



**PROJECT  
HALF  
DOUBLE**

# Project Half Double

CURRENT RESULTS OF PHASE 1 AND PHASE 2, DECEMBER 2017

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## INTRODUCTION

**The Half Double mission:** Project Half Double has a clear mission. We want to succeed in finding a project methodology that can increase the success rate of our projects while increasing the development speed of new products and services. We are convinced that by doing so we can strengthen Denmark's competitiveness and play an important role in the battle for jobs and future welfare.

The overall goal is to deliver "*Projects in half the time with double the impact*" where projects in half the time should be understood as half the time to impact (benefit realization, effect is achieved) and not as half the time for project execution.

**The Half Double project journey:** It all began in May 2013 when we asked ourselves: How do we create a new and radical project paradigm that can create successful projects? Today the movement includes hundreds of passionate project people, and it grows larger by the day.

The formal part of Project Half Double was initiated in June 2015. It is a two-phase project: phase 1 took place from June 2015 to June 2016 with seven pilot projects, and phase 2 is in progress from July 2016 to July 2018 with 10 pilot projects.

**The Half Double consortium:** Implement Consulting Group is the project leader establishing and managing the collaboration with the pilot project companies in terms of methodology. Aarhus University and the Technical University of

Denmark will evaluate the impact of the pilot projects and legitimize the methodology in academia.

The Danish Industry Foundation, an independent philanthropic foundation, is contributing to the project financially with DKK 13.8 million.

**About this report:** This report focuses on phase 2 pilot projects documenting their development and further consolidates results from the phase 1 pilot projects. This is the third report about Project Half Double (Svejvig et al. 2016, Svejvig et al. 2017). This report's target group includes practitioners in Danish industry and society in general.

The editorial team from Aarhus University prepared the report from October 2017 to December 2017, which means that data about pilot projects from December 2017 is not included.

The report is structured as follows: The next chapter presents the Half Double Methodology at project and portfolio level. This is followed by an overview of pilot projects and five detailed chapters about the pilot projects. The final chapter holds a conclusion of the report. Appendices include a description of the research methodology, limitations and updates to the Half Double Methodology.

**Limitations:** There are several limitations to the results presented in this report. Please refer to Appendix B on page 49 for a detailed presentation of limitations identified in this study as these are important for interpretation of the results.

# THE HALF DOUBLE METHODOLOGY – PROJECT AND PORTFOLIO LEVEL

## The Half Double Methodology

Project Half Double was initiated in 2014 with a clear mission. Our aim was to find a project methodology that could increase the success rate of projects while increasing the development speed of new products and services. We were convinced that by doing so we could strengthen Denmark's competitiveness and play an important role in the battle for jobs and future welfare.

Our challenge was essentially to conceptualize a project management methodology through research and collecting best practice approaches. A project management approach that is based on actual human behavior, unpredictability and complexity rather than assumptions of rationality and predictability acknowledging that times are changing; that the external environment is becoming more and more turbulent; that performance requirements are rising and that it is becoming increasingly necessary to accept continuous change and chaos as fundamental premises. We did not reject the classic view of project management. Instead, we used it as a steppingstone adapting it where most needed in relation to the situation at hand. We aimed to experiment with new principles and methods in real-world pilot projects and to gather learning from this experience - and in the process, get a community of trendsetting professionals to help co-create the methodology.

The Half Double Methodology in its latest "ready to go live" version is presented in Figure 1 on the next page: A methodology demanding a strong focus on three core elements which, combined, reduce time to impact, keep the project in motion and promote the leadership of people rather than the management of technical deliverables. Each core element puts forward a principle – a non-

negotiable standard – for how we are to lead our projects. Each principle is directly linked to a method – a proposed approach, procedure or process for bringing the principles to life in practice. Each method is supported by a tool – a specific instrument – aimed at easing implementation. Bear in mind that we emphasize the evolving nature of the concept as the methodology is in continuous development – never set in stone. Rather, it is constantly inspired by – and adapted to – new insights and learning from practice and from our community of engaged project practitioners. See Appendix C, page 52 for further insight into how Half Double Methodology has evolved.

The concept takes us from the core – the non-negotiable standards we bring into all projects – to the localization where we adapt the methods and tools to fit local cultures and practices. The further we move away from the core elements and into the outer circles, the more flexible we become in terms of which approaches and tools to apply. We propose that each project applies an Impact Case to drive business impact and behavioral change, but remains open to the idea of applying the organization's own Business Case template if it is the preferred tool; however, it must embrace behavioral change to be applicable. Hence, the actual implementation and adaption require reflection and translation to work in the local context. Each of the three core elements and their associated principles, methods and tools are elaborated on in the next section. A more in-depth understanding of the methodology and examples of how it has been translated into practice will be available in the Half Double Handbook, which is planned for publication in March 2018.

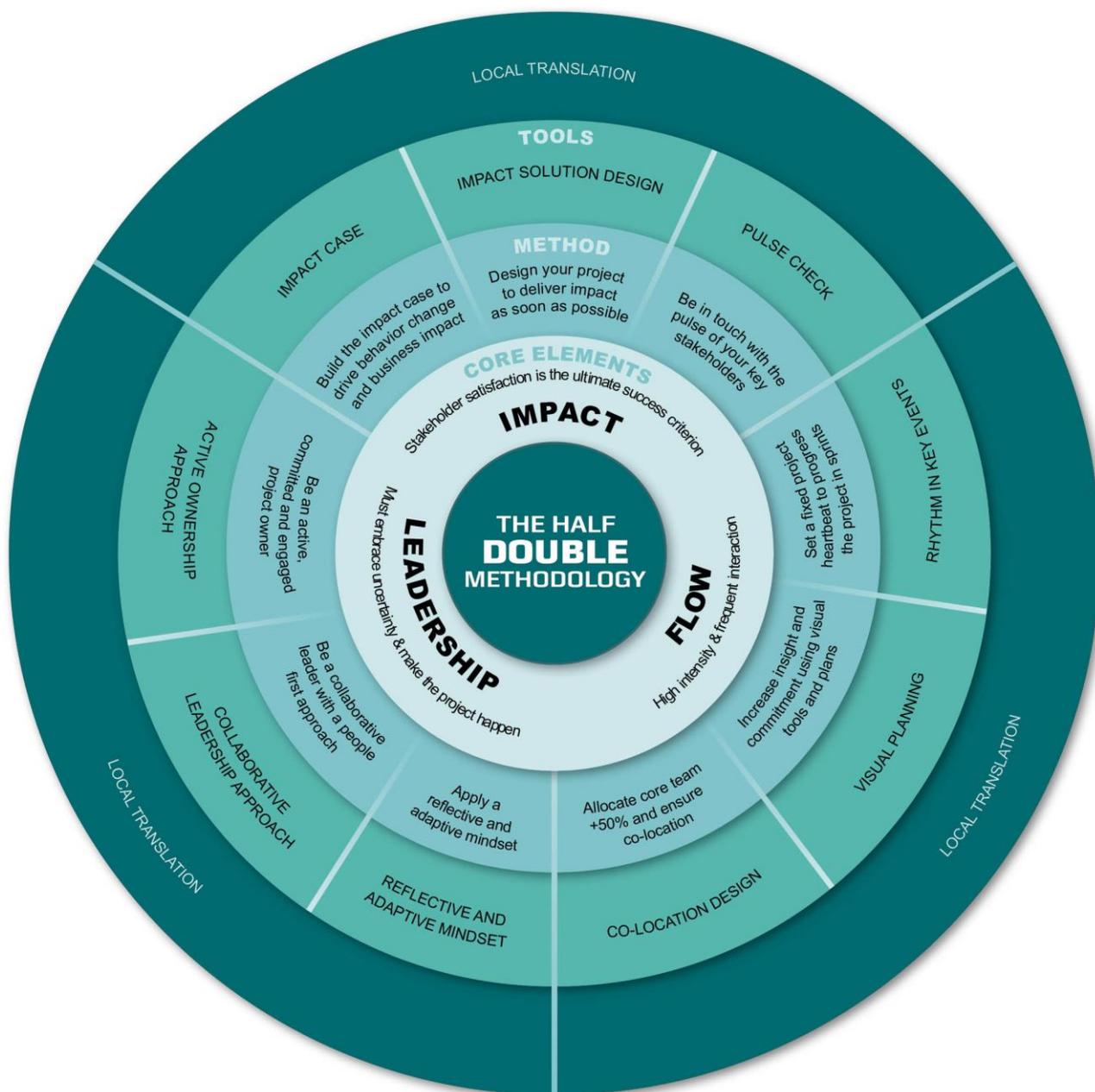


Figure 1: The Half Double Methodology

### CORE ELEMENT 1: IMPACT

**Principle: Stakeholder satisfaction is the ultimate success criterion.** No project exists for the sake of the project. All projects are initiated to create impact. Identifying and focusing on impact right from the start is the key. Impact changes the dialogue from being centered on technical

deliverables to how to ensure stakeholder satisfaction throughout the project’s lifecycle. The Half Double Methodology puts forward the following methods and tools to realize impact in practice:

**Impact method 1: Build the impact case to drive behavioral change and business impact.** Projects should be driven by impact rather than deliverables. Together with key stakeholders and subject matter experts, we therefore formulate an impact case that lists, prioritizes and visualizes the business and behavioral impact the project is set out to create. These impacts are broken down into selected KPIs to steer the project forward. The impact case and KPIs are used to follow up on project progress continuously adapting plans and efforts to enhance stakeholder satisfaction. **Tool:** The Impact Case.

**Impact method 2: Design your project to deliver impact as quickly as possible.** We must move away from the premise that projects only generate value at the very end of their lifespan. We need to create early insights through fast prototyping, generating impact – faster in the process. As soon as objectives and key impacts are identified, the project is ideated and analyzed to define the fundamental idea. The fundamental idea summarizes the actual solution design; the approach to realize impact as soon as possible; how to frontload knowledge and involve end users right from the start; and how to capture learning and insights early in the project and throughout its duration. Key learning and insights allow us to adapt the approach to the ever-changing environment and the thoughts and feelings of our key stakeholders. The core idea is the foundation for the impact solution design – an overall map outlining the project’s impact realization journey toward its conclusion date, which combines commercial, behavioral and technical deliverables. **Tool:** The Impact Solution Design.

**Impact method 3: Be in touch with the pulse of your key stakeholders.** Acknowledging and working actively with the dynamic nature of projects are key to success. Interests and focus change rapidly, and it is essential to gain insights and facilitate an ongoing dialog among the right people to ensure engagement and continuous

focus on the right impact. As part of the effort to gain that insight, we identify the project's key stakeholders and once a month we distribute an electronic questionnaire consisting of six questions set out to measure the stakeholder’s “pulse”; e.g. “Are you confident that your current work is creating impact for the project?” The pulse check report provides a snapshot of each stakeholder’s experience with the project. This insight functions as the basis for a constructive dialog regarding how to steer the project forward to leverage impact, ensure energizing working conditions and personal development. **Tool:** The Pulse Check.

## CORE ELEMENT 2: FLOW

**Principle:** *High intensity and frequent interaction to ensure continuous project progression.* We want to create flow in the project. The whole project group should work on the project at the same time – not just a few project team members. However, important project working hours are often lost in coordination, retrospective project reporting and shifting between multiple projects running simultaneously. We can do better. To focus on the flow of the project, we use simple methods to intensify project work, ensure the project progress every week and deliver results – faster. The Half Double Methodology puts forward the following methods and tools to enhance flow in practice:

**Flow method 1: Allocate team +50 % and ensure colocation.** At a portfolio level there is a best practice approach aimed at ensuring “short and fat” projects – meaning fewer projects with a more intense resource allocation. The approach has been proven to reduce lead time drastically. Together with the project owner, project leader and portfolio management office, we therefore work to ensure that core project team members are +50% allocated to the project. We furthermore know that placing project team members in the same physical (or virtual) location enhances their

team performance as it boosts energy and the degree of knowledge sharing among participants. To ensure effective and efficient project work, we therefore aim at establishing an energizing virtual or physical colocation setup to do away with complexity generated by different time schedules and sites. The collaborative setup is designed as a step-by-step process that supports the fixed project heartbeat and the visual tools. **Tool:** Colocation design

**Flow method 2: Set a fixed project heartbeat for stakeholder interaction to progress the project in sprints.** A fixed project heartbeat creates more energy, higher efficiency, better quality and ultimately faster development. In short, stringent structures free up energy and the focus needed to do creative thinking and solve complex project tasks. Together with the project leader, we develop a stringent rhythm consisting of monthly sprint planning meetings, weekly 30-minute status meetings and weekly solution feedback meetings where weekly deliverables are presented and evaluated by key users and important stakeholders. Based on solution feedback from users, the following week's deliverables are planned in detail using a visual poster. Every two weeks the project owner takes part in the review meetings to get to know the project in its raw and unpolished form. "Corporate theater meetings" with neat PowerPoint presentations are reduced to a minimum and time spent is optimized and utilized to handle real life project issues and decisions. **Tool:** Rhythm in key events.

**Flow method 3: Increase insight and commitment using visual tools and plans.** When operating in a project mode with high intensity and many touchpoints with both internal and external stakeholders, it is important to find an efficient way of communicating progress and solutions as well as progress and traction. Powerful visualization is an indispensable communication tool that drives dialogue and project progress. To enhance commitment and alignment, we

therefore ensure that the project core team together produces a visual plan for the overall sprint for ongoing reference at weekly planning sessions, daily planning sessions and weekly solution feedbacks. All plans are kept visual (or virtual) at all times in the colocation setup; they are also used for quick communication of the status of the project to other stakeholders. We furthermore work with visualizing the current solution or process at hand through mock-ups and fast prototyping using simple drawings, simulations with colored cards and posters. **Tool:** Visual planning

### CORE ELEMENT 3: LEADERSHIP

**Principle:** Leadership embraces uncertainty and makes the project happen.

We aspire to revolutionize how projects should be led. We want less bureaucracy, less formal steering committee meetings and less contractual focus. We need less compliance and more commitment. We need leaders who cope with turbulence, conflicts and people – leaders, who focus on the human aspects; work closely together on a regular basis; handle issues and complexity jointly and know the project inside out.

Laid-back formal steering committees that critically assess the project only once every two months are a thing of the past. Project owner involvement, sparring with the project and intensity are the future. Project owners must dare take the lead and must invest and spend real time on the projects – simply because research has proven an active owner to be a critical prerequisite for project success.

Project leaders who view and promote themselves as the most technically savvy and think that structure can save any project are living in the past. Collaborative project leaders with a people-first approach and who can embrace a complex human system are the future – because they actually succeed with their projects.

The Half Double Methodology puts forward the following methods and tools to enhance project leadership in practice:

**Leadership method 1:** Be an active, committed and engaged project owner. Research suggests one common denominator across all successful projects: an active, committed project owner who engages directly with the project on an ongoing basis. We therefore work intensively on ensuring that the right project owner is appointed in close collaboration with the steering committee. The project owner will be working closely together with the project leader and the steering committee to ensure project success. The project owner should focus on eliminating idiocracy at the organizational level to pave the way for the Half Double mindset and to adapt the project to governance or vice versa. Furthermore, the project owner should spend real time with the project – three hours biweekly as a rule of thumb – to embrace uncertainty and adapt to changes with on the spot decision-making as the primary tool. Being part of the meetings will ensure continuous focus on impact and guide the overall project to stakeholder satisfaction. **Tool:** Active ownership approach.

**Leadership method 2:** Be a collaborative project leader (not manager) with a people-first approach. It no longer suffices to be a trained technician who can follow detailed procedures and techniques, prescribed by project management methods and tools, if you are to lead a project to impact. Collaborative project leadership is about leading a complex system of human beings, embracing the inevitable uncertainty and making the project happen. A collaborative project leader is capable of using domain knowledge to provide some of the answers and ask the right questions. At the same time, a collaborative project leader is capable of facilitating a people process with high energy in interaction; to apply knowledge from cross-functional subject matter experts and solve complex project problems in the process. In other

words, a collaborative project leader “knows what to do when you don’t know what to do”. We therefore coach our project leaders to reflect in practice and act off the cuff in challenging situations. **Tool:** Collaborative leadership approach

**Leadership method 3: Apply a reflective and adaptive mindset.** One of the most important leadership skills is adaptive competency: the ability to react swiftly and intelligently to whatever changes he or she might face; having a personal drive and at the same time the ability to keep an eye on what happens when you act. In order to act swiftly and focused, you also need to know who you are. You need to be aware of what you do, why you do it and be able to read and learn from the consequences of your actions. At the same time, you have to be able to read other people and their reactions. Enabling you to adjust your approach tap into their underlying motivational drivers and to make them follow you. The reflective and adaptive mindset pinpoints three states of mind that the active project owner and the collaborative project leader should subscribe to to leverage their leadership and to enable the Half Double approach. **Tool:** Reflective and adaptive mindset.

## LOCAL TRANSLATION

**Principle: Build a Half Double mindset to initiate the Half Double approach.** Current practice will lead to current results and new results require new practices. In other words, implementing Half Double is implementing change. For the change to be a success, we have to establish a Half Double mindset with key stakeholders early in the process. This requires us to assess and rethink our current practice. All too often, the best of intentions are in place going in, but hurdles along the way – in the form of rigid governance structures, misalignment of expectations and lack of real commitment – may result in relapse into old habits and practices.

On the one hand, the organization must adapt to be in alignment with the Half Double mindset. It requires executive level commitment and willingness to think along new lines; abandoning the focus on early predictability in cost and specifications in favor of a focus on impact creation and stakeholder satisfaction; abandoning the idea of placing operational needs and hierarchies before the project instead providing the space and resources needed to ensure high intensity and weekly progression; dismissing contract and quality/time/cost as the only control mechanisms and allow for trust and relationships to be main drivers. And, last but not least, to move away from placing rules and best practice standardized before the needs of the specific project instead allowing for flexibility in governance and execution model to empower people and impact in gate decisions. In sum, the right choices must be made in order to create successful projects.

On the other hand, there is a need for aligning and tailoring the methodology to the situation at hand to organizational structures, cultures and to the local nature of the projects. There is no “one-size-fits-all” and the project, the methods and tools must be designed to fit the conditions of the surroundings.

The Half Double Methodology puts forward the following methods and tools to ease implementation and ensure a change that sticks in the organization:

**Local translation method 1:** Build a Half Double mindset to initiate the Half Double approach. A strong coalition that supports the change must be established. Based on our context, we consider who should support the change in order to make it sustainable. It is among these people that we must create a common mindset and vision right from the start. **Tool:** The Half Double mindset

**Local translation method 2:** Customize to governance to ensure flow. Each project must be

customized to the specific governance and local best practice models to succeed. The uniqueness of the project must be handled on a broader organizational level to ensure the freedom to maneuver and progress. At the same time, the local governance and project execution standards are assessed to identify whether there is a fit or whether it would be beneficial to deviate from certain standards to ease progression and realize the impact solution design. Having this dialog in advance is crucial to deliver on the project's impact case. **Tool:** Customize to governance

**Local translation method 3:** Anchor the Half Double practice to pave the way for new results. Implementation of Half Double is implementation of change. When change is introduced, there will be established habits that are difficult to alter. We therefore initially reflect on what radical changes are needed. Then, on an ongoing basis, we assess our progress in terms of anchoring the new methods and tools with key stakeholders. **Tool:** The reflective map

### Half Double on the portfolio level

Effective portfolio management creates maximum strategic impact, fast. This calls for an agile approach to strategy and strategy development in which the organization constantly and rapidly adapts to the surrounding conditions. It requires a close link between the strategy, selected must-win-battles and prioritized projects. At the same time, it is a prerequisite that projects are executed with a constant focus on reducing time to impact so that value creation is a constant – and not a vague ambition.

However, along with the desire to double the impact and reduce project lead time comes certain implications on the portfolio level. To enable flow in execution and focus, high resource allocation and rapid decision-making are needed, resulting in fewer projects with more intensity and stronger leadership. This calls for ownership, tough

prioritization of projects and a clear understanding of the desired strategic impact.

Although apparently introducing a complex task to portfolio managers, the methodology also provides parts of the solution. In a Half Double portfolio management setup, the focus is on strategic impact, and projects are prioritized based on how they can reduce the time to strategic impact. And looking to the core of the methodology, the integration of the elements, impact, flow and leadership generate the commitment and foundation needed to make the right decisions across the portfolio. Targeting the desired impact and building an impact case with ongoing impact tracking and pulse checks build a foundation onto which projects can be prioritized according to their strategic value. The aspiration of creating a flow in project execution presents the straightforward prerequisite of 50 per cent allocation. Also, the leadership approach encourages an active project owner who provides relevant project insights at the portfolio level and strategic insight at the project level, the latter being crucial, as it requires an in-depth understanding of projects to prioritize appropriately.

In other words, the Half Double portfolio approach also subscribes to the overall Half Double philosophy:

- We value impact over scope, cost and time
- We value stakeholder satisfaction over comprehensive specification and contract negotiation
- We value flow and progression over multitasking
- We value leadership over management
- We value adaptation and reflection over rigid structure and long-term predictability
- We value trust over control

This philosophy has been translated into three methods with proposed tools to ease practical application.

**Portfolio method 1: Making strategy and portfolio fit to create strategic impact.** *Principle: Stakeholder satisfaction is the ultimate goal for strategic impact.*

Projects should be prioritized based on short-term, medium-term and long-term value as well as in terms of impact such as business impact, customer impact and environmental impact. However, from a Half Double perspective, stakeholder satisfaction is considered the ultimate goal for strategic impact and the task is to create maximum strategic impact per time unit.

Prioritizing the projects and their potential strategic impact is not only based on generic project key figures but through an informed dialogue in the portfolio leadership team consisting of all project owners and senior management. It is important to have this dialogue among people with deep insight into the strategy, the projects, their challenges and targeted impact creation. The core idea is that the portfolio team prioritizes the projects generating the highest impact in the shortest period of time. Only senior management and project owners with deep insight into the projects can make this prioritization, which is a balancing of goals and strategy, the wishes of the organization's various functions and what is practically possible.

In order to prioritize and lead with stakeholder satisfaction as the ultimate goal for strategic impact, the key priority criterion is impact per time and people unit. The Impact Case, the Impact Solution Design and the Pulse Check are all strong tools for gathering data to make valid decisions on the project as well as the portfolio level.

**Portfolio method 2: Short and fat portfolio with frequent strategic adjustment.** *Principle: Fewer projects with high intensity and frequent senior leadership interaction.*

Having chosen the right projects, the next task is to ensure a rapid flow of impact. Many executives

initiate more projects than the organization can handle optimally. Too many projects initiated at the same time result in switching costs, prolonged lead time and organizational fatigue. With Half Double, we value few, completed projects over several initiated, incomplete projects. In other words, we prefer fewer and shorter projects with higher intensity and frequent leadership interaction over many long-term projects.

The way to secure a dynamic portfolio consisting of short and fat projects is to identify the maximum number of projects running in parallel and the length of the intervals in which these projects can be executed. You map your critical people (project leaders and team members) and base your calculations in terms of the number of parallel projects in the portfolio on the assumption that they cannot be allocated to more than two projects each at the time. You also establish fixed lead times of, e.g., four, eight or twelve weeks, in order to allow for ongoing portfolio adjustments on a quarterly basis. The fixed lead times should be determined by the portfolio leadership team depending on the circumstances of the individual organization and the projects concerned.

**Portfolio method 3: Portfolio leadership team with ownership.** *Principle: Embrace uncertainty with senior leaders close to the projects and adjust the portfolio when necessary*

In our experience, traditional portfolio management is based on long-term strategic plans and, furthermore, rational project key figures that do not provide an adequate image of the current state of the portfolio. Senior management finds itself far from where the real action is and managers base their decisions on key figures describing initial expectations to each project rather than on what is called for in a given situation. As conditions change at the speed of light, adjusting the portfolio once a year or every six months is not enough. In the Half Double Methodology, we value an agile strategic approach over long-term strategic planning. We value leadership dialogue instead of generic. Lastly, we value short distance to senior leadership over hierarchy and steering committees.

Succeeding in the ambition of an agile portfolio approach requires embracing uncertainty, having senior leaders close to the projects on an ongoing basis and adjusting the portfolio when necessary. In practice, this means that we must establish a rhythm in the portfolio and prioritize short and fat projects in quarterly portfolio meetings. To ensure active ownership, we propose a cap of maximum two projects per critical key person.

# PILOT PROJECTS

## Overview of Pilot projects and current results

### Timeline for pilot projects

Figure 2 below shows the timeline of the seven phase 1 pilot projects (June 2015 to June 2016) and four phase 2 pilot projects (July 2016 to June 2018).

The project type is also shown in the figure; the figure indicates the diverse application of the Half Double Methodology so far.

Figure 2: Overview of pilot projects

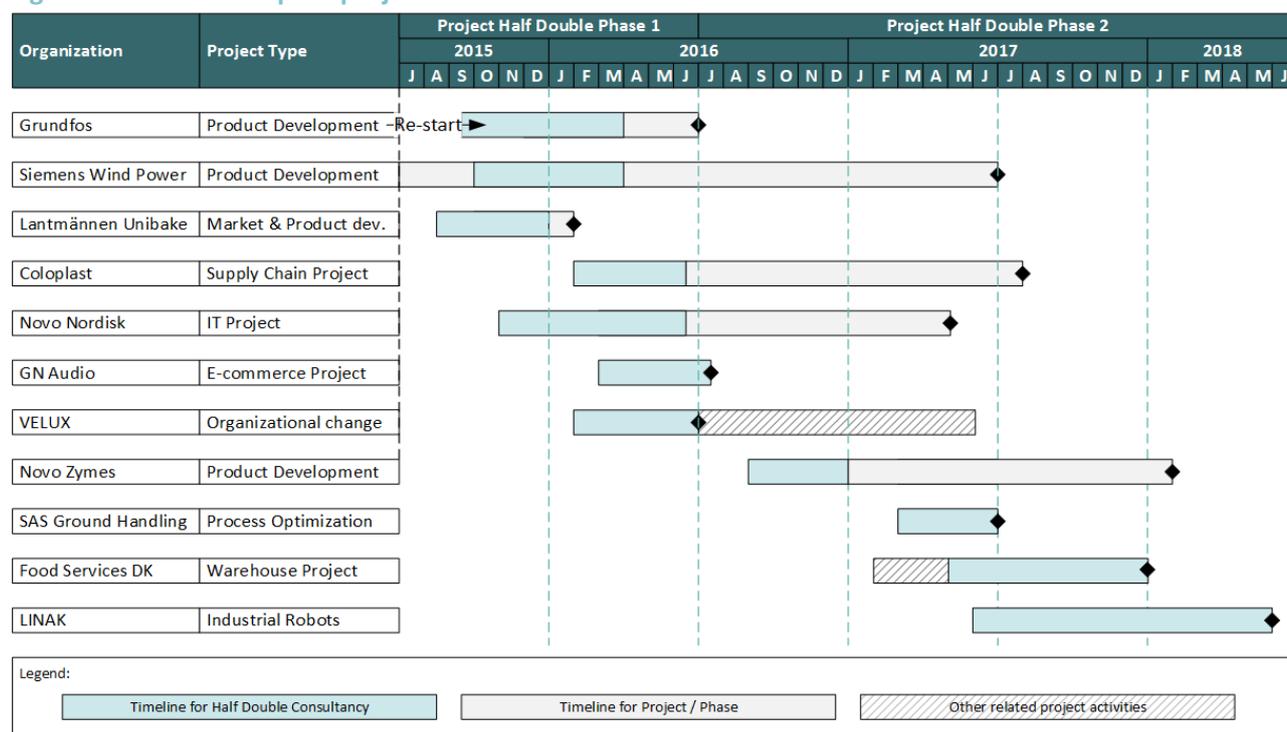


Figure 2 shows the timelines for each pilot project (light green bars and grey bars). The light green bars indicate the period where Half Double consultants from the Implement Consulting Group supported the projects. The shaded grey bars

indicate that pilot project results are used in other projects.

Six out of seven phase 1 pilot projects have been completed while three out of four phase 2 pilot projects are still in progress.

### Current results with respect to impact from Half Double Methodology

An overview of the current results from the phase 1 and phase 2 pilot projects are shown in Figure 1 below:

**Figure 3: Impact from the Half Double Methodology on Pilot Projects**

COMPANY	PROJECT TYPE	IMPACT FROM HALF DOUBLE METHODOLOGY
	Product Development	○
	Product Development	○
	Market & Product Development	●
	Supply Chain Project	●
	IT Project	●
	E-commerce Project	●
	Organizational Change	●
	Product Development	◐
	Supply Chain Project	◐
	Supply Chain Project	◐
	Supply Chain Project	◐

● Higher  
○ Lower  
◐ N/A

Figure 2 shows the following summarized results:

- The Lantmännen Unibake, Novo Nordisk, GN Audio, VELUX and Coloplast pilot projects appear to have benefitted from using the Half Double Methodology
- Grundfos and Siemens Wind Power pilot projects seem to have had little effect from using the Half Double Methodology
- Novozymes, SAS Ground Handling, Food Services Denmark and LINAK are four phase 2 pilot projects which are still in progress or have not been evaluated by the research team

The results indicate to which degree the Half Double Methodology (HDM) has impacted the pilot projects. It is important to emphasize that the evaluation shown above is only related to the impact from using HDM. This means that the pilot projects can be successful in other ways, for instance achieving the stated success criteria, delivering on time, cost, etc.

Please refer to Appendix A to understand the details about how we have evaluated pilot projects with respect to impact from Half Double Methodology

## Mapping of description of pilot projects into published reports

The description of the pilot projects are divided into two parts:

- **Part 1:** Short introduction to the company, outline of the pilot project including application of the Half Double Methodology, expected or preliminary results with focus on impact and finally learnings
- **Part 2:** Summarizes key points from part 1 but adds status of fulfillment of success criteria and comparison of pilot projects with reference projects

Table 1 below shows the mapping of part 1 and part 2 into the reports published about Project Half Double.

**Table 1: Mapping of description of pilot projects into published reports**

Pilot project	Part 1	Part 2
Grundfos		
Siemens Wind Power		
Lantmännen Unibake		
Novo Nordisk	Project Half Double, Preliminary Results for Phase 1, June 2016 (Svejvig et al. 2016)	Project Half Double: Addendum: Current Results for Phase 1, January 2017 (Svejvig et al. 2017)
GN Audio		
VELUX		
Coloplast		See chapter on Coloplast page 16
Novozymes	See chapter on Novozymes page 21	
SAS Ground Handling	See chapter on SAS Gr... page 27	To be described in later reports from Project Half Double
Food Services Denmark	See chapter on Food Services page 31	
LINAK	See chapter on LINAK page 37	

The following chapters will thus describe one phase 1 pilot project, Coloplast, and four phase 2 pilot projects, Novozymes, Food Services Denmark, SAS Ground Handling and LIMAK.

## Coloplast Pilot Project

### Company and Pilot Project

**Coloplast** is a global medical device company. The company was established in 1954 with the invention and production of the first Coloplast stoma bag; today the business includes ostomy care, continence care, urology care, wound care and skin care.

#### Key figures

- Approximately 10,000 employees around the world
- Total revenue of DKK 13,909 million
- Head office: Humlebæk, Denmark

Coloplast develops and markets products and services that make life easier for people with very private and personal medical conditions. Coloplast works closely with users to develop solutions that consider their special needs. Coloplast markets and sells its products and services globally and supplies its products to hospitals, institutions as well as wholesalers and pharmacies. In selected markets, Coloplast is also a direct supplier to users (homecare).

**The Coloplast pilot project** is a product modification project. It is set up in the Coloplast Supply Value Stream (SVS) department. This department primarily works with product modifications in the current production. The project is a typical product modification project, and Coloplast executes a number of this type of

project each year. The core project group consists of people from the Global Quality organization situated at the main office in Denmark. Further, the project is allocated staff from various departments in Denmark as well as staff from the Coloplast production site in Hungary. The project was initiated by Corporate Procurement as part of an overall program to minimize raw material dependencies and hence the overall risk of production related to raw materials. The project is in the closure phase – completion is expected in January 2018 – and the project continues to use elements from the Half Double Methodology. A redefinition of the project was necessary in order to support Coloplast's commercial strategy, which required several deliverables to be aligned with the R&D department.

The main aim of the Coloplast pilot project is to eliminate the need for re-planning and repeated production testing. The key challenge of the product modification project can be split into two main parts: (1) the first challenge is facilitation of efficient communication and coordination among the many participants, and (2) the second challenge is to develop a risk and problem management process that fits into this special situation.

TABLE 2 below shows a brief overview of the project's key activities:

**TABLE 2: Brief overview of the pilot project's key activities**

TIMING	DESCRIPTION
December 2015	Initiation meeting. First draft of impact case.
January 2016	Pilot project initiation.
February 2016	Kick off in Hungary. Introducing PHD to the factory.
Marts 2016	Kick off in Denmark. The first version of a main visual plan is designed by the participants.
April 2016	Weekly planning and coordination meeting and second sprint planning meeting.
May 2016	The team is working intensively with the first important deadline.
June 2017	Execution phase completed (including screening, validation, stabilization etc.).

TIMING	DESCRIPTION
October 2017	Project end (1 <sup>st</sup> October 2017).
January 2018 (expected)	Project closure.

TABLE 3 shows the key success criteria and their fulfillment after implementation (October 2017).

**TABLE 3: Overall success criteria and their fulfillment**

SUCCESS CRITERIA		
	Target	Actual / Expected
#1	Reduced time consumption and improved time to impact.	After project end it can be concluded that by using the Half Double Methodology (HDM), early impact design combined with the established flow have successfully frontloaded collaboration and risk management and mitigated costly risks. An example is the identification of the need for a clinical trial and that it could be combined with an already planned trial, potentially saving DKK 1m+ as well as time.
#2	Reduce numbers of tests and iterations.	After project end it was established that the number of test production runs where reduced risks were minimized by involving the production site and mapping their risks and problems, especially dependencies on the remaining project group by using the tools from HDM. <i>Result:</i> Early in the screening phase, the project team frontloaded alignment in the current production baseline by working with risk/frontloading when planning the screening. This ensured reliable results from the final qualification when selecting representative production lines.
#3	Reduce re-planning through improved coordination.	The main project plan was established as collaboration. There were no requirements of re-planning in the execution phase. Improved coordination using weekly and monthly meetings, pulse checks, and visual tools has been achieved. The improved coordination by having weekly and monthly meetings and visual tools has reduced the re-planning of the project.
#4	Risks and problems mapped early and continuously throughout the project. Improved risk management facilitates "right" decisions and willingness.	Risks and problems have been mapped on three levels of the project. This was done by the management group at the production site in Hungary, and at the kick off in Denmark. This was crucial in identifying risks and was a solid argument towards the steering committee to recruit the resources needed to conduct laboratory tests. Moving ahead, a KPI or matrix must be established to keep track of the risk management of the project. Together with the supplier, the project team works to define the tolerance levels in the recipe in order to facilitate the right decision and improve risk management. The outcome of risks and problems mapped on three levels has helped the project team make the right decisions and continuously improve the risk profile of the project based on HDM.
#5	New way of running projects used in other projects. The concepts of frontloading risk and adjustments is used in other projects.	After project end it can be concluded that the project leader and the management group have decided on how the risk methodology can be applied in other similar projects. Implementation of both the methods and tools for all supply value stream projects are ongoing. Coloplast is now using the concept of frontloading risk in all projects. Doing this helps Coloplast to continuously control the risk profile of their projects.
#6	Participation in coordination meetings. A changed mindset is needed.	After project end it can be concluded that by using the HDM tools there is a high degree of participation in the weekly and monthly coordination meetings as well as in the project kick off. There is no participation log, nor any rules concerning participation. The project leader wanted to invite the project members to participate in these meetings and let them make an individual, professional decision as regards the benefit of their meeting participation not only on their own individual level but also on a higher project level. Experience shows that new project participants get a good overview of the project due to this meeting setup. The project participants have been very satisfied with the meeting setup, and the level of participation in the weekly and monthly meeting throughout the project has been high.

SUCCESS CRITERIA		
	Target	Actual / Expected
#7	Key stakeholders experience a higher degree of transparency in the project process and risk handling. This contributes to a shorter execution phase.	After project end it can be concluded that Pulse check data supported the project manager in being aware of using the right tools from HDM in a good constructive manner to obtain full potential of the concept. Regular alignment meetings are held in order to maintain a high degree of transparency and to improve risk management with the Innovation Value Stream (IVS) project. This is expected to contribute to a shorter execution phase. The project has achieved that key stakeholders such as Project Owner, Global R&D Director and the Quality Director on the site have acted as project Ambassadors, resulting in a fast and smooth execution phase.

### Comparing Pilot Project with Reference Projects

Evaluation in the individual organization consists of the pilot project and three reference projects, which are used for comparison. The basic idea of the comparison is to evaluate in practical terms to which extent the pilot project performs better (or worse) than the reference projects (see Appendix A for a more elaborate description and Svejvig and Hedegaard (2016)).

Although most projects show unique characteristics, it also clear that there may be a family resemblance among projects. This fact is used in our comparison where we have asked for three reference projects which are as similar with the pilot project as possible. Table 4 below shows individual characteristics for the pilot project and the three selected reference projects

**Table 4: Proxies for size and characteristics of pilot and reference projects**

PROJECT CHARACTERISTICS SUMMARIZED					
No.	Proxy for size and unit	Pilot Project	Reference Project #1	Reference Project #2	Reference Project #3
1	Resources (number of man-hours)	6000 – 8200 man-hours	1000 – 1100 man-hours	1500-2000 man-hours	Approximately 4000 man-hours
2	All Cost (Euro)	340,000	135,000	CAPEX 455,000 OPEX 40,000	7000
3	Diamond model factor (scale from 0 to 16)	11.46	6.42	7.67	5.58
4	Project complexity factor (scale from 0 to 4)	2.59	1.92	2.67	1.58
5	A composite proxy size qualitatively derived from item 1, 2, 3 and 4 above	1	3	2	4

Table 4 shows resources, cost, diamond model factor (Shenhar and Dvir 2007), complexity factor, and a composite proxy for size where 1 is the largest project and 4 is the smallest. The pilot project is the largest project compared to the

three reference projects, which should be taken into account when comparing the projects.

Project duration is an important factor; Table 5 below shows duration of project phases for the four projects:

**Table 5 Number of months spent in the project phases**

DURATION					
Project	Pilot project	Pilot project <i>Simulated timeline</i>	Reference project #1	Reference project #2	Reference project #3
Scoping	4	3	1.5	1.5	2
Execution	13	23	35	15	6
Implementation	2	3	3	3	4
<b>Total project</b>	19 months	28.5 months	43 months	24 months	17 months
<b>Composite size</b>	1	1	3	2	4

The basic idea concerning the pilot project was to spend more time in the scoping phase to reduce uncertainty and risk later on. This is consistent with the position taken by Peter Morris over the past four decades, namely a focus on the front-end of projects (Morris 2013b, Morris 2013a). Table 5 shows that the scoping phase took about four months, which is much longer than the comparable reference projects. Total pilot project duration is 19 months, which is shorter than reference projects #1 and #2, but longer than reference project #3, which is, however, a much smaller project as shown in Table 5 (according to composite size).

Coloplast also simulated the timeline for the pilot project as if they had followed the traditional approach for doing the project and the estimated duration is 28.5 months compared to the actual 21

months. However, this is a simulation where we lack empirical evidence.

Coloplast introduced another concept called *iteration*. Iterations is a major change in a project where they have to go back and repeat key activities. Iterations are desirable in the scoping phase because the idea here is to uncover as many uncertainties and risks as possible, while the opposite is the case in the subsequent phases where the point is to try to reduce the number of iterations. This is fully in line with the notion that decisions taken early are easier to cope with than late decisions (changes) as they might have a higher cost or even reach a “point of no return” (Mikkelsen and Riis 2013: 97-100). Number of iterations related to project phases is shown in Table 6 below:

**Table 6 Number of iterations**

ITERATIONS					
Project	Pilot project	Pilot project <i>Simulated timeline</i>	Reference project #1	Reference project #2	Reference project #3
Scoping	0	0	0	4	3
Execution	1	5	2	3	1
Implementation	0	0	0	0	0
Closure	Not completed (1/1 2018)	Not completed (1/1 2018)	1	1	1
<b>Total iterations</b>	1 (so far)	5	3	8	5
<b>Composite size</b>	1	1	3	2	4

The pilot project has one iteration in the execution phase, which is lower than reference projects #1 and #2, and reference project #3. Coloplast also

simulated the number of iterations for the pilot project as if they following the traditional approach for doing the project and the estimated

number of iterations is five compared to the actual one iteration. However, this is a simulation where we lack empirical evidence.

Overall, it can be concluded that the Half Double Methodology has had a positive impact on the pilot project. When we consider the practices used in the different projects, several of them appear to be important for achieving the results in the pilot project: (1) Colocation, (2) Short and fat projects (high allocation of core resources), (3) Strong and active project ownership, and (4) The steering committee was used for development and sparring. Pilot and reference projects all focused

on customer value, but this was further enforced in the pilot project by early impact design. This in combination with the established flow has successfully frontloaded collaboration and risk management and mitigated costly risks for the Pilot project.

Coloplast states that the learning from three tools: going forward Impact, Flow and Leadership will be implemented in the project portfolio. In doing so Coloplast will continuously improve the risk profile of the projects, and this is expected to allow a smooth execution phase at all times.

## Novozymes pilot project

### Company and pilot project

**Novozymes** is the world leader in bio-innovation and producer of industrial enzymes and microorganisms. Enzymes are widely used in laundry and dishwasher detergents. Other enzymes improve the quality of bread, beer and wine or increase the nutritional value of animal feed. Enzymes are also used for the production of biofuels; they convert Biomass starch or cellulose into sugars that can be fermented into ethanol. Novozymes sells enzymes to more than 40 different industries. Novozymes also produces a range of microorganisms for use in agriculture, animal feed, industrial cleaning and waste water treatment.

### Key figures

- Headquartered in Bagsværd, Copenhagen
- Plants in Argentina, Brazil, Canada, Denmark, England, India, China and the US
- Subsidiaries and sales offices in more than 30 countries
- Turnover: DKK 14.002 billion (2015)
- R&D investment: 14% of turnover
- Workforce: 6,485 employees

**The pilot project**, Food protection, is characterized as an innovation and product development project initiated by the New Business Development, Incubation and Acquisitions (NBD I&A) team.

The NBD I&A team is focused on accelerating execution and growth on innovation projects in new industries and/or technologies in Novozymes, by focusing on three core functions: to *explore* growth opportunities and emerging trends, to *acquire* new businesses, and to *build* future divisions and businesses. Through these core functions, NBD I&A work to strengthen and catalyze growth in existing projects while identifying and developing new businesses and growth opportunities. The team works with a

diversity of stakeholders, both across the company and externally, to identify and integrate the best research, talent and ideas into the product and business development processes.

**The Food Protection project** is a new product development project set in motion to develop new microbial solutions for the food industry. It began in the summer of 2016, as part of a scouting exercise, and has since grown to encompass a fully dedicated core team, while engaging a diversity of stakeholders from across Novozymes. The project core team focused on developing two Minimum Viable Products (MVP's) in two distinct product categories before the end of 2017.

### Local implementation

The three core elements of the Half Double Methodology: Impact, Flow and Leadership were specifically tailored to fit the project and the Novozymes organization and came to life in practice through the following initiatives.

*Impact case and impact solution design was used to initiate the project:* As the project is an early innovation project, the first phase was used for choosing which initiatives to focus on. Novozymes had a list of approx. 15 ideas related to this new area of business, and a selection process was initiated to choose only two ideas in order to reduce the time to impact and to focus intensively on each of the ideas. An ambitious target was set: to get from idea to market in one year with a MVP. The first three months from October 2016 to December 2016 were dedicated to define the overall scorecards (mini impact assessments) of the 15 ideas enabling the choice of which two initiatives Novozymes wanted to focus on and progress the next year towards a MVP. Based on the scorecards, two initiatives were chosen and an elaborate impact solution design process was initiated for each of the initiatives to define the

impact case and the core idea to reduce the time to impact. Four workshops on each initiative were carried out. The workshops defined the overall objectives, impact and roadmaps for the two initiatives. By mid-December, the project owner was able to evaluate and carry out gate approval of the two initiatives selected clearly defining each of the two MVPs and related impact. Having involved key stakeholders in the impact solution design process, the initiatives had already produced internal commitment to the projects and defined MVPs making it easier to start execution of the coming project sprints. Having initiated the project in January 2017, the impact cases were broken down into hypotheses for each six-month horizon from January 2017 to January 2018 where the MVPs were to be launched. These hypotheses were used to follow up on impact and to ascertain that the projects were on the right tracks to create impact. Every month in sprint planning, the overall KPI's and hypotheses were discussed in the core team and with the project owner to identify the next step in the coming sprint.

The project owner said this about the MVP approach: "Way too often, we find ourselves spending too much time in the laboratory, perfecting our ideas. Instead, we need to release and test these ideas rapidly, often long before we have the ideal concept. We always tend to go for the Ferrari. Shouldn't we try to start out with the bicycle, and get some feedback on that first?"

*Pulse Checks:* To gain ongoing insight into the experience and thoughts of team members and stakeholders, we conducted a monthly pulse check with key staff – in this case, project owner/sponsor, a project leader, and two team leaders, who led each of the two core teams, and two key stakeholder groups consisting of cross functional business owners related to the new products in development. Results were followed up in monthly core team meetings to facilitate a constructive dialog. Early in the project, the team

members seemed unwilling to answer the pulse checks, because they saw it as an "extra" time-consuming task. But when the team leaders started using the results in a constructive way, e.g. discussing the reasons for low ratings, the core team members started seeing the value of the pulse checks. The pulse checks have also created "aha" experiences for the team leaders opening their eyes to perspectives or challenges that they had not noticed. Overall, the pulse check served the purpose of maintaining a constant focus on impact and contributing to an energetic working environment.

*Allocate core team +50% and assure colocation with visual plans:* The two core project teams included members from R&D and Business Development working closely together, in addition to regular engagement with project leaders and "expert teams". The two core teams worked together from a shared "war room" — which meant that some team members had to shift from their normal working locations to the new one. In the room, visual project management plans and tools were displayed to help track progress. We started defining an overall milestone plan for the year based on the six-month hypotheses mentioned above. The overall plan was drilled down into week sprint plans. The strong focus on colocation helped ensure that all participants felt the energy and drive in the project.

*Fixed project heartbeat for stakeholder interaction:* Having chosen the two projects and defined the MVP's by the end of December, the rhythm in key events were created from January 2017 to January 2018. Although adjusted a couple of times to fit the local culture and working conditions, the main rhythm was: monthly core team sprint meeting Friday from 13-16; visual status and adjustment meetings every second Friday from 13-15 in the core team; project owner meeting Wednesday 15-16 every second week; and a key stakeholder meeting Wednesday 13-15 at the end of each sprint every month. Very early

in the project it was decided to reduce the Steering Committee and leave decisions to an active project owner. Usually Steering Committee members as well as cross functional leaders and experts took part in the key stakeholder meeting every four weeks giving them the opportunity to follow the project, review results and give feedback to the project to create commitment to the new products being developed.

*Hands-on project leadership:* The project leader was responsible for the outcome of both projects, and was involved actively in both projects, including being the team leader for one of the projects. The team leader for the other project was from the corporate cross-functional project management team, and both teams benefitted from the process facilitation competencies of this team leader.

*Active, committed and engaged project owner:* Very early in the project it was decided that the Vice President of NBD I&A took on the project owner role. He explained his approach to the role in an interview stating “My job is to create the ideal frame, ask the right questions and to offer my help when the team asks for it. Besides assisting the project leader. All of this requires a high level of trust”. He added: “It should stressed, however, that the ultimate responsibility for the project is mine as the owner, and everyone knows that. I always make a point of emphasizing that if we fail or if we encounter challenges, people are free to point their fingers at me”. Asked about how he paved the way for impact, he said: “To pave the way for impact creation and frontload the change management aspect inherent in the project, an essential focus for me has been to involve the upper management team to ensure that they understand and buy-in to the project’s impact targets and execution. Next to regular stakeholder management and regular touchpoints, in practice, this also entails that I have brought my leader and his leadership team to the project war room. Here, they have participated in the standard weekly

review meeting in order for them to get an individual feeling of what the project is all about”. And finally, he decided to show up and engage with the project and explained how: “I believe that it is key that as a project owner you always keep updated on a real-time basis on what really matters. My approach has therefore been to have ongoing touch points with the project leader, and to drop by the project informally as often as I can. I simply open the door to the war room, and luckily, they always end up inviting me to join them. Often, they give me a brief update on the status of the project, before business proceeds as usual”.

*Reflective and adaptive mindset:* In order to enhance the reflective and adaptive mindset, two initiatives were made: (1) In order to evaluate and improve the way of working, a few learning workshops with the core teams were initiated. The outcome of these meetings was among other things, adjustment of the rhythm, adjustment of planning approach and an internal article about use of the methodology on the Novozymes intranet. (2) Secondly three cross-functional stakeholder meetings on learnings using the methodology were organized. At the meetings, the project leader presented the status and learnings, and diffusion of the methodology to other parts of Novozymes was in focus. These meetings increased commitment and created a positive approach to the Half Double Methodology.

*Local translation of governance:* To gain full effect, Novozymes was willing to go all in on the Half Double approach from the start. In December 2016 governance with roles and responsibilities were discussed in a workshop to enhance efficient execution when initiating the rhythm in key events. In the workshop key governance representatives as well as the NBD I&A leadership team participated and concluded on how to approach the project laying the foundation for working as impact driven and efficiently as

possible. The main deviation from Novozymes' traditional project governance was that the local organization had the total responsibility for the project. As a consequence, the project owner role was expanded, and the project owner involved the Project Review Team in gate decisions (usually it works the other way around). Each month, the Project Review Team was invited to "key stakeholder meetings" to follow the project and offer input. Furthermore, the project was led by the local new business development responsible – the corporate project leader reported to this

person. All and all making the local division overall responsible for decision-making and project execution. Also, the overall reporting structure was discussed at the workshop, and it was decided to run the project with less reporting and more face to face meetings than usual. The project owner explained the advantages of the approach: "Usually, I would receive very long project updates and reports. In the Half Double project, I engage with the project so frequently so that it is top-of-my-mind.

**Below is a brief overview of the project's key activities:**

**Table 7: Brief overview of the pilot project's key activities**

TIMING	DESCRIPTION
September 2016	<ul style="list-style-type: none"> <li>Decision to start using the Half Double approach on the Food Protection initiative.</li> </ul>
October 2016	<ul style="list-style-type: none"> <li>Project leader and project owner chosen. Project organization defined and allocations discussed.</li> <li>Analysis of the Food Protection initiatives with scorecards. Two promising initiatives chosen to focus the Half Double approach.</li> </ul>
November 2016	<ul style="list-style-type: none"> <li>Impact definition and impact solution design workshops held on the two projects chosen to define impact cases and core idea of reducing the time to impact.</li> <li>Key stakeholder meeting # 1 on use of methodology to gain commitment executed.</li> </ul>
December 2016	<ul style="list-style-type: none"> <li>Workshop on adjustment of governance for working as impact driven and efficiently as possible</li> <li>Impact case, resource allocation of core teams and overall approach approved by project owner</li> <li>Colocation room created, and core teams initiated.</li> </ul>
January 2017	<ul style="list-style-type: none"> <li>Rhythm in key events initiated in the two projects</li> <li>Milestone planning workshops for each project to break down overall hypotheses to activities</li> <li>Key stakeholder meeting # 2 on use of methodology to gain commitment executed</li> </ul>
February 2017	<ul style="list-style-type: none"> <li>First technical results reviewed. Positive outlook confirmed.</li> </ul>
March 2017	<ul style="list-style-type: none"> <li>Project #2: 1 customer committed to trial on product solution.</li> </ul>
April 2017	<ul style="list-style-type: none"> <li>Project #2: Initiation of CRO technical trials</li> </ul>
May 2017	<ul style="list-style-type: none"> <li>Project #1: 3 innovation partners signed confidential agreement for cooperation.</li> <li>Top technical candidates tested in in-vivo trials</li> </ul>
June 2017	<ul style="list-style-type: none"> <li>Key stakeholder meeting # 3 on use of methodology to gain commitment executed.</li> </ul>
July 2017	<ul style="list-style-type: none"> <li>Build commercialization scenarios and agreement with partners on performance criteria</li> <li>Process validation and Supply agreement in place</li> </ul>
August 2017	<ul style="list-style-type: none"> <li>H2 Kick-off with team, sponsor and stakeholders</li> <li>Project #1 Partner trials initiated</li> </ul>
September 2017	<ul style="list-style-type: none"> <li>Sample products produced and tested</li> </ul>
October 2017	<ul style="list-style-type: none"> <li>Confirmation of value proposition hypothesis</li> <li>Project #2 Customer trials initiated</li> </ul>
November 2017	<ul style="list-style-type: none"> <li>Conclusions of customer trials</li> </ul>
December 2017	<ul style="list-style-type: none"> <li>Learnings from project / foundation for decision-making</li> </ul>
January 2018	<ul style="list-style-type: none"> <li>Planned Minimum Viable Product (MVP) launch</li> </ul>

### A couple of stories from Novozymes pilot project

*How to ensure resource commitment with +50% allocation of high caliber employees (explained in interview with the project owner). “One of my first challenges as a project owner was related to ensuring the high resource allocation needed to run a project where you work with parallel tracks and aim for continuous customer validation. We were faced with typical “resistance to change” reactions in some parts of the organization when asking for the resources: “We’ve tried this before” and “It won’t work in our part of organization” were two of the classics. To kill complexity, I made it clear that I was to be the main high level target and team setter while most of the decision-making and execution resides with the project leader and team members. Secondly, I chose to face the resistance quite brutally by simply saying: “It’s not up for debate, this is the way we’ll do it. If you aren’t able to allocate the resources, I will look for them externally”. If your current way of doing projects creates obstacles, you need to find other ways of working. You need to take charge and encourage that kind of entrepreneurial mindset”.*

*In a global company you must make allowances for the fact that project participants cannot always be physically present: When you work with teams that work from remote locations, it can be challenging to use visual planning as this is very dependent on all project participants being present in the same physical location. This was countered by using a digital visual planning tool that has the same features as the physical one. This made it possible to work together from different locations to some degree, but having said that, the most efficient work was done when the whole team was physically present in the same location.*

### *Keeping an eye on milestones and deliverables:*

The project teams tended to focus on their ongoing tasks on a weekly basis – they were good at using the sprint method and at keeping track of their individual activities. Therefore, it was an important role of the project leader to keep an eye on and track the overall milestones, deliverables and interdependencies and insisting that the team spend time on this, even though they may feel that they are being “interrupted” in their daily work.

*Communicating the “why”:* Overall it was important to keep the team members informed about *why* they were using the Half Double method. The team should feel that they were doing this together, because it would benefit *everyone* – not only the managers, project owners, etc. When the project leader explained the reasons for using Half Double, the team showed a much larger degree of willingness to experiment and to fail and learn without losing their motivation.

### Preliminary results and key learnings

Overall, the on-going MVP projects have been progressing very positively with focus on clarifying key assumptions as fast as possible. In six months, significant traction has been achieved on all tracks of the projects (technical, commercial, supply and regulatory). For example, in one of the projects, the trials of the technical solution are showing promising results, and the three potential customers engaged very early in the process have expressed strong interest in the solution. Overall, the cross-functional, cross-located team members and stakeholders give positive feedback on this way of working, citing the benefits of commitment, focus and frequent touch points in the overall progress of both projects.

**Table 8: Overall success criteria and their fulfillment**

SUCCESS CRITERIA		
	Target	Actual / Expected
#1	Overall impact: Accelerate the Microbial Control platform and reduce the time to market and impact	Expected January 2018
#2	Microbial Control executed with higher impact and shorter time than similar reference projects	Expected January 2018
#3	2 minimum viable products used and adapted by customers before 31 <sup>st</sup> of December 2017	Expected January 2018
#4	1-5 innovation partners on-board before 1 <sup>st</sup> of June 2017	<ul style="list-style-type: none"> <li>• <b>Project #1:</b> 3 innovation partners signed confidentiality agreement for corporation in first half of 2017</li> <li>• <b>Project #2:</b> 1 customer committed to trial on product solution.</li> </ul>
#5	Food protection core team engaged and motivated (pulse check of 4.0 in average).	<ul style="list-style-type: none"> <li>• <b>Average pulse check project #1</b> (week 13 to week 27 – 2017): Sponsor: 5, Key stakeholders: 3 and Core team: 3.7</li> <li>• <b>Average pulse check project #2</b> (week 13 to week 27 – 2017): Sponsor: 4.7, Key stakeholders: 4.3 and Core team: 3.5</li> </ul>
#6	1 project owner, 1 project leader and 1 core team capable of using Half Double accelerated approach	Realized

**Table 9: Learnings from the pilot project at Novozymes**

LEARNINGS	
#1	The “Short & Fat” resource allocations (i.e. at least 40%) allow for deeper engagement between team members, enhancing the quality of interaction and allowing for greater collective focus on problem solving and more rapid iteration of ideas. In the case of the Food Protection project, several core team members were allocated 100%.
#2	Colocation & visual planning: The dedicated “war rooms” (where team members regularly work together) and the visual project planning tools help create greater alignment among teams and allow leaders and other stakeholders to quickly and effectively get an overview of how a project is progressing.
#3	Checking the pulse of projects: Regular “check-ins” with project team members and stakeholders can help ensure that a project is on the right track.
#4	Energy and drive: The increased frequency and intensity of interaction has led to higher energy levels and drive among team members, which, when channeled correctly, can help to accelerate progress in the project.
#5	Active project ownership: Having an active, committed and engaged project owner who works in close collaboration with the team increases overall motivation, energy levels and progression of the project.
#6	Managing cross-functional teams: It can be challenging to manage resource allocation and dependencies across various cross-functional team members / working groups. The fixed project rhythm can counteract this tendency to some degree.
#7	Balancing planning and problem solving: It is crucial to strike a greater balance between the time required for aligning and planning between all team members and stakeholders and actually “getting things done” (i.e. problem solving, product development).
#8	Later stage product development: While the Half Double Methodology works well for early stage product development, the method would require adaptation for later stage product development processes (learning loops are longer etc.)

## SAS Ground Handling pilot project

### Company and pilot project

**SAS Ground Handling** is the largest Scandinavian ground handler, processing more than 20,000 pieces of luggage and 35,000 people on 400 flights daily at Copenhagen Airport alone. The company is part of SAS Group and has an average employee tenure of more than 12 years.

- 1,800 employees, with an FTE count of 1,500
- Head offices: Stockholm and Copenhagen
- Part of SAS Group

SAS Ground Handling takes care of all ground operations ranging from connecting gates to airplanes, unloading and loading airplanes, to transferring luggage to the aircraft or conveyer belt. The work intensifies in summer holidays from June to August and the winter holiday from December to February where the number of travelers and odd-size luggage increases.

**The pilot project** is categorized as a process optimization project. SAS Ground Handling aspires to improve the customer experience in the Ground Handling area by increasing the number of on-time luggage at Copenhagen Airport. The organization has already created significant impact by reducing the number of delayed transfer bags from 20 per 1,000 in 2014 to 12 per 1,000 in 2016. The target for 2017 is to reduce the number of delayed transfer bags even more to eight delayed bags per 1,000 transferred bags, which was to be achieved using the Half Double Methodology. The reason is that the impact had to be achieved before the peak season began in June 2017. The target of eight bags per 1,000 transfer bags was believed to be ambitious, yet realistic, taking the conditions and development of the current infrastructure, working environment and traffic program into consideration. With the

decreasing prices of commercial air traffic, resulting in a boom of passengers, SAS Ground Handling faced issues of capacity limitations due to the infrastructure of Copenhagen Airport. In addition, SAS Ground Handling was challenged by deviations from standard procedure, caused by irregularities such as faulty equipment, lack of equipment, and resource volatility. To achieve their objective, SAS Ground Handling had to re-think its current operations and find improvements in its already established processes.

### Local implementation

The three core elements of the Half Double Methodology, Impact, Flow and Leadership, were specifically tailored to fit the project and the SAS Ground Handling (SAS GH) organization which came to life in practice through the following efforts.

*Impact case:* SAS GH impact case was very quantifiable which made impact tracking realistic and tangible. The impact case was visualized and deeply embedded in the entire process. Because the impact was easily measured, the team could track the improvements throughout the project, which proved motivating for the team and helped keep them on track and focus fiercely on impact rather than deliverables.

*Impact solution design – Reduce time to impact by jointly prioritizing the hypotheses leading to highest impact:* Following the reduced time to impact mindset, the project was launched with an Impact Definition workshop. This was made possible through the three initial project owner meetings before the actual project start-up (please refer to “active project owner section”). By making sure key players, related to the process that was targeted for optimization, were involved

from the start, it was possible to focus more on impact and solution than ways of working at the Impact Definition workshop.

After the first three executive meetings, the impact solution design process was started with key stakeholders. The project was discussed in the senior management of SAS GH; at the initial dialogue meetings, it was decided to involve key players in an impact definition workshop to define the impact case and prioritize the hypotheses that could lead to impact. The workshop used an approach of mapping the process where there could be opportunities for creating impact. Then the team listed hypotheses under each step in the process. Finally, each team member placed a number of stickers on the hypotheses they had faith in. The two hypotheses with the most stickers were selected as focus for the next two impact solution design workshops. This method was a way to create joint commitment to the priorities.

To support the project flow, it was agreed – at the workshop with the key players – that the core team and project leader should be colocated in a “war room” two full days per week – Thursdays and Fridays. This way, the project work had high intensity ensuring progress in the project and reducing time to impact. As this project had the potential to reduce costs significantly, whilst improving customer satisfaction, the experience of the project leader was vital. The CEO and project owner chose the project leader himself ensuring the best fit for the project. The manager had experience from operations and had been with SAS for more than 15 years, which proved vital in the understanding of key processes.

In this case, the Project Management Office was the Lean office and care was taken to involve union representatives in the project. At the impact definition workshop, it was agreed that several sub-groups of key insiders (e.g. union representative) should be closely involved to support the new way of working. These employees

could provide important knowledge about processes, and as opinion leaders, they drove the implementation and feedback.

*Pulse check – Measure and create stakeholder satisfaction by taking the pulse of the project:* 80% percent of the meetings included a pulse check enabling the project leader to track the level of energy and satisfaction across its stakeholders. The pulse checks were followed up by sessions where results and improvements were debated. Furthermore, this served as a way to continuously keep the discourse on impact instead of deliverables or activities.

*Intensity project work and colocation design to enhance impact – Core team designed to smaller and cross-organizational groups:* The core team consisted of 10 closely knit people. One of the project participants said: “At SAS Ground Handling we’re like a family – most people have been here for 20 years”. The close relationship was further reinforced by a 40% colocation in a dedicated project room. The project rooms allowed issues to be dealt with on the spot rather than being postponed until the next formal meeting. This helped reduce the project lead time.

*Visualization and visual planning –boosting team energy:* The visual plan was updated throughout the project which allowed the project team and other stakeholders to monitor the progress continuously. Furthermore, the updated visual plan allowed the project participants to identify bottlenecks and showed how the different working streams might affect each other both positively and negatively. The visual plan created motivation and engagement. One of the project participants stated: “In all my +20 years with SAS Ground Handling, I have never truly believed in a project – until now”.

*Leverage the project leader role – Increase responsibilities to enable impact focus and realization:* The project was characterized by trust, cooperation and purpose. This gave the project

team the autonomy and direction needed to work and coordinate independently which was experienced as engaging and induced a sense responsibility among the participants.

*Active project ownership:* To ensure the sponsorship of the executive management, a series of three meetings was set up with two senior representatives from Implement Consulting Group and the CEO of SAS Ground Handling to launch the project. These meetings laid the foundation for the problem to be solved, the expected impact of the project and next steps in initiating the project. To keep momentum, the CEO of SAS GH was chosen as Project Owner. He followed the project with meetings in the colocation room every two weeks. At the meetings, he focused on impact in the initiatives and handled current issues with the core team. He also participated in large workshops to design and approve the actual solutions to optimize the luggage handling process.

*Reflective and adaptive mindset:* Formulating the mindset made it possible for the impact solution design workshops to focus on contributions to the scoping of the project. Ten hypotheses to reach the target of eight per 1,000 transfer bags were developed; only two of them were selected to focus effort and scope. This step was key in securing stakeholder alignment and ownership, and in driving the focus on impact throughout the whole project.

*Adaption to governance:* To gain full effect, SAS Ground Handling was willing to go all in on the Half Double approach from the start. Overall governance was discussed at the impact definition workshop, and it was decided to run the project with less reporting and more face to face meetings than usual. The project quickly adopted the reduced time to impact mindset, and it soon became a part of the corporate DNA.

**Below is a brief overview of the project’s key activities:**

**Table 10: Brief overview of the pilot project's key activities**

TIMING	DESCRIPTION
March 2017	<ul style="list-style-type: none"> <li>• Pilot project initiation.</li> <li>• Designing and defining the impact case: Departing from the goal hierarchy, the impact case was designed along with the key performance indicators to be able to track project impact.</li> <li>• Half Double impact definition workshop with the core team: The core team was gathered to kick off the Half Double effort in the pilot project. We brainstormed and prioritized two hypotheses to reach the target of eight per 1,000 transfer bags. This step was key in securing stakeholder alignment and ownership, and in driving the focus on impact</li> <li>• Colocation design: We planned and prepared for a colocation room to provide the setting for the entire duration of the project.</li> <li>• Pulse checks: Introducing the core team to the pulse checks and the purpose of applying it as part of the Half Double Methodology.</li> <li>• Identification of key participants and detail planning of workshops</li> <li>• First two impact solution design workshops</li> </ul>
April – May 2017	<ul style="list-style-type: none"> <li>• Follow up on impact and improve continuously</li> <li>• Institutionalize changes at managerial level to ensure sustainability</li> <li>• Add one more hypothesis to work on</li> <li>• Pulse check</li> </ul>
May-June 2017	<ul style="list-style-type: none"> <li>• Follow up on impact and continuous improvements</li> <li>• Institutionalize changes at managerial level to ensure sustainability</li> <li>• Pulse check</li> </ul>

**A couple of stories from the SAS Ground Handling pilot project**

*The value of a measurable impact case:* Because we focused solely on three hypotheses and because we kept the impact targets very concrete and tangible, we could track the improvement on impact on a daily basis. This had two major consequences: (1) We were motivated to achieve the project goals and this made the project very relevant for the project participants, and (2) Because the impact was so tangible, it made us focus on the impact rather than the deliverable.

Sometimes, a project impact can be perceived as somewhat abstract, but the deliverables tend to be very tangible. This results in a suboptimal focus on deliverables rather than on the organizational impact. This can be prevented by a concrete impact case.

**Preliminary results and key learnings**

The number of delayed transfer bags was reduced by 20 percent in only two months and the project culture and mindset in SAS Ground Handling were gradually transformed.

**Table 11: Overall success criteria and their fulfillment**

SUCCESS CRITERIA		
	Target	Actual / Expected
#1	Cost savings (number removed from public report)	Achieved
#2	Reduced ratio of delayed bags from 12 per 1,000 passengers to 8 per 1,000 passengers	Achieved
#3	Reduced lead time of transfer bags from unloading aircraft to pick-up conveyer belt from 20 minutes	Achieved
#4	All employees involved have an “on time” mindset	Achieved
#5	Key employees are trained in effective unloading process	Achieved
#6	Key interfaces are prioritized based on “on time” thinking and handled in the appropriate sequence	Achieved
#7	Roles & responsibilities during unloading are clear	Achieved

**Table 12: Learnings from the SAS Ground Handling pilot project**

LEARNINGS	
#1	The impact case proved very useful and guided the project throughout the project.
#2	The impact solution design created a proper setting from which key stakeholders could develop three distinct hypotheses which continuously drove the project towards the desired impacts.
#3	80 percent of the workshops were concluded with pulse check as well as a discussion on what could be improved and how these improvements could be implemented. The true value lies in the discussions as they, not the data from the pulse checks, drive improvements and morale.
#4	The visual plan must be updated at all times as this provides an essential overview of the key deliverables and duration of key events as well as giving the project team a quick and common understanding of the process and the bottlenecks
#5	Active project ownership: This could be improved by the project team using its mandate more proactively.

## FoodService Danmark pilot project

### Company and pilot project

**FoodService Danmark** is one of Denmark's largest foodservice wholesalers, delivering food to professional kitchens throughout Denmark. FoodService Denmark's value chain ranges from Sales, Customer Service, Logistics to Distribution, and the company consists of a large portfolio of wholesale and specialist divisions. In an increasingly competitive environment, FoodService Danmark's competitive edge manifests itself in a wide product variety, short lead times and a high service level to its customers. This setup gives the company the opportunity to serve a wide range of professional customers, while adding complexity to the operations.

Key figures:

- Approximately 1,250 employees
- Annual sales of DKK 4.500 million (2016)
- Head office: Ishøj
- More than 100 trucks, 2 storage terminals and 29 Cash and Carry stores at key locations in Denmark, which enables the company to deliver fresh goods throughout the country

**The pilot project** is characterized as a warehouse efficiency project. The "New Eyes" project was initiated to re-think the existing warehouse concept including design and implementation of solutions, supporting flexible, robust and efficient processes. Eliminating re-work and waste in the processes, as well as a stronger focus on first-time-right, FoodService Danmark can meet its customer demands in a more cost effective manner.

The "New Eyes" project was launched in May 2017. Early in 2017, prior to project launch, Implement Consulting Group analyzed FoodService Danmark's value chain. The result of this analysis identified significant potential for further efficiency gains at the Catering Engros warehouses. The warehouse in Middelfart was chosen as a Half Double pilot project as the

terminal had already been working with Lean and wanted to make further improvements. Due to limited project resources from the customer side, the project team consists of two external consultants, an external subject-matter expert and the head of the warehouse. Other stakeholders, such as the operations managers and their teams, contributed valuable insights, by co-creating solutions and by being active project ambassadors. The project was divided into three phases: analysis, design and implementation. The first part of the **analysis** included data collection through *gemba*, IT systems, reports and interviews. From this, it was assessed that the full potential could only be realized by matching capacity to the actual workload, implying a reorganization of the warehouse organization. After the project sponsor's acceptance, a more extensive analysis showed a doubling of the initial potential estimate. Consequently, the scope of the project was adjusted and deliverables were changed accordingly.

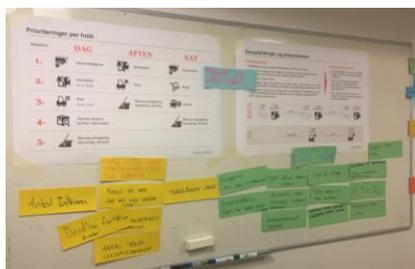
In addition to identifying the "right" match between workload and capacity throughout the workday, the **design phase** co-created a new warehouse concept focusing on eliminating re-work and process waste. Moreover, a major restructuring of the management organization had taken place, reducing the number of roles in the warehouse by 50 percent. The remaining roles were clearly redefined together with the employees in scope. As part of the **implementation phase**, the new warehouse concept, including operational management tools were rolled out in the entire warehouse, impacting routines of approximately 100 employees and managers.

**Local implementation**

The three core elements of the Half Double Methodology: Impact, Flow and Leadership were specifically tailored to fit the project at FoodService Denmark:

*Impact case with behavioral and business KPIs to maintain constant focus on impact:* Based on the analysis and in collaboration with the reference group, we established four business and four behavioral KPIs. The project KPIs tracked the business impact and underlying behavioral changes which were critical to drive sustainable impact. To ensure measuring of the “right” factors, it was important to co-create the leading KPIs with our key stakeholders. We used the impact case and the behavioral and business KPIs to maintain a constant focus on impact, and not on project deliverables.

*Co-creating the impact solution design:* Several factors were relevant in designing the new warehouse concept. The first phase focused on understanding the existing processes and systems, the terminals’ connection to other parts of the value chain as well as identification of key drivers for efficiency and quality. Observing actual operations, being on *gemba*, conducting interviews with warehouse employees, managers, and staff from other departments, such as Customer Service, were central in gaining deep insight into existing processes, and this enabled us to point out improvement areas early in the project.

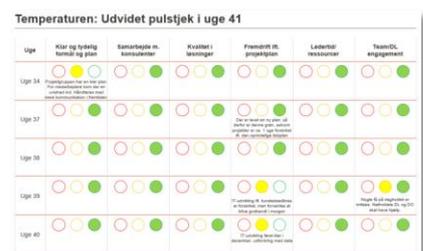


In the second phase, a deeper analysis was conducted to gain insight into the customers’ ordering patterns. Firstly, the analysis revealed a

lot of re-work in the warehouse, as many customers place several orders in one day; these were mainly handled as they were received. Secondly, it became clear that the number of employees in each shift did not match the actual workload, the consequence being over- and understaffing in the course of the day. Thirdly, the analysis revealed that the warehouse process of refilling empty shelves and picking products created a lot of waste. Based on these analytical insights and additional interviews, we conducted a workshop with employees from the different shifts to co-create the new warehouse concept. As a result, standard workflows and processes were clearly defined and prioritized for each shift.

As part of the third phase, the central components of the new warehouse concept underwent a pilot test, and the concept was refined based on this learning. Additionally, the restructuring of the management organization was supported by the roles needed in the new setup. All operation managers and their management team took part in workshops, trainings and received coaching sessions to ensure the right competence and skill level.

*Constant focus on feedback through pulse checks:* Throughout the project, we encouraged constant feedback from all stakeholders. Bi-weekly pulse check dialogues were conducted with the project owner. The pulse check comprised six standard questions regarding the clarity of the project’s purpose, progression, quality of solutions, resource accessibility, collaboration and engagement. These questions gave us insight into the customers’ perspective on certain issues and served as input to the steering committee



meetings. Following up on the pulse check in the steering committee has been useful, as critical issues were either resolved before or during steering committee meetings.

To get immediate feedback after workshops and meetings, a “mini” pulse check was conducted by the end of each session. The questions varied as they were made relevant to the topic of the workshop but all aimed at achieving an immediate indicator of participants’ view on the workshop outcome. This gave us valuable insights and allowed us to take action when necessary.

*Colocation design has enabled fast progression:* The core project team was colocated approximately 70 percent of the weeks in a common project room in Middelfart. Being close to the client and the actual operation was key to clarifying questions and it allowed us to just “go and see”. This was central to driving fast changes throughout the project. Besides that, the project room resulted in another benefit: Employees, managers and stakeholders from other functions occasionally came into the project room to air their frustration or share a good idea. The open-door policy was an important driver to get access to valuable information, gain trust and spur co-creation.

*Visualization of the project’s progress and drafted solutions used as efficient communication and co-creation tool:* To keep all stakeholders updated on the progression of the project, involving them throughout the various stages and confirming results, we made use of various visualizations in the project room. For example, visualizing the hypothesis tree increased transparency of our findings in the analysis phase. Our project stakeholders thereby had the opportunity to offer their knowledge and verify our findings. Being transparent about our solution design built trust, facilitated a co-creation process and increased the robustness of our solutions.

*Fixed project rhythm as the project’s heartbeat:* To manage the high-paced project plan and ensure constant progression, from the start we set up a fixed rhythm for meetings with key stakeholders. In the analysis and design phases, key stakeholders were invited to a bi-weekly status meeting in the project room. Here they were informed about results of the analysis and the activities for the next weeks. In the implementation phase, we changed the rhythm, as bi-weekly group meetings were no longer perceived to be relevant. We agreed with the operations managers to have weekly, individual meetings with each of them. Those meetings were used for sparring on issues with the new warehouse concept, challenges with employees and other current issues. Having had a fixed meeting rhythm with key stakeholders from the outset was important to keep them informed and active in the project. However, adjusting the rhythm and format of the meetings was important to keep interaction relevant and value-adding for the operation managers.

Weekly status meetings were held with the project owner. Having regular meetings right from the beginning helped involve him actively in setting the course of the project. Moreover, we used these meetings to discuss the project progression by means of the pulse check. Another important rhythm, which we fixed from the start, was bi-weekly steering committee meetings. Having the project sponsor close to the project created active ownership and enabled us to change the scope of the project when we realized that the biggest potential was found in restructuring the management organization and changing the working hours of half of the warehouse employees.

*Active project owner engaged with project team on a weekly basis:* From the beginning of the project, we focused on ensuring a high level of involvement from the project owner and the project sponsor. This was especially important in

the analysis and design phases, as the findings of the analysis suggested a change of project scope. As the project owner and the project sponsor were actively involved, they immediately understood this opportunity and agreed to change the scope and focus on those deliverables that create most impact. Having a fixed meeting rhythm and frequent communication throughout the project allowed fast alignment, ensuring constant progress throughout the project.

*Local translation is key – adapt your approach and actions to the needs of the organization:* To ensure organizational fit, we adapted the Half Double Methodology according to the needs of the

project and FoodService Danmark’s organizational capabilities. Being confronted with a lack of available project resources from the customers, we were, for instance, unable to gather a project core team with 70 percent allocation. Instead, the project owner got heavily involved in the project himself and prioritized the operation managers’ involvement in project activities. A dedicated project resource from the customers could have been valuable, for instance, in building capabilities within the warehouse. However, the setup pushed us to work closely with key stakeholders, which in turn created a broader sense of ownership of the project across the warehouse.

**Below is a brief overview of the project’s key activities:**

**Table 13: Brief overview of the pilot project's key activities**

TIMING	DESCRIPTION
February 2017	<ul style="list-style-type: none"> <li>Pre-analysis was conducted analyzing FoodService Danmark’s entire value chain</li> <li>Substantial potential was identified in the warehouses</li> </ul>
May 2017	<ul style="list-style-type: none"> <li>Launch of the “New Eyes” project, improving warehouse efficiency in Middelfart</li> <li>Understanding daily operations through gemba, interviews and initial data analysis</li> <li>Creating hypothesis on underlying root causes to warehouse efficiency in Middelfart</li> </ul>
June 2015	<ul style="list-style-type: none"> <li>Extensive analysis of customer patterns and working hours</li> <li>Analysis and design of the new organizational structure</li> </ul>
July 2017	<ul style="list-style-type: none"> <li>Summer break</li> </ul>
August 2017	<ul style="list-style-type: none"> <li>Implementing new organizational structure and roles</li> <li>Co-creating the new warehouse concept and implementing tools to support the processes</li> <li>Running first pilots to test and refine the concept</li> </ul>
September 2017	<ul style="list-style-type: none"> <li>Designing and co-creating additional elements of the new warehouse concept</li> <li>Running further pilots to test and refine additional elements of the concept</li> <li>Starting the implementation phase with new working hours and the new concept on all shifts</li> </ul>
October / November 2017	<ul style="list-style-type: none"> <li>Implementing and refining the last elements of the new warehouse concept</li> <li>Training and coaching operation managers in the new concept and in their new role</li> </ul>
November / December 2017 (expected)	<ul style="list-style-type: none"> <li>Implementation of the last deliverable, when the IT system is ready</li> <li>Coaching operation managers and their teams in the new concept and prioritizing accordingly</li> <li>Organization is ready to sustain the operations themselves</li> </ul>

**A couple of stories from the FoodService Danmark pilot project**

*Using pilots to implement solutions early on thereby spurring motivation and buy-in:* After the solution design workshop, where we co-created

the new warehouse concept, we decided to test it in operations as soon as possible.

Together with the evening shift operation management team, we brainstormed about the best and worst-case consequences to be prepared for the different situations we could run into. Early

in the first pilot day, the warehouse staff got nervous. The number of orders did not decrease with the usual speed and the team was uncertain that they could finish on time. However, the support function and distribution teams instantly were excited and applauded the new process. Their administrative workload had immediately decreased by more than half. A distribution manager commented: *"We could feel the effect of the project pilot immediately, and our deliveries can now be completed considerably quicker than before"*.

Around midnight, the warehouse also started to experience the benefit of the new concept. The success of implementing this new solution early in the process gave the project a big boost. Experiencing that the new warehouse concept works increased the level of engagement in the project. Moreover, getting feedback from other business units increased their awareness of end-to-end improvements.

*The effects of decreasing organizational complexity – Increased speed of decision-making and work satisfaction:* When starting the project, we faced a complex organization with several layers of decision-makers and various roles across the four shifts. Streamlining and reducing the number of roles in the warehouse by more than 50 percent reduced complexity and enabled faster decision-making. After hosting a workshop with the operation managers, defining the new roles and responsibilities, one of them commented: *"My role is clear to me now. Instead of having a lot of overlap with my manager, I now know what I can decide myself. And I don't have to push all decision upwards, and then often having to wait for a reply for days. Now I can make decisions myself when problems occur"*. Besides, the operation managers got the leadership responsibility for their employees allowing closer employee-manager relationships. Introducing a weekly survey to get feedback on employee satisfaction enabled operation managers to be

closer to their employees and take corrective action when necessary. This organizational change has increased work satisfaction of both employee and managers.

*The missing pulse check:* After workshops, we usually conducted a mini pulse check with the participants. Getting immediate feedback on their gut feeling regarding the project's progression or the result of the workshop gave us valuable insights and allowed us to take corrective action when needed. When we were about three months into the project, we hosted a workshop and were running out of time. To finish on time, we agreed on next steps and finished the workshop there. One of the operation managers asked in a somewhat confused and disappointed tone: "But what about the pulse check?" Only then did we realize that they also enjoyed doing the pulse check. It was their opportunity to let us, and the other participants know about their point of view regarding the progression of the project. We learned our lesson and did not down-prioritize the pulse check again.

### Preliminary results and key learnings

The project is still ongoing, and the final evaluation of the full results cannot be done yet. However, several parts of the solution have been implemented and a number of benefits can already be shared: (1) Approximately a 15-percent overall productivity improvement attributed to the overall project (November 2017). (2) Implementation of the new warehouse concept has reduced re-work by +50 percent for extra deliveries due to empty shelves, leading to efficiency and quality improvements. (3) Improved quality in the warehouse processes, including fewer mistakes and a neat warehouse. (4) Improved employee satisfaction in three out of four shifts (no change in shift 4).

The project resulted in several learnings regarding the Half Double Methodology. Key learnings were the need to constantly focus on impact which was

agreed in the beginning, instead of getting locked on deliveries. When your analysis reveals that major potential can be realized by doing something other than expected – then do it – don't stick with your delivery plan. This implies a need for flexibility towards deliveries, but ensures that the project generates real impact. A precondition is a high degree of involvement and trust from the project owner and the project

sponsor. Another key learning is to set out frequent touch points with key stakeholders. Using pulse checks gives you valuable insight on your stakeholders' perspective on the project's quality, its progression, and their engagement. This creates transparency and enables you to change the course of action quickly, when necessary.

**Table 14: Overall success criteria and their fulfillment (realized as of November 1, 2017)**

SUCCESS CRITERIA		
	Target	Actual / Expected
#1	Savings of DKK 3.5 million	Annual savings of DKK 7 million ( <i>expected</i> )
#2	Improving warehouse efficiency (measured in pieces / hour), comprising re-work	12 percent increase from baseline (avg. week 1 to 17) ( <i>actual</i> )
#3	Improving warehouse quality (measured in service level)	+50 percent decrease in short-picks and a stable service level of 99.5 percent ( <i>actual</i> )
#4	Supporting reorganization and ensuring that operation managers are on-boarded in their new role	Pulse checks for operation managers at avg. 4.5 out of 5 ( <i>actual</i> )
#5	Employee satisfaction (weekly surveys)	Approx. 10 percent increase in employee satisfaction ( <i>actual</i> )

**Table 15: Learnings from the pilot project at FoodService Danmark**

LEARNINGS	
#1	Keep constant focus on impact creation (not deliverables)! This requires a high level of engagement and trust from the project owner and the project sponsor, and has the potential to double your benefits.
#2	Co-creation is important to build robust solutions that fit the organization's needs and capabilities. Moreover, co-creation builds up knowledge locally and creates a strong sense of ownership with the leaders and employees. This ensures that the organization can sustain the benefits in the long run.
#3	Frequent interaction and direct communication with the project owner are key to success, as processes can be speeded up and tasks can be prioritized immediately.
#4	Local translation is important to ensure relevance and fit of the solution and speed of progression. Make your project approach fit to the rhythm of the people you work with – not the other way around.
#5	Having a project room allows clear visualization of the project's progress and solutions. Moreover, people know where to find you and can come by if they have a good idea, questions or other issues they want to share with you.
#6	A dedicated project resource from the customer could have contributed with additional insight and given faster access to key persons in the organization. Moreover, this setup could have strengthened the sense of ownership of the project results in the organization.
#7	Using the Half Double Methodology in a part of an organization which is not used to working with traditional project management models made the introduction to the Half Double Methodology uncomplicated. It became an effective and natural way of managing the project from the start.
#8	Conducting pulse checks regularly gives you important insight into your stakeholder's perspective on the project. It helps you to understand what works and what does not and enables you to take corrective action accordingly.
#9	Using pilot implementation has two major benefits: (1) testing and verifying solutions early in the process gives you important technical insight and allows adjustments early on. (2) Experiencing that the solution works, boosts motivation and increases engagement among employees and other key stakeholders.

## LINAK pilot project

### Company and pilot project

**LINAK** is a privately-owned Danish manufacturing company specialized in linear actuators. The CEO and owner, Bent Jensen, took over from his father in 1976; since then the company has expanded from seven employees to more than 2000 in 35 countries.

Given the history of the company, there is a strong culture and great pride in the success that the employees create, and with an important presence and significant production in the small town of Guderup in Southern Jutland, the company represents the best of Danish manufacturing.

LINAK is divided into four divisions, one of which is DESKLINE. DESKLINE specializes in actuators for ergonomic desks. In response to rapidly expanding sales, short supply of labor and limits to the footprint of the factory, the DESKLINE division has initiated a drive toward production automation wherever feasible. The factory processes have been optimized by introducing LEAN principles, and the production cells are operated in three shifts during peak periods.

**The pilot project** was initiated in response to the learnings from the first five automation projects where the capacity was added in addition to the current semi-automated production cells by adding fully automated cells based on robots. These projects were regarded a success in terms of reaching the production targets and quality required, but the duration of the projects was too long, and the costs rose from project to project due to increased complexity and higher requirements from LINAK. The scope of the project was defined as the specification, design, sourcing, installation and commissioning of a robot-based automated production cell that can triple the current production capacity. The project was initiated by the head of the DESKLINE division,

and the DESKLINE Operation Manager was appointed Project Owner. The project manager was chosen based on the criteria that he had run automation projects before and that he had experience working with the supplier for the project in question.

The supplier had supplied most of recent automation projects, and a key element to work with in the project was the customer/supplier relationship, which was rated as good but not necessarily efficient.

### Local implementation

The three core elements of the Half Double Methodology, Impact, Flow and Leadership, were specifically tailored to fit the LINAK project as well as the supplier of the automated production cell.

*Impact case and follow up on KPI's to ensure impact:* The two main drivers in the impact case was i) the quicker the production switch from manual to automated production, the quicker LINAK can benefit from the significant lower unit cost, and ii) efficiency improvement on the supplier side would reduce the cost of the project runs. LINAK uses a standard financial model to evaluate investments in automation and other production improvements. This model uses payback time from project completion as the main decision criterion. It does not take into account the accumulated benefits during the project period and the earlier go-live date. The importance of this limitation of the model became clear when the CEO was asked to approve the preliminary impact case earlier in the project thereby accepting additional risk. The benefit of this early approval was an earlier project completion date, but this could not be reflected in the financial model used for the impact case. In the project, this challenge was solved in an

elaborated dialogue between the CEO and the project owner.

In the initial workshops, a shared cost/benefit model for the project was briefly discussed but was not pursued further.

*Impact solution design in the initiation of the project:* The impact solution design for the project was developed through the first three workshops between LINAK and the supplier: the project initiation workshop, the project planning workshop, and the project kick-off. The ideas came from a mix of retrospective views on previous projects and from challenging the current project model using a series of what-if questions. The core idea was to take a different view on project risk to accept more risks related to speed but accepting that the total cost of the project would not be fixed. Several important principles in the current project model were therefore adjusted accordingly.

- Immediately after kick-off, the project sponsor secured the go-ahead from LINAK's CEO for the supplier to start detailed design of the solution based on a preliminary business case and the supplier's non-binding calculation of project costs. The supplier was to be compensated on a cost and material basis. In a standard project, the design will not be initiated before a fixed priced contract for the entire project has been agreed.
- The supplier agreed to order three standard robots with a long lead time, thus taking the risk of having to put them in inventory if the project was canceled.
- LINAK's CEO also approved the early investment in certain critical and expensive components with a long lead time in order to cut waiting time during assembly.

- The factory acceptance test at the supplier's factory was skipped to reduce cost and save time, with final assembly done directly on LINAK's factory floor. The risk is that the commissioning will take significantly longer and be more expensive as the specialists from the suppliers are based a three-hour drive from LINAK.

In addition to the changed view on project risks, several other initiatives were taken to reduce time and at every weekly solution feedback meeting, new optimizations were explored.

*Allocation of core team:* The core team consists of LINAK's project manager, the supplier's project manager, the lead engineers from the supplier, and key technicians. Allocation for all team members is high, with the caveat that there are periods where not all have tasks to solve. One example is the head of assembly at the supplier who will be 100% allocated for a specific period, but has almost no tasks in the early and late phases of the project. From the beginning, the core team consisted of four people from the supplier and LINAK's project manager.

*Fixed project heartbeat for stakeholder interaction:* Due to project participants' allocation changing over time, at each new sprint it is evaluated who should be part of each of the interactions, i.e. solution feedback or daily stand-up. There are more participants than both LINAK and the supplier would normally select, as frequent interaction and feedback are the key to progress faster than normal on the project. Six key events were defined requiring only minor adaptations to the general Half Double Methodology. The biggest difference from other Half Double projects is probably the significant presence of senior members from the supplier in key events.

Key events	Participants	Duration	Method	Frequency
Sprint planning	The core team, the project owner, two members of LINAK's production management, and three members of the supplier's project organization.	Half day	Face to face	Every four weeks
Review sprint solution	The core team, the project owner, two members of LINAK's production management, and three members of the supplier's project organization.	Half day	Face to face	Every four weeks
Daily visual status	The core team	15 min	Mixed. Virtual planning tool, in-person at the supplier, Skype for LINAK's PM	Daily
Weekly solution feedback	The core team, the project owner, one members of LINAK's production management, and two members of the supplier's project organization.	30 min	Skype	Weekly
Plan next week	The core team	1 hour	Face to face	Weekly
Pulse check feedback	The core team, the project owner, and the supplier's key account manager.	30 min	Face to face	Every two weeks

*Pulse Checks:* Pulse checks are carried out every two weeks including the same participants as in the sprint planning sessions with a maximum of nine respondents. The frequency was selected to fit the project heartbeat and the results are discussed at the four-weekly sprint review sessions and at one of the 'plan next week session' in between. This turned out to be a good frequency as the team can address issues and take corrective measures before challenges arise.

*Visual tools and plans:* In the project team, the supplier is responsible for producing the deliverables, while LINAK is responsible for making decisions and creating the design specification. However, the two companies are located a three-hour drive away from each other and therefore have to take travel time into account when selecting and designing tools. Initially, the sprint plan was created on a physical poster with the entire team being present. However, it soon turned out that active participation in the daily and weekly Skype sprint meetings were difficult for the LINAK team members. The team began to use a tool called Virtual Visual Planner (VVP) which is a digital version of a sprint planning board. This

tool worked extremely well because it maintained the sprint structure and allowed all team members to modify post-its in real time while conducting the meeting using Skype. The tool is intuitive and requires no training to be used effectively – and can therefore be integrated into the project effortlessly. The tool supported the active participation of all team members as they are all able to add and modify their own post-its in real time. In the assembly phase, plans will be poster-based as the technicians have to have access without opening a computer.

*Collaborative project leadership:* LINAK's project manager has engaged deeply with the supplier's project organization and spent much work time at the supplier's site. The resulting understanding of the challenges faced by the supplier opens for a trustful customer/supplier relationship where the focus is on moving the project forward and challenge design decisions where appropriate. Furthermore, this approach bridges the "them" and "us" mentality that can develop in a project of this kind.

*Active, committed and engaged project owner:* LINAK's project owner prioritizes the fixed events and is constantly driving towards the maximum impact. The project owner was chosen as he would be responsible for production afterwards and can make critical decisions fast related to the design and scope as well as judging risks. This power was put to good use in the project with key decisions taken directly at the workshops or right after. The project financing and overall go/no-go decision was made at CEO level; the project owner was not mandated to change the financial evaluation model. The key challenge in the project is the objective of reducing project cost by a more efficient production at the supplier. As the project owner does not have a direct mandate, a close and trustful dialogue between the project owner and the leaders of the supplier's project organization is required. And maybe a different contract paradigm.

*Local translation and adaption to governance:* The main elements of local translation are related to

the fact that two companies are involved with a clear customer/supplier relationship but also a very clear agenda focusing on the mutual success. There are many similar projects in the pipeline and fast, efficient execution with maximum impact is essential for LINAK to meet market demands at a competitive price. The common understanding of this was established and has enabled the project to meet deadlines and targets so far. The project is a LINAK project, but as the supplier has more participants than LINAK in most key events, the project has had a significant impact at the supplier. However, the supplier has a production planning system where cost optimization is in focus. In certain cases, this affects lead time in production; in order for the Half Double project to progress optimally, the supplier would have had to change their production planning system. However, introducing a new production planning method or system in the middle of this pilot project was judged too risky, and was likely to lead to a longer overall lead time the first time.

**Below is a brief overview of the project's key activities:**

**Table 16: Brief overview of the pilot project's key activities**

TIMING	DESCRIPTION
June 2017	<ul style="list-style-type: none"> <li>Six-hour project initiation workshop with key staff at LINAK and senior management from the robot automation supplier introducing the Half Double principles. Later the two parties evaluated similar projects and consolidated key learnings.</li> </ul>
August 2017	<ul style="list-style-type: none"> <li>Six-hour project planning workshop. The workshop secured that all project participants knew about Project Half Double and what was the aim of the project. It also had the character of an initial kick-off with both LINAK and the supplier at the supplier's facilities. Key ideas for the solution design was explored and a plan for the project using the traditional project approach was presented. First proposal for the project flow was discussed and revised.</li> </ul>
Early September 2017	<ul style="list-style-type: none"> <li>Two-day kick-off seminar at LINAK with project owner, key LINAK staff and key supplier staff (6-7 September). The workshop focused on the Solution Design and the requirements for the automated production cell. Based on a few key changes, the project participants revised the project plan to reduce the project plan from 60 weeks to 40 weeks.</li> </ul>
Mid-September	<ul style="list-style-type: none"> <li>Project flow was initiated with four-week sprints, weekly solution feedback meetings and daily virtual stand-up meetings. All physical meetings were held at the supplier's site.</li> </ul>
Late September	<ul style="list-style-type: none"> <li>The project owner paid a visit to a sub-supplier whose lead time on key parts was a critical part of the project. The project owner secured early delivery, which removed the item from the critical path and the full benefit of other optimizations could be realized.</li> </ul>

TIMING	DESCRIPTION
October 2017	• Six-hour workshop at the supplier’s site to discuss optimizations in the production process as the lead time on production and assembly.
Mid-November	• Final ‘go’ on the complete project scope and agreement between LINAK and supplier
October – January 2017	• Detailed design, production of components, assembly of robot cells, and finalization of control software on the supplier site.
February 2018	• Setup of the automated production cell on the factory floor
March 2018	• Commissioning of the automated production cell and the control software
April 2018	• Stabilization and pilot production (first impact created)
May 2018	• Site acceptance test (solution ready to deliver full impact)

**A couple of stories from the pilot project at LINAK**  
*Factory acceptance test – a story about quality, cost and staff travelling.* Early on, it became clear that skipping the factory acceptance test (FAT) and pilot production at the supplier could significantly reduce project duration and potentially save costs if commissioning was smooth. However, this meant that the supplier’s key staff would have to spend more time at LINAK away from home and the cost of man hours would rise with travel and accommodation costs. The leadership teams at LINAK and the supplier agreed to find a solution to this with a shared risk approach, as cost for

travelling and accommodation for LINAK’s employees would be reduced.

*Visit to sub-suppliers – don’t accept standard lead time.* It became clear that the lead time on a certain made-to-measure component was on the critical path and that this blocked a lot of other initiatives to reduce the total duration of the project. Instead of just pushing the supplier, the project owner visited the sub-supplier and discussed scheduling. This active approach resulted in a significant reduction in lead time and opened for other optimization.

### Preliminary results and key learnings

**Table 17: Overall success criteria and their fulfillment**

SUCCESS CRITERIA		
	Target	Actual / Expected
#1	Execution time of a maximum nine months (38 weeks) from project start (kick-off with a supplier) to finish (Site acceptance test at LINAK’s factory)	After seven weeks of project execution, the current prediction is 37 weeks.
#2	Cost reduction of 25 percent on man-hours from supplier compared to a similar on-going project	Current expectation is a saving less than 20 percent, but it is unclear how much is related to reuse of designs from other projects and reuse of control software, and how much is related to the elimination of a factory acceptance test. There is an ongoing discussion about the baseline that the project should be compared to.
#3	LINAK’s LEAN office capable of replicating the approach on other projects after the pilot is completed	On track, but at risk due to change of staff.
#4	The supplier adopts the methodology and is willing to execute projects the same way again	Above expectations, as the supplier is rolling out visual plans across the whole project organizations and is convincing their other customers to adopt a similar methodology.

**Table 18: Learnings from the LINAK pilot project**

LEARNINGS	
#1	In a project where the majority of the work is carried out by an external supplier at a different site, virtual tools become essential. Good tools are the foundation for good and efficient meetings.
#2	LINAK's current framework for evaluation of investments in automation did not sufficiently account for the benefits from early impact, and these had to be framed verbally to the CEO.
#3	Even though the project managers bought into the setup and the methodology from the beginning, and the project team from both LINAK and the supplier participate actively, support is needed to diffuse the methodology and the tools to the project participants.
#4	Daily (and weekly) visual planning meetings are possible and effective to do virtually if certain prerequisites are in place. Monthly sprint planning meetings were done in person. Team and project managers attend the daily and weekly meetings on a regular basis. A virtual tool supported the process.
#5	Having a visual plan with main milestones on a poster for the team – and project owner – made it possible to visualize dependencies with other projects, major milestones and risks in the project.
#6	In a buyer / supplier relationship, the Half Double Methodology made it possible for both parties to focus on and discuss impact when making critical decisions about the project, rather than only discussing the classical project triangle – scope, resources and time.
#7	Having a clear sprint rhythm with a visual board and daily meetings enabled the supplier to get much faster responses from LINAK than they were used to, mainly because the project participants from LINAK were available for input and they could visually see how the plan would be impacted if they didn't supply a response quickly.
#8	Using the impact solution design tool created focus on showstoppers for delivering impact as early as possible. This focus prompted LINAK to visit a sub-supplier in person to negotiate early delivery of a part that was slowing the critical path in the plan. This would not have been done if the project owner was not involved, and if the importance of delivering impact early was not clear.
#9	Involving the project owner on a regular basis has resulted in deadlines being held up until this point. Focus on main deliverables at the end of each monthly sprint has kept a high pace in the project so far.
#10	The pilot project was undertaken to develop a standardized new way of executing automation projects, but it became evident that most of the decisions in the Impact Solution Design might not be applicable to other projects. A key learning is therefore that all projects are different and it is key to invest time in being creative during the initial workshops.

## CONCLUSION

The focus in this report is on phase 2 pilot projects and on documenting their development as well as further consolidating results from phase 1 pilot projects. This is the third report about Project Half Double (Svejvig et al. 2016, Svejvig et al. 2017).

The study of the pilot projects shows that:

- The Lantmännen Unibake, Novo Nordisk, GN Audio, VELUX and Coloplast pilot projects appear to have benefitted from using the Half Double Methodology
- Grundfos and Siemens Wind Power pilot projects seem to have had little effect of using the Half Double Methodology
- Novozymes, SAS Ground Handling, Food Services Denmark and LINAK are four pilot projects from phase 2 which are still in progress or have not been evaluated by the research team

The results indicate the degree of impact from Half Double Methodology (HDM). It is important to emphasize that the evaluation described above is only related to the impact from using HDM. This means that the pilot projects can be successful in other ways, for instance, by achieving the stated success criteria, delivering on time, cost, etc.

Evaluation and comparison of projects (Svejvig and Hedegaard 2016) are a “dangerous endeavor”, and there is a complex relationship between using a project methodology and the resulting project performance (project success) which is influenced (moderated) by the project environment (context) (Joslin and Müller 2016b). We certainly acknowledge the complex causation between context, methodology and project performance (see also Befani et al. 2007) and our claim is confined to the following proposition:

*Applying the Half Double Methodology can lead to an apparently higher impact from the pilot projects compared to comparable reference projects in the same organization*

We furthermore show that a positive effect apparently applies to five out of the seven pilot projects in PHD phase 1 while two pilot projects have had little effect from using the Half Double Methodology. Please refer to appendices A and B for an elaborate description of the research methodology and not least the limitations of this study.

## APPENDIX A: RESEARCH METHODOLOGY

The purpose of the research in Project Half Double is to evaluate the impact of the Half Double Methodology (HDM) and the degree to which this new project paradigm may increase the success rate of projects. The research process was carried out in parallel with the pilot projects in order to learn from them and with the purpose of comparing these pilot projects with other projects using traditional methods. However, it is challenging to compare projects as they are distinctive and contingent as indicated by the classic definition of projects as “A temporary endeavor to create a unique product, service, or result” (Project Management Institute 2004: 368). Consequently, a clear definition of the evaluation criteria and rules for comparison is required. Therefore, we designed a comparison framework to evaluate and compare the pilot projects with other projects labelled as reference projects in the same organization. This was done to assess the degree to which the HDM is successful and more effective than traditional approaches in reducing time to impact (Svejvig and Hedegaard 2016). In this section, we briefly introduce the design of the evaluation and comparison framework and the process of data collection and analysis.

### Action design research

Overall the research can be labelled as engaged scholarship where we co-produce knowledge with practitioners and engage in intervention (Van de

Ven 2007). Particularly, we frame the research approach in Project Half Double as action design research (ADR) adapted from the information systems domain “ADR is a research method for generating prescriptive design knowledge through building and evaluating...artifacts in an organizational setting” (Sein et al. 2011: 40). ADR consists of four interleaved stages: (1) problem formulation; (2) building, intervention, and evaluation; (3) reflection and learning; and (4) formalization of learning. ADR also involves seven principles shown together with the four stages in Table 18 below, which outlines the action design research process (inspired by Gregor et al. 2014). It is an iterative process moving back and forth between the different stages as stipulated in the ADR method (Sein et al. 2011). As shown in TABLE 13, the ADR process entails a problem-solving cycle and a research cycle (Mathiassen et al. 2012). These two cycles are intertwined (Svejvig and Hedegaard 2016).

The research cycle designed a comparison framework. This artifact works at two operationalization levels (Pries-Heje and Baskerville 2008) as a general comparison framework and as a specific comparison framework for each of the seven organizations involved in Project Half Double.

**TABLE 13: The action design research process related to Project Half Double**

STAGES AND PRINCIPLES	APPLICATION OF STAGES AND PRINCIPLES IN PROJECT HALF DOUBLE (PROBLEM-SOLVING CYCLE)	APPLICATION OF STAGES AND PRINCIPLES IN THE RESEARCH PART OF PROJECT HALF DOUBLE (RESEARCH CYCLE)
<b>STAGE 1 Problem formulation</b>		
<ul style="list-style-type: none"> <li><b>Principle 1: Practice inspired research</b></li> </ul>	Project Half Double is driven from practice with the overall objective to develop a new and radical project paradigm in order to increase the competitiveness of Danish industry	The comparison framework is used to evaluate and compare the intervention process, especially practices and impact in order to assess the degree to which the HDM is more successful than traditional approaches

STAGES AND PRINCIPLES	APPLICATION OF STAGES AND PRINCIPLES IN PROJECT HALF DOUBLE (PROBLEM-SOLVING CYCLE)	APPLICATION OF STAGES AND PRINCIPLES IN THE RESEARCH PART OF PROJECT HALF DOUBLE (RESEARCH CYCLE)
<ul style="list-style-type: none"> <li>• <b>Principle 2: Theory-ingrained artifact</b></li> </ul>	The HDM artifact is derived from lean and agile thinking (Womack and Jones 2003, Axelos 2015), and is related to the rethinking project management research stream (Winter et al. 2006, Svejvig and Andersen 2015).	The artifact “comparison framework” is based on open systems theory (Andersen 2010, Chen 2015), evaluation theory (Pawson and Tilley 1997, Stufflebeam and Shinkfield 2007), Diamond model for project characteristics (Shenhar and Dvir 2007).
<b>STAGE 2 Building, intervention, and evaluation</b>		
<ul style="list-style-type: none"> <li>• <b>Principle 3: Reciprocal shaping</b></li> </ul>	The HDM is applied to the pilot projects and experience from the pilot projects is used to revise and enhance the method.	The comparison framework was first developed as a general framework and later applied to each pilot project and re-shaped in each organization through an iterative process.
<ul style="list-style-type: none"> <li>• <b>Principle 4: Mutually influential roles</b></li> </ul>	There is mutual learning between practitioners, consultants and researchers both within and across organizations, e.g. through knowledge sharing workshops – this learning process also overlaps the problem-solving and research cycles.	
<ul style="list-style-type: none"> <li>• <b>Principle 5: Authentic and concurrent evaluation</b></li> </ul>	The comparison framework is used to evaluate the pilot project and compare it with the reference projects.	The comparison framework is continuously discussed in interviews and workshops as part of the evaluation. A more structured review of the specific comparison framework was also carried out in each organization.
<b>STAGE 3: Reflection and learning</b>		
<ul style="list-style-type: none"> <li>• <b>Principle 6: Guided emergence</b></li> </ul>	Guided emergence reflects that the initial design of the artifacts (HDM and comparison framework) is shaped by its ongoing use and the participants who use the artifacts (Sein et al. 2011: 44). This happens as a natural part of using the artifacts although it becomes more knowing and doing in practice (Orlikowski 2002), which only to some extent is codified and explicated.	
<b>STAGE 4: Formalization of learning</b>		
<ul style="list-style-type: none"> <li>• <b>Principle 7: Generalized outcomes</b></li> </ul>	The HDM as artifact is a generalized outcome which will (and has to) undergo more design cycles to reflect the learning that takes place in Project Half Double.	The comparison framework (both the general and specific for each pilot organization) is a generalized outcome where the specific comparison framework may also be generalized and applied to other settings.

The table is adapted from Svejvig and Hedegaard (2016).

## The general comparison framework

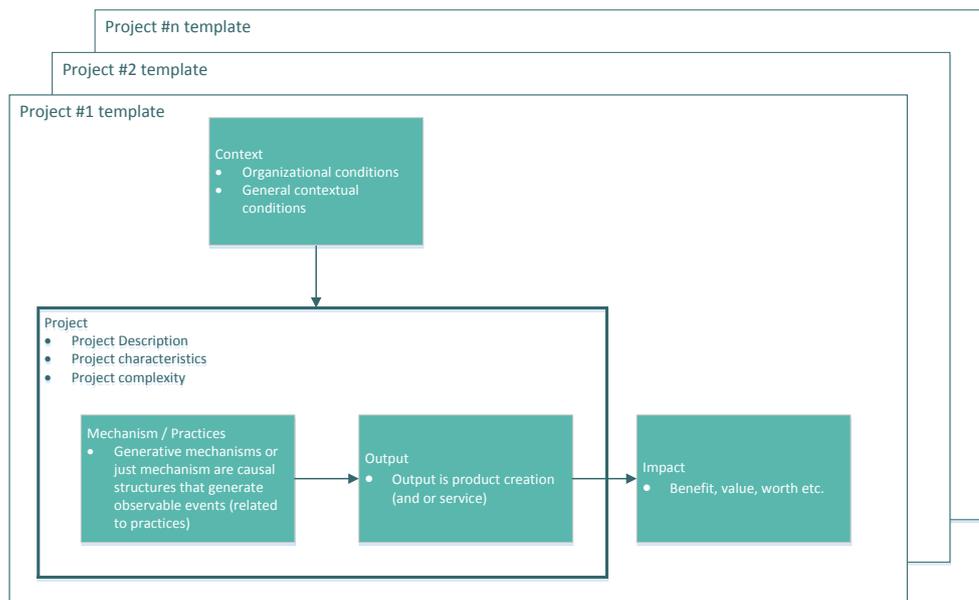
The general comparison framework (GCF) is based on evaluation theory, models and applications (Patton 1997, Stufflebeam and Shinkfield 2007) and realistic evaluation (Pawson 2002). To this is added Shenhar and Dvir’s Diamond model (2007) as well as project complexity models (Fangel 2010). The evaluation and comparison process thus build on a mixed method approach, where we combine quantitative and qualitative data

(Tashakkori and Teddlie 1998, Biesta 2010).The GCF reflects an open systems view on projects (Bertalanffy 1956, Chen 2015), but is adapted from the realistic evaluation method consisting of three elements: Context (C) + Mechanism (M) => Outcome (O) (CMO model) (Pawson and Tilley 1997, Pawson 2002), which basically describes that the context and the mechanism (practices) used in a project lead to the outcome (Svejvig and

Hedegaard 2016). We acknowledge the complex causation between C, M and O (Befani et al. 2007) and employ it conceptually to illustrate relationships between these elements, also known as a structural or interpretative

explanation (Neuman 2014: 77-84). The basic CMO model is then merged with core concepts from project value creation consisting of project -> output -> outcome/change/impact (Laursen and Svejvig 2016)

The figure below shows the evaluation areas in the template:



**FIGURE 4: Project evaluation template**

FIGURE 4 shows the five elements: context, project, mechanism/practices, output and impact. Context refers to organizational conditions like management style and project management maturity as well as general contextual conditions such as market conditions, which shape the project. The project itself has a description, characteristics and a complexity, which can be used to categorize the project. In the project, people execute practices which are expected to lead to tangible and/or intangible outputs (product and/or service creation), finally having some impact in the short, medium and/or longer term (Serra and Kunc 2015, Laursen and Svejvig 2016).

This GCF was adapted specifically in every organization and operationalized in relation to each pilot project through an iterative process as illustrated in more detail by Svejvig and Hedegaard (2016).

The research process: In all of the pilot organizations, data was collected in the pilot project as well as in (at least) three other projects selected by the pilot organization as “reference projects”. The research team met with each organization between 5-10 times at workshops and interviews. These interviews were supplemented by other relevant project documentation provided by the project managers (Myers 2009).

Figure 5 outlines the general research process and the various activities at different stages in every

pilot organization. The process was iterative especially between stages 3 to 6.

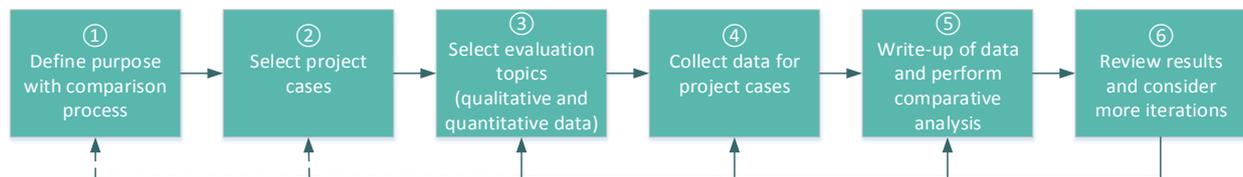


Figure 5: Research Process in pilot organizations (adapted from Svejvig and Hedegaard 2016)

### Data collection

The pilot project and reference project managers participated in interviews lasting approx. two hours. The purpose of these interviews was to clarify the project characteristics and complexities. An adaptation of the Diamond model introduced by Shenhar and Dvir (2007) was used for this purpose. The Diamond model gives an overall indication of the similarities and differences between the projects selected. It includes the standard elements: complexity, novelty, technology, and pace. To decide on the project complexity measures, IPMA's characterization of management complexity (Fangel and Bach 2002, Fangel 2005, Fangel 2010) was used. This evaluation template was applied to all projects in order to facilitate comparison. Along with the Diamond model, cost and resources were treated as output measures and size proxies. Notions of impact were related to the individual project key performance indicators.

Moreover, the interviews were used to clarify "mechanisms" such as the practices employed in the various projects as well as the project managers' experience and learning. Project practices were compared to the notions of impact, leadership and flow, proposed by HDM. Attention to project practices provides understanding of what (actually) happens in projects and how this might or might not affect the impact of the

project. Projects as practice (Blomquist et al. 2010) refer to understanding what practitioners do and the tools they use, their interaction and intention and their joint episodes of activities. In order to compare pilot project practices to reference project practices, we asked the project managers in the reference projects to consider their project practices and compare them with the HDM principles. On a scale from 1-4, we asked them to score to what extent they had practiced these principles. Whenever possible, we made sure that an "alignment profile", e.g., head of project management, PMO manager, line manager etc. was present at the interviews to support comparison between the project scorings. All interviews were recorded to secure rich documentation.

The project data for each organization was summarized in word documents and the project scorings were fed into tables. Data was then written into small reports on each organization and sent for review by the research participants in order to amend possible errors. Additionally, we carried out evaluation workshops to capture learnings from the pilot projects and to follow up on the fulfillment of the pilot project success criteria (performance evaluation).

## Data analysis

The research process has resulted in a large amount of various forms of both quantitative and qualitative data, which will be analyzed and compared for each organization. Moreover, we intend to compare and contrast findings across the seven cases (Miles and Huberman 1994, Patton 2002).

Within each organization, the research team compared the pilot project to the reference projects based on various forms of data in accordance with the specific comparison framework. For example, project budget, cost, resources, characteristics, practices, etc. as well as the degree to which key performance indicators were achieved. Moreover, a crisp set qualitative comparative analysis (Rihoux and Ragin 2009) was carried out on the project practice scorings in order to find patterns in the data suggesting that some practices may have impacted on the pilot project in contrast to the reference projects. This analysis was carried out in order to understand whether HDM represents something different

from the way project practices were normally executed in each organization and how HDM may have impacted the results of the pilot project. Certainly, we are wary with emphasizing any causality but treat the outcomes of the analysis as indications of a possible impact.

In order to secure respondent validation of the analysis and findings, review meetings were held in all seven organizations with an outset in the first data “write-ups” (Silverman 2000). These meetings were used to discuss the appropriateness of the data material and the validity of the conclusions drawn from this material.

Data analysis has been ongoing all along the data collection process and is still not completed. As we want to follow the projects until and beyond their closure to track their long-term impact, both data generation and data analysis are expected to continue in a longitudinal study

## APPENDIX B: LIMITATIONS

The aim of this report is to document project results and to find indicators of the practical implications of using the Half Double Methodology (HDM) across seven organizations.

The report has tried to answer the question regarding the impact of the HDM by comparing the performance of a number of pilot projects applying the new HDM with comparable reference projects relying on established methodologies.

There are limitations to the findings presented in this report – and these should be taken into account when considering the conclusions.

This chapter gives an overview of some of the limitations of this study.

**First of all**, the report is a comparative study in which a vital part of the evaluation includes systematic comparison (Stufflebeam and Shinkfield 2007: 7-18, Bryman 2008: 58-61, Chen 2015) of Half Double-inspired pilot projects with reference projects. It is difficult to compare projects as all projects are unique and no projects are identical.

Although we try to take a holistic view of the projects by evaluating them in different conceptual frameworks and on a large number of dimensions, we cannot measure and control for everything. For instance, we analyze all projects in terms of complexity, pace and novelty based on Shenhar and Dvir (2007) Diamond model as well as size in terms of hours and cost inspired by Atkinson's (1999) classical triangle. However, these dimensions are of a rather "hard" and technical nature whereas more personal and "soft" aspects pertaining to the people involved receive less focus. Although, for instance, the project approach as well as the participants' competences and background are included as part of the complexity scoring (Fangel 2010), further research that takes a broader view of the project

practitioners could be done. For instance, practitioners' experience, training, certificates, orientations and identity as well as project managers' leadership skills plus members' interactions and teamwork have not been substantially scrutinized.

In addition, aspects of the organizational context that influence the performance of the pilot and reference projects might have been overlooked. Although the pilot project is juxtaposed to a number of reference projects from the same organization, the organizational context is never the same. Instead, the organization is always in flux and can be seen as an organizing process in constant movement (De Cock and Sharp 2007, Hernes and Weik 2007). Hence, there can be changes in the organizational culture or structure which circumstantiates the pilot and reference projects with different chances of success. Moreover, learnings from prior experience are not taken into account. Neither are differences in competences and capabilities nor maturity levels in terms of project management processes and end users' perceived need for the product or service being developed and rolled out. Implications are that the pilot projects, which are typically done at a later point in time, often will have greater chances of success.

In addition, the Hawthorne effect (Roethlisberger and Dickson 1939, Baritz 1960) might be at play, namely that the fact that the pilot project practitioners know that they are being studied probably has an impact on their behavior and might increase the performance of the pilot project.

Moreover, it is possible that the increased attention and special treatment given to the pilot projects because of the new methodology in terms of extra resources from implement consultants to training and coaching as well as reflective talks and

interviews with the research team, affect results. It is also possible that the pilot projects being part of an optimization experiment and development process have been privileged with more and positive attention from top management compared to earlier reference projects. Following these lines, the halo effect (Neuman 2014: 4) might play a role in the performance improvements of some of the pilot projects. It seems plausible that many of the authors contributing to this report are biased towards PHD.

In general, one should be cautious of the positivist understanding of the researcher as a neutral and detached observer (Bryman and Buchanan 2009). The report is based on a pragmatic and engaged scholarship study relying on a subjective ontology (Van de Ven 2007). Following a postmodern paradigm, it is hard to distinguish between the observed and the observer – between the subject and the object of study (Heidegger, 1992 in Rendtorff 2014). According to Bourdieu's reflective sociology, scientists are always embedded in and part of the context and phenomenon they study and therefore their position has implications for the knowledge they produce (Mathiesen and Højbjerg 2013), and such reflections should be explicated.

**Second**, the report is an evaluative study in which the projects are classified as more or less successful. Project success is a multidimensional and contested concept (Jugdev and Müller 2005) that lies in the eyes of the beholder (Joslin and Müller 2016a). Therefore, the projects analyzed in this report might be perceived as more successful by one stakeholder and less successful by another. Although we have tried to circumvent these issues by evaluating the pilot projects based on a set of broadly agreed upon success criteria established from the beginning of the project life cycle (Jugdev and Müller 2005), criteria might change as the context changes and the project encounters unexpected circumstances. Moreover, learning

arises as the project develops and new insight might change the project and its success criteria. Hence, success criteria and perceptions might change over time. In order to get a broader understanding of the projects' value creation, project performance should be evaluated in a long-term perspective (Larsen and Svejvig 2016) stretching beyond the timeframe of the first and second phases of PHD. Consequently, the success evaluation and classification of the projects documented in this report might change and the projects' performance might be different if viewed in another light at a later point in time. Such circumstances are, however, a natural part of doing this kind of action design research (Sein et al. 2011, Svejvig and Hedegaard 2016) and should not be seen as a scientific error.

**Third**, as the HDM framework is an artefactual design in development, meaning that the HDM is adjusted and improved as it is applied and knowledge and learnings are obtained, the HDM changes over the course of the study. This means that not all projects are evaluated against the same practices. Such differences are not to be regarded as a rigorous error. Rather, these changes should be seen as a methodological precondition of an experimental process and a natural part of an action design research (Sein et al. 2011, Svejvig and Hedegaard 2016) study in which practical change and knowledge production go hand in hand (Nielsen 2013).

**Fourth**, the same preconditions pertain to the comparative evaluation method that also develops through the learning process. For example, an implication of the improvement of the analytical framework is that the selection of reference projects has developed from an ad hoc process to a more structured and scientifically supported procedure in which the responsible project practitioners are assisted by the research team.

**Fifth**, it should be noted that although there is reason to believe in a positive relationships between project methodologies in general and project performance (Joslin and Müller 2016a), it is not possible in this report to document a causal relationship between the improved performance of the pilot projects compared to the reference projects and the HDM. We cannot say that the performance improvements are caused by the HDM – we only state that when we find indications that there might be a relationship, the pilot and reference projects are similar or at least comparable on a large number of dimensions but different when it comes to practices – and that the explanation of the improved performance might lie in the variation in HDM practices.

**Sixth**, although data availability has increased substantially in this report compared to earlier reports (Svejvig et al. 2016, Svejvig et al. 2017), in some cases collection of the necessary data needed to document the relative performance of the pilot projects has not been possible. In other cases, data availability and access is vast. In these cases, possibilities of further analysis that would strengthen the results exist. Such analyses include triangulating the quantifiable scores with qualitative interview data. In addition, time to do a deeper analysis and look more into some of the intriguing specifics of a given organization or project could yield new knowledge and interesting insights.

**Seventh**, this report is not a critical review of the HDM and we do not pertain to questions regarding how radical the methodology is and to what degree projects can be delivered in half the time with double the impact. These statements are “consultancy jargon” and from a research perspective most likely exaggerated and overly optimistic. A comparative study based on a review of other project methodologies could highlight what the HDM offers compared to other methodologies.

**Finally**, the scope and sweet spot of the HDM is still under debate – the discussion might be extended to include broad concepts such as project setting and context relating to: 1) the impact of major public projects; 2) smaller projects which cannot be justified on their own; 3) cross-organizational projects with contractual frameworks, to mention some relevant areas.

All these limitations should be taken into account when considering the effects of the pilot projects inspired by the HDM.

## APPENDIX C: UPDATES TO HALF DOUBLE METHODOLOGY SINCE JUNE 2016

Three years have passed since Project Half Double was initiated, and the methodology continuously evolves as it intermingles with practice. As in any human-centered design process, methods and tools are identified on the basis of real needs, tested in practice, adjusted and integrated in an updated version of the concept. It is iterative and messy. Quite unpredictable and complex. This also means that it comes with challenges such as version management, consequential corrections to maintain coherence and puzzled practitioners. However, creating a fixed one-size fits all method was never the objective. The Half Double Methodology needs to be in touch with what makes sense in a given context and at a given point in time.

With that ideology in mind, experiments have been conducted and new insights have emerged. These insights have resulted in two substantial updates to the methodology in its “ready to go live” version.

Updates to the Leadership element:

- **Diamond of innovation is out:** Feedback from the community made it clear that the diamond of innovation tool was too challenging to implement in practice. To reflect on how to customize the project and the organizational support structures to fit the challenge at hand appeared to make perfect sense. However, the tool itself was not perceived to be easily applicable. The idea of customization was therefore moved out to the local translation circle. At the same time, we conceptualized a third Leadership method and tool that were both more targeted towards anchoring the right mindset and thinking within the project owner and the project leader.

- **Reflective and adaptive mindset is in:** It has become more and more clear that in order to succeed with Half Double, you need a certain way of viewing the world. You need to view changes as opportunities rather than threats. Any contact as an opportunity to lead rather than a disturbance. Yourself and your leadership style as a tool for direction-setting, guidance and motivation rather than a fixed form of management. The method “Apply a reflective and adaptive mindset” has helped us become more articulate and clear in terms of the kind of thinking we need and expect from the project leader and the project owner. The method is supported by a tool: “The reflective and adaptive mindset” which consists of three guidelines to help clarify how to bring the method to life in practice: 1. Say yes to the possibilities, accept the mess and adapt to the changing environment, 2. Embrace team members and key stakeholders, understand their behavior, and act accordingly, and 3. Know yourself, be reflective in your actions.

Updates to Local translation:

- **Local translation is now supported by three methods and three tools:** One thing has become clear over the course of time, and that is that the greatest challenge of implementing and integrating the methodology practice is local translation and leading the change it entails in terms of local structures, cultures and individual behavior. It requires a conscious, well-thought-through effort. Key stakeholders must be mobilized, the governance structure should be assessed and evaluated in terms of its relevance and value in terms of the needs of the project, and the nine methods and tools should be tailored and anchored among key stakeholders to ensure

sustainable impact. The pilot project process has helped us become crisper on what is needed when starting up and leading a Half Double project. The first Local translation method – Anchor the Half Double practice to pave way for new results – is therefore now accompanied two new methods with connected tools: 1. Build a Half Double mindset to initiate the Half Double approach & the Half Double mindset tool: 2. Customize to governance to ensure flow & the customization tool. Together, the three methods help us set the course of the project initially; make the necessary adjustments to existing structures and to adapt the approach to ensure it sticks amongst key stakeholders.

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