

Becoming More Agile:

How to Adopt Agile Development Methodology

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Salient CRGT has a 25-year history of delivering innovative, missioncritical infrastructure and software solutions for over 50 Federal clients. Over the last several years, we have developed new programs leveraging Agile methodologies and transitioned existing programs from Waterfall to Agile. For instance, Salient CRGT used an Agile approach to create several solutions for a federal organization, a customer of ours for over 20 years. We developed a facilities management system, a geospatial predictive analytics application that has saved the agency approximately \$150 million each year for the past two years. Salient CRGT also transitioned a segment of a large, business critical application which serves as the system of record for all business mailings, from Waterfall to Agile. The application accounts for more than 60% of the organization's \$65 billion in revenue, recording more than 100 million transactions daily. Based upon these experiences and others, Salient CRGT has garnered expertise working in—and improving upon—software development processes.

In the traditional (serialized) approach to software development, there are only very short periods of communication between the customer organization and the development teams. As a result, there is a lack of confidence on the part of government stakeholders that IT can deliver what they want. The 2011 IT Project Success Survey shows that only about 50% of projects implemented under traditional development paradigms are successful. Even with those that are successful, traditional methodologies show extremely poor effectiveness and areas such as quality, value, and ROI.

Unlike a typical Waterfall project which may have only a few releases a year, an Agile project usually has short, two-week iterations and code is transitioned through development, test, and production environments very rapidly. Agile also requires greater customer involvement at the stakeholder and senior management levels, as well as participation from related teams. With this increased commitment of resources comes software development that reflects the needs of the customer. Most of all, the focus of Agile is in the output: in Agile, success is reflected in the delivery of working pieces of software.

Making the shift from Waterfall to Agile is a transition that involves changing organizational perception as well as developmental practices. As with learning any new process, guidance is needed for maximum success. With Agile experience and the ability to facilitate the transition from Waterfall development to Agile, Salient CRGT provides the answers and direction you need to support your decision to move toward the Agile process, plus help to maximize the benefits of Agile practices.

Q: How does the Agile development process differ most from the traditional Waterfall development approach?

A: Agile utilizes rapid development conducted in iterative sessions in short bursts, usually two weeks. This development approach involves continuous change and adaptability. With this increased commitment of resources comes software development that reflects the needs of the customer. Working software is the primary measure of progress. Salient CRGT's repeatable development processes and Continuous Integration process, which include activities such as Daily Stand-ups, Scrum of Scrums, and Sprint meetings (for planning, reviews, and retrospectives) as well as artifacts including product and sprint backlogs have been assessed at CMMI Level 3, ensuring a timely delivery of a quality product to our customers.

Moving Toward Agile

Salient CRGT advises customers to consider critical factors and make key decisions prior to some of the following processes to help complex organizations transition to adopting Agile processes:

- ▶ **Selecting the Pilot Project** – To have a successful adoption of Agile, it is crucial to demonstrate success in one or more pilot projects. Pilot selection is critical in determining how Agile adoption is perceived by the rest of the organization.
- ▶ **Committing Resources and Staff to Development** – Agile requires the commitment of resources and facilitating preparations for adoption of Agile practices.
- ▶ **Acclimating Customers and Stakeholders to the New Process** – As part of Agile deployment at an agency, care must be taken to acclimate stakeholders to the rigorous approach of Agile.
- ▶ **Implementing Agile on Large Projects** – Organizations can scale Agile for large projects by applying Agile methodologies in multiple teams working on subsystems and components.

Selecting a Pilot Project

Demonstrating success with a pilot is an important first step on the road to Agile adoption. Because this is such an important decision in the acceptance process, Salient CRGT assists our customers in selecting the right project to enable teams to embrace the Agile concepts and principles. Organizations with significant software development teams, extensive methodologies, and legacy development programs already in place may be resistant to change and want proof that it can work, and Salient CRGT can help these teams work together to make the change effective and productive. A coach who understands Agile methodologies can make a positive impact in helping an organization build the first team. When making this selection, Salient CRGT suggests these considerations/actions:

- ▶ **Select the Right Team** – When putting together a team for your pilot project, select individuals who are willing to take the time to learn and properly apply Agile techniques. To increase chances of success on the pilot project, the first team should be permitted to mature in the new processes before trying to create multi-team projects. Recommended team size is six to nine members per project.
- ▶ **Enable Team Interactions** – A collocated team is ideal for Agile and will promote the concepts, such as collaboration, face-to-face meetings, pair programming, and instant meetings as needed. Shared space promotes the collaborative nature of Agile. It also facilitates enterprise buy-in when others can see the use of Agile growing.
- ▶ **Choose Size, Duration and Scheduling** – Ideally, a project should be small enough to be done by just one team so that your team members can focus on just learning Agile. A project also needs to be long enough to have credibility among management while still being short enough to be able to produce results and demonstrate benefits of the Agile approach.
- ▶ **Foster Organizational Support** – As Agile may be a significant shift from the current business processes, an engaged sponsor can help the teams promote and assimilate Agile processes. As a coach and facilitator for Agile adoption, Salient CRGT can help the sponsor and the development team increase acceptance from within organically.
- ▶ **Identify Importance and Criticality** – It is important to choose a project with some visibility and with some meaning to the stakeholders because the more important the project is to the business, the better support the various work groups will get from key personnel in different support areas.

Q: What criteria are most important in the selection of a pilot program for the implementation of Agile development?

A: The pilot program should be mid-sized and of moderate complexity and risk. It also needs to be long enough to see the benefits of the Agile development—typically, three to five months in duration. Salient CRGT implemented Agile development at a federal organization for building the mobile version of the eApprover application, an automated workflow for thousands of users. The project enabled iterative feedback from the customer and addressed the changing needs of the vendor—making it easier to revise requirements during the development process and address each user story successfully and fully, prior to moving to the test environment, preventing rewriting extensive amounts of code.

- ▶ **Avoid New Technologies** – The team may be tempted to use some new technologies or architecture to implement on this pilot project, but Salient CRGT recommends waiting to implement new technologies at the same time unless it is needed for the Agile transformation itself. As the focus of this pilot is to prove Agile is a viable development process for the organization or for a target program, it is wiser to avoid adding extra complexity to the work to allow the success of Agile to speak for itself.
- ▶ **Determine Risk** – Agile methodologies manage risk implicitly and deal with risk more effectively than traditional methods. Thus, the pilot project should be risky enough to present an opportunity to highlight these risk management methods.
- ▶ **Prevent Project Dependencies** – Salient CRGT has found that it is best to select a project that has very few dependencies on other enterprise systems in the organizations so the pilot project can proceed without added resistance from other teams using the standard development processes.
- ▶ **Target New Development** – A good choice for a pilot project is a new software development project instead of an enhancement to an existing application. This makes it easier to incorporate Agile methodologies into your iterations, such as unit testing, automated testing, continuous integration, as well as working with shorter release windows.
- ▶ **Maintain Original Scope** – Salient CRGT has found that teams succeed when they remain focused on the original scope of the project—rather than trying to add more and more functionality and enhancements outside the scope—to show the success of Agile for this initial project.

Committing Resources and Staff to Agile Development

Salient CRGT helps our customers in determining the resources needed before engaging development teams in their first sprint. Our customers have learned that it is essential to commit resources and facilitate preparations for adoption of Agile practices, including selecting the team, investing in Agile coaching, training courses, and shared space for the Agile teams.

- ▶ **Agile Roles** – Agile development focuses on roles of key participants, such as stakeholder, product owner, team member, Team Lead (Scrum Master), as well as identifying the importance of supporting expertise for a team.
- ▶ **Collocation** – One of the key elements of the Agile manifesto is collaboration. Teams need to work together in large centralized areas to promote real time open communications, the ability to have meetings when needed. The most effective Agile teams have a dedicated area to gather and work, as well as materials such as sticky notes, whiteboards, etc., to augment brainstorming during daily meetings between developers and stakeholders.
- ▶ **Agile Coaches** – An Agile coach has experience in implementing Agile projects and can help your company with that process. Typically, the Agile coach is hired as a contractor outside the organization. Some companies even bring in Agile coaches early before the first pilot is selected to help with strategizing the best way to roll out Agile to the entire enterprise. They can help train your teams, scrum masters, and even stakeholders to stay on track with Agile adoption.
- ▶ **Training Personnel** – As a coach, Salient CRGT can help the customer decide what kind of training is needed for the different roles and how to incorporate high level overview with other teams in the organization that will be affected by this transformation
- ▶ **Tools for Tracking Work Artifacts** – A key consideration is the methods for tracking artifacts for the Agile teams and products, such as user stories, acceptance criteria, tasks, team members, and test scenarios. Although there are many possibilities ranging from handwritten cards and notes all the way to off-the-shelf Web-based products to support Agile, Salient CRGT recommends starting with the low tech options for tracking artifacts and using lessons learned and experience to determine which products would be most beneficial.

Q: Who fulfills the key roles on a team during Agile development?

A: Key roles include stakeholders, developers, and project lead. Agile practices suggest hiring an independent contractor to be the Scrum Master. With multiple certified scrum masters and PMI Agile Certified Practitioners (PMI-ACP)® on our staff, Salient CRGT has supported federal customers starting new programs using the Agile methodology as well as transitioning existing programs from traditional Waterfall approaches to Agile.

Acclimating Stakeholders to Agile

Within our experience, Salient CRGT has found that adopting Agile may be harder for some organizations than others. Using Agile, stakeholders are continuously involved in the development cycle. This is a significant shift from the typical level of involvement under the Waterfall approach. For that reason, Salient CRGT focuses on assisting our customers in adjusting and adapting to the new process as well as adjusting Agile to fit them.

Salient CRGT works with our customers to help overcome obstacles within the organization. Stakeholder participation is very important to Agile teams so that they can work to build projects that reflect the understanding of what is needed. With the rapid and repeated iterative process of Agile—an Agile project usually has short two-week sprints and code is constantly being transitioned through development, test, and production, and scrums (stand up meetings) are frequent—it is important to come up with solutions to better the relationships with the stakeholders and teams. Stakeholder involvement is still critical to the success of the Agile project. Salient CRGT is committed to helping our customers succeed and see the return on investment they will receive by encouraging stakeholder involvement and changing the culture to move away from the traditional Waterfall processes.

Some strategies can be employed to help improve the relationship and increase the chances of success for the Agile project:

- ▶ **Get Stakeholder Support** – It is important to identify the level of support from each stakeholder and determine who will help or hinder the adoption of Agile adoption, then determine how best to increase knowledge and identify possible risks to the support of Agile within the enterprise.
- ▶ **Keep Stakeholders Involved** – Stakeholders may lose interest and gaining it back is difficult, so Salient CRGT recommends the Agile teams to keep regular communication and involvement with the stakeholders so they maximize the productivity of the teams and the interest of stakeholders.
- ▶ **Adapt to Stakeholder Needs** – At the beginning of the project, the customer determines the level of access the Agile team will have to your stakeholders, and establishes the working schedule between stakeholders and developers. The Agile teams need to adapt to the needs of the stakeholders that are driving the project, which means accommodating stakeholder schedules and availability. The more face time Agile teams can coordinate with the stakeholders, the more successful the projects will be.
- ▶ **Include Operations Teams** – Agile teams rely heavily on operations staff, especially in the beginning, to help change and adapt current company practices to accommodate these new practices. Salient CRGT offers training and guidance to our customers to help the support organization to participate in the Agile transformation and work with the Agile teams to adapt existing processes to the changes.
- ▶ **Working with Management** – Acceptance of Agile requires the continuous participation of stakeholders, so senior management should be aware of the principles of Agile and support the level of involvement of stakeholders that is required. By working with customer project management, Salient CRGT can help to advance the practice of Agile by helping senior management become more aware of the benefits of Agile.

Q: How important is training for participants when moving to the Agile development process?

A: According to some sources, training is second only to executive sponsorship in the top success factors for Agile adoption within an organization. Salient CRGT's customers have sought opportunities to learn from our Agile developers—for example, following our team's implementation of an Agile project, the customer has asked their own staff to shadow our team to learn more about implementing an Agile methodology.

Implementing Agile on Large Projects

Once Agile has been introduced and the shift in the organizational culture permits greater involvement of stakeholders and key roles, Salient CRGT can continue to facilitate the broader acceptance and use of Agile. Salient CRGT supports our customers to further engage the organization to implement Agile practices to larger projects with more participants.

In larger projects, companies may have teams of more than the recommended six to nine members per project. When the size of your Agile team grows beyond this, it is recommended to divide up the teams into several smaller Agile teams. With this method, each development team becomes responsible for one or more subsystems in the project enabling them to work as an Agile team and deliver the features for their prospective subsystem. This also reduces the coordination required because the majority of communication would now be within the subteams. This allows organizations to scale Agile for these large projects as the teams are basically groups of small teams each applying Agile methodologies to their subsystems.

Summary

With smart planning and commitment to building acceptance, even a large organization can successfully adopt Agile concepts for development projects. Salient CRGT is a committed contractor with Agile experience and ability to facilitate the movement from Waterfall development approach to successful Agile practices.

Q: When using Agile for large, multi-team projects, how does the process change?

A: Actually, the process is the same—just across several teams. Each team would have a specific subset of functionality within the overall project, and each team would deliver and produce its own working piece of software as a component of the final product. Salient CRGT's developers on an application development project worked in multiple scrum teams to address the highly complex needs of this largescale application comprised of 26 distinct functional modules, all while transitioning to an Agile development approach. Additionally, our software development team achieved a defect-free rate of 98%.