responsible for the outcome. Transparency requires those aspects be defined by a common standard so observers share a common understanding of what is being seen.

For example:

- A common language referring to the process must be shared by all participants; and,
- A common definition of "Done"¹ must be shared by those performing the work and those accepting the work product.

Inspection

Scrum users must frequently inspect Scrum artifacts and progress toward a goal to detect undesirable variances. Their inspection should not be so frequent that inspection gets in the way of the work. Inspections are most beneficial when diligently performed by skilled inspectors at the point of work.

Adaptation

If an inspector determines that one or more aspects of a process deviate outside acceptable limits, and that the resulting product will be unacceptable, the process or the material being processed must be adjusted. An adjustment must be made as soon as possible to minimize further deviation.

Scrum prescribes four formal opportunities for inspection and adaptation, as described in the *Scrum Events* section of this document.

- Sprint Planning Meeting
- Daily Scrum
- Sprint Review
- Sprint Retrospective

¹ See "Definition of "Done", p. 14.

Scrum

Scrum is a framework structured to support complex product development. Scrum consists of Scrum Teams and their associated roles, events, artifacts, and rules. Each component within the framework serves a specific purpose and is essential to Scrum's success and usage.

The Scrum Team

The Scrum Team consists of a Product Owner, the Development Team, and a Scrum Master. Scrum Teams are self-organizing and cross-functional. Self-organizing teams choose how best to accomplish their work, rather than being directed by others outside the team. Cross-functional teams have all competencies needed to accomplish the work without depending on others not part of the team. The team model in Scrum is designed to optimize flexibility, creativity, and productivity.

Scrum Teams deliver products iteratively and incrementally, maximizing opportunities for feedback. Incremental deliveries of "Done" product ensure a potentially useful version of working product is always available.

The Product Owner

The Product Owner is responsible for maximizing the value of the product and the work of the Development Team. How this is done may vary widely across organizations, Scrum Teams, and individuals.

The Product Owner is the sole person responsible for managing the Product Backlog. Product Backlog management includes:

- Clearly expressing Product Backlog items;
- Ordering the items in the Product Backlog to best achieve goals and missions;
- Ensuring the value of the work the Development Team performs;
- Ensuring that the Product Backlog is visible, transparent, and clear to all, and shows what the Scrum Team will work on next; and,
- Ensuring the Development Team understands items in the Product Backlog to the level needed.

The Product Owner may do the above work, or have the Development Team do it. However, the Product Owner remains accountable.

The Product Owner is one person, not a committee. The Product Owner may represent the desires of a committee in the Product Backlog, but those wanting to change a backlog item's priority must convince the Product Owner.

For the Product Owner to succeed, the entire organization must respect his or her decisions. The Product Owner's decisions are visible in the content and ordering of the Product Backlog. No one is allowed to tell the Development Team to work from a different set of requirements, and the Development Team isn't allowed to act on what anyone else says.

The Development Team

The Development Team consists of professionals who do the work of delivering a potentially releasable Increment of “Done” product at the end of each Sprint. Only members of the Development Team create the Increment.

Development Teams are structured and empowered by the organization to organize and manage their own work. The resulting synergy optimizes the Development Team’s overall efficiency and effectiveness. Development Teams have the following characteristics:

- They are self-organizing. No one (not even the Scrum Master) tells the Development Team how to turn Product Backlog into Increments of potentially releasable functionality;
- Development Teams are cross-functional, with all of the skills as a team necessary to create a product Increment;
- Scrum recognizes no titles for Development Team members other than Developer, regardless of the work being performed by the person; there are no exceptions to this rule;
- Individual Development Team members may have specialized skills and areas of focus, but accountability belongs to the Development Team as a whole; and,
- Development Teams do not contain sub-teams dedicated to particular domains like testing or business analysis.

Development Team Size

Optimal Development Team size is small enough to remain nimble and large enough to complete significant work. Fewer than three Development Team members decreases interaction and results in smaller productivity gains. Smaller Development Teams may encounter skill constraints during the Sprint, causing the Development Team to be unable to deliver a potentially releasable Increment. Having more than nine members requires too much coordination. Large Development Teams generate too much complexity for an empirical process to manage. The Product Owner and Scrum Master roles are not included in this count unless they are also executing the work of the Sprint Backlog.

The Scrum Master

The Scrum Master is responsible for ensuring Scrum is understood and enacted. Scrum Masters do this by ensuring that the Scrum Team adheres to Scrum theory, practices, and rules. The Scrum Master is a servant-leader for the Scrum Team.

The Scrum Master helps those outside the Scrum Team understand which of their interactions with the Scrum Team are helpful and which aren’t. The Scrum Master helps everyone change these interactions to maximize the value created by the Scrum Team.

Scrum Master Service to the Product Owner

The Scrum Master serves the Product Owner in several ways, including:

- Finding techniques for effective Product Backlog management;
- Clearly communicating vision, goals, and Product Backlog items to the Development Team;
- Teaching the Scrum Team to create clear and concise Product Backlog items;
- Understanding long-term product planning in an empirical environment;
- Understanding and practicing agility; and,
- Facilitating Scrum events as requested or needed.

Scrum Master Service to the Development Team

The Scrum Master serves the Development Team in several ways, including:

- Coaching the Development Team in self-organization and cross-functionality;
- Teaching and leading the Development Team to create high-value products;
- Removing impediments to the Development Team's progress;
- Facilitating Scrum events as requested or needed; and,
- Coaching the Development Team in organizational environments in which Scrum is not yet fully adopted and understood.

Scrum Master Service to the Organization

The Scrum Master serves the organization in several ways, including:

- Leading and coaching the organization in its Scrum adoption;
- Planning Scrum implementations within the organization;
- Helping employees and stakeholders understand and enact Scrum and empirical product development;
- Causing change that increases the productivity of the Scrum Team; and,
- Working with other Scrum Masters to increase the effectiveness of the application of Scrum in the organization.

Scrum Events

Prescribed events are used in Scrum to create regularity and to minimize the need for meetings not defined in Scrum. Scrum uses time-boxed events, such that every event has a maximum duration. This ensures an appropriate amount of time is spent planning without allowing waste in the planning process.

Other than the Sprint itself, which is a container for all other events, each event in Scrum is a formal opportunity to inspect and adapt something. These events are specifically designed to enable critical transparency and inspection. Failure to include any of these events results in reduced transparency and is a lost opportunity to inspect and adapt.

The Sprint

The heart of Scrum is a Sprint, a time-box of one month or less during which a “Done”, useable, and potentially releasable product Increment is created. Sprints have consistent durations throughout a development effort. A new Sprint starts immediately after the conclusion of the previous Sprint.

Sprints contain and consist of the Sprint Planning Meeting, Daily Scrums, the development work, the Sprint Review, and the Sprint Retrospective.

During the Sprint:

- No changes are made that would affect the Sprint Goal;
- Development Team composition remains constant;
- Quality goals do not decrease; and,
- Scope may be clarified and re-negotiated between the Product Owner and Development Team as more is learned.

Each Sprint may be considered a project with no more than a one-month horizon. Like projects, Sprints are used to accomplish something. Each Sprint has a definition of what is to be built, a design and flexible plan that will guide building it, the work, and the resultant product.

Sprints are limited to one calendar month. When a Sprint’s horizon is too long the definition of what is being built may change, complexity may rise, and risk may increase. Sprints enable predictability by ensuring inspection and adaptation of progress toward a goal at least every calendar month. Sprints also limit risk to one calendar month of cost.

Cancelling a Sprint

A Sprint can be cancelled before the Sprint time-box is over. Only the Product Owner has the authority to cancel the Sprint, although he or she may do so under influence from the stakeholders, the Development Team, or the Scrum Master.

A Sprint would be cancelled if the Sprint Goal becomes obsolete. This might occur if the company changes direction or if market or technology conditions change. In general, a Sprint should be cancelled if it no longer makes sense given the circumstances. But, due to the short duration of Sprints, cancellation rarely makes sense.

When a Sprint is cancelled, any completed and “Done” Product Backlog Items are reviewed. If part of the work is potentially releasable, the Product Owner typically accepts it. All incomplete Product Backlog Items are re-estimated and put back on the Product Backlog. The work done on them depreciates quickly and must be frequently re-estimated.

Sprint cancellations consume resources, since everyone has to regroup in another Sprint Planning Meeting to start another Sprint. Sprint cancellations are often traumatic to the Scrum Team, and are very uncommon.

Sprint Planning Meeting

The work to be performed in the Sprint is planned at the Sprint Planning Meeting. This plan is created by the collaborative work of the entire Scrum Team.

The Sprint Planning Meeting is time-boxed to eight hours for a one-month Sprint. For shorter Sprints, the event is proportionately shorter. For example, two-week Sprints have four-hour Sprint Planning Meetings.

The Sprint Planning Meeting consists of two parts, each one being a time-box of one half of the Sprint Planning Meeting duration. The two parts of the Sprint Planning Meeting answer the following questions, respectively:

- What will be delivered in the Increment resulting from the upcoming Sprint?
- How will the work needed to deliver the Increment be achieved?

Part One: What will be done this Sprint?

In this part, the Development Team works to forecast the functionality that will be developed during the Sprint. The Product Owner presents ordered Product Backlog items to the Development Team and the entire Scrum Team collaborates on understanding the work of the Sprint.

The input to this meeting is the Product Backlog, the latest product Increment, projected capacity of the Development Team during the Sprint, and past performance of the Development Team. The number of items selected from the Product Backlog for the Sprint is solely up to the Development Team. Only the Development Team can assess what it can accomplish over the upcoming Sprint.

After the Development Team forecasts the Product Backlog items it will deliver in the Sprint, the Scrum Team crafts a Sprint Goal. The Sprint Goal is an objective that will be met within the Sprint through the implementation of the Product Backlog, and it provides guidance to the Development Team on why it is building the Increment.

Part Two: How will the chosen work get done?

Having selected the work of the Sprint, the Development Team decides how it will build this functionality into a "Done" product Increment during the Sprint. The Product Backlog items selected for this Sprint plus the plan for delivering them is called the Sprint Backlog.

The Development Team usually starts by designing the system and the work needed to convert the Product Backlog into a working product Increment. Work may be of varying size, or estimated effort. However, enough work is planned during the Sprint Planning Meeting for the Development Team to forecast what it believes it can do in the upcoming Sprint. Work planned for the first days of the Sprint by the Development Team is decomposed to units of one day or less by the end of this meeting. The Development Team self-organizes to undertake the work in the Sprint Backlog, both during the Sprint Planning Meeting and as needed throughout the Sprint.

The Product Owner may be present during the second part of the Sprint Planning Meeting to clarify the selected Product Backlog items and to help make trade-offs. If the Development Team determines it has too much or too little work, it may renegotiate the Sprint Backlog items with the Product Owner. The Development Team may also invite other people to attend in order to provide technical or domain advice.

By the end of the Sprint Planning Meeting, the Development Team should be able to explain to the Product Owner and Scrum Master how it intends to work as a self-organizing team to accomplish the Sprint Goal and create the anticipated Increment.

Sprint Goal

The Sprint Goal gives the Development Team some flexibility regarding the functionality implemented within the Sprint.

As the Development Team works, it keeps this goal in mind. In order to satisfy the Sprint Goal, it implements the functionality and technology. If the work turns out to be different than the Development Team expected, then they collaborate with the Product Owner to negotiate the scope of Sprint Backlog within the Sprint.

The Sprint Goal may be a milestone in the larger purpose of the product roadmap.

Daily Scrum

The Daily Scrum is a 15-minute time-boxed event for the Development Team to synchronize activities and create a plan for the next 24 hours. This is done by inspecting the work since the last Daily Scrum and forecasting the work that could be done before the next one.

The Daily Scrum is held at the same time and place each day to reduce complexity. During the meeting, each Development Team member explains:

- What has been accomplished since the last meeting?
- What will be done before the next meeting?
- What obstacles are in the way?

The Development Team uses the Daily Scrum to assess progress toward the Sprint Goal and to assess how progress is trending toward completing the work in the Sprint Backlog. The Daily Scrum optimizes the probability that the Development Team will meet the Sprint Goal. The Development Team often meets immediately after the Daily Scrum to re-plan the rest of the Sprint's work. Every day, the Development Team should be able to explain to the Product Owner and Scrum Master how it intends to work together as a self-organizing team to accomplish the goal and create the anticipated Increment in the remainder of the Sprint.

The Scrum Master ensures that the Development Team has the meeting, but the Development Team is responsible for conducting the Daily Scrum. The Scrum Master teaches the Development Team to keep the Daily Scrum within the 15-minute time-box.

The Scrum Master enforces the rule that only Development Team members participate in the Daily Scrum. The Daily Scrum is not a status meeting, and is for the people transforming the Product Backlog items into an Increment.

Daily Scrums improve communications, eliminate other meetings, identify and remove impediments to development, highlight and promote quick decision-making, and improve the Development Team's level of project knowledge. This is a key inspect and adapt meeting.

Sprint Review

A Sprint Review is held at the end of the Sprint to inspect the Increment and adapt the Product Backlog if needed. During the Sprint Review, the Scrum Team and stakeholders collaborate about what was done in the Sprint. Based on that and any changes to the Product Backlog during the Sprint, attendees collaborate on the next things that could be done. This is an informal meeting, and the presentation of the Increment is intended to elicit feedback and foster collaboration.

This is a four-hour time-boxed meeting for one-month Sprints. Proportionately less time is allocated for shorter Sprints. For example, two week Sprints have two-hour Sprint Reviews.

The Sprint Review includes the following elements:

- The Product Owner identifies what has been "Done" and what has not been "Done";
- The Development Team discusses what went well during the Sprint, what problems it ran into, and how those problems were solved;
- The Development Team demonstrates the work that it has "Done" and answers questions about the Increment;
- The Product Owner discusses the Product Backlog as it stands. He or she projects likely completion dates based on progress to date; and,
- The entire group collaborates on what to do next, so that the Sprint Review provides valuable input to subsequent Sprint Planning Meetings.

The result of the Sprint Review is a revised Product Backlog that defines the probable Product Backlog items for the next Sprint. The Product Backlog may also be adjusted overall to meet new opportunities.

Sprint Retrospective

The Sprint Retrospective is an opportunity for the Scrum Team to inspect itself and create a plan for improvements to be enacted during the next Sprint.

The Sprint Retrospective occurs after the Sprint Review and prior to the next Sprint Planning Meeting. This is a three-hour time-boxed meeting for one-month Sprints. Proportionately less time is allocated for shorter Sprints.

The purpose of the Sprint Retrospective is to:

- Inspect how the last Sprint went with regards to people, relationships, process, and tools;
- Identify and order the major items that went well and potential improvements; and,
- Create a plan for implementing improvements to the way the Scrum Team does its work.

The Scrum Master encourages the Scrum Team to improve, within the Scrum process framework, its development process and practices to make it more effective and enjoyable for the next Sprint. During each Sprint Retrospective, the Scrum Team plans ways to increase product quality by adapting the Definition of “Done” as appropriate.

By the end of the Sprint Retrospective, the Scrum Team should have identified improvements that it will implement in the next Sprint. Implementing these improvements in the next Sprint is the adaptation to the inspection of the Scrum Team itself. Although improvements may be implemented at any time, the Sprint Retrospective provides a formal opportunity to focus on inspection and adaptation.

Scrum Artifacts

Scrum’s artifacts represent work or value in various ways that are useful in providing transparency and opportunities for inspection and adaptation. Artifacts defined by Scrum are specifically designed to maximize transparency of key information needed to ensure Scrum Teams are successful in delivering a “Done” Increment.

Product Backlog

The Product Backlog is an ordered list of everything that might be needed in the product and is the single source of requirements for any changes to be made to the product. The Product Owner is responsible for the Product Backlog, including its content, availability, and ordering.

A Product Backlog is never complete. The earliest development of it only lays out the initially known and best-understood requirements. The Product Backlog evolves as the product and the environment in which it will be used evolves. The Product Backlog is dynamic; it constantly changes to identify what the product needs to be appropriate, competitive, and useful. As long as a product exists, its Product Backlog also exists.

The Product Backlog lists all features, functions, requirements, enhancements, and fixes that constitute the changes to be made to the product in future releases. Product Backlog items have the attributes of a description, order, and estimate.

The Product Backlog is often ordered by value, risk, priority, and necessity. Top-ordered Product Backlog items drive immediate development activities. The higher

the order, the more a Product Backlog item has been considered, and the more consensus exists regarding it and its value.

Higher ordered Product Backlog items are clearer and more detailed than lower ordered ones. More precise estimates are made based on the greater clarity and increased detail; the lower the order, the less detail. Product Backlog items that will occupy the Development Team for the upcoming Sprint are fine-grained, having been decomposed so that any one item can be "Done" within the Sprint time-box. Product Backlog items that can be "Done" by the Development Team within one Sprint are deemed "ready" or "actionable" for selection in a Sprint Planning Meeting.

As a product is used and gains value, and the marketplace provides feedback, the Product Backlog becomes a larger and more exhaustive list. Requirements never stop changing, so a Product Backlog is a living artifact. Changes in business requirements, market conditions, or technology may cause changes in the Product Backlog.

Multiple Scrum Teams often work together on the same product. One Product Backlog is used to describe the upcoming work on the product. A Product Backlog attribute that groups items is then employed.

Product Backlog grooming is the act of adding detail, estimates, and order to items in the Product Backlog. This is an ongoing process in which the Product Owner and the Development Team collaborate on the details of Product Backlog items. During Product Backlog grooming, items are reviewed and revised. However, they can be updated at any time by the Product Owner or at the Product Owner's discretion.

Grooming is a part-time activity during a Sprint between the Product Owner and the Development Team. Often the Development Team has the domain knowledge to perform grooming itself. How and when grooming is done is decided by the Scrum Team. Grooming usually consumes no more than 10% of the capacity of the Development Team.

The Development Team is responsible for all estimates. The Product Owner may influence the Development Team by helping understand and select trade-offs, but the people who will perform the work make the final estimate.

Monitoring Progress Toward a Goal

At any point in time, the total work remaining to reach a goal can be summed. The Product Owner tracks this total work remaining at least for every Sprint Review. The Product Owner compares this amount with work remaining at previous Sprint Reviews to assess progress toward completing projected work by the desired time for the goal. This information is made transparent to all stakeholders.

Various trend burndown, burnup and other projective practices have been used to forecast progress. These have proven useful. However, these do not replace the importance of empiricism. In complex environments, what will happen is unknown. Only what has happened may be used for forward-looking decision-making.

Sprint Backlog

The Sprint Backlog is the set of Product Backlog items selected for the Sprint plus a plan for delivering the product Increment and realizing the Sprint Goal. The Sprint Backlog is a forecast by the Development Team about what functionality will be in the next Increment and the work needed to deliver that functionality.

The Sprint Backlog defines the work the Development Team will perform to turn Product Backlog items into a “Done” Increment. The Sprint Backlog makes visible all of the work that the Development Team identifies as necessary to meet the Sprint Goal.

The Sprint Backlog is a plan with enough detail that changes in progress can be understood in the Daily Scrum. The Development Team modifies Sprint Backlog throughout the Sprint, and the Sprint Backlog emerges during the Sprint. This emergence occurs as the Development Team works through the plan and learns more about the work needed to achieve the Sprint Goal.

As new work is required, the Development Team adds it to the Sprint Backlog. As work is performed or completed, the estimated remaining work is updated. When elements of the plan are deemed unnecessary, they are removed. Only the Development Team can change its Sprint Backlog during a Sprint. The Sprint Backlog is a highly visible, real-time picture of the work that the Development Team plans to accomplish during the Sprint, and it belongs solely to the Development Team.

Monitoring Sprint Progress

At any point in time in a Sprint, the total work remaining in the Sprint Backlog items can be summed. The Development Team tracks this total work remaining at least for every Daily Scrum. The Development Team tracks these sums daily and projects the likelihood of achieving the Sprint Goal. By tracking the remaining work throughout the Sprint, the Development Team can manage its progress.

Scrum does not consider the time spent working on Sprint Backlog Items. The work remaining and date are the only variables of interest.

Increment

The Increment is the sum of all the Product Backlog items completed during a Sprint and all previous Sprints. At the end of a Sprint, the new Increment must be “Done,” which means it must be in useable condition and meet the Scrum Team’s Definition of “Done.” It must be in useable condition regardless of whether the Product Owner decides to actually release it.

Definition of “Done”

When the Product Backlog item or an Increment is described as “Done”, everyone must understand what “Done” means. Although this varies significantly per Scrum Team, members must have a shared understanding of what it means for work to be complete, to ensure transparency. This is the “Definition of Done” for the Scrum Team and is used to assess when work is complete on the product Increment.

The same definition guides the Development Team in knowing how many Product Backlog items it can select during a Sprint Planning Meeting. The purpose of each Sprint is to deliver Increments of potentially releasable functionality that adhere to the Scrum Team's current Definition of "Done."

Development Teams deliver an Increment of product functionality every Sprint. This Increment is useable, so a Product Owner may choose to immediately release it. Each Increment is additive to all prior Increments and thoroughly tested, ensuring that all Increments work together.

As Scrum Teams mature, it is expected that their Definition of "Done" will expand to include more stringent criteria for higher quality.

Conclusion

Scrum is free and offered in this guide. Scrum's roles, artifacts, events, and rules are immutable and although implementing only parts of Scrum is possible, the result is not Scrum. Scrum exists only in its entirety and functions well as a container for other techniques, methodologies, and practices.

Acknowledgements

People

Of the thousands of people who have contributed to Scrum, we should single out those who were instrumental in its first ten years. First there was Jeff Sutherland, working with Jeff McKenna, and Ken Schwaber, working with Mike Smith and Chris Martin. Many others contributed in the ensuing years and without their help Scrum would not be refined as it is today. David Starr provided key insights and editorial skills in formulating this version of the Scrum Guide.

History

Ken Schwaber and Jeff Sutherland first co-presented Scrum at the OOPSLA conference in 1995. This presentation essentially documented the learning that Ken and Jeff had over the previous few years applying Scrum.

The history of Scrum is already considered long. To honor the first places where it was tried and refined, we recognize Individual, Inc., Fidelity Investments, and IDX (now GE Medical).

The Scrum Guide documents Scrum as developed and sustained for twenty-plus years by Jeff Sutherland and Ken Schwaber. Other sources provide you with patterns, processes, and insights about how the practices, facilitations, and tools that complement the Scrum framework. These optimize productivity, value, creativity, and pride.