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IT@Intel: Intel IT's Agile Journey Toward Scalability and Transformation

Intel IT accelerates its Agile journey with a leadership-first approach and by adhering to good scrum planning and practice

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Executive Summary

Large-scale, Agile transformations are extremely challenging for digital enterprises. Every organization's path is unique and more often than not, failure is part of the process. Intel IT's Agile journey is no different—at times oscillating between challenging to downright discouraging over the course of a decade—before finally turning the corner and delivering sustained improvements in capacity, predictability and positive team engagement over two years.

Today, Intel IT is on course to double the value delivery capacity of all IT teams by 2023. This paper focuses on how we traversed the chasm between discouragement and sustained improvement. We credit our success to a rededication to good scrum and a leadership-first approach to practical, large-scale Agile transformation.

More specifically, this paper will discuss:

- How Intel IT leveraged the role of leadership to accelerate and support our Agile transformation.

- Why "good scrum" practices are essential for scale.

- What novel approaches we took to accelerate our progress.

- Lessons learned throughout our Agile journey.

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Acronyms

LSW	Leader Standard Work
ABF	Agile Budgeting and Forecasting
QCC	Quarterly Cadence Countdown

Background

Intel IT began its decade-long journey toward Agile transformation with the following objectives: empower teams; improve alignment with Intel's business units; and accelerate predictable, high-quality value delivery to clients. However, several years into our journey, it became clear that we needed to refactor our approach. We had not developed a solidly constructed scrum implementation, one that would support and reinforce work patterns that would allow us to scale as planned. As a result, our attempts to scale Agile were not universally successful.

Facing mounting pressure to double value delivery capacity to meet business needs, Intel IT sought a more focused approach toward adopting scrum, one that fully embraced its fundamentals. After a period of self-reflection, we noted several areas that had to be addressed to accelerate our transformation journey. These included:

- Failure to effectively involve executive leadership early to ensure support and sponsorship.

- Ambiguity in critical leadership roles, especially for managers of scrum teams.

- Inadequate team construction, manifesting in sluggish adoption of scrum, inconsistent results and failure to realize the benefits of scrum.

- Incompatibilities between Intel IT's strategic workforce plan and scrum team construction.

- Premature scaling without proper foundational aspects in place.

- Failure to effectively outline traditional Agile management practices, which are essential for achieving the necessary cultural/mindset shift in the work environment.

A Better Way to Scale Agile

Scrum prescribes a framework within which people can address complex adaptive problems. So, while missteps are bound to occur, there is a methodology in place to get teams back on track. After using scrum—and trying to scale it across all of Intel IT for several years—we determined that we were missing the foundational aspects of scrum that would allow us to reach our scalability goals.

Our approach to getting back on track involved both meticulous reintegration of traditional scrum practices, as well as some novel approaches for cultivating the necessary cultural changes required for a successful Agile transition. It was clear that we needed more universal adherence to the scrum framework to enable sustainable change. However, that required a level of buy-in that we had not previously taken the time to establish during our earlier rollout. This time, we decided to start at the top.

Leveraging Top Leadership

There is no such thing as a bottom-up transformation—transformations must be led. We needed our Agile journey to begin with top leadership and filter down through a bourgeoning ecosystem of transparency, support and increasing success. To set the stage, we began our reset of Agile by engaging with Intel IT executives on the challenges that they faced and how Agile could help.

We started by asking executives one simple question: What problems would you like to solve?

The answers we received were fairly typical of enterprises. The executives wanted to increase predictability, improve quality and reduce delivery times. More importantly, these are the challenges that have historically fueled the popularity of Agile transformations. In other words, Agile has a track record of helping organizations shorten cycle times, eliminate waste and improve quality and predictability.

Once we explained this to executives and raised their level of understanding of Agile, we were able to achieve early buy-in at the top level, which helped facilitate broader acceptance throughout the organization. It also allowed us to set goals and establish key performance indicators, so we could measure and report our progress in real time.

We also assigned an experienced Agile coach to each IT director. Directors play a critical role in setting expectations, reinforcing direction and leading organizations through their Agile transformation. They are instrumental in communicating why change is required. By modeling the right mindset and behavior, they can also be instrumental in creating an organizational culture that is conducive to change.

The coaches helped accelerate each director's Agile learning curve. They also provided directors with the guidance and support they needed as they aligned their business groups' goals with the broader transformation goals of the organization. This strategy helped foster trust between the organization and the coaching community, so that coaches were considered as leaders who not only helped with training and problem solving, but also showed the organization what good scrum looks like.

Transforming IT Managers into Agile Managers

From an IT manager's perspective, Agile transformations can be very unsettling. They may experience a loss of purpose and identity within the organization, especially as they observe so many of their traditional responsibilities being absorbed into the scrum framework and practice. Our oversight was not replacing those traditional managerial responsibilities with new responsibilities that are relevant in an Agile environment.

To address this problem, we put IT managers to work in a meaningful way as Agile managers. This was a novel strategy, as IT managers do not typically have a defined role in Agile rollouts. However, as Agile managers, they became responsible for overseeing the scrum implementation (see Figure 1). This meant they had to stop directing the work and start building teams to accelerate scrum adoption and set expectations for good scrum. They also had to be the first link in the help chain for their teams—removing impediments that the team could not eliminate on their own. They had to learn to stop answering questions and start asking them.

Scrum Roles and Relationships

Front-Line Manager
Building the Right Scrum
- Setting Vision, Strategy and Expectations
- Scrum Construction
- Doing Good Scrum
- Providing Help

Scrum Master
Building the Thing Fast, Continuous Improvement

Product Owner
Building the Right Thing, Business Value

Development Team
Building the Thing Right, Quality

Figure 1. Intel IT created the novel role of Agile manager for IT managers, allowing them to oversee traditional scrum roles of scrum master, team member and product owner.

The next step in the Agile manager's journey was to introduce leader standard work (LSW), which is a lean manufacturing concept and refers to the leader's role in helping operators ensure smooth factory operations. In a factory environment, the manager can walk the floor, spot problems and offer help. In our Agile environment, we needed to give the Agile mangers a means to "walk the scrums," spot problems early and offer help.

We developed a three-part LSW system to help Agile managers operationalize this approach to problem-solving (see Figure 2):

- **Cadence and Sequence.** Establishing proper cadence ensures that there are many eyes available to spot a developing problem, so that it can be addressed early. Sequence ensures that the people closest to the problem have an opportunity to fix it first. If the Agile manager spots a problem, then that typically means that it was a problem that the scrum could not resolve on their own.

- **Visual Controls.** Agile managers review visual controls to see if the scrum is in a normal or abnormal state. Initially, we used simple burn-up charts, but soon found it was also helpful to have Agile managers look at team construction, predictability, quality, sustainability and continuous improvement. Most organizations dedicate part of their weekly staff meetings to an Agile manager LSW review, where managers can review the visual controls together and learn from each other.

- **Response.** Responses are actually prescribed questions that Agile managers ask when they judge that the scrum is in an abnormal state. These are simple questions designed to reinforce good scrum expectations, identify waste in the work process, grow the problem-solving muscles of the team and improve decision-making skills. When first learning the system, the managers struggled to keep all the questions straight, so we told them to start with one question that always works, "What's the problem and how can I help?" This puts the focus on the system instead of the people and makes it clear that the manager is there to help.

Figure 2. Lean leadership involves helping people learn how to apply lean thinking on their own. Agile managers protect and accelerate the scrum's ability to self-organize.

The Agile managers became the purveyors of the overall scrum vision, expectations and strategy. They are highly visible and decisive participants in Agile and play a crucial role in making sure that the proper scrum practices are put into place. This leads to an enhanced sense of purpose and ownership and reinforces the trickle-down cultural change that is needed for a successful Agile transformation. Agile managers are expert early-problem-spotters and have honed their support and coaching skills, which builds greater sustainability into the transformation.

We observed that feedback from these managers grew increasingly positive as they began to see improvements in team productivity and happiness. Research has shown that happy workers are approximately 12% more productive, suggesting that happiness can be an indicator of productivity.[1] Several of the managers have since volunteered to coach others to become Agile managers, leading to a robust internal coaching team. These coaches regularly cite scrum success stories to reinforce enthusiasm for the process. These success stories get retold as part of the Agile transformation process, but they are also equally organic. The resulting buy-in is cumulative, an effect that spreads down through the ranks, seeding collaboration and increasing the organization's internal coaching capacity.

Finally, by creating the role of Agile manager, we were able to offset some of the anxiety IT managers may feel about where they fit into the concept of an Agile self-organizing team.

Practicing Good Scrum

Putting leadership to work in a meaningful way improved team alignment with the scrum principles. But ultimately, adherence to the empirical process of Agile teams within a scrum framework requires discipline, as well as a certain acceptance of the learning curve associated with a new way of working. Bit by bit, teams can grow their self-organizing skills and make the process more natural (see Figure 3).

Scrum principles are grounded in three pillars: transparency, inspection and adaptation. By realigning our focus on firmly establishing basic scrum fundamentals—especially cadence, continuous improvement, self-organization and planning with empirical data—our teams realized the value of these pillars. This focus on the fundamentals enabled our teams to achieve predictability and become more organized. Table 1 presents a checklist of good scrum fundamentals.
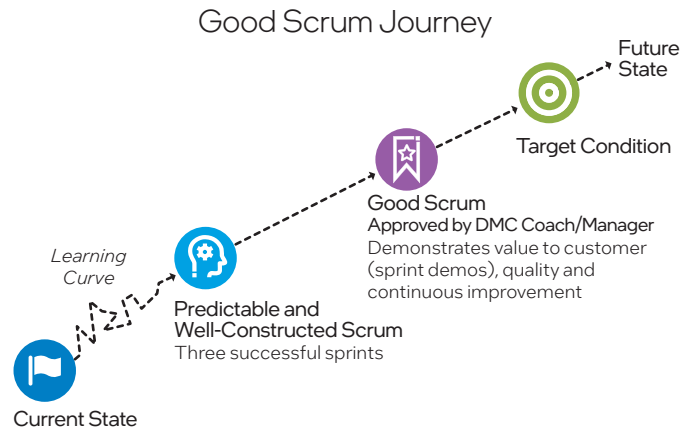

Figure 3. Performing good scrum often involves a learning curve before construction is solid enough to yield sustained progress.

Table 1. Checklist: Fundamental Process of Good Scrum

Category	Detail
Sprint Planning	• Team reviews user stories in the planning meeting that will be executed in the first 1-2 days of the sprint to remove ambiguity. • The sprint goal and backlog are determined and agreed upon in the sprint planning event. • The scrum's sprint velocity is measured and used for planning future sprints and releases. • The scrum plans at least 20% of its velocity on "Keep Improving IT" experiments and improvements. • The development team clarifies story acceptance criteria prior to sizing and captures any changes in writing. • Continuous improvement plan is visible and includes evidence of progress on completing items. • There is evidence that quality is fully owned and understood by the team.
Daily Scrum	• The whole development team attends the 15-minute daily scrum to self-organize around the sprint commitment and coordinate their work. • Sprint interrupts are written as stories with acceptance criteria and scope is renegotiated based on size of impact. • The development team commences work and collaborates to finish the entire sprint backlog. • Team members volunteer to work on stories and tasks—the PO or SM does not assign them.
Sprint Review	• A review meeting is held for each sprint with relevant stakeholders to demo the work product.
Sprint Retrospective	• A retrospective meeting is held for each sprint to evaluate the sprint goal and identify 1-2 improvements to implement in the next sprint. • Missed goals, incomplete stories, interrupts, overtime, happiness, improvement progress and surprises are discussed in the retrospective.
Backlog Refinement	• The whole development team sizes stories together before or during the sprint planning meeting, using blind voting and Fibonacci sequence.
Product Owner (PO)	• All stories are accepted or rejected by the PO and no partial credit is given for incomplete work at the end of the sprint (move and resize). • The PO ensures the product and release backlogs represent stakeholder needs and are visible and prioritized. • The PO brings prioritized stories with intent and initial acceptance criteria to the sprint planning meeting.
Scrum Master (SM)	• The SM is an agent of change that advocates improved practices, experimentation and problem solving. • The SM tracks and facilitates impediment removal for the team and minimizes the effects of interference and interrupts during the sprint.
Scrum Team	• The team maintains a written working agreement that is updated based on learning. • The team produces a potentially shippable work product at each sprint. • Working agreement includes evidence of quality.

An Incremental Approach to Scaling

Having learned the hard way that premature scaling of scrum may not produce the desired results, we decided to take an incremental approach, scaling one small area and then adjusting our approach as needed before scaling further. We wanted teams to learn how to collectively deliver something larger than a single team can deliver on its own. This meant building foundational skills that enable better planning and portfolio management.

We began by identifying the top strategic programs and aligned Agile coaches with program leaders to help them build out a three-quarter release plan, complete with a backlog of capabilities and features to support their roadmap. We scaled up Agile backlog refinement sessions to the portfolio level, where we focused on retraining leadership to write capabilities and features as increments of value delivery rather than the stories and tasks required to deliver value (Figure 4). This approach provided the following benefits:

- Kept leaders focused on the "what," "why" and "by when" of the work.
- Facilitated a common understanding of the work breakdown across the teams.
- Led to more meaningful discussions with partners and stakeholders.
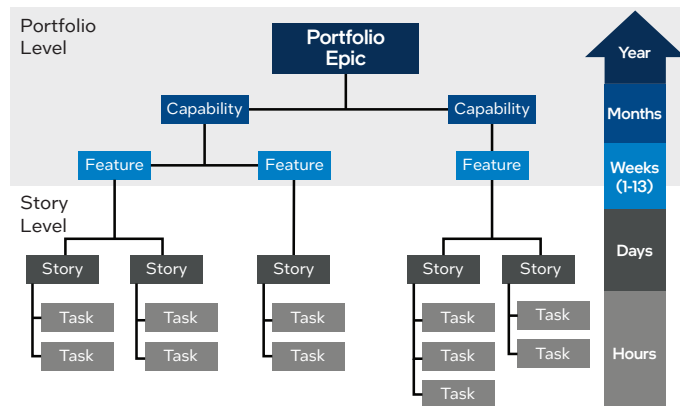

Figure 4. Roadmaps are defined by portfolio items in the work breakdown and prioritized as part of the program backlog.

These initial backlog refinement sessions also exposed several deficiencies, including undefined architecture and technology, the inability to see beyond the first quarter and ambiguous stakeholder priorities, which we were able to address before moving forward.

Once the program backlogs were built, we needed to ensure that they were maintained and continuously improved. To operationalize this, we rolled out Agile Budgeting & Forecasting (ABF), a quarterly cadenced-based process for all group and team leadership. ABF influences team capacity to support longer-range capacity-based planning. It draws on scrum fundamentals of cadence, continuous improvement, self-organization and planning with empirical data that has been scaled up to work with a set of teams. The intent is to provide improved visibility for building a quantifiable longer-range plan that is supported by insights gained from collaboration, early feedback and an early warning system for long-range risks and gaps. ABF also provides teams with a refined, prioritized and roughly sized backlog of features that enables more successful quarterly release planning.

Process Makes Perfect

In addition to forecasting, we learned that there were other activities needed to happen at scale and on a cadence. To provide a framework for operationalizing these activities, we created the Quarterly Cadence Countdown (QCC) to clarify what program leadership should be doing at any given time. This keeps program leadership on a two-week cadence where they are focused on preparing for quarterly planning events with the scrums (see Figure 5). So, while scrums are working to deliver the current quarter's commitments, program leadership is preparing for next quarter's outcomes. This provides a repeatable structure that helps manage the activities of scaling across the portfolio and incorporates lessons learned, such as how the demands of horizontals may impact planning and execution and which architectural dependencies exist.

As with all good Agile processes, a quarterly after-action review helps ensure continuous process improvement. The QCC taught leaders how to operate on a short cadence and kept them focused on where to take the program next. This also provides "space" for the scrums to self-organize around meeting their commitments.
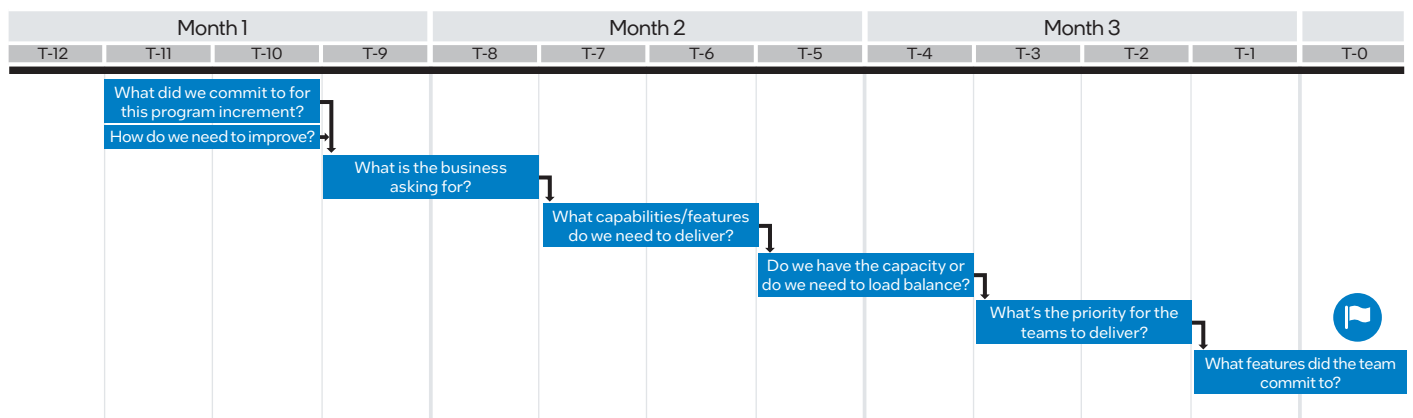

Figure 5. Time-boxed scrum events, such as sprint planning, are crucial for maintaining cadence.

This incremental approach to scaling scrum has enabled us to carefully rollout, test and optimize each piece of our scaling framework. This does not mean the current crop of published scaling frameworks is flawed, but rather that scaling is always somewhat unique to the needs of the organization. Our approach is guided by our goal of achieving "minimum viable bureaucracy" at the scaled level.

Results

Like many enterprises, Intel IT executives were concerned with shortening cycle times, eliminating waste and improving predictability. Understanding this upfront allowed us to create goals that kept our scrum implementation anchored to achieving real business results. This helped us to not only track progress, but also ensure continued leadership sponsorship and participation in the journey.

By implementing the above solutions, we achieved measured improvements in each of the areas that executives were concerned about. Furthermore, the realization of these improvements reinforces the acceptance of Agile at all levels, paving the way for a broader cultural transformation. Improvements included:

- A 26% increase in velocity, which is the value delivery capacity of the teams.
- A 31% increase in the number of teams that reliably make and meet commitments for each sprint.
- A 25% increase in the number of "happy" teams as reported in the sprint retrospectives score of 4+/5.

It is important to note that "predictability" and "happiness" are proven indicators of how sustainable an Agile transformation is likely to be. As the graph in Figure 6 shows, Intel IT is in a good position to continue reaping the benefits of its Agile journey. Our mostly steady progress has only been interrupted by periods of organizational change. This shows how environmental matters can interfere with a team's focus and slow progress. The more we can stabilize the environment, the faster our journey will go.
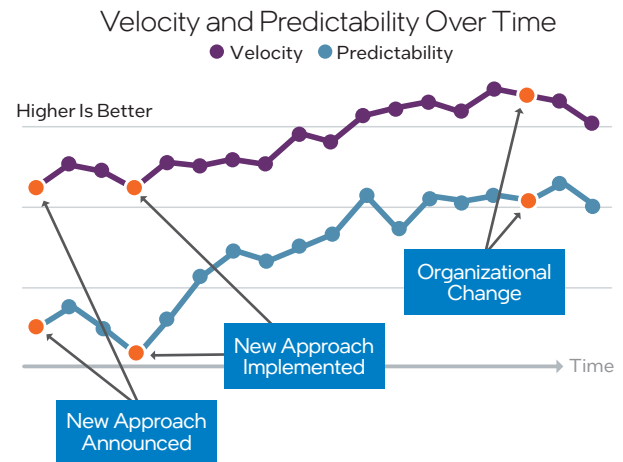

Figure 6. Intel IT's reboot of Agile has shown mostly steady improvement, with the exception of periods of organizational change. These "blips" are indicative on how environmental stability impacts the Agile journey.

Lessons Learned

Key Lesson That Helped Intel IT Turn the Corner in its Agile Journey

Intel IT credits the following lessons learned for helping us achieve a successful Agile reset:

- **Anchor scrum journey in the pursuit of real business results.** We began by asking leadership a few fundamental questions: What problems must be solved? Do you believe scrum can help solve these problems? What is the current baseline? What is the target? This not only helped us establish buy-in from top leadership, but it also provided us with success stories that we used to coach and motivate teams.
- **Only scale "good" scrum.** Scaling teams that have not yet achieved good scrum practice will only amplify inherent problems.
- **Scale scrum for the right reasons.** Scale scrum only when there is a need for coordinated teams to create a larger integrated work product. Scaled scrum is not a management structure, but rather a cross-functional integration structure to help teams deliver something larger than a single scrum can on its own.
- **Scaling scrum is fractal.** Once good scrum is in place, scale only the things that work, such as sprint planning, scrum leadership roles, team agreements and so on. Strive for the "minimum viable bureaucracy" at the scaled level.
- **Scaling scrum is incremental.** Avoid "big bang" scrum scaling—scaling all at once; instead, start gradually with 5-7 teams. Take note of what works and make that the standard for how to scale the next batch of scrums. Update the standards according to lessons learned and have a clear target for what is to be achieved.
- **No one can dictate how to scale scrum.** Regardless of anyone else's experiences, including our own, organizations must find their own way to "good" scaled scrum using fast feedback, inspection and adaptation. Tweaks based on the unique circumstances of the individual organization are okay!

Conclusion

Sometimes it's the unanticipated detours of a journey that create a new perspective and an opportunity for growth. Intel IT's Agile journey has not been a straight path, but what we learned in the process makes us more confident about the road ahead. We've acquired skills that will allow us to maintain cadence for business alignment and predictability. We've reimagined leadership roles in a way that helps enable large-scale transformation. And we've implemented and/or reinforced the scrum standards that will keep us on track. Hopefully, this snapshot of our journey offers valuable insights to others embarking on a similar path.

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