How Nokia Managing Complexity Scaling in Large-Scale Development with LeSS

PROBLEM

In 2007, Nokia Siemens Networks (now Nokia Networks) developed a high-capacity network gateway from the ground up. The project faced two critical risks.

The first was technological uncertainty. The chosen hardware and software platforms were untested within Nokia and were not yet available at the start of development.
The second significant risk stemmed from unclear market requirements. Initial commercial use cases were undefined, requiring frequent adjustments to feature content.
Traditional development methodologies, with their sequential planning and rigid structures, would have led to excessive delays and limited flexibility. To manage the complexity across multiple teams and geographic locations, Nokia needed a scalable, agile approach.

AGITATION

Although Nokia adopted Large-Scale Scrum (LeSS) to navigate project uncertainties, the implementation was far from seamless.

One of the primary challenges was resistance to feature teams. Teams accustomed to component-based development feared potential quality issues. Additionally, conflicting work cultures created friction. While some teams had successfully implemented Scrum, others had experienced a failed attempt at “fake Scrum,” where traditional waterfall practices were merely rebranded.

Another critical challenge was slow architectural alignment. In the early stages, progress stalled as teams engaged in prolonged debates over infrastructure decisions instead of fostering effective collaboration. As the organization scaled, the Product Owner role became a bottleneck, restricting feedback loops and slowing the refinement process. Cross-team dependencies further complicated development, as organizing Requirement Areas around inbound and outbound interfaces led to inefficiencies.

A lack of formal LeSS training also hindered adoption. Even after two years, many employees had not fully grasped the framework, leading to inconsistent implementation and limiting the effectiveness of agile transformation. Without addressing these structural and cultural barriers, the risk of reverting to traditional, less efficient development models remained high.

SOLUTION

Despite these challenges, Nokia successfully scaled its agile practices by implementing key LeSS principles. The introduction of cross-functional feature teams marked a significant shift from isolated component teams. These long-lived feature teams operated across multiple domains and were responsible for delivering complete customer-facing features.

The transition followed an incremental scaling approach. Nokia initially launched the model with two teams and gradually expanded to over twenty, ensuring a manageable and sustainable adaptation process rather than an abrupt structural shift.

To maintain high software quality as the number of teams grew, the company prioritized automated acceptance testing, safeguarding code integrity even as new teams joined the project. The organization also refined its sprint review and planning processes. Sprint Planning 1 included representatives from all teams, fostering alignment across the organization. Meanwhile, Sprint Reviews were restructured into sequential, team-specific meetings with the Product Owner to facilitate more focused and actionable discussions.

Another key improvement was integrating customer documentation teams within sprints rather than treating documentation as a separate process. This change enhanced product usability from the early development stages and ensured that documentation remained aligned with ongoing software changes.

KEY ACTIONS:

To reinforce the adoption of LeSS and drive long-term agility, Nokia implemented several structural and procedural changes. One of the most impactful actions was empowering decision-making by introducing Area Product Owners. This change distributed backlog refinement responsibilities across multiple decision-makers, alleviating the bottleneck caused by reliance on a single Product Owner.

The company also reorganized Requirement Areas to minimize cross-team dependencies and ensure teams had end-to-end ownership of features. This structural change reduced inefficiencies and improved overall workflow. Additionally, Nokia made significant investments in training initiatives. LeSS-focused education programs were introduced to help teams not only understand the framework's mechanics but also internalize its underlying principles.

To foster a culture of continuous improvement, Nokia established a formal improvement service that translated retrospective feedback into tangible, actionable changes. This initiative helped sustain momentum in the agile transformation and ensured iterative refinements became an integral part of the development process

RESULTS

The implementation of LeSS delivered Tangible Business Benefits:

- **Improved Speed, Quality, and Flexibility:** The adoption of LeSS led to significant enhancements in overall development efficiency.
- **50% Faster Time to Market:** Compared to a previous gateway product developed using a waterfall approach, Nokia accelerated delivery by 50 percent.
- **High Code Quality Through Automated Testing:** Automated testing played a crucial role in maintaining system integrity, even as the organization scaled.
- **Greater Market Adaptability:** The ability to pivot from broadband to LTE gateway development ensured alignment with emerging customer needs and industry trends.
- **Enhanced Collaboration and Shared Ownership:** The introduction of feature teams fostered a collaborative work culture, reducing bottlenecks and increasing overall efficiency.

COMPARATIVE CONTEXT

A comparison between LeSS and other agile frameworks highlights Nokia's strategic advantages in adopting this model. Unlike the Scaled Agile Framework (SAFe), which relies on hierarchical coordination layers, LeSS emphasizes organizational simplification. By reducing management overhead and increasing team autonomy, LeSS allows for more streamlined decision-making and faster iterations.

Compared to traditional waterfall methodologies, which require extensive upfront planning and limit adaptability, LeSS enables iterative development. This flexibility allows teams to shift priorities based on real-time learning rather than constrained by rigid project roadmaps. Nokia's experience also underscores the importance of distinguishing between true agile adoption and superficial implementation. Many organizations struggle with "fake Scrum," which means they adopt Scrum terminology without making the necessary structural and cultural changes. Nokia avoided this pitfall by fully committing to feature teams and continuous iterative refinement.

RECAP LESSONS FROM NOKIA'S LeSS ADOPTION

Several key takeaways emerged from Nokia's LeSS adoption. The implementation of feature teams significantly improved flexibility and efficiency, while automated testing ensured quality remained scalable as the organization expanded. The agile transformation also enabled a faster response to evolving market demands, strengthening Nokia's competitive position.

However, certain areas required further refinement. The need for more extensive training became evident, as a deeper understanding of LeSS principles would have facilitated a smoother transition. The structuring of Requirement Areas could have been optimized to reduce dependencies and enhance cross-team efficiency. Additionally, the Product Owner role would have benefited from a more distributed model, with greater reliance on Area Product Owners to balance decision-making responsibilities.