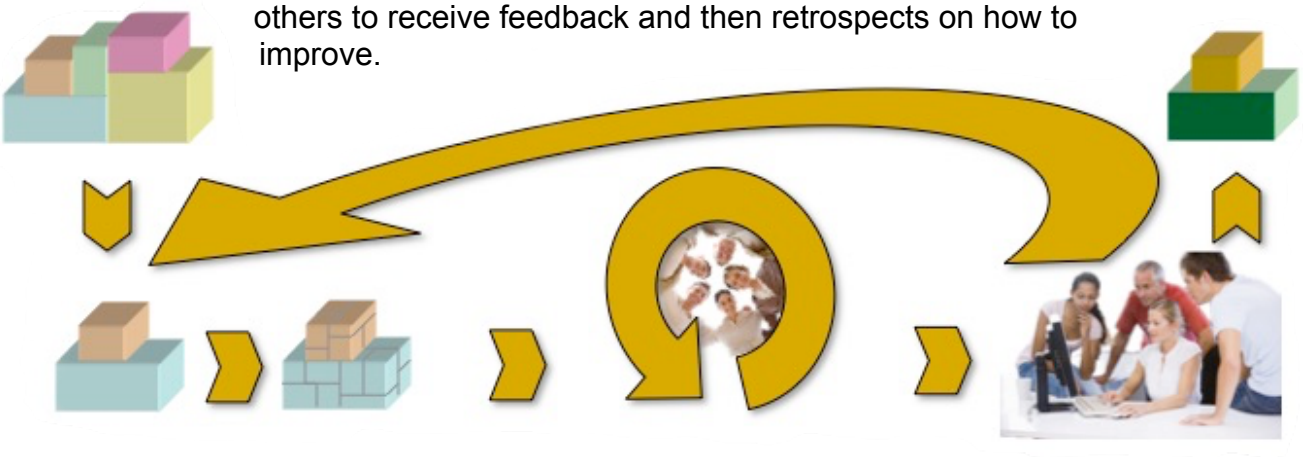
An Introduction to Scrum

What is Scrum?

Even projects that have solid, well-defined project plans encounter some degree of change. Shifting market conditions, budget cuts, staff restructuring, or any number of influences will disrupt the best plan. Projects that begin with changing or unclear requirements make it sometimes difficult to even establish basic project expectations.

Scrum is a disciplined agile development process that allows teams to deliver usable product increments periodically throughout the life of the project, absorbing change and new requirements as the project proceeds.

Below is a high-level picture of how Scrum works, commonly referred to as the Scrum Framework. The large input blocks represent work requests that are fed into the repeating cycles of work. Requests are decomposed and planned out for the cycle by a team of people. The team meets every day during the cycle to update each other on their progress. At the end of the cycle they share their output with others to receive feedback and then retrospects on how to improve.



The more specific details follow, and we encourage you to also read the foundational reference document, “The Scrum Guide,” at scrumguides.org.

Basic Terminology:

Three **accountabilities**:
- The **Product Owner**, who represents stakeholders and sets direction on what the **Developers** should be working on;
- The **Developers**, those who actually carry out the work of delivery;
- The **ScrumMaster**, who continuously helps the **Team** become more effective and ensures everyone has what they need to be successful.

When we have a **Product Owner**, **Developers**, and a **ScrumMaster** working together, we have a **Scrum Team**. Within a Scrum Team, there are no sub-teams or hierarchies. It is a cohesive unit of professionals focused on one objective at a time, the **Product Goal**.

Three **artifacts**:
- The **Product Backlog**, an ordered list of desired features that have been estimated;
- The **Sprint Backlog**, a list of activities and tasks that represent the plan for the cycle of work, or **Sprint**;
- The **Increment** of delivery, what the **Developers** actually produced during the **Sprint**.

While not a formal artifact, we would also expect some form of visual progress (e.g., a Burndown Chart).

Four **events**:
- **Sprint Planning** forms the plan for the **Sprint;**
- The **Daily Scrum** allows team members to update and connect with each other;
- The **Sprint Review** where the team shares with others what they have produced;
- The **Sprint Retrospective** to discuss improvement opportunities;
- The **Sprint** itself is the container for the four events and serves as the heartbeat of **Scrum**.

While not a formal event, we will spend time getting the Product Backlog ready. We call this set of activities Product Backlog Refinement. We would also expect ongoing Product Backlog Refinement activities as the **Sprints** progress. With this perspective, we ensure our **Product Backlog** is always in a healthy state for the next **Sprint Planning** event.

Also while not a formal event, we might want to spend time in Release Planning. The purpose of Release Planning is to establish a plan for expected product functionality and potential release dates that can be communicated across the organization.

The Product Backlog

The starting point of a Scrum project is the **Product Backlog**. This is simply a list of features and functions that we expect to be developed during the project. Compared with a more traditional method, we might say these are the Business Requirements.

item#	description	estimate	order
D-021	build interface to credit processor	20	1
D-004	accept credit cards option on profile page	8	2
D-005	add processing for address mismatches	5	3
D-017	allow for international zips	13	4
D-008	new card requests	8	5
D-012	EDI feed quarterly updates	20	6
D-010	Financial Recon report 1	5	7
D-011	Financial Recon report 2	3	8

Please note that this **Product Backlog** is a list where each entry has a brief description of the feature or deliverable we desire for this project, an estimate of the effort required, and an order. We've also included an item# that's used as a reference. There are variations of how this can be represented, and some organizations will include additional columns of information to help them manage their work, but if you have these basic items you have a healthy **Product Backlog**.

Product Backlog Refinement

This is an initial and possibly ongoing activity where the **Product Backlog** is created, verified, and refined. This is not a formally defined event of **Scrum** and therefore does not have a specifically recommended time-box since every endeavor and every organization is different in deciding what level of detail and confidence they wish to achieve in establishing their **Product Backlog**. Because we wish to begin execution as soon as possible, it would be wise to evaluate the cost of more extensive planning balanced against the benefits of learnings that can only be achieved by allowing the team to begin work.

The Product Owner

The **Product Backlog** is owned and represented by the **Product Owner** who has authority regarding this list and its priorities. There may be many interested stakeholders for this project, but the **Product Owner** is the one voice who has the final say over the content of the **Product Backlog**. Here are some of the characteristics of a **Product Owner**:

- Typically the internal or external client, can be a delegate or liaison, but is only *one* person even if there are many interested stakeholders.

- Responsible for the **Product Backlog**, but they must have input from many stakeholders and help from the **Developers** in establishing estimates and understanding technical requirements.
- Establishes and promotes the **Product Goal** so the **Developers** can make decisions as they proceed with their work.
- Responsible for the ROI (return on investment) of the project by prioritizing the work.
- Monitors progress against goals.
- Makes decisions regarding implementations.

The Developers

Before we can start a **Scrum** project, we need **Developers:** a small, cross-functional group committed to creating a usable increment each **Sprint**. The word "developer" is used here in a generic sense: anyone who has committed to and is contributing to the development of the project. Here are some of the basic characteristics of **Developers**:

- Are ideally sized at 3-9 people, cross-functional, & "full time," meaning they are not working on multiple projects simultaneously.
- Create the **Sprint Backlog** (see below) and ensuring work is decomposed into small, manageable tasks, typically 4-8 hours of effort per task.
- Manage their own work and self-organize around how to reach their commitments within the limits of established standards, procedures, and the **Definition of Done.**
- Establish working agreements and behave like mature professionals.
- Take responsibility for the actual doing of the work required to accomplish the commitments, with some ability to outsource to other departments or teams if the **Developers** do not possess the needed skill.
- Demonstrate their work at the close of the **Sprint** (see **Sprint Review** below).

The Sprint

Each iteration of work for our project is called a **Sprint**. The **Sprint** is a repeatable, fixed period of time, up to one-month in length, but typically two weeks, dedicated to the delivery of potentially shippable pieces of functionality, or product increments.

Sprint Planning

Once we have a healthy **Product Backlog** by spending time in Product Backlog Refinement as well as **Developers** who can work on the project, we can enter into the cyclical pattern of the Scrum framework. The Scrum framework, represented by the first graphic above, provides us with the guidance needed to deliver features and functions incrementally as the project progresses.

The entry point to this cyclical delivery method is the **Sprint Planning** event. **Sprint Planning** is a time-boxed event that officially marks the beginning of the **Sprint**. This

event is broken into three discussions: 1) the **Product Owner** proposes *why* the current **Sprint** could increase the product's value and the **Scrum Team** defines a **Sprint Goal**, 2) the **Product Owner and Developers** determine *what* features and functions will be worked on during the next **Sprint**, and 3) the **Developers** decompose those features and functions into small, manageable tasks that represent *how* they get the work done while meeting the **Definition of Done**. For a one-month Sprint, we would typically allocate a full day for this event (eight hours) even if we do not consume all the time allocated; proportionally shorter time-boxed recommendations would be appropriate for shorter Sprints.

The **Product Owner** and **Developers** join together during **Sprint Planning** to review the **Product Backlog**. They also invite whoever else is needed to properly plan out the work opportunity ahead of them. They review which features and functions have the highest priority to ensure the **Developers** have a good understanding of what's expected. They also determine which of the highest priority items can be worked on during the next **Sprint**. They do this by understanding their capacity for work during the coming **Sprint**.

The Sprint Backlog

The items selected for work during **Sprint Planning** are moved from the **Product Backlog** to the **Sprint Backlog**. We then move to the third part of **Sprint Planning** where the selected **Product Backlog** items are broken down into smaller, manageable pieces of work.

item#	description	estimate
D-015		
D-015.10	enhance 0100 msg as per spec (new bit)	6
D-015.20	begin using cred table for activity logging	1
D-015.25	reporting impact due to 0100 msgs changes	4
D-015.30	auto populate test data to cred table	5
D-014		
D-014.10	new integration test parameters	4
D-014.20	verify different card types	8

In this sample, we've included an item# that simply refers back to the original **Product Backlog** item, a description of tasks necessary to complete the **Product Backlog** feature, and an estimate that is small enough to be managed in a day, but not so small that we spend an inordinate amount of time in decomposition. In our example, our estimates are represented in hours.

Once there is agreement on the **Sprint Backlog** content, the associated **Sprint Goal**, and **Developer** commitment to their best effort for the work therein, **Sprint Planning** is complete. For the length of the **Sprint** we do not want to see any disruptions to the team that would prevent them from achieving their plan for the **Sprint**. The **Developers**

will use the **Sprint Backlog** to guide them through the new iteration, and they are now ready to begin working on the development of the increment.

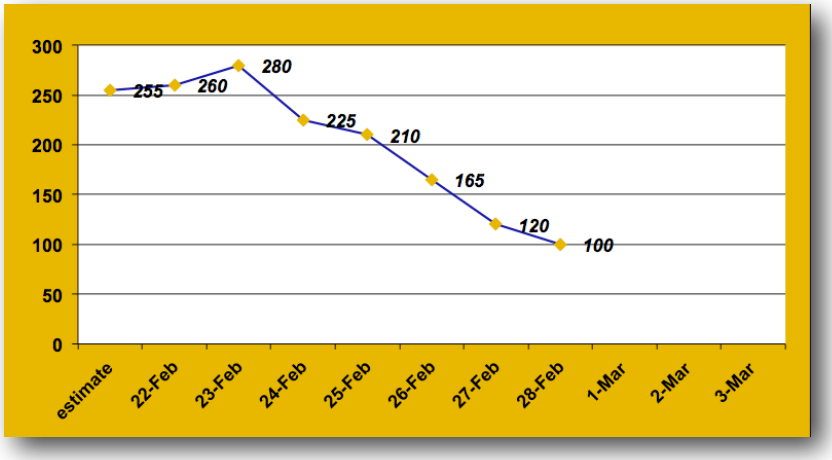
The Daily Scrum

To help the **Developers** understand their progress, they meet daily during the **Sprint** at the **Daily Scrum.** While others can observe, this daily event with a time-box of 15 minutes expects **Developers** update each other, commonly by answering the following three questions:
1 – what did I work on since our last Daily Scrum that's contributing to the **Sprint Goal**?
2 – what am I planning on working on next that will contribute to the **Sprint Goal**?
3 – what impediments are hindering my ability to achieve the **Sprint Goal**?

The **Daily Scrum** is the first great opportunity to "inspect and adapt" on a regular basis, allowing the team to consider ways to improve performance and ensure delivery of the **Sprint Goal**.

The Increment

Each **Increment** is potential shippable functionality meeting the **Definition of Done**. It has been verified as working with all previous **Increments** and could be immediately deployed to begin providing value.



We have seen three Scrum artifacts so far: the **Product Backlog,** the **Sprint Backlog**, and the **Increment**. While not a formal artifact, we expect some form of visual progress, often the Burndown Chart. This chart is used by the team during the **Daily Scrum** to understand how much work is remaining in the **Sprint**, day by day.

You will see that in our example, the x-axis represents time in terms of days of the **Sprint**, and the y-axis represents effort estimated for the **Sprint**. In our example we are representing effort in hours. Each day the **Developers** "burn down" remaining effort as they work towards the end of the Sprint, completing tasks as they look to have as close to zero remaining effort as possible at the end of the allotted time. The **Burndown** chart not only serves as a progress indicator for the team but is externally available to all interested stakeholders so they may also understand progress.

The Sprint Review

At the end of the **Sprint**, the **Scrum Team** meets other stakeholders at the **Sprint Review** to review the work that was completed. The **Team** reiterates the **Sprint Goal** and then proceeds with a demonstration of the work delivered. Decisions are made during this event regarding the potential deployment of what has been developed so far. For a month-long Sprint, we would typically allocate no more than four hours for this event.

This is the second great "inspect and adapt" opportunity, allowing the **Developers** and **Product Owner** to consider ways to improve the value of the project by reevaluating the **Product Backlog** for new items, changes to items, or re-prioritization. This is also the opportunity for the **Developers**, **Product Owner**, and other stakeholders to explore the pluses and deltas of the previous **Sprint** and how they can improve.

The Sprint Retrospective

The **Scrum Team** also holds a periodic **Sprint Retrospective**. This is the third great "inspect and adapt" opportunity, allowing the **Scrum Team** to consider ways to improve their overall performance above and beyond the project itself while addressing ongoing obstacles to productivity. What's going well? What could be better? Answers to these and other questions are logged for reference and future action.

In addition to the **Sprint Retrospective** taking place at the end of every **Sprint** where for a month-long **Sprint** we would typically allocate no more than three hours for this event, we may also expect a **Retrospective** at major intervals or special occasions, such as after a major delivery, after a major disruption to the **Scrum Team** or project, or at the end of the project funding.

We then loop back to the next **Sprint Planning** event where we identify and select items to work on during the next **Sprint**.

The ScrumMaster

Who oversees this framework and helps ensure that participants are following **Scrum** principles? That would be the **ScrumMaster**. Some of the basic characteristics of a **ScrumMaster** include:

- Responsible for **Scrum** values and practices.
- Encourages open communication, teamwork, and collaboration.
- Responsible for ensuring the **Developers** have what they need to be successful.
- Seeks ways to increase productivity; removes obstacles to productivity.
- Establishes the few key **Scrum** activities:

  - Product Backlog Refinement, when the **Product Owner** needs assistance
  - **Sprint Planning**
  - **Daily Scrum**
  - **Sprint Review**
  - **Retrospective**
- Protects the **Developers** from interruptions.
- Assists with record keeping for visual progress and other artifacts.

In addition to the process details we've just outlined, **Scrum** creates an environment that expects and promotes self-managed teams, iterative processing, continuous improvement, empirical thinking, and a high degree of visibility into the project and the organization. Implementing **Scrum** is much more than changing a process: it is changing the way we think about our work. We look to the **ScrumMaster** to be the change agent in helping others maneuver through these different ways of thinking. This is indeed a very difficult job but can be some of the most rewarding work on the project.

There are many additional sources of information about Scrum, but a great introductory read is *Agile Project Management With Scrum*, written by Ken Schwaber, or *Succeeding With Agile*, by Mike Cohn.

Helpful links:

http://www.winnowmanagement.com

http://www.scrumalliance.org

https://www.linkedin.com/groups/2044510/ (LinkedIn Certified ScrumMasters Group)