Digital, agile, useless?

Digitalization is a megatrend and traditional companies around the world have been investing significant resources into emerging technologies such as IoT, augmented reality, 3D printing and block chain with the expectation of increasing operational efficiency, improving customer satisfaction, and creating new revenue models. Despite the exciting prospects of going digital, recent studies show that 84 percent of digital projects were failures[1] and less than 10 percent of digital projects have been rolled out on a larger scale.[2] The ability to scale up typical speed boat success stories seems to be missing widely.

[1]*Marc Werner: "Digital Dementia" in Forbes Magazine, January 14, 2017.*

[2]*Steven Maxwell: "The Digital Divide" in Wired Magazine, August 21, 2017.*

Digital, agile, useless?

Surprisingly, many business executives have no idea of the extent to which their companies have invested time and money into digital proofs-of-concept (PoCs), minimal viable products (MVPs), and speedboat projects, because more than 70 percent of these investments were made by business units with small budgets in order to keep up the pace and to circumvent formal tender processes. While this approach seems to match the message "fail fast, fail often" used by many hip start-ups, tech giants, and strategy consultancies involved in such projects, it rarely yields the required success rates or matches their breakthrough transformation ambitions.

The two underlying misunderstandings

▸ Failing on single initiatives and failing on the overall approach are not viewed separately

▸ A typical green field startup situation differs significantly from a brown field digitalization environment

Despite local success stories, the result of digitalization for many companies is a technology landscape cluttered by siloed systems that are not interoperable, not scalable, and not secure, i.e., not enterprise-ready. In an interview, one executive identified 7 IoT pilots in his organization, which cost between $200,000 and $450,000 each to implement. His company's aggregate investment in IoT was more than $2 million, which is a pittance for a global company with $7 billion in annual sales. Nevertheless, it is upsetting that after three years of experimenting with IoT, none of these systems had been operationalized. "Had we spent a couple months planning these projects better, we would have implemented an enterprise IoT platform and some of these applications would be live in all or most of the regions in which we operate. We could be saving millions of dollars every year, but we aren't."

Digital initiatives can only produce company-wide competitive advantages such as lower costs or better quality when they are transformative. MVPs, PoCs and pilots alone are not transformative. They can improve local processes and Key Performance Indicators, but they don't create a brand preference or impact the top or bottom lines for a company.

Back to non-agile?

Has the agile approach been misleading? Do we need a more traditional approach, starting from a digital vision and continue with a forward planning, heavy project structure?

The clear answer is no. Technological development is speeding up further, thus traditional program planning will not solve the challenges. The agile method is the most efficient approach to develop single initiatives and local solutions with high involvement of the teams. There is no better way to boost acceptance and enable change.

Yet, some elements are missing in most of today's approaches into digital: ambition, technological backbone and organizational catalysts.

Ambition

The most common critique – especially of IoT and 4.0 – is the lack of an underlying idea or philosophy. Single technological solutions used to describe the bright future, such as RFID based logistic solutions, artificial intelligence, collaborative robots et al. do not convey the underlying principles and visions of a digital supply chain.

Technological backbone

After decades of IT-driven process transformation with a clear recommendation towards central, integrated systems we are facing a highly controversial discussion today. While cyber-security and some digital levers (big data, artificial intelligence) still require centralization, many other applications are available as decentralized solutions (e.g. analytics, apps, local Industrial Internet of Things) and frequently lead to questions of scalability, data/IP protection for cloud based solutions and IT-support efforts.

Organizational catalysts

The least highlighted aspect of digital transformation is deployment strategy. Without a simple recipe to use existent structures for rolling out digital solutions, efforts will multiply during the actual transformation process.

Ambition, technological backbone and organizational catalysts

Tier 1 Automotive supplier

The digital journey started 10 years back from now. Many of today's technologies were neither available nor on the horizon then, as were current performance levels. Yet, their digital roadmap and overall approach remains is the unaltered basis for transformation.

The starting point was to build standards for capturing data, e. g. data formats, KPIs or interfaces.

This was followed by the installation of networks in all production units used to assist local production.

The current step focuses on integrating cyber-physical systems, a critical step towards autonomous, self-organized production units.

Take-away: Keep your roadmap universal – don't focus on individual technological solutions.

Industrial products giant

Three main steps have been defined in the 4.0 roadmap:
- Lean management
- 4.0 enablement with MES (Manufacturing execution system) and RFID (Radio frequency identification)
- Connected factory

By building up internal solutions and consulting capacity and defining lead users (factories) it was possible to set and maintain standards from the very start of the transformation.

The successful implementation of lean management has set a solid foundation for 4.0 applications, the production system was acting as an internal rollout channel.

Take-away: Build on existing foundations and ramp up internal expertise at early stages.

Best practice analysis shows that successful organizations have a clear **ambition statement** for their digital transformation, often coupled with milestones. However, very few of them put dates behind their milestones. This reduces the pressure of adopting only partially functional technologies too early.

When it comes to the **technological backbone** of digitalization, proven engineering rules can be applied:

- Identify core fields and components that drive performance, security, safety and cost

- Standardize those fields through a corporate governance and/or frame contracts with technology providers

- Provide "plug and produce" solutions wherever possible

- Support the transfer of best practices amongst users for all other applications, e.g. through app platforms or community building

This approach avoids large upfront IT-infrastructure projects before even starting MVPs and pilots. Yet, it places sufficient focus on risk (data security and integrity) and cost (IT maintenance).

Rolling out digital solutions needs to be driven through and by **organizational catalysts**. Companies with a mature production system and active lean teams can use these structures to implement digital solutions at the heart of the value adding process steps. More centrally-driven organizations will instead rely on their line functions to deploy digital solutions and platforms. In all cases, change management on an organizational as well as an individual level is a key success factor and should be a prerequisite competency for everyone involved in the transformation.

Fail fast, fail often

Yes, but...

failure is an important learning component during the ideation and implementation phase of single/local 4.0 solutions. The unique chance to identify unattractive ideas that will not be accepted widely should be taken seriously. Once tested and approved, these solutions should be rolled out without further failures. The overall transformation approach should equally be excluded from a fail fast, fail often philosophy.

It is crucial to assess pilots and MVPs against several criteria before starting the rollout. The following anecdotes demonstrate how excellent ideas can potentially fail after successful piloting:

▶ An industrial company implemented a technology to track workers' health of workers in a dangerous environment with the goal of reducing occupational accidents and lowering the cost of workmens' compensation insurance. The pilot involving several workers was successful; however, the idea of using wearable devices to monitor employees is not accepted or permitted in several regions in which the company operates.

▶ A manufacturer implemented a turn-key solution to monitor energy consumption of a group of machines. The pilot was successful and the company realized some savings, but the solution could not be implemented factory-wide. The technology vendor refused to integrate with the company's legacy system or even export the data, because it expected the customer to subscribe to its energy management service.

▶ A service company implemented a system to monitor the condition of its equipment in the field. Instead of servicing the equipment based on fixed intervals, the company wanted to cut costs by scheduling maintenance based on actual condition. The pilot was successful; however, upon planning the rollout, the company learned that fixed maintenance schedules were mandated by law. It had to conduct onsite inspections and perform certain services on its equipment every six months whether the equipment needed it or not.

Most of the basic ideas could be rolled out after modifying some of the underlying technology, switching vendors or finding ways for special agreements with authorities. Yet, the sooner potential barriers are identified, the smoother solutions can be rolled out without acceptance issues.

Another take-away: rather than transferring fully developed solutions, organizations should focus on providing adequate concepts, platforms and use cases for local adaptation.

Green field and brown field digitalization are two different tracks

Although the underlying technology may be similar or identical, green field approaches will differ significantly from the digitalization of an existing business model, supply chain or production unit. While green field is an isolated approach that may fail or succeed, brown field activities are aiming to optimize the running businesses. The latter cannot be developed ignoring current structures, systems and processes, which adds some complexity both in terms of design and in the implementation of such projects. This frequently results in a moderate, step by step approach to cope with the change readiness of the organization and reducing the risk of serious interruptions of supply. And the truth is: in the long run, the vast majority of digitalization efforts will be brown field activities.

Do-How #1: Ambition – are you steering in the right direction?

The first question to answer is: is your digital ambition suitable and phrased in a way that your organization, suppliers and customers will can understand and support it?

▶ Include a vision of how digitalization will change and improve the way of working

▶ Do not get stuck in technological aspects

▶ Remember to adopt everyone's perspective – an ambition which is appealing to the C-level may be frightening your staff

When revising your digital strategy, a quick scan of the current portfolio of activities may be useful before sharpening the statements.

▶ What digital projects have been implemented or are being planned?

▶ What business units have implemented or are planning digital projects?

▶ What use cases were realized or are being planned?

▶ Who are the users?

▶ Who are the owners of the project?

▶ What technologies were used or will be used?

▶ Which vendors were used or will be used?

▶ What partners are being used or will be used?

▶ What are the measurable benefits?

▶ What are the costs?

Do-How #2: Technological backbone – which platforms and solutions can actually be spread out?

Simply put, the goal is to identify the use cases that have company-wide or global relevance, as well as the technologies, skills, and partners that are required to support an enterprise rollout.

▶ Do users require special skills to use the new solution? If yes: where do they exist or how easily can they be trained?

▶ Does the new process satisfy all regulatory requirements in most rollout regions?

▶ Is the new technology approved for use in most rollout regions?

▶ Is the vendor authorized to conduct business in most rollout regions?

▶ Does the technology satisfy cyber security rules in most rollout regions?

▶ Can the technology scale up to support a large, international project?

▶ Is the technology accepted and supported in the rollout regions?

▶ Is the new system intuitive to use?

▶ Can the new system be integrated with other systems?

▶ Is the cost structure affordable at scale?

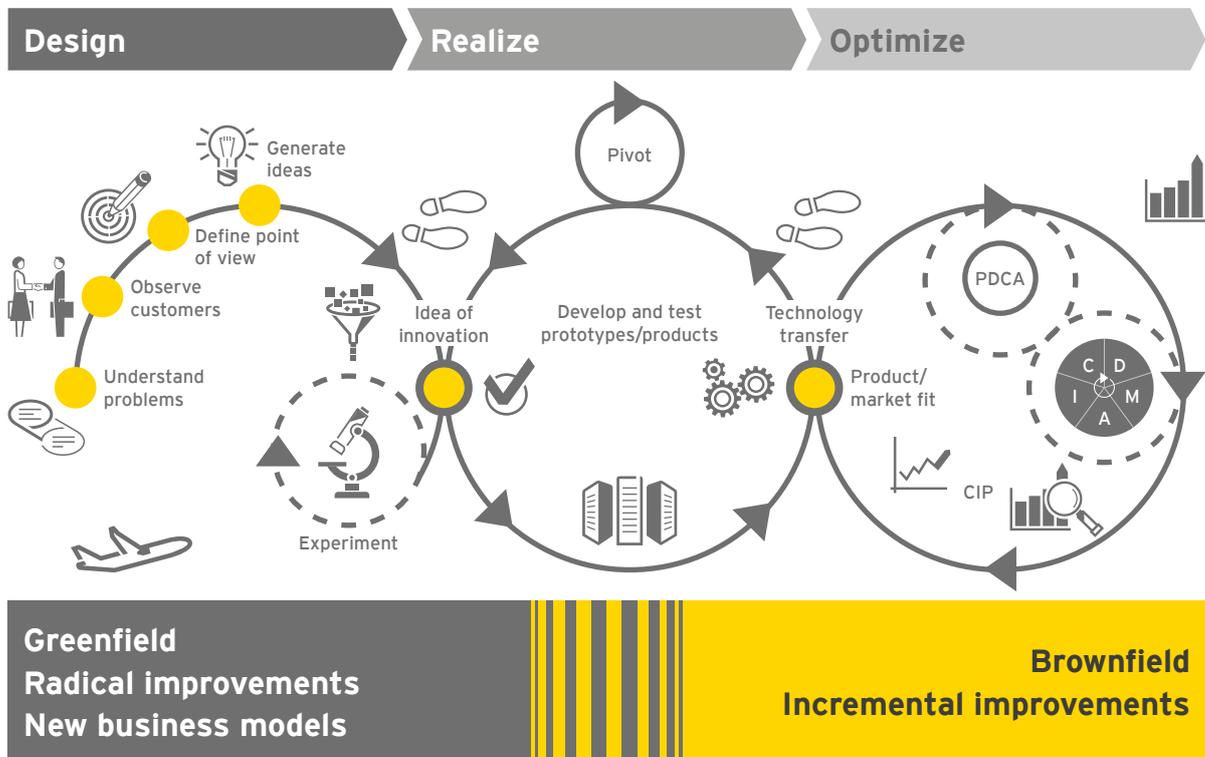▶ Are customers willing to pay for the new system or services?

- Can the system be fully tested in a live setting with live users?

- Does the new system solve a problem that most rollout regions have?

- Are the benefits measurable for most regions?

The list can serve you as a checklist for scanning existing pilot solutions or as a starting point to define new technological platforms. Once a decision has been made, it is crucial to focus on the selected platforms and vendors to fully benefit from the new standardized technological backbone.

Do-How #3: Organizational catalyst – spread digital solutions by using existing organizational structures

The most important part of any innovation or change is actually doing it. The basic idea that was adopted by the more successful early adopters was to use existing structures, competencies and frameworks to spread out digital solutions, e.g. manufacturing companies have used their lean structures for digital implementation. The beauty of this approach is, that the competencies required to find local solutions（based on general frameworks/platforms）are already in place: teams and moderators. Even agile approaches have worked well in these environments because they match the culture of continuous improvement and team oriented solution development.

Our **Design-Realize-Optimize approach** shows how these concepts, competencies and approaches can be combined to act as a catalyst for the digitalization rollout.

| Design | Realize | Optimize |

Generate ideas
Define point of view
Observe customers
Understand problems
Experiment
Idea of innovation
Pivot
Develop and test prototypes/products
Technology transfer
Product/market fit
PDCA
CIP
C D M A I

**Greenfield
Radical improvements
New business models**

**Brownfield
Incremental improvements**

PDCA = Plan – Do – Check – Act
DMAIC = Define – Measure – Analyze – Improve – Control
CIP   = Continuous Improvement Process

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