

Agile Development in a Pandemic

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Agile Methodology Features

User Stories

User stories are an excellent way help evolve everyone who is involved in a project to deeply understand not only the functional requirements involved in it, but why those are there. One of the other key abilities of a user story is that it embraces the agile mindset of creating working software instead of documentation.

User stories are generally written by the product owner of the team since they are the person who is most in-touch with the user. This story is then added to the backlog for the project, and left on the backlog until the next sprint planning session.

Prior to the pandemic the whole team would gather for a sprint planning session where they would decide what stories, or goals the team is going to take on for the current sprint. The time the team spends together during this meeting is critically important because it focuses the whole team's energy towards a singular goal.

In the current age of quarantine having an entire team crammed inside a single meeting room for a day would never happen. Due to the pandemic the importance of crafting quality user stories has become critical. Since meetings now are done through video calls and chat rooms while using a digital task board and a team member is no longer just a short walk away the user story must be crafted exceptionally well to let a team member work on it with the possibility of not hearing from another member for a few days.

Thankfully though there are many tools that are already built inside Agile to help product owners create good user stories, and there are plenty of third-party software choices available today that can help a product owner create meaningful user stories for their team too.

Meetings

Meetings are a part of any team development process. Agile has multiple types meetings that can take place, and each meeting has its own reason for existing, and team members who should be involved.

Daily Meetings

Daily meetings are a staple of the Agile development methodology. They are a fast, and efficient way to share valuable information with the whole team, and to figure out where members of the team might need more help. Most teams keep their meetings to be around one minute per person, which results in meetings typically being between five-fifteen minutes. Typically teams will keep the meeting to be a “no tech zone” where participants aren’t allowed to bring in any technology that isn’t explicitly necessary. Typically the only tech that can be seen in a standup meeting is a laptop for the meeting note taker, and possibly another laptop for any non-local team members too.

With the current pandemic raging on the typical standup meeting isn’t something that can happen now. Most people are stuck at home, and those that can leave wouldn’t be standing around in a circle with each in a small confined room. Daily meetings are something that still happen in the pandemic, but obviously have taken a more digital role. Team will meet up using software like Zoom, or Microsoft Teams. While it may be common sense to not talk over someone during an in-person meeting it takes some time to relearn how to not do that during an online meeting. To

help ease team members into not talking over each other some teams have adopted a round-robin style which unfortunately doesn't allow much interaction, while others have started using the built-in features of their software to indicate they have something to say. Zoom in particular can allow a person to raise their hand in the participant's pane.

Other Meetings

Meetings that don't fall within the prevue of a standup can be called many different things; breakout meetings, tactic meetings, war meetings, etc. These are meetings where the only people allowed in them are those that need to be there, and will almost always take a much longer time than a standup allows.

Similar to a standup these meetings would typically be a "no tech zone" and would be conducted in a room using a whiteboard, with the only tech allowed being if a member was non-local.

Today these meetings are still done but are done using a digital whiteboard that everyone has access to. In these meetings people are much freer to talk whenever they want since their time limit is much longer. Additionally with everyone having access to a whiteboard this is one area where team collaboration has increased during the pandemic due to it making everyone a non-local employee.

The Development Process

Agile development is all about iterative and incremental development. While most projects that are Agile are both iterative and incremental, it is possible for projects to be iterative but not incremental.

Iterative Development

In an Agile environment iterative development is encouraged as much can be learned by creating prototypes, or by refining the software over and over where each successive iteration increases the user's functionality.

In the early stages of development it would be a common practice to create a prototype that can be used to gather user feedback and then subsequently throw the prototype away once all the data has been collected. The product owner would show the prototype to a bunch of users in a focus group and collect their responses. That data is then used when developing the actual product. When conducting this group it is incredibly important to have a large amount interaction between the person demonstrating the prototype and the users who the end product is for.

Thankfully this practice is still able to be somewhat held even during a pandemic like COVID-19. While not entirely the same this can be accomplished hosting an online video call between the product owner and a group of users. The product owner would demonstrate the product just like they normally would and can field questions from the users. If the product is digital and the users can run the product then the product owner can send it over to the users either the day of, or the day before the meeting to give them time to play with it. The product owner can still gather a lot of useful information through this process even in the age of COVID-19 however as Agile allows the team to be flexible in their developmental process. When it comes to remote

presentations and product development there has to be extra steps involved and an understanding that any practice will take longer than if it was done in person.

Incremental Development

Agile is by design incremental, and often times inextricably linked to also being iterative as well. Agile focuses on creating incremental development since the very beginning with the Agile manifesto's statement of, "working software over comprehensive documentation". In the Agile world the software is the documentation.

In a normal Agile development setting incremental development is done in sprints with large meetings at the beginning and end of the sprint that plan out the progress the team will make in the sprint, and a retrospective meeting to see how well the team did.

Interestingly enough this part of the Agile methodologies works almost equally well in both the normal and pandemic settings. Since we don't plan out the entire project at any point and only truly plan the next sprint, typically one to two weeks, we put ourselves in a much better spot to change from office mode to quarantine mode. In shifting our views to quarantine we are forced to include the added challenges of it when we do our sprint planning meeting, and build that into how fast we move in our future sprints. As a team we might decide that we will move at a slower velocity because of the added stress of quarantine, and build in some buffer room with each task by increasing the cost of it. With those two small adjustments we can transition our teams' sprint speed back and forth with relative ease.

Team

Obviously the team is the most critical aspect of any development project, because without it nothing would be made. For the purpose of Agile development a team is the group of individuals who are working together on a single project.

I feel that out of all the primary aspects of Agile development the team is single handedly both hurt and helped the most from the COVID-19 pandemic. One of the 12 principles of the Agile development methodology is, “the most efficient and effective method of conveying information to and within a development team is face-to-face conversation.”

Before the COVID-19 pandemic teams were usually localized, and having people in office was preferred over remote workers. This preference made sense how important face-to-face communication and engagement is to Agile development. Since employees were preferred to be in office this made face-to-face communication easy. Meetings could be held in reserved rooms and the whole team could walk there together, afterwards any breakout meetings could happen where blocking problems were solved. The downside to this mentality is that there is a whole subset of potential employees who either aren't willing to move, or can't move to where the team is localized. Looking at the loss of potential employees this method of focusing on a localized team means that you might be forgoing the long-term gains of a fantastic team member for the short-term gains of having someone local to the rest of the team.

Since the pandemic hit every team has been forced to adopt some level of remote workers. This generally involves either adapting the current team to be remote, or has some level of onboarding new employees (either temporary or permanent). Either way the team will have to adapt in some manner to their new circumstances. In the event the personnel on the team isn't changing, and it

is just moving to a remote workplace then the team dynamic doesn't need to change that much. There will have to be some adjusting to a digital environment but everything from core hours to standup meetings, and even events like milestone retrospectives can generally be performed as before just in a digital environment. If the team is onboarding any new hires this is where it can be complicated depending on not only how experienced in the field the new team member is, but their experience working in a remote environment, and where they are geographically located. Since there are so many more variables when adding a remote worker to a team there are plenty more risks, but there is also a much larger potential team member pool to pull from.

User Personas

User personas are synthetic biographies of imagined users of the project. Members of the team will create these personas to give them a concise visual example of people who will potentially use the future product. These personas are a visual representation of the people this product is designed for and are hung up in the Team Room. The main purpose of have a lot of personas and keeping them up for ease of reference mean that when creating design choices for the project there is a direct reason for choices, and a justifiable reason for them.

In looking at how user personas are used there isn't much of a change with them between the normal office setting and a quarantine pandemic setting. Since user personas are printed out and placed on a wall in a team room, this can be replaced by being saved as pictures and placed in a shared repository. When team members are designing features for the product they have to reference why the feature is useful to a persona, "Alice who is 70 can't see very well so we shouldn't clutter the window too much." This is equally doable in an online setting where when the person proposing a feature can easily reference this as well and each team member can pull up that persona to see if that aligns with them.

Retrospectives

Retrospectives are unique meetings in the sense that depending on the team involved these can become mini-events. Retrospectives are usually broken down into one of two types; milestone, and sprint.

Sprint Retrospective

A sprint retrospective is typically held at the end of each sprint and is run by a member of the team and is designed offer opportunities for the team to improve its performance over the course of the whole project. A sprint retrospective must be a safe place where each member of the team feels comfortable speaking up with the aim to find measurable ways to improve the team or to construct ideas for improvement. The goal of a sprint retrospective is to come up with concrete and tactical matters to improve the team.

Even though a sprint retrospective can be performed in an online setting, unless the entire team is taking part in the retrospective in an online manner any nonlocal members will automatically feel like they aren't a full member of the team. In this manner a sprint retrospective can be performed in a quarantine setting, it must be either an all or none setting. Additionally the sprint retrospective should be planned to take at least half a work day, and would be best to be scheduled after lunch. This gives the whole team time to get some work done in the morning, then take a break for lunch and return with as clam as mind as possible. It will also give the team plenty of time to discuss the sprint and not put extra mental strain on the employees to go back to work after a long meeting. Finally planning this after lunch will let the team break for the day once the meeting is done and provides a nice finish for the day where team members can reflect on issues, concerns, suggestions, and solutions brought up in the meeting.

Milestone Retrospective/Project Retrospective

A milestone retrospective is held either at the end of a project, and is then called a project retrospective or a post mortem, or after a long period of time in a project, perhaps once every two or three months. A milestone retrospective is typically a one to three day affair where every permanent member of the team is in attendance. Additionally the retrospective is facilitated by someone who is external from the team. This is important because it is almost impossible for the facilitator to remain impartial in a discussion when the facilitator has a vested interest in the outcome of the project and the team itself. The goal a milestone retrospective is to talk about working relations between team members, overall team health, and project viability.

Based on my interviews, my personal experience, and my research I don't feel that a milestone can be effectively performed in a quarantine setting in the same way that it is does in a localized setting. If the normal duration of a milestone retrospective is at least one full day, with a project retrospective being up to three days, you would need to block out a minimum of two days for a milestone retrospective, with possibly of taking up to a full work week at the maximum for a project retrospective. A project retrospective is already a mentally and emotionally draining experience since it is designed to be a place where the whole team can express their feelings openly and find solutions to team problems. This kind of mental and emotional fatigue is very taxing on each team member already, and as the stress from an online setting sets in, and the days get longer the efficiency of the retrospective will decline, and the quality of discussion will deteriorate until people will just check out.

Outside Work Rituals

One thing that I have noticed through all my interviews was a common thread of how this is such a large departure from what can be considered “normal” even by people who normally are remote workers. As such I have dedicated the following exploring the coping mechanisms that don’t strictly fall within the confines of agile development but that have helped people maintain their sanity.

Commuting

Many people use their commute time going to work to get into “work mode” and “home/rest mode” when they are heading home. This can be accomplished from something as simple as listening to a podcast, one example that someone I interviewed gave was that they listen to a tech podcast on their way to work and a cinema related podcast on their way home. Other people will read blogs/magazines, listen to specific albums/music genres, or even watch different YouTube videos that get them in the right mindset.

In the quarantine era the idea of being on a packed bus listening to a podcast seems like a distant memory and people have come up with creative solutions to this problem. One common example is that they will take a walk around their block before and after work while listening to their podcast, YouTube video, etc. Each person that has brought up this concept says that while it’s not as useful as their normal commute it has helped them have a definite transition into work/home mode that they didn’t have before. For the interviews that didn’t feel comfortable going for a walk outside one surprising ritual that has formed is a workout in the morning to get them ready for the day, and a relaxing bath after work is over. According to the interviewee the act of working out energizes them since they have difficulties focusing during meetings even

when they are at the office, and it's exponentially harder at home. The bath is their reward for a day of focus and according to them "they don't need to worry about their coworkers complaining about body odor through the screen" so they don't need to shower off before work.

Work-Life Balance

According to every person I've talked to this has to be the single most challenging thing to deal with during the quarantine. From the people who are normal office workers this has been the cause of more emotional distress than anything else and has led to; arguments with spouses, working too much/little, depression, emotional crisis, frustration with children, and a myriad of other problems. Additionally when interviewing the people who normally do remote-work they have talked at length about how many people think that this is "normal" for them and they have gotten tired of explaining that this isn't normal remote-work conditions. The remote-workers I talked to have had similar experiences to those of the people who are normally office-workers but so a smaller level since they at least have some background in working at their house.

To solve this problem I have seen multiple solutions that seem horizontally similar in regards to the seniority of the individual that I interviewed. The tiers of interviewees can be broken down as; entry level, senior level, principle level.

The people I interviewed that are entry level workers seemed to have the hardest time when it came to work/life balance, and they also had the widest array of experiences. I found that even when interviewing entry level workers at the same company (Microsoft) they were told vastly different things from their managers around the concept of "how much work the company expects them to output" now that they are remote-workers. Some entry level employees were told that since they are fairly new to the work field they haven't had time to develop their habits

and as such are expected to perform at 100% efficiency even during this time, and since they are on salary that's what they signed up for. Whereas other entry level workers have been told that they are expected to only operate at 75% efficiency and will have extra leniency because of how new they are to the work field. Additionally the entry level workers I talked to felt that this pandemic has severely limited their potential for promotion. Unanimously they voiced that since they aren't very experienced in their job field they haven't been given much variety in their work, which has hampered their ability to grow.

Senior level workers, across the board had more flexibility than the entry level works and depending on the team had less to the same amount of flexibility as the principle level ones I interviewed. The main responses that I got from the senior level workers is that their work output was expected to drop since they couldn't be in the office to have their meetings, and they were able to set approximate guidelines of when they would be working, which generally was the typical 9am-5pm, give or take two hours depending on their start time. Senior level workers were able to choose when they started as long as they were working for their team's core hours, and would clock-off at the end of a usual work day. They attributed this flexibility to the time they had already put in with their respective company or team, and while they understood that it is more difficult for the entry level workers it is an unfortunate time for everyone in the industry. The senior level works interviewed couldn't think of anything they could do to really institute change since corporations like Google, Amazon, and Microsoft are so large that each team is essentially a microcosm unto itself and would advise the entry level workers to speak to their managers or skips (the person above their manager) if they are having problems with their team. The two principle level people I was able to interview obviously had the most flexibility in their schedules. They both had self-imposed cutoff times for work, and with the exception of their

boss requesting a meeting they wouldn't take any meetings after 3:30pm. They would schedule their days and meetings around that cutoff time but both mentioned that even with that they would still sometimes slip up and would end up working late into the night. The principle level people I talked to were pretty open about their cutoff times, and credited some of their freedom to the work they put in when compared to the other levels. They also both mentioned that although they have a self-imposed cutoff time, they would both frequently work late into the night but just did so without having to work online or with the rest of their team. Both of the people I interviewed here mentioned that their bosses expected their output to drop to around 75%-80% of their standard operating capacity. This was expected because the problems that they are working on require more concentration and thought than what most of the team can handle, as well as the reduced access to resources they have being at home instead of being in an office setting with other principle developers, and all their reference books they keep handy.

Remote Working Is Not Working From Home

One thing that employees who were working in-office and now are working from their homes due to the quarantine have been unanimously told is that, "you are now remote working, and not working from home." The reason companies are reinforcing this idea is that when an employee decides to work from home for a day there is the understanding that they will still work, but it is a more relaxed setting. Also when taking a day to work from home the employee will usually try to schedule this around not having any meetings. Companies and managers are repeatedly saying that this isn't "working from home" because employees will have meetings, they will have to be on time for them, and if they are constantly late for them their can and will be disciplinary measure taken.

While this may seem somewhat extreme companies are trying to instill the mindset in their employees that this isn't going to be short-term and wants to make sure that their employees understand that as well. One of the people I interviewed mentioned that while their team was really strict in regards to the quarantine measure the company put in place, once a month or two had set in the team slowly eased off the reins and gave their employees more freedom.

How Agile Can Change In the Future of Remote Work

Many companies are looking to the future once the pandemic is over and are trying to set themselves up for success once employees can return to the office. That being said from my research and my interviews I see five key areas that the software development industry might be more agile in the future.

Meetings

Meetings have radically changed since the COVID-19 pandemic began and many software engineers wonder if it will ever go back to the way it was. Whether meetings will be held in a room like the old days one thing that every person I talked to would agree on is that the days of “no tech zones” are a thing of the past.

Teams are oddly enough embracing the Agile mindset of “individuals and interactions over process and tools” by using a digital tool. I think that the future of meetings will include software that allows for nonlocal team members to be more included in any way possible. This will include digital whiteboards that all team members can use at the same time, and having nonlocal members be more prominent in the meetings by having all team members use some software that lets everyone see each other.

Software

Software that helps support distributed teams has seen a huge boom during the COVID-19 pandemic. A lot of software has been developed in light of the pandemic, but large companies have doubled-down on upgrading their own software to help compete in this market.

A great example of this is Microsoft Teams, this software has been around since 2017, but was almost entirely unheard of until 2020. Teams also languished in development hell as it wasn't widely used so those who had to use just suffered through it. Since the pandemic the Microsoft Teams team has ramped up production and provided many updates and quality of life improvements to their software now that almost the entire company uses it.

Teams

It's impossible to think that the idea of a software team won't fundamentally change going forward into the future. Some people will never feel comfortable going back to a large office setting. The future of the software development team is both remote and local, distanced and centralized. The teams of the future will be mixed between those in-office and those out-of-office.

Agile is ready to handle this as one of the key tenants of being Agile is "responding to change, over following a plan". Agile is willing to change the current paradigm if it's no longer working.

To embrace the new mixed location team there has to be a change in how a team works. Two worries of the people I interviewed were the demise of core hours, the time an employee is expected to work, and daily standup meetings. I feel that it will be up to the individual team to determine what their core hours are, and a big part of that will have to be how distanced their team is. If a team is totally localized they can have fairly standard core hours, but if a part of the

team is highly distanced, say from Redmond, WA and Sydney, Australia then standard core hours won't work. Additionally the concept of daily meetings will have to change based on the team's needs. A localized team can have daily standups while a distanced team might need to only have three or four standups, but use other methods to keep informed on their team members.

One method that I propose is a remote method of a SCRUpdate, short for SCRUM and Update. This is a method of performing your portion of a daily standup digitally. The methods that I have done and experimented with are the video and chat formats.

A SCRUpdate consists of all the essential information that someone who is in daily standup would provide, just digitally and on a software that the rest of the team uses too. This format is particularly useful when it comes to highly distanced teams that are in time-zones where it might be impossible for one or more team members to be present at each standup.

This practice is scalable as well to whatever size of a standup meeting might be. A person can post their portion of standup, their last 24 hours and their next 24 hours, into a chat feature where everyone has access to it. If more than one person is in the same location then they can record all of their parts together as well.

The SCRUpdate is a useful tool that can be combined with other software that is currently on the market today to host digital Kanban and Scrum boards. When provided in this manner it allows a distributed team to function at almost full capacity. Each member can see what every other member is working on, and if a member needs help they can bring it up in their SCRUpdate where it can then be addressed by the other members of the team by responding to the team members post.

Retrospectives

This is probably the most difficult thing for me to image on how Agile can be adapted to fix this.

A sprint retrospective can be achieved by having the team in an online video call, because seeing the faces of your coworkers is important, and discussing the retrospective normally. I feel that Agile can accomplish this somewhat easily by having the team member who is running the retrospective have designated breaks already planned into the meeting. There isn't much that needs to be adapted for the future for this kind of retrospective.

A project retrospective is almost impossible to imagine in its current state in a remote work setting mode, unless you decide to drastically change the goals and functionality of a project retrospective. If we are talking about a remote work environment for a project then the following list contains my proposed changes:

- At the end of the project give the entire team a paid week off to collect their thoughts and feelings. This gives each team member time to decompress from the project itself, and gives them time to decide what they want to bring up at the retrospective and things they want to see changed.
- Let the team know that beginning when they return from their vacation they will be in a week project retrospective. Inform the team that although this time is blocked out for the retrospective it doesn't necessarily mean that the whole week will be consist of just it. If they finish early then the rest is personal time to work on any projects they want, but will still be paid as if in the retrospective.
- If the team is multinational and has members who aren't comfortable speaking in English have translators provided so ESL team members can be a part of the discussion

and be sure to give extra time for them to speak up since it takes time to go from translator to team member, then back to translator and finally to the team.

- Understand that time zones are a thing and provide times that are optimal for each member. This might mean that if a meeting starts at 9:00am local time to you, it might be 11:00pm for a team member. To share the burden of this have the starting time for each meeting in the week be staggered so no one member is left to carry the burden of working awkward hours.
- Be sure to include frequent breaks for all of those involved and make sure that those times are clearly heard and displayed for all.
- Finally...be patient, and be sure to let the members of your know you appreciate their patience as well. Remember that any stress you are feeling someone else is feeling it too and they just might be holding it in.

Companies

After interviewing people for this paper no single person agreed on how companies can best change to a remote work setting. Part of this is that each person was focused on their specific company and thus their answers were subjective to the size of their company. Microsoft can do much more to be adaptable than a small independent video game studio, if for no other reason than the difference in money they have.

With that in mind the solution that I have is less concrete than my previous solutions, and goes back to one of the 12 principles behind the Agile manifesto, “Principle 5: Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.” If the company trusts their employees, and supports them then the team can decide how to best be Agile in a remote environment. The reason that I support this concept

above all others is that a team knows what it needs better than anyone else. Any solution provided will only work for some teams, but would hamper others. With that in mind I suggest that a company invest in their leaders, and trust their leaders to know what is best for their teams.

Conclusion

After all the interviews, research, case studies, and personal experience I have put into this there are only a two things that I can say with 100% certainty:

1. The world of software development is forever changed.
2. While it may be difficult the flexibility to an Agile development methodology can overcome most, if not all of these problems. Sometimes you just need to drastically change your perspective to think outside the box.

The only limitation to an Agile methodology effectively adapting to a team be it local, remote, or mixed is the creativity of the team and trust that team has in its leaders and fellow team members. The more distant a team is, the more trust is required amongst the fellow team members, however if the team is following the 12 principles behind the Agile manifesto then that trust is already an implicit part of every team.

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