



IT@Intel: Creating a System of Innovation

By formalizing an underlying culture and foundational principles, Intel IT has developed a systematic framework to encourage continual innovation

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Executive Summary

Innovation is at the heart of what drives Intel’s products and cultural values. Intel IT is dedicated to helping Intel thrive, and we must be as innovative as possible in our own roles. Recognizing the opportunity for encouraging more innovation across Intel IT, we set out to do exactly that.

In early 2022, an Intel IT team was formed to focus on innovation. The team researched best practices and formed a system of innovation that starts at the top—fostering a leadership culture that removes fear and dares teams to experiment. We identified seven foundational principles that enable innovative ideas to surface and leaders to follow through on 100% of ideas. To give workers a chance to explore ideas and reduce technical debt, we reserve 20% of team capacity for continuous improvement efforts (which is a form of innovation), through an initiative called Keep Improving IT (KIIT).

Over the last 16 months, our Innovation Day (InnoDays) events have resulted in 184 new ideas, 49 of which have been operationalized. A recent survey revealed that these 49 ideas are saving at least 122 hours per week (6,300 hours per year). Word of our success has spread, and other Intel IT groups are beginning to adopt our system of innovation. In this white paper, we share our principles and methodologies for fostering innovation, in the hopes that our learnings can help other companies become more innovative as well.

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Acronyms

InnoDays Innovation Days
KIIT Keep Improving IT

Business Challenge

Intel IT has been on a decade-long journey of Agile transformation. The adoption of scaled Agile methodology and establishment of scrum standards has empowered teams, improved alignment with Intel's business units and accelerated predictable, high-quality value delivery to clients. And yet, there is more to be done. A dedicated Intel IT team was formed in early 2022 to focus on the execution of innovation. As with most scaled Agile teams, the innovation team consists of several smaller teams.

While observing other teams across Intel IT, the innovation team (referred to as "we" throughout this paper) saw examples of teams missing opportunities to continuously improve their systems and products. We also noticed that experimentation was underutilized, and often teams did not decide what to build based on the output of experiments. By reserving execution capacity and holding a dedicated event at which to safely experiment, our system of innovation is helping us get closer to our desired state. Intel IT's goal to continuously improve is foundational for embedding a culture steeped in doing the best thing, defined by experimentation and feedback.

By formalizing an underlying culture and foundational principles, we have developed a systematic framework to encourage continual innovation, so teams can explore solutions to the problems in their day-to-day work with products and processes. Two years into its existence, the innovation team has realized significant success and the system of innovation is gradually being adopted across all of Intel IT.

Solution

Our goals were three-fold:

- Formalize a system of innovation that any Intel IT team can adopt.
- Enable individual teams to deliver more value, work faster without waste and get closer to the customer.
- Free up execution capacity so teams can experiment and support our continuous improvement initiative called Keep Improving IT (KIIT)—continuous improvement is a form of innovation.

The following sections provide details on our approach and results.

Getting Started

As with any new endeavor, we looked both within Intel IT and across the industry to identify best practices for encouraging and enabling innovation. We interviewed Agile coaches, reviewed industry publications and books¹, and listened carefully to workers and management. Our investigations included mindset, skillset and toolset. We came away from this initial stage with three key learnings:

- A culture change from the top down—with management sponsorship—was crucial to success.
- Seven foundational principles drive a system of innovation.
- Bottom-up adoption will help solve real business problems that are achievable within a specific Intel IT team.

Driving Cultural Change from the Top Down

There are many things that can be driven with a bottom-up approach. However, culture is not one of them. In our interviews and research, it became clear that culture must be driven from the top down and demonstrated by leaders to ensure adoption by everyone.

"Through every interaction, and shown by our actions, culture is observed, translated and internalized, resulting in the desired outward actions."

—John Simpson, Intel IT

The innovation team works with managers and scrum leaders to encourage them to demonstrate a culture of innovation that will inspire workers to innovate. Our innovation culture at the leadership level includes the following attributes:

- **Remove fear.** Fear is paralyzing. Many people have perceived repercussions of failing at something at work, and they may not be aware of the value of fail-fast experimentation. If people are fearful, they may avoid new, potentially risky ideas and stick with the familiar and routine, even if it isn't ideal.
- **Learn to experiment.** Having removed fear, experimentation is possible. But random experimentation may not produce valuable results. Leaders should encourage experimentation in a rational, well-structured manner.
- **Failure will happen, so fail fast.** Not all experiments work. Some—or even most—may fail. The risk is not in failure itself, but in taking too long to fail or not learning from the failure. Our culture of innovation motivates people to design experiments that will yield a "yes this works" or "no this doesn't work" quickly.

¹ Some of the references we used include the following:

McKinsey, "The Three Horizons of Growth"

Amy Edmondson, "The Fearless Organization"

Jeff Gothelf and Josh Seiden, "Sense & Respond: How Successful Organizations Listen to Customers and Create New Products Continuously"

Karl T. Ulrich, Innovation course at Wharton School of the University of Pennsylvania

- **Listen to the right voices.** When it comes to ideation and innovation, some people have constructive input that helps build ideas and success. Others tend to have less constructive, or even negative input. IT leaders need to find the balance between listening to stakeholders and to implementers. Ignoring either can result in a less than ideal outcome.
- **Build the help chain.** Delays breed failure. Our culture of innovation provides a leadership help chain with Agile methodology (such as first-line managers, product owners, scrum masters, leaders on our teams and team-of teams and general managers) that can provide support quickly to promote an innovative idea. The help chain is not bureaucracy, but instead is a connective tissue of help agents that support innovation.
- **Recognize behaviors and reward results.** Appreciation is a strong motivator. We recognize innovative ideas through team-based recognition at events (such as open forums) and through email to managers and peers. One of our Innovation Day (InnoDay) sponsor directors has awarded coaching to the winning teams to help drive their ideas to operationalization. This coaching also includes career advancement mentoring and further ideation development.
- **Refactor and grow.** After every InnoDay, we seek feedback on what went well, what did not go well and what needs to be changed. This “retrospective” approach is critical to continuous improvement. Without refactoring the system of innovation, it will eventually become faulty enough that people will stop using it.
- **Following through is not optional.** All ideas are opportunities to create something wonderful and help move the company forward. Leaders must follow up on 100% of ideas generated during an innovation event (formal or informal). We learned through surveys that lack of follow-through was largely responsible for declining participation in innovation events.
- **Lower barriers to entry.** The system of innovation is for everyone on the team. If only a few people are participating, it limits diversity of ideas, and therefore hampers innovation. Any idea that is aligned to the innovation targets, no matter the scale, is encouraged to be explored.

These cultural attributes at the top of the organization set the tone for the rest of the workforce. Innovative, performance-enhancing ideas will not be created or adopted without necessary elements in an IT organization’s culture, beginning with its leadership.

There are close parallels between the attributes of our leadership’s innovation culture and the seven foundational principles (discussed next). For example, “learning from failure” is a principle, while “removing fear” is a cultural attribute. Similarly, “following up on all ideas” is a principle; ensuring everyone *knows* to follow up is expected—and leading by example—is culture.

Foundational Principles Learned from Past Lessons

Intel IT has always strived to be innovative. But without a *system* of innovation, we can lose sight of why we need to innovate, how to learn from the past, and how to keep people excited enough to participate. We identified seven principles that underpin all the actions we take in our innovation work. These principles, in addition to the culture of innovation, serve as guardrails to help us maintain and even accelerate the pace of innovation.

Principle #1: Innovation Must be Targeted

Targeting innovation enables leadership to steer ideation toward solving our organization’s most pressing problems. We have created collateral that can help teams formulate laser-focused innovative ideas that create opportunities to do something better, faster or cheaper—or perhaps all three. Our “Build Skills as an Idea Generator” guide provides links to tools, videos, books and other resources that can help workers spark more ideas. We also provide an “Ideation Guide” that outlines the golden rules of ideation and gives tips on forming teams, refining ideas and moving an idea forward.

Five Golden Rules of Ideation

1. There are no bad ideas.
2. Quantity over quality.
3. Document everything.
4. Use and enrich others’ input for stronger ideas.
5. Keep an open mind and a non-judgmental attitude.

Principle #2: Our System of Innovation Is Not a Program

Agile programs are by nature impermanent. They are created to implement a solution, and when execution is complete (or priorities change), the program is disbanded. In contrast, our system of innovation is a permanent framework that informs the company’s culture and serves as a core approach for managers.

Principle #3: Failure Happens, So Learn Without Fear

Our “fail-fast, fail-well” approach to experimentation supports the highest possible level of innovation with the lowest possible risk. An experiment should be completed rapidly, with fast feedback loops (days, not weeks). In addition, for experiments that do fail, workers learn from those failures so they don’t repeat mistakes. We encourage teams to participate in activities that can help analyze the failure and move beyond it, such as the following:

- Retrospective activities focus on the collection of feedback from the entire team to understand which practices worked and which didn’t. What went well should continue as standard practice. What did not go well are problems that need to be solved.
- Program Inspect-and-Adapt activities involve all teams in the program, in a larger retrospective, at the end of a release.

Principle #4: Diversity Results in More and Better Ideas

Collaboration uncovers many things that single team members may not consider. We encourage inclusion of people with varied experience levels, multiple domains of expertise, deep expertise in a specific domain, customers (members of an Intel business unit) and support experience. A diversity of job roles and backgrounds results in a better crop of innovative ideas.

Principle #5: Ask for Help When It's Needed

When attending an InnoDay, teams working on their ideas can reach out to the help chain to get more information. Perhaps a scrum master has a particular resource available, or a general manager can provide assistance.

Principle #6: Follow Up on 100% of Ideas

Team leaders should promptly follow up on ideas and remove wasteful processes. For example, an automated system can eliminate delayed approval for working on an idea, in the case that someone is on vacation. The faster ideas move forward, the more time there is to work on improvements. Follow-up can be through meetings and emails or chat notes.

Principle #7: Set Aside Capacity for Innovation

Perhaps the most unique—and possibly controversial—principle of our system of innovation is that we ensure every team devotes 20% of their execution capacity to KIIT. This headroom for innovation allows them to automate and achieve higher quality with more testing. While we did experience some resistance to this principle, we engaged in discussion and coaching to help remove the concern. We worked with managers and team leaders to understand that creating capacity allows them to deliver more, faster.

Applying Our Principles: Innovation Events Drive Bottom-Up Adoption

While leaders build culture, employees build solutions through bottom-up adoption. The most popular type of innovation event so far has been InnoDays; we have held five so far, inviting 1,000 participants per quarter. (Other types of innovation events, such as Shark Tank² and Kaizen³, also have potential, but we have not yet explored these as much.)

InnoDays Setup

None of our activities have a formal program, budget or headcount. Therefore, our InnoDays can continue to occur and provide value, despite the occasional budget cut or group reorganization. As a group of coaches, we encourage participation through a series of presentations with targeted messaging (open-forum, webcast, email, staff and team scrum). By removing the mindset that “this could

easily soon disappear, so there’s no point in participating,” we have built a groundswell of participation, supporting principle #2: “Our system of innovation is not a program.”

We started by generating a list of problems that were identified by talking to our customers and collecting observations from our directors. After summarizing them, we created a list of targeted “themes,” addressing principle #1: “Innovation must be targeted.”

Idea Tracking

As people begin to ideate toward solving the targeted themes, the “Ideation Guide” that we created reminds them to assemble a team of diverse minds. Including the teammates in the idea registration and asking for additional help when they present their ideas (called a “pitch”) supports principle #4: “Diversity results in more and better ideas.”

The pitch describes the idea and what theme it relates to and identifies the team members or requests teammates. We recently asked participants to also include in the pitch the potential business value of their idea (such as saving x number of hours per quarter). Because of limited time, the InnoDays participants vote on the ideas and the most popular ones are pursued.

Team Formation and Execution

InnoDays are scheduled on a quarterly basis to make sure there is time set aside for the event. Capacity to work during this time is reserved to ensure that all work stops, and any intra-team dependencies do not interfere with work delivery. By doing this we support principle #7: “Set aside execution capacity for innovation.”

While formulating an idea to explore, and during the execution of the work during InnoDays, we encourage all participants to engage their “help chain.” This is the chain of leaders in the organization, both above and below, who can help find the right people, or answers, when the team struggles to make progress. This can also identify additional stakeholders, or similar work, that can be included. Supporting principle #5, “Ask for help when it’s needed,” is vital to creating the best ideas and connecting those ideas to the right people and business problems.

During the Event

One of the fastest ways to find the right idea to innovate around and create a solution is to perform small, fast experiments. This experiment mindset is key to spending the right time on the right solution. This also means we become comfortable with failure, as long as we learn from it. By encouraging experimentation and learning, we help to support principle #3: “Failure happens so learn without fear.” Regardless of the type of ideation and innovation we perform, this is foundational at any level in the organization.

² “Shark Tank” commonly refers to a television show that features billionaires who fund innovative products. The original Shark Tank concept is to purchase a stake in a company, support the product and make money. Our use of the term is slightly different, as our sponsors do not actually buy a stake in something, but instead support the pursuit of an innovative idea.

³ “Kaizen” is a Japanese business philosophy term referring to continuous improvement to achieve change for the better.

Idea Follow-Through

Our teams have begun to learn that ideating during an event is not enough; they should push those ideas as far as they can. At the end of the event, we assign an “Owning Director” to coach, encourage, remove impediments and be the foundation for the “help chain.” We actively manage each idea with regular follow-up, encouraging teams to dig deeper to find value, and if possible, expand the scope and operationalize it. This supports principle #6: “Follow up on 100% of ideas.” We leave no ideas on the table. A forgotten idea cannot deliver value.

InnoDays Best Practices

InnoDays focus on ideas that can be implemented solely by a program or team. Ideas that involve more funding are candidates for a Shark Tank (see “Next Steps”). Our system of innovation doesn’t address ideas or projects that have a scope outside of IT (such as a new acquisition).

We provide an “Attendee Guide” that instructs attendees how to submit ideas and prepare the pitch presentation (single slide, two minutes or less).

In our experience, co-located teams seem to improve participation, although they can ask advice from experts as needed. We have also found that enterprise architects come to the events to listen to the ideas, which helps with organic spreading of the system of innovation across the whole of Intel IT.

Results

As of the writing of this paper, our first five InnoDays generated 184 ideas that fall into three general categories of improvement: increased team capacity, increased product value and increased team health. Of these 184 ideas, 49 have been operationalized over the last 16 months and are saving at least 122 hours per week (6,300 hours per year).

Examples of recent InnoDays ideas that have been operationalized include the following:

- Learned a new framework, resulting in higher quality/less rework and saved time (more capacity so the team can deliver more value).
- Dynamic, real-time operations review, using data collected automatically from multiple sources.
- Automated credential renewing and consumption within a DevOps pipeline.
- Visualized the service management flow to minimize wait cycles and improve service-level agreement adherence.

We recently surveyed participants about how InnoDays have affected team capacity, team health and product value. As shown in Figure 1 on the following page, the survey results made it clear that increased team capacity was the largest area of improvement, driven in large part by a growing use of automation. “Higher quality” was the largest sector in the team capacity category at 42%. Within the team health category, “higher happiness” represented over 50% of the overall category. For the product value category, “new product value” and “faster time to market” were the largest sectors at 44% and 31%, respectively.

In the follow-up retrospective after each InnoDay, we asked participants for a 1-to-5-star rating of the event. The average score for all five InnoDays was about 90%. We have also observed that teams participating in InnoDays are growing their skills and becoming better problem solvers. This observation supports the results of an Intel IT survey conducted in 2017), which surveyed managers about the benefits of innovation. The consensus of that prior survey was that employees who participated in innovation-related activities contributed to project work by reducing the number of delays related to technical roadblocks and by identifying more options to solve project challenges.

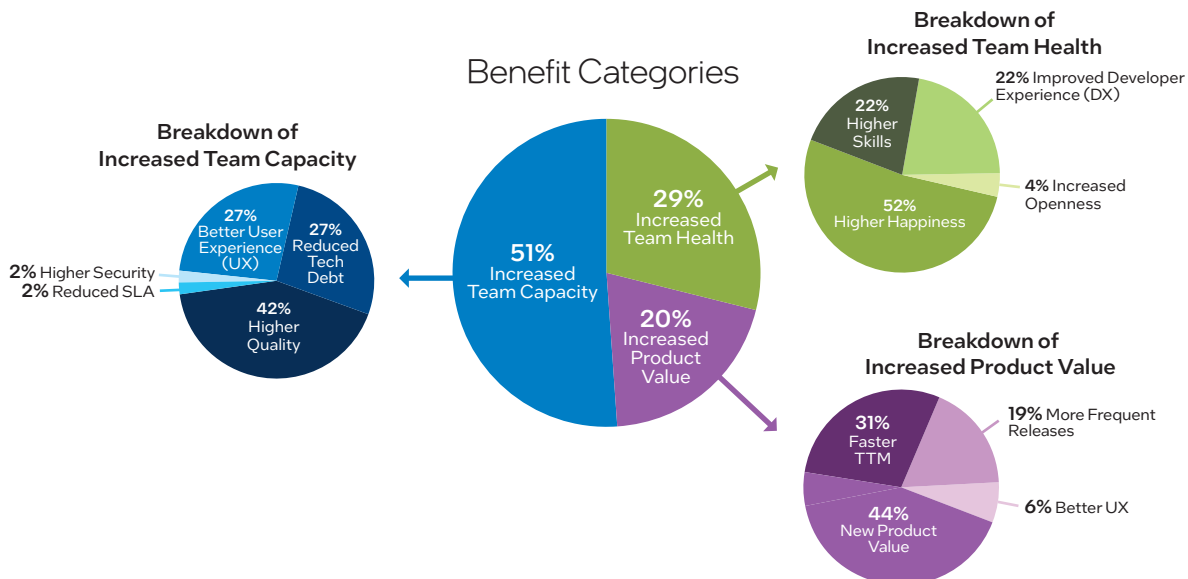


Figure 1. Breakdown of benefits resulting from InnoDays.

While happier teams, higher quality work and faster delivery of new products are all notable achievements, the most exciting result of our system of innovation is that directors are inviting people to general manager staff meetings to describe the innovative ideas that have been implemented. This is helping to expand the scale of adoption of the system of innovation across teams. Because of this additional interest, we prepared a “4-Minute Demo” guide to help workers or leaders quickly and succinctly present their ideas.

Innovation Helps Remove Technical Debt

Inefficient processes, redundant or outdated tools, and other technical debt increases costs and slows teams down

We provide teams with guides that help them inventory, prioritize and remove technical debt. Here are some examples of technical debt:

- A coding decision may have been made deliberately (short-term gain) but is now causing problems.
- A tool was chosen but is found to be inoperable with other tools.
- A system of applications has become overly complex over time.

Whatever the source of debt, the guides we provide help teams analyze the complexity and criticality of the debt and formulate a plan for removing it and preventing future debt. Working on technical debt projects is considered innovation and is part of the 20% team execution capacity reserved for continuous improvement through our Keep Improving IT (KIIT) initiative.

Next Steps

Some innovative ideas need more funding or resources than is available for an individual team. Shark Tank events are meant to present ideas that cannot be implemented solely by a program or team due to budget constraints, or ideas that would require more than 20% team capacity to work on. So far, we have held only one Shark Tank event, at which 12 ideas were presented and the panel voted to move forward with three ideas. Due to organizational changes, we have not yet operationalized these ideas, but they are still on the agenda for future work.

We plan to build on our successes and begin to encourage adoption of the system of innovation by other Intel IT teams. We have seeded other Intel IT organizations with people who are familiar with the system of innovation.

This will help drive innovation in groups such as:

- Manufacturing IT
- Operations group
- Supply chain IT

As we continue to learn and evolve, we will adjust our approach and tools as necessary.

Conclusion

Our system of innovation provides a formal framework to drive the implementation of new ideas across Intel. By encouraging a culture of innovation from the top down, adhering to a set of foundational principles, and providing access to innovation events where teams can share their ideas, we are helping to ensure the continued level of transformative ideas that will power Intel into the future. We have already operationalized 49 performance-enhancing ideas, representing a savings of at least 122 hours/week. We hope that by sharing our approach to encouraging innovation in Intel IT, we can inspire other companies to achieve similar results.

Related Content

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