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Scaled Agile Implementation - Lessons
Leaned, Path Forward
by Michael Millane

Scaled Agile Implementation –
Lessons Learned, Path Forward [1, 2]

Michael Millane

ABSTRACT

As with many IT organizations within companies started in the last century, Intel IT had a strong legacy of waterfall program and project management practices, small pockets of agile development teams and emerging DevOps practices with mixed results and limited visibility. Starting in 2019, Intel IT started our path implementing an industry-standard scaled agile framework amidst a broader digital transformation initiative. As we progressed through identifying our development value streams, launching our agile release train teams and then implementation of lean portfolio principles, we have observed and learned many benefits, as well as the limitations of leveraging a scaled agile framework. The framework allowed our organization to enhance business transparency, stabilize operations, increase focus on reducing aging infrastructure and reinvigorated disciplined project execution. While those benefits were impactful, we also encountered challenges in executing large, complex initiatives, obtaining a clear portfolio demand prioritization, and integrating our operating model with broader corporate processes.

Background

Intel operates a global Supply Chain that is only increasing in complexity due to the more complicated nature of the emerging modular products, our increased reliance on external manufacturers / suppliers and the constraints driven by the pandemic.

The Supply Chain network is spread across 20 countries, engages greater than 16,000 supplier and sources, builds and distributes more than 50,000 unique products

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[1] *Editor's note: Second Editions are previously published papers that have continued relevance in today's project management world, or which were originally published in conference proceedings or in a language other than English. Original publication acknowledged; authors retain copyright. This paper was originally presented at the 9th Annual University of Maryland PM Symposium in May 2022. It is republished here with the permission of the author and conference organizers.*

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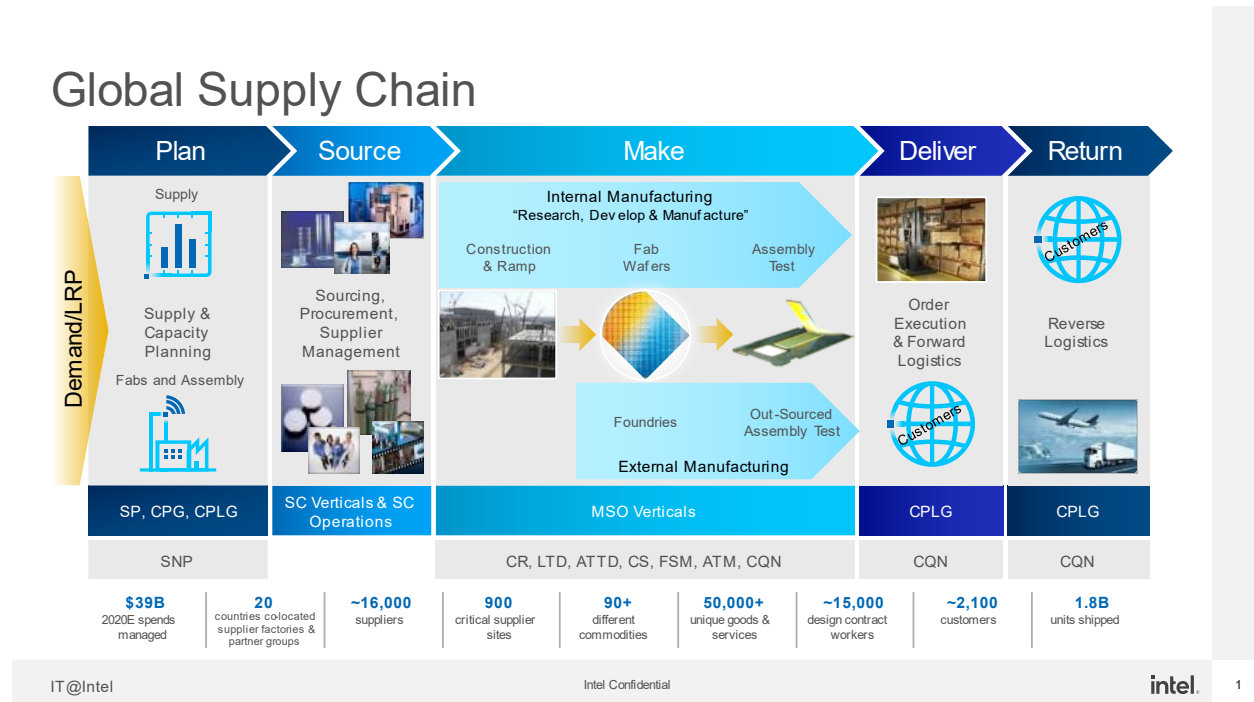
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Figure 1: Intel Global Supply Chain

The Information Technology context

In 2019, the Supply Chain IT was facing challenges and looking to support the company's inflight supply chain transformation. The teams have faced reorganizations of the IT department and experienced some workforce reductions that reduced our employee capacity at a time when business demand to the IT organization was increasing.

The applications and capabilities that support our supply chain business are a mix of enterprise resource planning (ERP), industry standard platforms and a larger number of custom applications that drive challenges in both IT operational support and project execution velocity and delivery.

IT operations were consistently below the overall, aggregate target service level agreement (SLA) which were only exacerbated by the capacity reductions. In addition, there was a significant number of major incidents which resulted in a large amount of business downtime and impact.

Project execution was also seen as lacking with both large and smaller initiatives missing commitments to the stakeholders. In summary, the operational, project issues in a resource constrained environment seemed daunting but a new approach was required.

Strategy & Approach to implement a Scaled Agile model

The Supply Chain IT group made the strategic decision to implement a scaled agile framework across the entire organization. The judgment was made to start our journey leveraging an industry-standard scaled agile framework and implementation model, prior to the full implementation across IT.

The organization held a week-long planning session in Q1'19 to model and plan the scaled agile implementation and organize around development value streams. These teams are essentially the IT value-delivery structures or scaled agile teams that deliver solutions to the business.

It was determined that we would have 9 scaled agile release teams that support our various supply chain businesses. These scaled agile release teams varied in size from 5-10 agile persistent teams (APT) and approximately 80-120 resources.
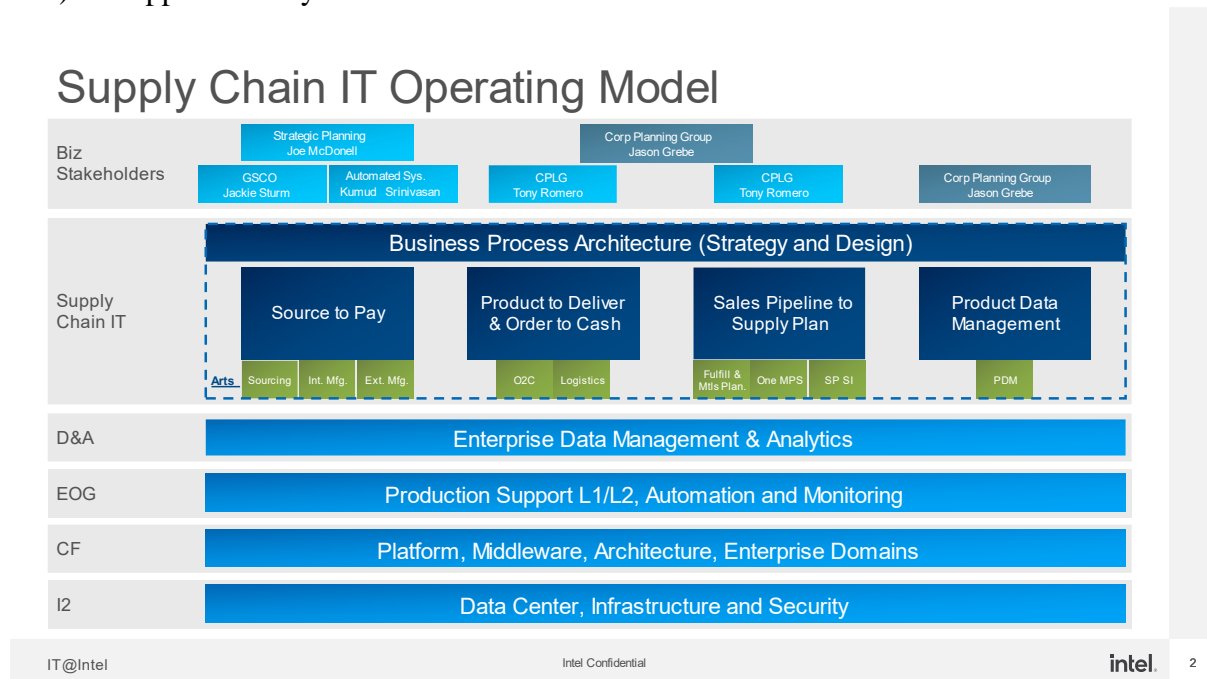

Figure 2: Intel Supply Chain IT Operating Model

The supply chain operating model has improved stakeholder goal alignment and execution delivery although we encountered a significant learning curve for both the supply chain business and IT partner organizations.

A fundamental process the scaled agile framework outlines is the integrated quarterly planning process that we execute across the entire portfolio prior to each program team conducting their localized planning. The portfolio level planning includes refreshing the business priorities and business outcomes as well as capabilities they would like to be delivered over the next quarter.

The IT teams prepare 't-shirt' sizing of the features to conduct an initial capacity assessment for their teams. The IT teams ensure that they reserve enough capacity to support operational support and any end-of-life (EOL) or technical debt reduction efforts. This pre-program increment process helps to reinforce the priorities, assess for high-level risk, dependencies, and capacity constraints prior to the team level planning (Figures 3 and 4).
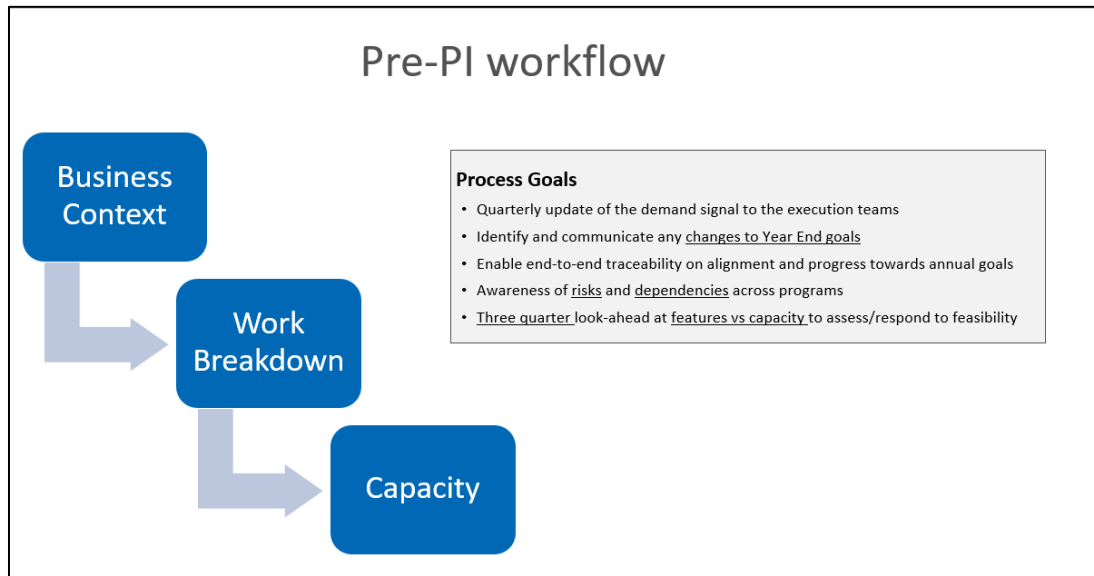

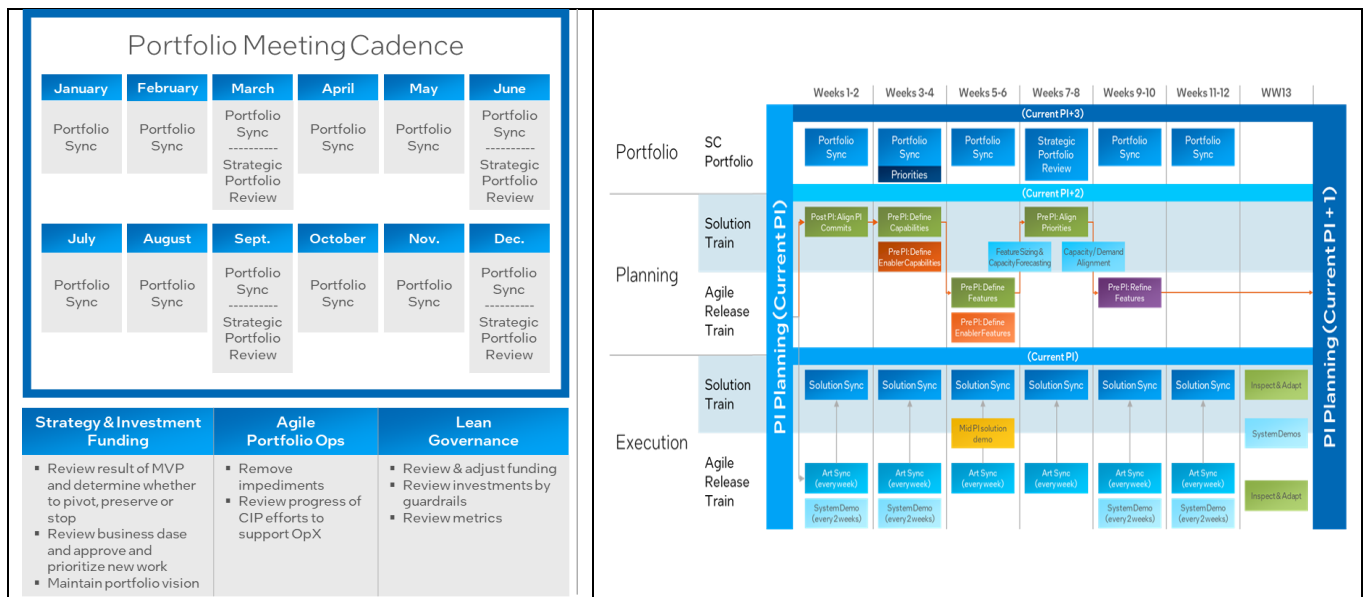**Figure 3: Integrated Portfolio Quarterly Planning**

Figure 4: Operating Model Governance

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In the Program Increment quarterly planning events the business representatives assign subjective business value to these items and similarly score the result at the end of quarter when the teams review, consistent with agile principles to demonstrate capabilities delivered.

Benefits

One of the primary benefits of the integrated planning process, and the scaled agile framework generally, is the business transparency, business agility that it provides the IT development teams. Similarly, since the scaled agile teams are focused on the breadth of scope: operational support, EOL-type or technical debt reduction activities as well as new capability, it provides the business teams with significantly improved visibility to the full complement of demand on the IT teams and any associated constraints and potential priority conflicts or trade-offs.

Secondly, with the quarterly planning and prioritization process coupled with the reserved operational support capacity, we saw significant improvement in the support trends over the last 3 years. The Business Recovery time – which represents the amount of time the business is impacted by downtime – decreased by 75% over that period. Not surprisingly, we observed a commensurate increase in the application availability from 99.38% to 99.75%. Finally, we observed a 45% reduction in Major Incidents related to change management comparing 2020 to 2021 (Figure 5). A significant reason behind the improvement of these trends is related to how the scaled agile model provides continued focus on operational support.
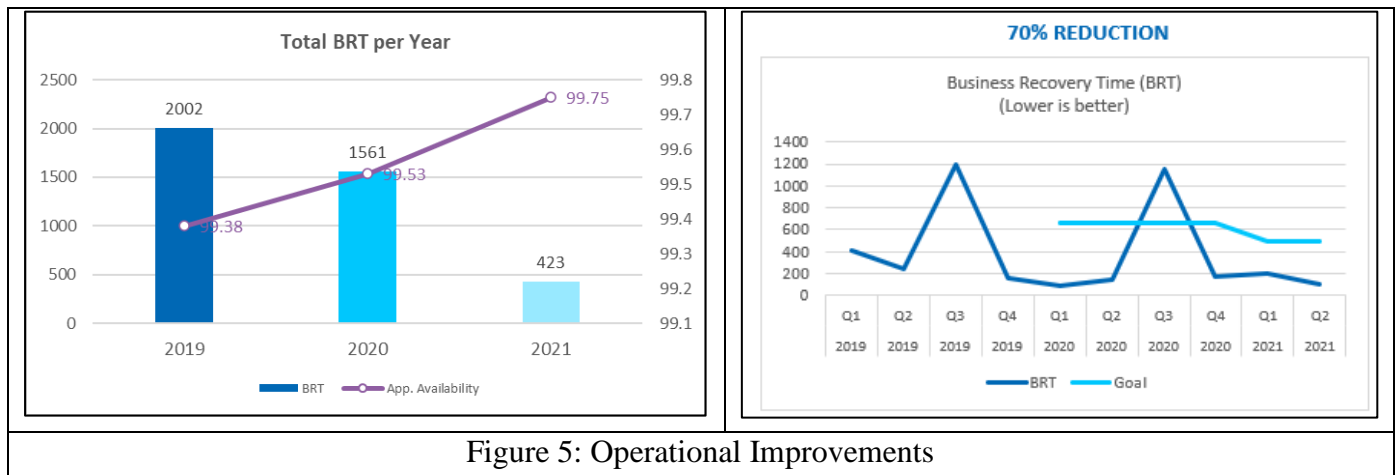

Figure 5: Operational Improvements

The efforts to keep platforms up to date or reduce the application proliferation and complexity is a continual IT challenge. As part of the quarterly planning process and EOL/technical debt roadmap activities, the teams set aside 20% of their capacity to keep platforms up to date and modern. The business representatives have visibility to this capacity allotment towards EOL and

it becomes a normal part of the prioritization process. As teams worked through the initial heavy backlog of technical debt reduction activities the capacity started to trend down from the initial target of 20%.

As outcomes of this improved focus, we saw improvements in application simplification and security posture across our portfolio and now a continued downward trend in the amount of effort required to maintain updated platforms. The Portfolio has a consolidated roadmap the exclusively focuses upon the efforts to retire older platforms or technologies (Figure 6)
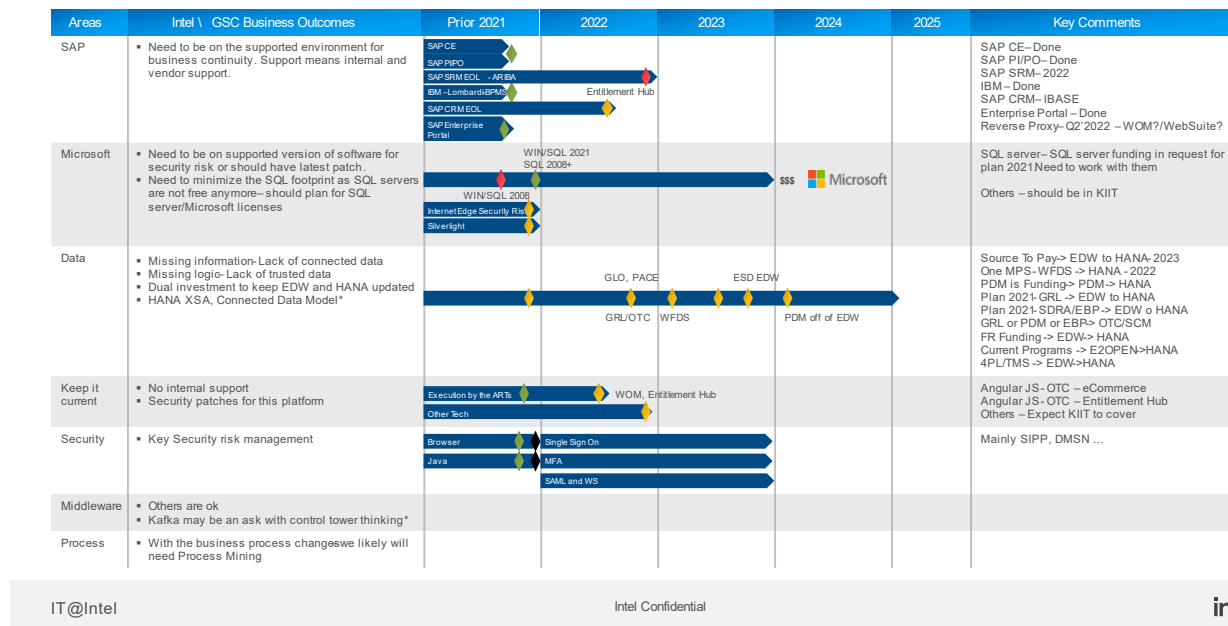

Figure 6: Portfolio EOL Roadmap

Prior to the implementation of scaled agile process, the Supply Chain IT teams were frequently missing key project milestones and deliverables. One of the key metrics used across the supply chain portfolio was something termed Program (or Flow) Predictability. Program Predictability measures how well scaled agile teams can plan and meet their PI objectives. Over the course of the 3-year period from 2019 to 2021, the teams improved from high 70% to consistently be slightly higher than 100% on average across the portfolio (Figure 7). The benefits were primarily seen on initiatives that were small to medium in terms of scope and complexity.
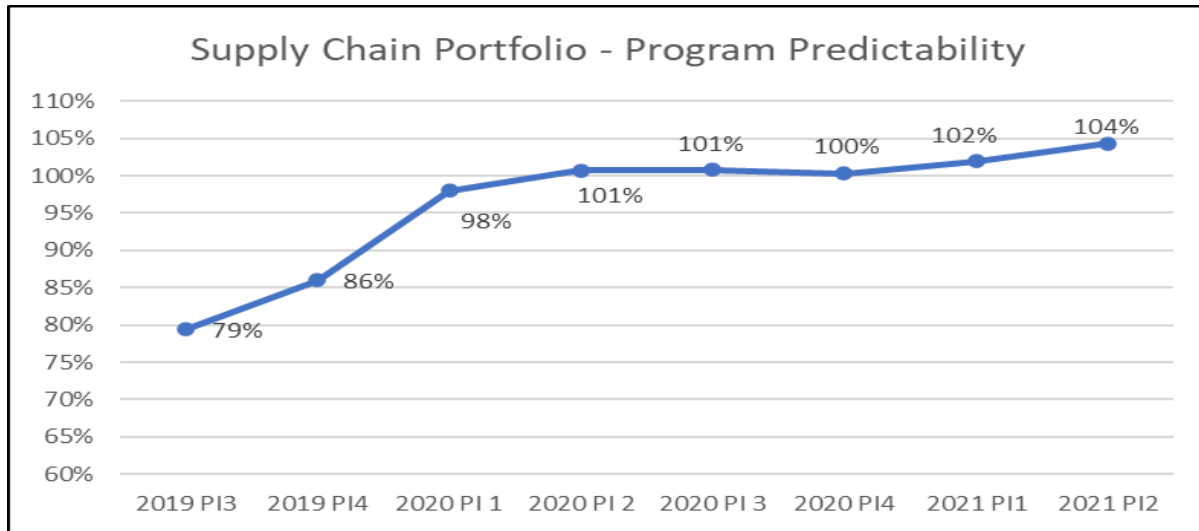
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Figure 7: Program Execution Improvements

Finally, the scaled agile operating model that was implemented ended up serving as a stabilizing construct in the face of 2 significant reorganizations of the IT organization over that period. The amount of organizational and personal churn and angst was minimized because regardless of the organizational structure – the scaled agile operating model insulated the employees from the change given that their day-to-day activities were largely not impacted.

Challenges

Prioritized Demand Signals

It is challenging to maintain a true '1 through N' prioritization at the portfolio level. It is more likely during the annual financial planning processes; however, it is much difficult to maintain as part of the integrated quarterly planning. The portfolio evolved into prioritization into larger themes and then had the individual domains request investments and x-cross prioritize within those smaller sub-portfolios.

Business & Investment Agility

The Corporate Financial Planning Process identified the annual funding level for each initiative for the following year. As a supply chain portfolio, we attempted to adjust funding on a quarterly basis based on project performance, emerging demand, key risks and budget status (i.e., over\under). While it is possible to gather and present the opportunities to shift investments to maximize value on a quarterly basis, the ability to execute those changes proved more difficult. The challenges were related to a mixture of corporate processes, lack of information and to a degree human nature. Our corporate internal financial processes, ability to have a holistic view on capacity resource planning and the reality that skillsets across teams are not truly fungible in many

cases. It is much more likely to be able to ramp up and wind down external resources than shift work to different teams across the Supply Chain IT organization.

Large/Complex Programs

One area where we found the scaled agile framework did not work in our environment was those large, enterprise-level and complex initiatives in terms of either business or technical complexity. For initiatives of this nature, we evolved into a hybrid lifecycle model that proved to be successful. Despite the guidance as part of our quarterly integrated planning process to plan 3 quarters out in time, the teams struggled with ability to align and execute a coordinated plan. The teams needed to invest in an upfront solution design phase that more thoroughly outlined the business, architectural and solution to-be state before driving more detailed designs and send capability demand to the APTs.

Intersection with Corporate Processes

Corporate and executive communication consistently required to 'translate' the business outcomes and value from the scaled agile planning and execution into a view that resonated with executive management, financial corporate processes that do not view the world in two-week iterations or quarterly 'buckets. They are much more interested in longer-term value, roadmaps and 'when are you done' in a multi-year view of the portfolio of initiatives.

Summary

In our Supply Chain IT experience, implementing a scaled agile framework proved to be an important step to stabilize, and then steadily improve, our operational and project execution efforts.

We experienced increased stakeholder satisfaction due in large measure to the transparency, visibility and responsive related to demand changes over the last 3 years. The consistency in the usage of the operating model and planning across the Supply Chain IT teams allows for us to enable portfolio-level planning, 'retrospectives and subsequent adjustments relatively quickly across such a large organization.

While we have seen small gains in our ability to improve portfolio-level investment agility – via quarterly investment changes – there continues to be opportunities to determine how we may improve that ability moving forward with a focus on how to maximize business value delivery, maintain our operational excellence.

The most significant challenge encountered during the implementation of the framework required us to adjust to and adopt a hybrid model for the large, complex initiatives that spanned multiple business organizations or where we were landing an entirely new platform. It was critical to fully work through the business transformation and comprehensive and consolidated end state architecture and design to a certain level before sending demand to the execution teams.

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In our experience, the benefits of moving towards a scaled agile operating model far outweighed or overshadowed the costs or challenges, however, with an understanding of those limitations, those challenges can be mitigated.

About the Author

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Michael Millane received his Bachelor of Science in Engr from Cornell University and an MBA in Information Systems Management from the University of Texas at Austin. Michael started his career in healthcare but has spent the last nearly 30 years in the high tech Industry at Intel Corporation. He has 30 years of IT-related experience as a Program Director in a variety of business domains: Supply Chain, Finance, Human Resources, Cybersecurity and Intel's Corporate Data Office. Michael can be contacted at michael.millane@intel.com