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5 Rules for Digital-Proofing Your Technology Strategy

AT A GLANCE

No development in modern times has been as pervasive and formative as the digital revolution. Digitalization repeatedly rewrites the rules and playing field for businesses and creates a complex competitive environment and technology landscape. To conquer the complexity of the new digital reality, technology strategy development practices must evolve.

5 rules for digital-proofing your technology strategy:

1. Get data-driven to jointly agree on what digital shall do for your business

To overcome complexity and uncertainty, technology strategy development must be data-driven and unbiased – based on a detailed, shared view of the business' future direction.

2. Set a common language for dealing with digital technology

To effectively direct investments and resources to high-impact technology areas, a common framework and language for future-business technology is needed.

3. Provide business rationale for the hard choices

Digital technology investments often come at the expense of current-business strongholds. To get buy-in for and succeed in change, it must be driven by business rationale.

4. Use all available sources of digital innovation

Digitalization requires innovation outside the frames of incumbents' current capabilities, pushing increased external engagement and exploring new types of partners.

5. Dare to make drastic changes to your operating model

With the high pace of digital disruption, operating models must be designed to be resilient and systematically facilitate change – when change is motivated by business rationale.

5 RULES FOR DIGITAL-PROOFING YOUR TECHNOLOGY STRATEGY

By Robin Sparrefors and Jens Bördin

In a recent workshop gathering of CTOs and Heads of R&D from 13 large Nordic industry companies, the challenges for and capabilities of next generation R&D and technology organizations were discussed. The meeting agreed that the current top challenge was managing the increasing complexity of the digital technology landscape. The CTO of one of the largest technology companies in Europe concluded that due to digitalization and resulting industry convergence:

“The number of technologies the company must master by 2020 will have increased 700 times compared to the number in 2001.”

The impact of digitalization – the explosion of new critical technology areas, the blurring of boundaries between industry verticals, and the new competitive landscape – is forcing industry incumbents to develop their business practices to manage new complexity. One significant challenge is how to control R&D spending, direct technology investments to high-impact areas, and ensure cost-efficient access to business-critical digital technology. Especially as digitalization often requires innovation outside the frames of industry incumbents’ current businesses, organizations and capabilities.

In this paper, we outline five rules for developing technology strategies fit for managing the complexity of the digital technology landscape. These rules are based on learnings from progressive industry companies that have upgraded their strategy models and practices for making technology investment decisions reflecting the new digital reality.

RULE 1: GET DATA-DRIVEN TO JOINTLY AGREE ON WHAT DIGITAL SHALL DO FOR YOUR BUSINESS

To overcome complexity and uncertainty, technology strategy development must be data-driven and unbiased – based on a detailed, shared view of the business’ future direction

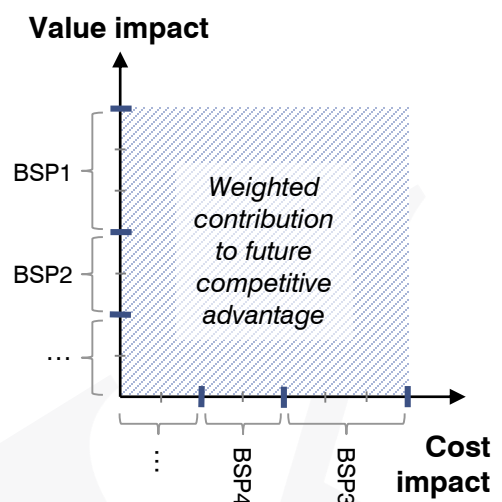
While most, if not all, technology-intensive companies have digital components in their technology strategies, most strategy development processes are based on practices that worked well in more stable business environments, where the relevant technology areas were well known and the number of emerging areas were few.

The basis for most such strategy development processes is that there are experts inside the company that together can produce the necessary joint understanding of the state and direction of the business and the corresponding technology scope. Given the magnitude and complexity of digitalization and its disruptive impact on companies, assembling a group of people with full understanding of the digital technology landscape and its ecosystem is difficult.

Business strategic priorities (BSPs)

Customer value		Weight
BSP1	Customer benefit X Improve features Y and Z to create differentiating benefits for customers in segments A and B.	3
BSP2	Spare part optimization Improve lead times and spare part availability on demand.	2
...	...	n

Cost impact		Weight
BSP3	Main cost driver X Reduce HW and SW cost of system X, expected to represent >10% of COGS in 2025	3
BSP4	Flexibility in manufacturing Improve flexibility to increase scalability, quality and efficiency	2
...	...	n



Illustrative example: Industrial company business strategic priorities

As a result, many companies struggle to get enough clarity of what digital technology can do for their business, and the technology strategy continues to be biased towards historic priorities instead of transforming the company to capture digital-based growth opportunities.

To make digital-proof technology strategy decisions, a more granular and data-driven approach is needed. Instead of relying on the expert opinions of individuals, decisions should be based on data-driven analysis of the business rationale for change. That way an unbiased case can be built, which is convincing enough to trump historical truths, the strong voices of current-business interests, and intricate company politics.

The cornerstone of such an approach is a detailed and shared understanding of how the company shall create its future competitiveness in terms of bringing value to its customers (existing and new) and managing its costs. This understanding can be created by analyzing and challenging the company's long-term business strategies, including the corporate strategy, sales & marketing strategies, product strategies and sourcing strategies, and thereby extracting clear 'business strategic priorities'.

Business strategic priorities are short, clearly defined and weighted messages that together define the future direction and priorities of the business, and create a common and detailed understanding of the building blocks for the company's future competitiveness.

The set of business strategic priorities creates an assessment framework within which the business impact of different technology areas, new and old, can be measured. This framework makes it possible to systematically translate business priorities into technology priorities. It creates cross-functional consensus of the strategic direction of the business and facilitates and shared understanding of digitalization's role in the company's future competitiveness.

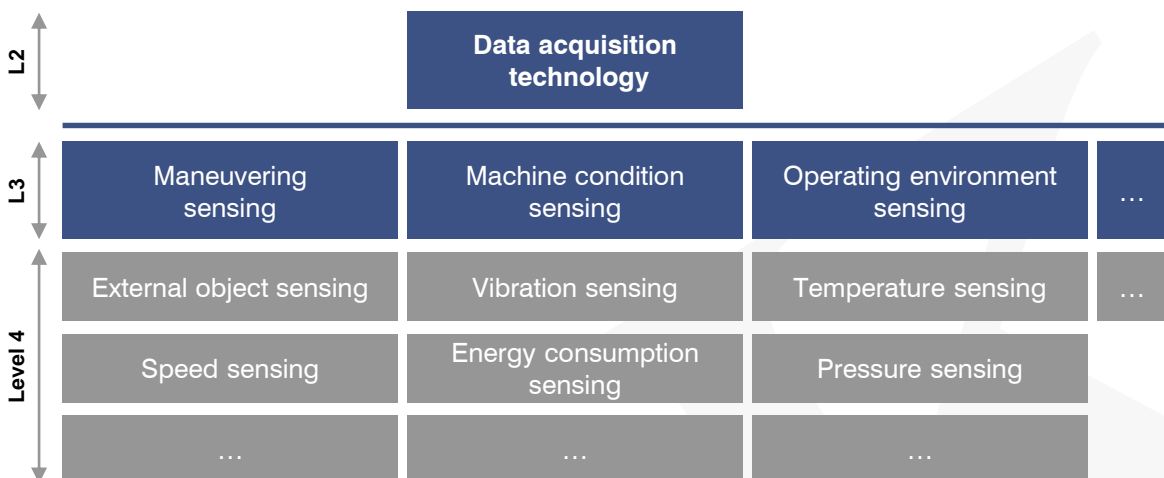
RULE 2: SET A COMMON LANGUAGE FOR DEALING WITH DIGITAL

To effectively direct investments and resources to high-impact technology areas, a common framework and language for future-business technology is needed.

Digitalization involves a number of ambiguous but frequently used concepts such as the Internet of Things, Industry 4.0 or Big Data Analytics. Most people have their own high-level understanding of what the concepts mean, but there are rarely agreed definitions in companies. The lack of a common language to discuss technology on a detailed level is a significant stumbling block. It is very difficult to be efficient and effective if there is no shared, clear basis for communication.

What is needed is a common framework that breaks down all relevant technology areas and creates a shared understanding within the company of what digitalization is. This sets a common language for the future technology scope and creates a backbone for a joint agreement between stakeholders of what, or what not, to include in envisioned product/service systems and sub-systems.

When combining business strategic priorities with such a technology framework, it is possible to effectively direct investments and resources to the technology areas that will have largest impact on future competitiveness. The technology breakdown becomes a contextual framework for prioritization. It can be used to designate ownership and accountability, to guide organizational design, and as structural containers for technology and project portfolios and thereby removing overlaps and gaps.



Illustrative example: Part of digital data value chain technology breakdown

RULE 3: PROVIDE BUSINESS RATIONALE FOR THE HARD CHOICES

Investments in digital technology often come at the expense of current-business strongholds. To get buy-in for and succeed in change, it must be driven by business rationale.

Even though digitalization journeys sometimes can motivate increasing the R&D and technology budget, companies typically face decisions of where to make cuts to finance investments in digital technology areas at some point in their technology strategy development.

R&D organizations often have a long and proud history, and even strong leaders will find it challenging to provide enough evidence to size up against historical truths and make necessary transformative investments in digital technology. Especially when these changes involve moving from hardware and product-focused technology areas to software and service-focused areas, outside the current capabilities of the R&D organization.

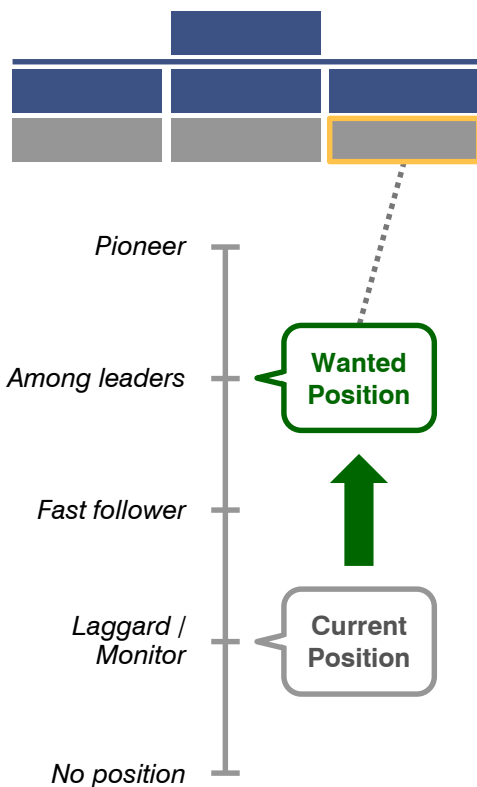
The key to getting buy-in for transformative changes is business rationale, which means building the case for change based on each technology area's contribution to added value for the customer and/or cost advantages. The business strategic priorities and common technology framework of Rule 1 and 2 provide the tools needed to define 'wanted positions' for technology areas. This enables high-resolution assessments of gaps between current and wanted positions and to quantify needed changes – both increases and reductions.

Example case

An industrial company had a leading position within heat transfer and cooling technologies, and >10% of the R&D budget was allocated to this area. When analyzing the area's impact on business strategic priorities, and hence on the company's future competitiveness, it was declining, indicating a wanted position of only being a "fast follower".

In the predictive maintenance technology area, the company currently had a "laggard" position and only sporadic R&D investments were made through different local initiatives. At the same time, a large share of the company's future competitiveness could be attributed to this area and analysis showed that the wanted position was to be at least "among leaders".

With a business rationale-based and data-driven comparison between the areas the CTO of the company built consensus – among management and engineers – for a revised strategic direction and for reallocating financing and resources to the predictive maintenance area. The process involved several tough choices, where it had been hard to get key decision-makers as well as informal opinion leaders behind the change without its solid business rationale.



Internal conditions:

- Do we have the right capabilities to get to the wanted position in Predictive maintenance?
- How much resources would be needed to close the gap in 1 versus 3 years?
- Can we refocus people from reduction areas to growth areas?

External conditions:

- Are there players that could block us from reaching the wanted position?
- Are there external players that we could engage to faster reach the wanted positions?
- What does the talent pool look like and can we acquire needed skills to close the gap?

Illustrative example: Complementing qualitative business rationale questions

To create a complete basis for making business rationale-based and informed decisions, a complementing more qualitative understanding of internal and external conditions for closing gaps in different technology areas has proven useful. With enough data to qualitatively validate the feasibility of changes, it will be easier to create acceptance and support for the tough decisions and move investments and resources from traditional areas to future-business areas.

RULE 4: USE ALL AVAILABLE SOURCES OF DIGITAL INNOVATION

Digitalization requires innovation outside the frames of incumbents' current capabilities, pushing increased external sourcing and exploring new partners.

New business-critical digital technology areas create mismatches between current and wanted positions and companies must decide on how to best close the gaps – and how to do so in the most cost-effective way. With digitalization, industry incumbents are often forced to look outside their own walls to access new technology.

Most companies already use some external sources of innovation. However, digitalization significantly increases the scope of the technology landscape and pushes innovation needs outside the frames of most existing suppliers and partners' capabilities. Industry incumbents therefore have to shift towards using a broader range of external sourcing and update their make-or-buy options to explore new types of partners.

Two examples of options for accessing long-term differentiating digital technology and at the same time balancing uncertainties by keeping options open, are 'multiple growth venture bets' and 'partnerships with digital leaders'. These engagement options are not new in themselves, but their importance is heightened and characteristics accentuated in the digital setting.

Multiple growth venture bets

Companies facing digitalization challenges are often keen to open up the checkbook and acquire the most promising growth venture. Given the plentitude of digital start-ups and their typical volatile rise and fall patterns, it is difficult to spot the winner early on.

To not put all eggs in one basket, companies need to connect with multiple growth ventures, stimulate them to develop in right direction, and postpone investment decisions until risks are lowered. E.g. ecosystems like incubators and accelerators can allow companies to tie several different, and often even competing, growth ventures to the company without having to buy all of them all.

Partnerships with digital leaders

By building partnerships with companies with big "digital muscles", that have come further in their digitalization journeys, it is possible to quickly advance positions in areas that otherwise would have required significant time and resource investments to get into.

Digital leaders can be tech platform providers with complete digital solutions to build new innovations on top of, software companies with tools for boosting your digital presence, or consultants with skilled resources to quickly make advancements without having to hire all needed talent. This type of partnerships works best when there is mutual exchange, not just one-way transactions.

RULE 5: DARE TO MAKE DRASTIC CHANGES TO YOUR OPERATING MODEL

With the high pace of digital disruption, operating models must be designed to be resilient and systematically facilitate change – when change is motivated by business rationale.

Arguably the biggest reason for why even good technology strategies fail is that the operating model is not geared for executing the strategy. Change in the digital world comes much faster and hits much harder than most companies are used to. New digital areas will emerge (preferably driven by you, but most likely not) and cause disruption. Hence, digital-proofing is much about ensuring that the technology strategy itself and the organizations, process and governance structures used to execute on the strategy, are adaptive to change.

Without a fit-for-purpose operating model, it is easy to get trapped in an ‘innovation theatre’ pitfall. With pressure from shareholders and stakeholders to capture the latest digital trends and buzzwords, organizations can be pushed to set up hasty and ad hoc initiatives to demonstrate quick results (often artificially). This takes resources away from delivering on the business-rationale made choices in the technology strategy and hurts the longer term competitiveness.

On the other hand, when changes to the strategy are based on informed decisions, the operating model must be able to rapidly adapt and facilitate the change in a structured way. Three examples of how to build a resilient and systematically adaptive operating model are:

1. Organizational models to manage emerging areas

Organizational models for handling new areas that do not fit in the current structure must be proactively prepared, not set up reactively and ad hoc. Systematic models for integrating emerging areas will ensure avoiding improvised and ineffective individual attempts. Examples of models include temporary R&D programs that can evolve into new departments and rapid prototyping functions specialized in exploring next horizon areas.

2. Systematic strategy revision process to ensure motivated changes

Strategy revisions cannot just be done annually, but need to be more frequent and respond to internal and external triggers for assessing if the underlying business rationale is still valid. This does not mean that the strategy should be in constant flux, but be responsive enough to not be inert. As long as you are true to the data-driven strategy process, recurring revisions will reinforce the strategy and trigger fast change when motivated.

3. Agile budgeting process to facilitate rapid adaptation

More agile ways to set technology budgets will facilitate rapid changes and avoid having to redistribute already allocated money. Examples include gate-based unlocking of funds, deferring financing decisions until later in the year, and safeguarding parts of budgets for unexpected events. To avoid a staff focus on “chasing financing”, transparency in how resources are directed to the areas with highest impact on future competitiveness is key.

CONCLUSION

To conquer the complexity of the new digital reality, technology strategy development practices must evolve. From our experience of working with progressive industry companies, we have distilled five rules that can guide companies in successfully digital-proofing technology strategies. This helps them effectively direct investments and resources to the technology areas that will contribute the most to the company's future competitiveness.

The rules include to build a data-driven joint agreement on what digital shall do you for your business; to set a common language for technology; to build business rationale for hard choices; to use all available innovation sources; and to make necessary adaptations to the operating model for execution.

The five rules are largely applicable to any technology strategy, including areas not directly concerned by digitalization. However, the characteristics of the digital technology landscape and business ecosystem accentuate the need to apply the rules. The speed of the digital revolution emphasizes the need to act now.

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