Scalable and Agile IT Operating Model
- How to stay competitive in the connected world

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Juha Kauhanen
Abstract
Ideas and syntheses in this article have been influenced reading past and current public thought leadership and observations and conclusions formed working with colleagues and clients. I find myself inspired by the idea of transcending corporate cultures and ways of working towards more and more democratic and transparent ways of working, away from patterns rooted in industrial era thinking.

A particular note of appreciation goes to Juha Huovinen, founder and Chairman of the Board of Sofigate, for creating the IT Operating model framework which serves as a background for the views and ideas presented in this article. The ideas and suggestions presented here are personal points-of-views.

Summary of key points
To harness the opportunities digitalization offers for value creation and capture, companies should:

• See the whole and the interconnections of the elements of your IT operating model with a simple enterprise architecture framework that is easy to understand and adopt by everyone and use by both business and IT in their everyday communication
• Look outside the borders of their internal IT departments for depth and breadth of skills, past the usual and common outsourcing models, and aiming for deeper partnership matrixes where results are measured up at a partnership level
• Foster a gradual shift toward agile and lean business-IT development culture, while ensuring coordination and consolidation of assets for clarity, simplicity and predictability

Introduction
Modern IT operating models need agile and scalable. They need to provide the business with on-demand services both quickly and reliably. Services provided need to be fit-for-purpose and cost efficient, requiring a coordinated and consolidated approach to competency and asset management.

My recent article (https://www.ictstandard.org/article/2015-02-23/business-it-operating-model-40-surf-digitalization-wave), laid out certain current imperatives and requirements for a modern IT-business operating model. The article also described fundamental elements of an effective IT operating model and suggested thoughts on how to organize and develop IT operating model capabilities required in the digital economy.

This article is a follow up, focusing on three interrelated core aspects of a modern IT operating model that anticipates and responds to the challenges and opportunities of the connected digital economy:

• Seeing the whole, predicting the future and learning from the past,
• Breaking free from rigid value creation patterns, and
• Balancing coordination and agility.

Companies are increasing digitalization of their value creating assets to reduce their costs, improve productivity and produce new, innovative services. Regardless of the industry - manufacturing, resources, finance and retail to public administration and healthcare – enterprises are, or should be, heavily investing in efforts in assessing and implementing ways to digitalize their business operating models. This includes their internal development and operating processes and external delivery channels.

Organizations should be looking for ways to increase speed and agility of their digital operations with best fitting partners. The goals of cooperation should be the ability to offer better products and services in a more convenient and customizable ways, and the ability to reduce overall operating costs. Digitalization has the required economies of scale built-in for both increased value creation capability and reduced costs of operations. Figure 1 depicts this positive cycle of increased digitalization and value capture.
Challenges of current IT operating models

As IT is becoming an increasingly vital function for companies underpinning all aspects of their operations, it will need to be led and managed as such – as a key value creating asset without which the operations would cease functioning as intended. An IT operating model should be forward-looking: Able to predict demand and prevent risks from occurring. Negative impacts of a poorly coordinated and operated IT departments are in most cases significant, causing high risks with instant and wide negative consequences at occurrence.

This article views the IT operating model (and the IT department which is the physical manifestation of that model) as a system. This system comprises of elements, interconnections between the elements and a function - a purpose. The elements may have individual purposes and form subsystems within the operating model, but all elements are connected and cannot be regarded in isolation. To be as effective and efficient as possible, all elements need to work in unison and coordinately guided by a shared purpose. Through interconnections between the elements and the shared rules and purpose guiding the elements toward common goals, the system and its value creation capability is greater than the sum of its elements. Each element adds value, but together they can add exponentially more. The first key to unlocking limits to growth is in the way the elements work together.

The system interacts with other systems – within the ecosystem – with interfaces to customers, partners, suppliers, government authorities, and so on. This ecosystem forms the wider system where the IT departments of the company operate and are a part of. The second key, to unlocking faster expansion, is in the way the system works together with other systems.

All elements of these layered systems influence and impact each other. Therefore, a holistic coordinated approach should be taken to make sense of the overall landscape of value creating IT assets. This holistic point-of-view is where enterprise architecture can play a pivotal role, when applied methodically and in a purposeful manner.

Certain IT functions may be monitored and controlled by various tools; service management and configuration management systems or project portfolio systems, providing baselines and snapshots or service assets, project statuses and their performance. These may be displayed on various management dashboards and as reports at appropriate levels of detail depending on who is looking.

However, many companies struggle in being able to form a holistic view of the system – their IT operations – in the connected and increasingly complex digital economy. Increased complexity requires more efforts for gaining a view, which combines all elements and their interconnections; how value is created and at what costs (how value can be captured).

This lack of a holistic view has its origins in ways IT functions, departments, enterprise applications and their interconnections have emerged; out of different needs at different times, driven and led by different leaders and managers with differing goals. The elements that make up the services and functions have formed half haphazardly over time, planned and measured in quarter years, typically without a coordinated overall and forward looking planning and coordination between business units and departments.

This is in fact the case with all elements in the system – people, processes and technology. The landscape of an IT operating model is often not well comprehended by any one person in an organization. Business cases
defined for solutions not long ago now seem inadequate. It is a race against time in the world of business and IT and the only constant is change. What and how something was achieved six months ago more efficiently and effectively than competitors, is now a norm and expected and someone out there is already doing it better.

Merely following documented best practices is a best practice to be average. In order to gain edge, companies and their IT departments should *coordinatedly together try to see the system holistically*, predict the future of it as best as they can, and keep learning from its past (not only from someone else’s best practices), retaining and leveraging what has worked and removing the elements that did not.

Companies need to *continuously look for alternative, more efficient ways of operating their IT departments for more effective outcomes*. Do we have the right elements in place? Can we build elements better and make them better work toward our goals and achieve improved results, faster? Are we doing things correctly - and with the correct partners?

This article will briefly also touch the topic of balancing *coordination and autonomy* – *consolidation and agility*. Companies should discover and foster patterns where common centrally coordinated rules and practices are applied and guide the doing of the right things in the right ways, while and at the same time allowing as much freedom and autonomy. The autonomy asks for the critical leverage points (e.g. market facing teams) in their value creation networks to be able to make local decisions at the last responsible moments (moment when the decision need to be made before losing an opportunity, while having the most possible knowledge of the situation at hand).

The next few pages look into the three aspects of seeing the whole, finding better ways to create and capture value, and balancing consolidation/coordination and agility.

**Taking a holistic approach, predicting the future and learning from the past**

Huovinen presents the idea of a *value stream* within an IT operating model in figure 2. The flow (grey arrow) shows how business demand is transformed into supply through interconnected steps that combine as a coherent system and ensure flexibility to adapt to changing requirements, provide coordinated control over the value creating assets, reduce costs through efficient development and operations and increase value through fast delivery of fit-for-purpose solutions.

![Figure 2. Value stream within an IT operating model (Huovinen, 2014)](image)

The stream starts with the strategic business intent and goals that are fed into the IT operating model. Enterprise Architecture (EA) is fed with input from the business and the market. Within the EA, the required IT assets and interconnections between the assets are analysed and mapped. Existing assets to be leveraged and new capabilities that are required in order to achieve the intended strategic business outcomes are identified.

Enterprise architecture guides and sets the high-level rules of the development and service delivery. There should be an *ongoing feedback loop* from the subsequent steps in the value stream all the way back to the enterprise architecture and to business strategy. The enterprise architecture thus gets input from the business...
Wider system than individual elements where everything is connected, it is no longer needed and in fact should be avoided to try to incorporate into the overall business operating model, its effectiveness and efficiency.

In the modern digital economy, the bottom-up feedback is increasingly important, as businesses are deeply reliant on IT in their value creation processes. Changes, correction and adjustments in direction partway through the stream are thus anticipated and embraced.

When seeking to adjust the efficiency and effectiveness of the IT operating model (the throughput and quality of the business value it is capable to deliver) it is good to keep in mind at all times that changing individual elements in isolation has the least effect on intended outcomes and business value. To use an analogy: Switching individual players of a football team results in the team retaining most of its overall performance characteristics. However, if the rules of the game are changed or the way in which the players are able to communicate with each other and the team coach (the interconnections), the team and results are transformed. Changing the rules means leveraging the opportunities of digitalization.

Businesses - the core value models of even the largest companies - are always inherently simple. The ways they are organized and structured make them complex. Simplify complexity by reducing waste, in structures and processes. Continually ask do we really need this, in light of our vision? Aim for value in everything you do. Focus on outcomes instead of the projects or the products intended to supposedly deliver the value. Do not get bogged down on individual features, and keep the end in mind. Do not let the projects become the purpose, they are just vehicles; one chosen out of infinite number of options to achieve a goal. The holistic view allows the different ways, means and answers to emerge more quickly.

For opportunities to result in desired outcomes, companies should pay careful attention to how the elements work together and to how the system fits within and interacts with its ecosystem. Enterprise architecture, as a concept, is meant for this purpose.

As a concept and a tool, Enterprise architecture is often perceived with certain apprehension. EA can be seen as a complex Rube Goldberg machine that is well understood only by EA boffins, better left and forgotten to their ivory tower in isolation with their overly complicated models and diagrams and spreadsheets, not truly usable in real life and business.

This is, of course, an exaggeration, but acts to serve an important point. Enterprise architecture as a practice can become complicated and distant from real needs of the value creation processes if it is approached mainly at a technical and operational level, with isolated tools and models used solely by IT architects. Enterprise architecture can become a bottleneck rather than a facilitator if too much emphasis is put on documenting, up-front planning and modeling and obligatory gate reviews which do not add real value or serve a clear purpose. But used wisely and in an agile manner, based on common language that is easily understood by all stakeholders, enterprise architecture will form a backbone for access to holistic and flexible views to an enterprise and the IT operating model from different stakeholders’ perspectives.

Perhaps it is the name itself - enterprise architecture – that has collected much dust and many dings over the years, distancing it from actual, effective use helping companies and IT functions gain a better grasp of the whole picture. Whatever it is, and however it is called, a capability to see the forest from the trees is required. Putting EA to work and to good use, by bringing it closer to people with an easily understood and approachable vocabulary, modeling tools and means to share information and knowledge among all stakeholders, should be encouraged. Enterprise architecture will provide a view to the current business context, to the near future and to the past. A glance at the past via snapshots of the state and configuration of the enterprise along with performance trends at good times and bad can prove to be very valuable, even at times of rapid change. Often those lessons learned that may prove useful later on are quickly forgotten.

Modeling and sustaining extended enterprise architectures should be considered now more than ever; the same concepts and patterns as with an enterprise specific EA, only applied in a systemic and coherent way within the extended organization, formed through partnerships.

Breaking free from rigid value creation patterns

The ways in which organizations set up the various elements of their IT operating model have a major impact on the overall business operating model, its effectiveness and efficiency. In the modern digital economy, where everything is connected, it is no longer needed and in fact should be avoided to try to provide the elements from within the system. Instead, they should be acquired in a flexible manner from within the wider system that encapsulates the companies and their IT departments - their ecosystems.
Companies face uncertainties that generate very high information processing requirements and they must deal with limited financial and human resources. The in-house IT resources in the long run tend to not be as open to influences and knowledge dissemination compared to partnership-matrixes, which form hybrid organizations, combining the resources of two or more separate systems.

Rigid value creation patterns refer here to the ways many organizations fail to see the forest from the trees when it comes to utilizing their ecosystem. They may acknowledge and use the basic best practice models of outsourcing - analyzing the vital core functions they should retain and the less strategic and repeatable processes they may opt to let suppliers handle, either those close by or overseas.

It has become essential that companies and their business units are highly responsive to multiple avenues for value creation simultaneously, for their incumbent core business and those that the new technology (IT) can offer. Those new offerings may complement older revenue and profit models or create entirely new ones. Convergence of IT and traditional industries and the new applications opening within the traditional industries via IT can indeed open up possibilities for companies and business units to consider new revenue and profit models.

The importance of IT as an enabler of the digital economy and as a key corporate function prompts companies to consider turning to partnership-matrixes to more effectively leverage IT. In a partnership matrix, resources from both partners collaborate inside an extended virtual matrix enterprise. These hybrid structures offer a broader knowledge and expertise base and flexible capability and capacity buffers for peak demand times.

Value creation and innovation alone are not enough though; the value created (revenue) need to also be captured (retained profits). Lowering fixed costs by using flexible partnership models enables effective avenues for value capture. Partnership-matrixes make it easier to adjust and make course corrections within the ecosystem and in the economy and markets where the only constant is change.

Companies can retain and grow their value creation capabilities faster by forming collaborative partnerships that are based on trust and transparency. Leveraging a shared, flexible and interchangeable resource pool can significantly reduce overhead costs compared to relying on fixed in-house resources.

Conflicts of interest can be sometimes hard to avoid and manage in partnership models. The areas most fit for partnering should be carefully planned (figure 3). Conflict is a natural and potentially a positive thing, as long as it is not escalated to a harmful or unconstructive form. Conflict between elements facilitates the creation of robust solutions to problems through a healthy debate. However, negative risks of conflicts of interest should be identified and mitigated. A partnership-matrix should foster dual control and evaluation systems based on elevated levels of trust, including leaders who operate comfortably with lateral decision-making and a culture that can negotiate open conflict and a balance of power.

The final point I would like to make about partnership-matrixes between companies and IT departments is that the measurement and reward systems should accommodate increased knowledge sharing, while considering potential risks of conflict of interest.
It is quite typical in many organizations, that individuals and teams are most commonly rewarded for what they know and are skilled at - not so much on how much they share their knowledge and skills. These reward models actually discourage knowledge sharing. The culture of a partnership organization should encourage and reward the discovery and transfer of knowledge, leading to collaborative innovation.

Companies tend to lose those things they do not measure. If knowledge sharing, insight, collaboration and creativity are not measured, they will not prosper and grow within the (eco) system. Therefore, to encourage cooperation and knowledge sharing, the companies and partnerships should “measure up” by focusing on aspects above the normal span of control of a sub-system. Teams and individuals would not be rewarded based on the performance of their own unit, but rather on the performance and results of the wider system – department, company, or the partnership-matrix. Measure within the system, but more importantly also up and sideways within partnership-matrix. This is a way to make interconnections in the extended system stronger - it changes the rules of the game. Conflicts of interest can be better avoided and risks mitigated this way.

Coordination is not possible without meaningful measurements and monitoring. Primary metrics of an IT operation model should measure its effectiveness (business outcomes supported). Efficiency (IT performance) metrics are necessary, but secondary. Looking at value in a holistic manner beyond direct financial savings and benefits, and from a sustainability (in various suitable forms) point of view should back up straightforward ROI measures.

**Balancing coordination and agility**

Traditional best practice in the areas of service and operations management typically emphasize the importance of achieving balance, whether in stability vs. responsiveness, quality vs. cost, reactive vs. proactive.

Balance between the extremes needs to be found, but finding it does not need to mean having to make compromises. Balance emerges more naturally in well coordinated, but agile environments. Coordination and agility go hand, without compromises.

Going back to the concept of IT operating value stream in figure 2, understanding the system requires understanding the elements and the interconnections between them. Each element should add value to the stream (otherwise they are waste). Seeing the whole is vital for coordination and agility. An overall view of the value stream will provide answers to questions such as:

- What are the wider goals, objectives and overall business imperatives, which the solutions developed within the stream will support and be coordinated towards?
- What processes, departments or business units will the solutions support? Who needs to be involved?
- What are the success factors, key performance indicators for the particular solutions within the overall business context?
- What capabilities and are we enabling for the IT department, the business departments, and in the strategic context that measure up with the key performance indicators?
- What can we use that we already have, and what should we get or do more of? Is there something we do not need anymore or should to do less of (anywhere within the stream) in light of the business needs and market demand?
- How volatile is the environment and our estimate?

IT departments should deliver business value (the last circle in picture 2) quickly and reliably, all the while considering questions such as above. It takes serious coordination to juggle these elements and it is best to limit the number of concurrent elements in scope.

Traditional development and project management methods are suitable on occasion, when the environment and desired outcomes are clear and plans to achieve the goals straightforward to define. Study after study shows us, however, that approaches that are more agile almost invariably result in higher yields in complex environments where influencing factors and how they may change and interrelate are difficult to estimate and predict.

Achieving agility in a value stream depends not so much on the individual elements (circles in picture 1), but on how they interconnect and interoperate coordinatedly. Agility and coordination go hand in hand, complementing each other.

Agile IT department and operating model should be lean. Non-value-adding elements such as waiting, task switching, and defects that need to be corrected (technical debt) should be minimized. Agile and lean IT
requires optimizing processes and practices, interconnections between people and functions. Being lean should not mean cutting workforce as a first step at times of economic downturns. Instead, agile and lean should mean creative services faster and more efficiently to the market.

Parallel and iterative processes between elements and steps should be favored over sequential steps that are controlled with rigid system of review tollgates. Partial - but complete - increments of business value should be released sooner rather than later. Development pace needs to be sustained and sustainable, never compromising quality in favor of speed.

Quality, to emerge and sustain, should be built-in as opposed to being forced from the corner offices. The "rope of quality" binding products and solutions should be pulled by the elements in unison, not pushed by the management. Source of quality in an agile environment resides in the source of the product developing units. Quality emerges from within the steps and through the continuous integration between them.

Instead of siloed teams, the entire value stream should foster interoperability and cross-functionality as a coherent system, with a strong emphasis on knowledge and skill sharing. Teams and functions should be able to collaborate across skills and competences to avoid unnecessary handover rituals, delays and waiting times. They should have room to focus on knowledge gathering and constant learning.

Work-in-progress should be minimized, to avoid investments without any returns until much later down the stream, by which time parts of the business case may likely be redundant. Smaller batches should be preferred over large commitments. Flexible, outcomes oriented programs consisting of lean and nimble sub-projects, delivered in iterations within the control limits and common goals of the programs should be preferred over long and monolithic projects, heavy in upfront planning. Planning is essential, and there should be lots of it, but it should happen all through the value stream. The larger the commitment chunks, the harder it is to make adjustments and recover any results for later uses in case of course changes.

A value stream could utilize signaling systems (whichever way implemented), to alert the preceding steps whenever subsequent teams are ready for new input. Pull, rather than a push mechanism should be favored in an agile IT operating model. Feedback is fed back upstream as corrections and adjustments are required based on the more elaborated information and enlightened knowledge gathered downstream.

Robust control and coordination to ensure verification, validation and continuous integration of upstream and downstream activities is vital. Each element (team or function) in the value stream should be able to 'stop the line' if a problem occurs, or if a feature is spotted that may not be necessary (in the product that is being developed or in the development process itself). Delivering features that end up not being utilized is waste, and increases maintenance costs for no good reason.

Due to the criticality of IT for business operating models, the IT operating and development paradigms are likely to transcend beyond the borders of IT departments. Emerging (IT) systems development and operating concepts such as Agile Release Trains and DevOps, taking advice and guidance from Lean and Kaizen philosophies, seek to adjust the ways of working to better suit modern times. The newer paradigms are still more entrenched in the domains of software development. These emergent ones could be increasingly leveraged, by adjusting them to suit the IT-business operations more holistically.

Achieving agility in business-IT development cannot be planned and dictated. An agile and lean IT operating model requires shifts in the corporate culture and mindsets of people. Approaching transformation of a value stream as a preplanned top-down managed program, with strict pre-assigned tasks and process manuals leading the change, will likely fail. The system needs to lead the transformation as a whole, gradually. There should be no set schedules to be able to say, "We are now agile". Agility cannot be measured with rigid metrics. It happens; through small shifts, changes in perception, thinking, habits and behaviors that self-reinforce over time to form new operating cultures.

Scaling agile practices to the enterprise level - to operating models and portfolio management - requires combining things with a birds-eye view of the system (EA); snapshots, trends and analysed causes from the past, the current state and the more predicted roadmap ahead.

Consolidation and coordination are essential to avoid chaos. Coordination, in the context of both internal IT operations and partnership models, should provide the system with clear goals, purpose and rules. It should guide the system, enforcing the rules when needed. However, it should not enforce any more policies, practices and processes than necessary to keep the system working within the overall control limits of the game. Too much coordination and strict policies reduce speed, innovation and motivation.
The system needs to operate with clarity, simplicity and with predictability. Top down consolidation and coordination should be focusing on providing shared technology platforms, guiding principles and control mechanisms to operate in a coherent manner; optimizing value and risks while reducing costs. Consolidation and coordination protect the system from impediments and limit constraints and bottlenecks in the value stream, by ensuring scalability through common solutions and flexible and pools of experts not confined within the corporate boundaries.

Controls and policies need to have clear rationale based on helping to achieve goals, or being compliant with laws and regulations. Coordination and consolidation should not venture into micromanagement. They should focus on proactively intervening with special cause variations - those few critical inputs and factors that will impact (enabling or limiting) the system most, and which can be better identified via enterprise architecture - as opposed to common causes. Common cause issues can and should be improved within and between the elements of the system by the self-organizing, cross-functional teams.

Again, instead of focusing of siloed, individual projects, products (whatever is being developed) as ends in themselves, focus should always be in the outcomes and value in achieving a vision. The customer does not need a drill, rather a hole. An enterprise does not need an ERP, rather to manage its products, personnel, suppliers, financials, etc. There are infinite ways to achieve a vision, as long as it is clear and sets the playing field.

The digital economy is a playing field where companies cannot win without a coordinated team of versatile, quick and agile players which can be “traded” on-demand from team to team, partner to partner, to form best possible winning combinations in context of the situation – the customer and market opportunities.

About the author
Juha Kauhanen works as a Senior Advisor at Sofigate, since 2013. Before that, he worked for Deloitte, based in Finland and Australia. Over the past 15 years, Juha has served some a wide range of clients in various industries. His focus areas are IT governance, change management, enterprise architectures and project, program and portfolio management. Juha holds an MSc in cultural geography and PMI-PMP, PMI-ACP, ITIL Expert, PSM, PSPO, TOGAF and Lean Six Sigma Black Belt certificates.
Juha.kauhanen@sofigate.com
Juhaelias@me.com