PROJECT HALF DOUBLE

Training practitioners, working with visuals, practice reflections and small and medium-sized enterprises

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CONTENTS

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INTRODUCTION

Since the beginning of Project Half Double in 2015, the overall goal has been 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 and not as half the time for project execution.

The research team at Aarhus University has published three Project Half Double reports on the Half Double Methodology and the results from applying the methodology on "real life" pilot projects (Svejvig et al., 2017; Svejvig et al., 2016; Svejvig, Rode & Frederiksen, 2017) in order to evaluate how the overall goal mentioned above has been achieved.

The aim of this report is to document some of the learnings obtained throughout the years. Four themes were selected for this report: 1) practitioner training, 2) working with visuals, 3) practice reflections, and finally 4) small and medium-sized enterprises.

The Half Double practitioner development program promotes a vision of the successful project manager as a reflective practitioner rather than a trained technician. The Half Double methods and tools require reflective practice by the project manager as well as the project team. To some extent, the development program also constructs settings to stimulate reflective practice and learning through various individual and group activities.

In the Half Double Methodology, working with visuals is one way of stimulating reflection beyond the individual. Visuals bring together people and facilitate dialog, discussion and collaboration in and among project teams and stakeholder groups. Visuals can facilitate goal setting and strategizing. In general, visuals can take many different forms and have many different implications.

One thing is to train reflective practitioners and to learn the Half Double Methodology and tools like working with visuals. Another thing is to stay reflective and practice back home in the host organization. To help reflective practitioners stay reflective, this report presents two tools to evaluate to which degree the Half Double Methodology is applied and to reflect on how to improve.

The Half Double Methodology is not a "fits all" concept. There are and will be "sweet spots" in which the Half Double Methodology works better than in other contexts. Most of the pilot projects are done in large organizations, but four organizations are small to medium-sized enterprises (SMEs). The four pilot projects have not progressed to a stage enabling us to conclude if and how the Half Double Methodology works in these SMEs, but a first step is taken.

The four themes are related to using, learning, evaluating and implementing the Half Double Methodology. The report can be used as an encyclopedia on the four themes. You can read one or more of the chapters consecutively or separately.

For details on the Half Double Methodology, see Appendix A.

For details on the research methodology and limitations, see Appendices B and C.

1. TRAINING PRACTITIONERS

Project work has become standard in a growing number of organizations. With this follows the importance of employing project management techniques as well as the need to acquire, train and maintain project management professionals dedicated to these work assignments (Pinto 2016). The objective of this chapter is to analyze and suggest ways to train project management professionals to become reflective practitioners of the Half Double Methodology. We consider the present conditions for project management as presented in the literature, and taking our starting point in an existing training program, we outline some of the opportunities and challenges of training competent (Half Double) project management professionals, who are able to navigate competently in contemporary projects and project environments. The chapter does not suggest "right" ways of developing Half Double project professionals. Rather, it should be treated as a starting point for further reflection and discussion.

This chapter is divided into two parts. The first part briefly outlines the historical changes to the conceptualization of project management in the literature. This outline enables a discussion of the essential competencies that are expected of the project manager today, as well as of the implications for practitioner development, which according to several scholars ought to produce reflective practitioners rather than trained technicians (Berggren & Söderlund, 2008; Crawford, Morris, Thomas, & Winter, 2006). The second part of the chapter engages with the theory of the reflective practitioner to consider the requirements of the project manager in the Half Double Methodology and the methods for training. Taking our starting point in empirical data derived primarily from observation studies of Half Double training sessions, we discuss opportunities as well as challenges to teaching and learning reflective managerial practice.

The evolution of project management and the project manager

The field of project management has experienced an ongoing professionalization. An increased commodification of project management expertise through certifications and detailed prescriptive bodies of knowledge (PMBOK) helps to legitimize project management as an expert occupation (Hodgson & Muzio, 2012). However, this increased professionalization has been criticized as modern project contexts require a complexity of soft skills that are hard to certify; this has launched a movement of "rethinking project management" as well as rethinking project management education (Berggren & Söderlund, 2008; Cicmil, Williams, Thomas, & Hodgson, 2006).

Rethinking project management

The following section outlines three themes which are part of a larger movement towards greater alignment between current project conditions and theories for practice. These themes represent a development of general conceptualizations of project management professionalism over time.

From control to complexity

Project management as a professional field emerged as part of the industrial progress in the post-war era and the technological race during the cold war. Mega infrastructure/construction projects and defense/space programs were launched, which called for skilled engineers who could organize and lead the massive work tasks (Lenfle & Loch, 2010). The first project management training programs were set up to account for these needs. Since then, project management has advanced and matured into a distinct professional occupation and discipline defined by tools and methods recognized as best practice to plan, monitor and control projects. Such tools and methods are promoted and legitimized by professsional agencies such as the

Association for Project Management (APM) and the Project Management Institute (PMI). In order to diffuse the use of project management skills without undermining the quality, PRINCE2 and the Global Accreditation Center (GAC) of PMI were established as accrediting and certifying agencies. This means that practitioners are now trained, certified and "credentialized" against an increasingly standardized body of knowledge and sets of competencies (Bredillet, Tywoniak, & Dwivedula, 2015; Crawford et al., 2006; Hodgson & Paton, 2016; Hällgren, Nilsson, Blomquist, & Söderholm, 2012).

From this point of view, good project management is basically associated with the ability to plan, to establish clear project boundaries, to predict and exercise control to achieve the results aimed at (Crawford & Hoffman, 2011). Yet, projects continue to fail, and the practical applicability and relevance of formal project management knowledge have been a concern for project researchers for some time (e.g. Crawford & Pollack, 2007; Morris & Jamieson, 2005). A stream of literature documents this development of the project management field as well as the necessity to adapt project management knowledge and practice to today's project realities (e.g. Cicmil et al., 2006; Svejvig & Andersen, 2015). This literature questions the consequences and efficacy of applying standardized and rationalist knowledge to project management, especially the effects of instrumentalist project management guides (Cicmil et al., 2006; Clegg & Courpasson, 2004; Hodgson & Cicmil, 2008). Instead, successful project managers rely on pluralism, since they tend to develop their own methodologies and vary these from one project to the next (Remington & Pollack, 2011). Moreover, project managers' behavioral and personal competencies appear to be just as relevant for their performance as the tools and techniques emphasized in the standards (Müller & Turner, 2010; Thomas & Mengel, 2008). At the same time, project management research and practice have become more aware of the role played by

complexity, chaos and uncertainty in projects and project environments (Crawford & Hoffman, 2011). Technological developments, globalization and the shift from an industrial society to a knowledge intense society challenge our classical knowledge base of project management designed for a more stable and predictable world. Therefore, it is a growing concern that project management education fails to prepare its students for the circumstances that they face in their everyday working environments. Traditional managerial tools may be insufficient, inadequate and ineffective if not directly harmful when dealing with the complexity, uncertainty and ambiguity of contemporary project contexts (Crawford et al., 2006; Hällgren et al., 2012). It is argued that in these situations successful project managers think and act holistically and may have a natural or learned proactive perspective of what needs to be done (Stevens, Patton, & Cooke-Davies, 2011).

From management to leadership
Project managers must be able to maneuver in ambiguous and complex projects and project environments. They are responsible for information and communication flows; they are planners and goal setters, team developers, motivators, conflict resolvers, etc. In the literature, there is a growing recognition that modern project management involves the ability to exercise leadership. Pinto (2016, p. 155) argues that successful completion of a project is very unlikely without the commitment of an energetic "project leader".

The classical management role is associated with formal rights and authority in terms of position. Typically, management roles are administrative in nature with a focus on systems, using the right tools and techniques and striving for control (Müller & Turner, 2010). Leadership is defined as the ability to inspire confidence and support among those who are needed to achieve organizational goals (Pinto, 2016, p. 138). In addition to a range of management skills such as planning, delegation and decision-making, project managers must develop a range of leadership

skills to be able to support the process of transforming a diverse group of functional experts into a cohesive, motivated and collaborative team (Pinto, 2016, p. 145). As opposed to classical management, project leaders focus on interpersonal relationships and deal effortlessly not only with technical challenges but also with human challenges. They develop, motivate and inspire others with their vision for the project and the future and communicate activities and directions (Pinto, 2016, p. 156).

Throughout this chapter, we use the term project manager. This is only because it is a common designation for the person heading a project team. However, Project Half Double generally uses the term "project leader" to emphasize this focus on leadership in the project management role.

From trained technicians to reflective practitioners

The evolution of the project management field certainly affects project managers' working environment and the skills they need be able to perform efficiently and successfully. Consequently, there seems to be a gap between what education providers offer and what is actually needed in order to handle projects in modern-day environments (Thomas & Mengel, 2008). As noted above, organizations are becoming increasingly complex. Therefore, project managers must develop an adaptive capacity to handle complexity and change. Research argues that they need a "*high degree of self-reference, the ability to thrive on change, a solid foundation in traditional methods and techniques and the ability to adapt to change and develop new approaches on the fly*" (Thomas & Mengel, 2008, p. 309). Consequently, project manager development programs must transcend the inculcation of best practice standards and their linear, rational and analytic approaches. Instead, attention is directed towards process and practice-based approaches highlighting the actuality of projects and project conditions; this involves aspects of complexity, ambiguity and unpredictability as well as human

and relational project dynamics (Cicmil et al., 2006; Pollack, 2007; Sage, Dainty, & Brookes, 2010; Svejvig & Andersen, 2015a; Thomas & Mengel, 2008).

A critical stream in project management research regularly emphasizes reflexivity. Instead of rushing to solve the problem before us, by immediately applying standardized models at hand, it is important to question the assumptions and implications of these models and how they may affect the problem. Hence, over time conceptualizations of project management have changed from a predominantly technical skill-set to a broader reflective practice managing the aspects needed to provide a successful project outcome (Crawford et al., 2006). Instead of fostering implementers and technicians who mechanistically follow "*cookbook*" rules and recipes (Bredillet et al., 2015, p. 258), contemporary project management education should facilitate the development of "reflective practitioners" (Crawford et al., 2006).

It is possible to find notions of reflexivity applied in the literature on leadership (e.g. Alvesson, Blom, & Sveningsson, 2016), as well as in the literature on learning (e.g. Argyris, 2002; Kolb, 1984; Schön, 1983). Reflection is considered to be "[*A*]*n important human activity in which people recapture their experience, think about it, mull it over and evaluate it*" (Boud et al. 1985 cited in Alvesson et al., 2016, p. 13). Certainly, everybody is to some extent reflective. Yet, even if they have both the capacity and the opportunity, people can deliberately refrain from reflection and comply with available truths and norms, "go with the flow" and do things the right way, rather than asking whether this is actually the right thing to do (Alvesson & Spicer, 2012). In that way, reflexivity refers not only to ability and opportunity, but also to willingness to scrutinize and challenge established ideas and beliefs, including one's own.

At the heart of reflective practice is making sure that the knowledge base which informs practice is open to scrutiny and can be challenged

(Thompson & Thompson, 2008). Hence, practice should not be based on habit, routine and mindless sticking to procedure. Reflective practice is the process of becoming aware of the knowledge that informs our practice, uncovering it, inspecting it and changing it if needed. Explicit reflective processes thus enable reframing problems and offer a multiple perspective view. Moreover, this encourages both experts and novices to process ambiguity and not to hinder analysis by drawing rash conclusions and making hasty decisions without fully exploring other options (Alvesson et al., 2016).

According to Raelin (2001), project participants' reflective practices are essential for project-based learning. Yet, this is not solely an individual endeavor. In fact, the very process of attempting to articulate and make sense of project experiences with fellow project participants and other stakeholders may help create the language and narrative through which experience can be shared and preserved for reference in further project work. This articulation process is an important element of reflection and the diffusion of knowledge (Berggren & Söderlund, 2008).

There is growing evidence that projects may prove beneficial to the long-term success of companies if they incorporate reflective practices systematically into their project management processes (DeFillippi, 2001). It is argued that benefits include not only more effective project performance but also the training and development of more effective project professionals whose project-based learning by doing and reflective experience can be directly leveraged in

future projects (ibid.). In this view, reflection should be a fundamental element of project management pedagogy if the main role of project management education is to build up practitioners with the ability to synthesize and embed theory into their own practice and critically assess and reformulate theory and to apply this new formulation spontaneously when appropriate (Thomas & Mengel, 2008).

Project management training

Even though research still finds value in traditional project management training, which equips people with core skills and fluency in the project management language, there is a need to do more (Egginton, 2012). Rather than merely training project managers to focus on problem solving and applying tools and techniques, competent project managers should also be prepared to diagnose situations, adopt appropriate tools and techniques as necessary, and learn continuously. However, it is challenging to merge classical and critical views of project management in education since they – in many ways – are incompatible. The classical project management tools and techniques tend to simplify and sectionalize projects to make them manageable, while the critical approaches seek to emphasize and embrace complexity and thus rebuke the clarity and rationality notions underpinning the classical view (Leimbach & Goodall, 2017). Table 1 summarizes the evolution in project management (PM) training and its foci and conceptualizations of necessary qualifications.

Classical view on PM training	New views on PM training
Methods and tools	Operational abilities and adaptability
Dislocation between theory and practice	Pragmatic application of theory in practice
Knowledge acquisition	Capability acquisition
Hard skills	Soft skills
Standard project models	Project ambiguity
Certification	Constant learning
Trained technicians	Reflective practitioners

Table 1: Views on project management training

Inherent to this development is the understanding that project management education requires the application of new learning styles or teaching methods to infuse soft skills and pluralist adaptable practice. The new training forms ought to encourage the learner's development of a certain level of self-knowledge and intellectual skills to understand existing best practices and adapt it as necessary and furthermore to build up the emotional skills to motivate, coach and lead team members. Rather than trained technicians, who are familiar with and can follow detailed procedures and techniques prescribed by best practice project management methods and tools, project management education should facilitate the development of reflective practitioners, who can learn, operate and adapt tools and methods effectively (Crawford et al., 2006; Nielsen & Svejvig, 2016; Svejvig & Grex, 2016; Winter, Smith, Morris, & Cicmil, 2006). This means applying diverse tools and approaches and being alert to the need to change tools and approaches as the project develops and changes (Remington & Pollack, 2011).

Yet, it is not an easy task to shift focus from action to reflection in the typical task-centered project practice where time pressure prevails. Cultivating habits of reflective practice thus requires deliberate attention to learning and seeing beyond the task at hand (Ayas & Zeniuk, 2001). Crawford and Hoffman (2011, p. 91) emphasize experience as inherent to reflective practice. They propose that proficient performers or experts in project management may be able demonstrate reflective practice, while novices and advanced beginners in the project management field will act as trained technicians relying on project management standards. Many years of project management experience may therefore be a requirement for these competencies. The question is therefore how learning and obtaining such important skills can be accelerated through training (Crawford & Hoffman, 2011; Hällgren et al., 2012; Winter et al., 2006).

Developing reflective practice – in the individual, group and organization
As may be apparent from the above, reflective practice is not something that just happens. Nor is it easily developed by adopting a set of formulas or following instructions. Reflection must be arranged for and organized (Berggren & Söderlund, 2008). In order to develop the required self-awareness and discover new values and meaningful perspectives, we must attempt to uncover and overcome our own biases by temporarily withdrawing from comfortable environments exposing ourselves to the unknown (Thomas & Mengel, 2008). Consequently, reflective practice is also about developing learning capabilities within an organization (Ayas & Zeniuk, 2001). Yet, stepping out of our comfort zone is challenging. According to Berggren and Söderlund (2008, p. 290), effective management knowledge is co-produced and developed through a combination of reflection and action. This knowledge production must be operationalized in both individual and group contexts in the organization.

Certainly, the individual who undergoes educational training is the starting locus of learning and the most important carrier of new knowledge. It is an individual's professional responsibility to make reflection a reality in the working practices as part of daily duties and responsibilities (Thompson & Thompson, 2008). However, it is also acknowledged that this reflective practice relies on contextual conditions (Alvesson et al., 2016). To be robust and effective, new knowledge must be operationalized in both individual and group settings within the relevant organization. Consequently, the team is another important learning locus where individuals share experience, work on joint projects and develop new knowledge beyond individual reflection (Berggren & Söderlund, 2008). In fact, building communities of reflective practitioners may promote the sustainability of learning through projects and the development of habits of reflective practice that may cross the boundaries of the specific projects or project teams (Ayas & Zeniuk, 2001).

We know that enrolling individual employees in a course and providing them with new knowledge does not always lead to diffusion, learning and changed practices in the organization. Therefore, it is important to recognize the learning dynamics at play in the project environment and the wider corporate setting (Egginton, 2012). The organization is therefore a third learning locus to consider when seeking to promote reflective practices, since organizational implications might be important when it comes to developing reflective practitioners. It will often involve influencing the culture of the organization in an attempt to make it more receptive to and supportive of reflective practice. In fact, organizations may set up structural conditions which act as barriers to reflection. These may, for example, be limited time to think, narrow descriptions of professional roles, performance management systems that do not reward radical thinking or conditions with limited contact with other units or peers (Alvesson et al., 2016). Barriers to reflection can also be constituted by organizational cultures – such as a strong consensus-seeking culture and wanting to agree or great respect for authorities and traditions (ibid.). Therefore, it is important to note that reflective practice is not necessarily a solitary individual pursuit. Rather, the three learning settings together create personal learning and behavioral changes as well as organizational learning and changes (Berggren & Söderlund, 2008; Crawford & Hoffman, 2011).

Tools for promoting reflection

Reflective practices and ongoing involvement in learning require the use of reflective learning tools (Ayas & Zeniuk, 2001). Table 2 provides examples of learning tools suitable for various learning settings (adapted from Berggren and Söderlund 2008).

LEARNING SETTINGS		
Individual	**Group**	**Organization**
Individual reflection on articulation of experience – for example: • Written reflection reports	Group discussions of individual and collective experience – for example: • Review meetings • Reflective talks	Organizational discussion about evaluation and implication of results – for example: • Lessons learned databases • Knowledge theatres • Diffusion of knowledge

Table 2: Examples of learning tools in different learning settings

Scholars emphasize after-action reviews, project and team audits and lessons learned databases as examples of supportive tools for reflection and project-based learning (Ayas & Zeniuk, 2001).

Berggren and Söderlund (2008, p. 289) argue that articulation, which centers on the individual's ability to express and communicate opinions and beliefs, is a significant part of reflection and diffusion of knowledge. Therefore, they suggest that articulation in project management training is essential for consolidating individual as well as group learning and knowledge sharing. Likewise, articulation is a critical foundation for diffusing, evaluating and implementing results in organizations (ibid.). Berggren and Söderlund argue that knowledge theatres, defined as annual performative events in organizations to articulate and enact key lessons learned, may stimulate a social cycle of learning and promote the implementation of such lessons learned in the organization. Other examples of tools are questions which encourage critical thinking processes for learning as they promote self-evaluation and may expose ingrained taken for granted assumptions and produce consideration for alternative perspectives and solutions. Yet, key to good questioning is the establishment of a comfortable learning climate and to recognize that questioning is an art that needs to be practiced (Thompson & Thompson, 2008).

The Half Double training program

The Half Double Methodology represents an alternative extension to classical project management methodologies. In that way, learning about the Half Double Methodology undoubtedly fosters reflection on what is already known and furthermore what participants usually think and do in their project management practice and what is commonplace in their organizations. Moreover, the core elements of the Half Double Methodology ideally facilitate reflexivity. Elements such as the impact case, the impact solution design and the collaborative project owner demand reflective spaces. At the same time, the Half Double Methodology offers actual tools for stimulating reflective practice such as the pulse check, sprint planning and the idea of a reflective and adaptive mindset as well as translating the methodology to different organizational realities. Acknowledging that the Half Double Methodology involves elements that require and stimulate reflective practice, the next section will gaze on the development and learning of these practices in training.

The section is based on data on the Half Double training program collected in 2016 and 2017. Consequently, the section does not cover later developments in the training program.

Program structure

Project Half Double comprises teaching practitioners the Half Double Methodology. The training program is a development course funded by the Danish Industrial Foundation; it is offered to project practitioners in Denmark by Implement Learning Institute.

The purpose of the training program is to enable project professionals to create "double the impact in half the time" in their own projects by using the Half Double Methodology. In that way, it promises a rather set accomplishment and goal.

The program consists of two one-day sessions (from 08.30 to 16.30) with classroom teaching and case work as well as preparation before class.

Between the two sessions, there is a period of approximately three months in which the participants work with the Half Double Methodology in their own projects and home organizations. The participants articulate their reflections in two individual papers.

Figure 1 shows the course structure as presented to the participants.

Participants must prepare by reading the Half Double handbook to gain an understanding of the methodology. Moreover, they must organize and register as a team and decide on a project to bring to class as a case to work on.
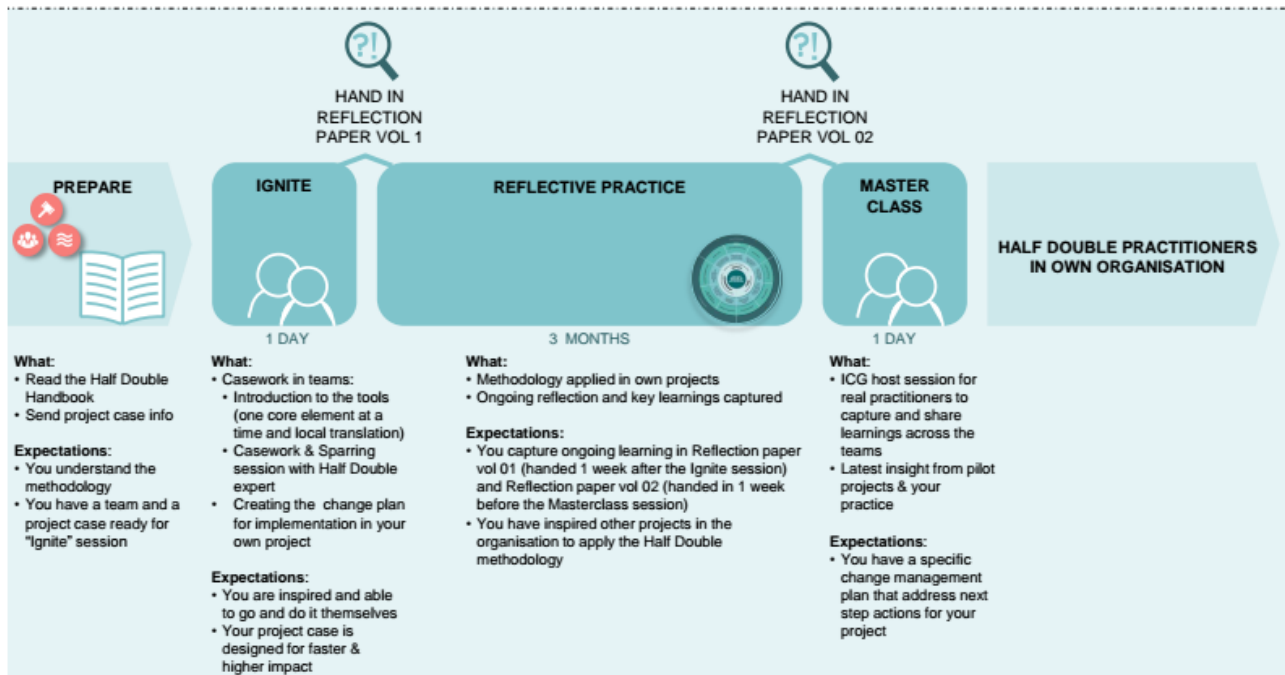
Figure 1: General course structure

ELEMENT	DESCRIPTION	POTENTIAL LEARNING
Preparation	Read the Half Double handbook	Get familiar with the Half Double Methodology
Team-based learning	Participate in organizational teams	Individual and team reflection • discussions with organization and project representatives • internal networking • knowledge exchange with informed colleagues • supportive group in project and organization after training
Case-based learning	Work with own project from home organization	Application of tools, methods and principles in practice • learning benefits and barriers of application
Course material	A pamphlet is provided to each group with blank template models to be filled out in class I&II	Group reflection tool – with collective notes • collaboration • engage and understand • artefactual proof of work • reminder of Half Double methodology + team intentions

Table 3: General training elements

Table 3 summarizes general training elements of the Half Double program and their potential learning implications.

The first training session (Ignite class I) includes introduction to the core elements of the Half Double Methodology, collaboration in teams and

formulating a plan for implementing Half Double in the project brought as case to the course.

Before the next session (Master class II), participants will start applying the methodology in their own project in the home organization.

One week after the first training session, participants hand in their first reflection paper capturing learnings and plans for future use of the methodology.

One week before the last training session, participants hand in their second reflection paper capturing their experiences and learnings from working with the methodology in practice as well

as future actions to become a stronger Half Double practitioner.

Participants are expected not only to have introduced the methodology in their own project, but also to have tried to inspire others in their home organization to do the same.

In the last training session, participants share experience and learnings. They are expected to leave the session ready to manage their own projects as "half double practitioners" in their home organizations.

The program elements and their potential learning implications are outlined in Table 4 and Table 5.

ELEMENT	DESCRIPTION	POTENTIAL LEARNING
Clarifying expectations	Group discussion: Why am I (trainee) here? What would I (trainee) like to change in my organization?	Individual and group reflection • identifying status and problems as well as needs for change in the real world (home organization and own projects)
Ambition I	Individual poster pointing to ambition level: What do I (trainee) want to achieve – here and now?	Individual reflection • explicit declaration of ambition, engagement and commitment in course and real world
Working through the HD methodology	1. Teaching: presentation of HD principles, methods and tools 2. Task: Group discusses and plans the actual application of HD elements in own project 3. Talk: Presentation of work and sparring with trainer and other trainees	1. Learning the HD methodology 2. Individual and group reflection • practicing HD thinking • reflection on alternative project management approaches and possible benefits and barriers of HD application in real world 3. Presenting plans for HD in own project • external networking
Implementation	Group discussion: What has to be true for HD to work in my (trainee) organization?	Individual and group reflections on necessary changes and explicit barrier breakings • imagining HD in real world
Ambition II	Pulse check: Individual poster pointing to ambition level: What do I (trainee) want to achieve in my organization in the future? Collective discussion: Why aren't you (trainee) less ambitious? What would it take to be more ambitious? Can trainers do something to help?	Explicit ambition: • commitment + engagement Questions & answers: • sharing excitement, spotting new resources/opportunities/enablers

Preparing reflection paper I	Interview in groups of 2 with pre-prepared questions	Start first home assignment • increase chance of completion and submission Explicit reflection • increased understanding, knowledge sharing and new insight + specific topic benefits
Reflection paper I	Individual written assignment – submitted 1 week after Ignite class I: What are your (trainee) key strengths and development areas within the field of project management? What are your (trainee) next steps to become a Half Double practitioner: your personal ambition and why?	Time to reflect on HD and self and own projects and home organization • Sense making, clarification, reminder of HD and commitment to continue the journey in the real world

Table 4: Training I – Ignite Class

ELEMENT	DESCRIPTION	LEARNING POTENTIAL
Reflection paper II	Individual written assignment – submitted 1 week before master class II • List three adjectives that overall describe the experience of working with Half Double in practice • Describe two situations where you applied the methodology… What have you learned? What will you do differently going forward … to become a stronger Half Double practitioner?	Time to reflect on HD and self and own projects and home organization • Sense making, clarification, reminder of HD and commitment to continue the journey in the real world
Addressing reflections	1. Presentation: acknowledging and summarizing reflection papers: 2. Different and shared issues are addressed in groups 3. Exercise: dividing room into issues. 4. You (trainee) go where you want to work on actual solutions to common problems. Supplementary comments from other trainees + trainers	Articulation and sharing of experience and reflections. Questioning • engagement: trainees define class by bringing what is relevant • use: greater return on time spent on relevant issues and solutions • external networking
Working through the model (again)	1. Re-Teaching: presentation of HD principles, methods and tools 2. Re-Task: practical application 3. Re-Talk: sparring with trainer (focus on one specific method and tool of each principle)	Repetition of HD on new background of information on experience with applying HD in own project in home organization
Prerequisites	1. Presentation: 7 prerequisites for making HD work in own project and home organization 2. Exercise: select 3 prerequisites that you (trainee) would like to work with in your organization	Reflecting on trainee specific worlds and challenges • work on actual solutions

Reflection exercise	Individual reflection: • What is your (trainee) HD edge – how can it accelerate your career? • What are the arguments for how you (trainee) will use the HDM on your current/future projects?	Individual reflection and articulation Coherence with career issues • motivation and commitment

Ambition III	1. Pulse check: Individual poster pointing to ambition level:
	
	  • Are you (trainee) on your way to become a HD practitioner?
	
	2. Collective discussion:
	
	  • Why are you (trainee) here?
		1. Individual reflection on experiences and future practices
		2. Explicit ambition:
		  • commitment + engagement
		3. Questions & answers:
		  • group sharing excitement, spotting new resources/opportunities/enablers

Table 5: Training II – Master Class

Between the training sessions, participants are expected to engage in reflective practice in relation to their own project management activities. This includes reflecting on own standard practices and the expectations and traditions in the home organization as well as the practices suggested by the Half Double Methodology.

Reflective elements

The program aims to develop Half Double practitioners. This means that it is not only intended to inform participants of the Half Double Methodology. As one of the trainers stated in an Ignite class I: "*We want to enable you to use your knowledge and become Half Double practitioners*" (Fieldnotes 23.02.17). To become Half Double practitioners, the course participants should gain an overview of the methodology and immediately start directing it towards creating and managing high impact projects in their own organizations.

Early in the first Ignite session, participants are asked to articulate their learning goals for the course and with that their ambitions and commitment to learning and implementing the Half Double Methodology. They do that by writing their name on a post-it note and sticking it on the poster shown in Figure 2: Hierarchy of ambitions. However, since this is done early in the program, participants' knowledge of Half Double is solely founded on readings and not on any experience gained through actual practice. Hence, it is solely

an expression of ambition and commitment and the trust in the course to actually deliver on these ambitions. Yet, it is an individual reflective exercise involving articulation of what is desirable to learn: what you would like to change in your own working practices and how committed you are.

Towards the end of the Ignite class I, this exercise is repeated as a "pulse check" following up on participants' reflections on learning and course participation as well as uncertainties and potential barriers for executing in practice.

At the end of Master class II, this "pulse check" is run again and differences are discussed in class. This exercise invites participants to articulate their own commitment and reflect on what they may be able to do in order to meet their own ambitions.
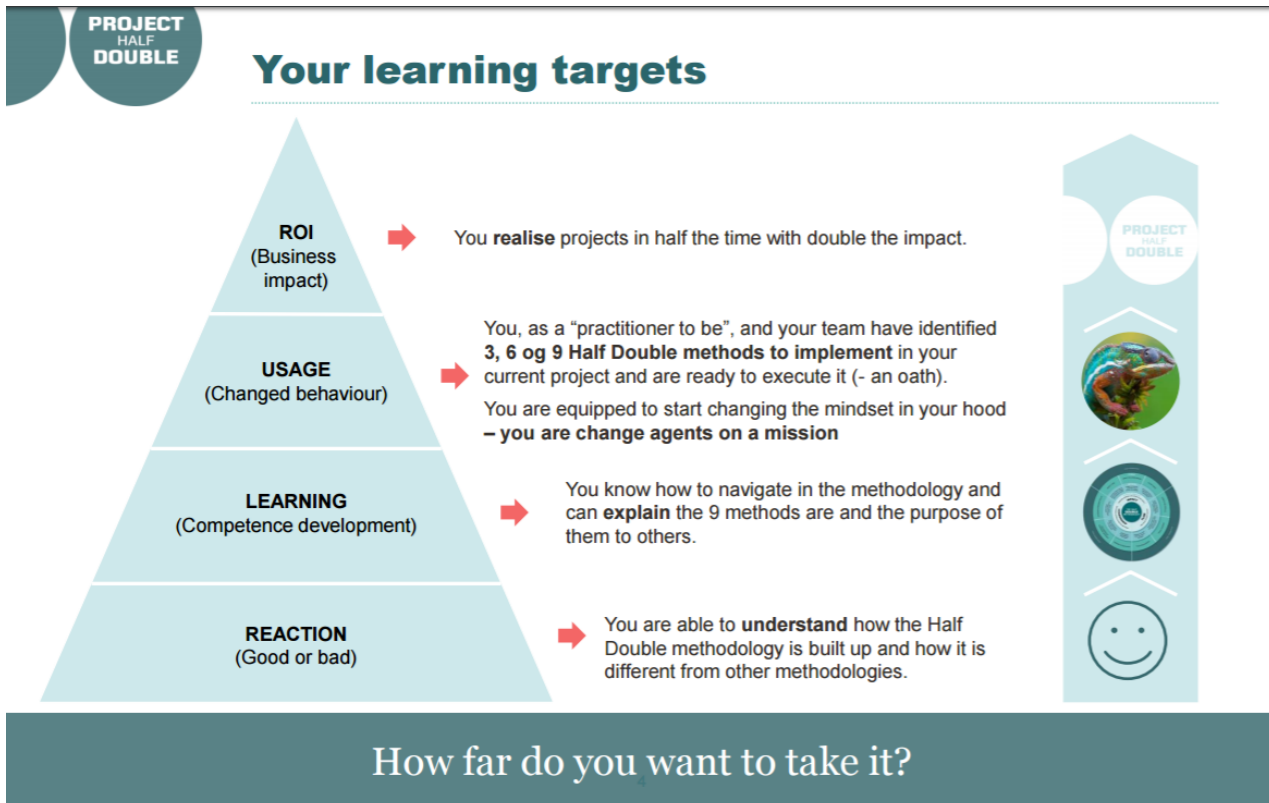
Figure 2: Hierarchy of ambitions

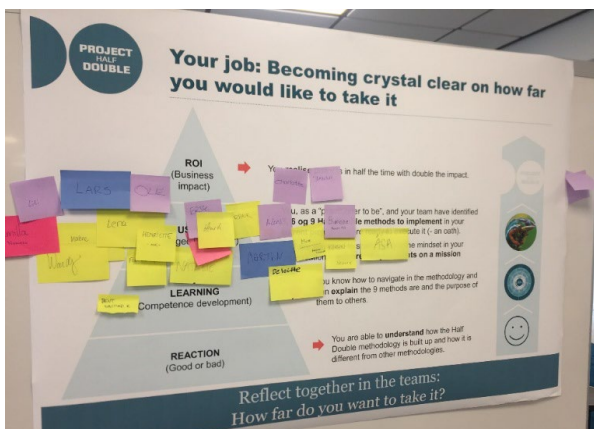Photo 1 shows how participants placed their post-it notes at the beginning of the Ignite class I.

Photo 2 shows how participants placed their post-it notes at the end of the Ignite class I
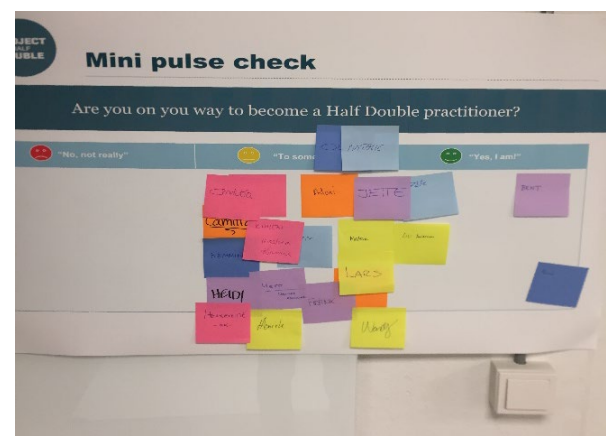

Photo 1: Course participants' ambitions

Photo 2: Course participants' progress

Between the two training sessions, participants compile two reflective papers on their individual experience of applying the Half Double Methodology in their own projects and home organization.

Towards the end of the first training session, the individual writing process is initiated by a collective group exercise in which participants interview each other – in pairs. They use a fixed interview guide with reflective questions – like: "*How do you usually approach projects? In what ways do the Half Double Methodology resonate with your current project management practice? How does it differ? What are your personal success criteria for applying the methodology to your own projects? What are your next steps to make it happen in practice?*"

Participants must submit a second reflective paper before the second training session. In this paper, questions concern experience with applying the Half Double Methodology in own projects in the home organization. Participants must describe two situations in which they applied the methodology: what they learned from doing that, and how they want to proceed. This writing process supports individual reflection on current and alternative project management practices and what it may take to bring about change.

In the second reflective paper, a participant wrote: "*I have learned a lot trying to implement the Half Double mindset. It has been clear to me that the focus on impact instead of output, and on stakeholder involvement is the right way to go to get better results. But, I have also learned that it is very difficult to get people, both leaders and colleagues, to dedicate the time for actually making progress.*"

The section highlights the challenging task of implementing new knowledge: it is not easy and may require a wider organizational change in working procedures and prioritizations. This sentiment confirms that changing project management practice does not merely depend on changing the mindsets of project managers. It also depends on time and dedication from a broader range of organizational participants learning new practices.

Reflections on reflections

Certainly, reflection is an individual cognitive process, but as stated above, it is not always an individual activity. It is also a social activity. The Half Double training course seeks to support the social and group reflective space by inviting participants in teams from the same organization. The intention is that when signing up in teams, participants will have some form of support from their organization. As one of the trainers argued: "*When you want to use an impact case and the organization says "no", others may say: "I think it is a good idea".* (Fieldnotes, 23.02.17). Returning as a team from the training program may in that way work to counter some of the experience of being barred from practicing the Half Double Methodology. The Half Double trainers are aware of the implementation challenges and acknowledge the difficult task of changing practice. They address the challenge by picturing trainees as "Jedi knights". This imagery fosters notions of participants fighting for Half Double in their respective organizations. The notion of participants being "change agents" is clear very early in the program as the trainers call on the participants to help them spread the Half Double Methodology and "*make changes out there*" to fulfill the ambition of increasing competitiveness in Denmark.

Learning the Half Double Methodology requires not only individual reflective practice but also reflection in teams working together on a specific real-life project from their own organization. Working together on a project leads to discussions on how to actually apply the Half Double Methodology. The team members practice speaking in Half Double terms and learn together in the process. In that way, the course facilitates a collective reflective space. Moreover, Implement Consulting Group invites participants into a Half Double practitioner community with members from

various industries and various parts of the country. They offer a ready network for potential sparring and support and invite people to join in networking events on a regular basis.

Concluding remarks – on training practitioners

In project management research, there is a growing concern that conventional project management education fails to properly prepare its students for the actuality of projects characterized by complexity, uncertainty and ambiguity. A movement away from the focus on technical knowledge and tools for planning and executing projects according to time, cost and scope characteristic of the certified standards of best practice can be detected. Instead, rethinking project management draws attention towards complexity, adaptability and project leadership as well as issues of self-awareness and reflection, which complements the certified standards.

The Half Double practitioner program reflects and responds to this development to a high extent. Not only does the Half Double Methodology embrace the vision of the project leader and the necessity to tailor responses to the specific project, the organization etc. It also promotes a vision of the successful project manager as a reflective practitioner rather than a trained technician. The Half Double methods and tools require reflective practice by the project manager as well as the project team. To some extent, the development program also constructs settings to stimulate reflective practice and learning through various individual and group activities.

On the individual level, the training program invites reflection through writing the reflective papers as well as through making the individual think about own practice as compared to the practices recommended by Half Double. Sharing and discussing individual and team experience also creates space for reflection and, importantly, facilitates forms of articulation, which support individual and group learning. However, even though the Half Double training program invites participants in organizational teams, it is unclear how practitioners tackle the barriers of established project management truths and habits that may complicate implementation of radical Half Double practices in their own projects – not to mention how practitioners are to diffuse the Half Double Methodology in their home organization. The training program still only addresses the organizational level of learning and the required implementation of group and organizational reflective spaces to a limited extent.

An ideal situation might be to include project owners or other people with decision power in the organizational teams participating in the training program. In that way, it would not merely be a job for the project managers to act as change agents in the organizations.

As an endnote, emphasis must be made of the fact that becoming a reflective practitioner is an ongoing process. Participation in the Half Double practitioner development program may kick off this journey, but it is the everyday organizational practice that is vital for this continuous learning and becoming. Consequently, in order to stimulate reflective practice in project work in organizations, participation in training programs does not suffice. It is necessary to create reflective environments in the organizations as well: to make time and space for reflection and to allow critical inquiries. In that way, reflection does not solely promote increased self-awareness and reflective capacity in individuals, it is also a social practice, which needs fostering and nurturing in the organization itself. Hence, it is necessary to create proper environments in the organizations, which can foster reflection as well as it is about individual project managers' competences for reflection.

2. WORKING WITH VISUALS

Some aspects of the Half Double Methodology are more collective and facilitating of reflection than others. "Visual planning" is one of the tools that may foster collective reflection.

Working to "increase insight and commitment using visual tools and plans" is a central method in the Half Double Methodology. The purpose of working with visuals is to reach the core element of flow: to achieve "high intensity and frequent interaction" in projects.

On a background of research on visuals in project management, this chapter documents how pilot project participants worked with visuals and what was acquired from visual application in practice.

The chapter is structured as follows. First, we briefly introduce some core arguments for working visually in projects based in recent research literature. Second, we outline how and why visual planning is an important element in the Half Double Methodology, and finally, we describe how pilot project managers employ visuals in the Half Double pilot projects and elicit key learnings based on their experience.

Visuals in projects

New and innovative tools and techniques are required to support management processes in response to an increased speed of business and complexity in projects and project environments (Williams, 2015).

In the project management field, visual representations are increasingly recommended as a tool. A "visual" is an artefact (e.g. picture/image/figure/model) that displays data (Geraldi & Arlt, 2013).

Since we acquire and process more information through vision than all other senses combined, research emphasizes that in order for information to be conveyed most efficiently, it should be visual (Geraldi & Arlt, 2013; Williams, 2015). People tend to remember drawings and pictures better.

Visuals are therefore a strong means of communication and a way of creating and sharing insights quickly and effectively. Therefore, it is of value to project managers who are tasked with communicating project information to various audiences, e.g. project teams, sponsors and key stakeholders (Williams, 2015).

Visuals are powerful "thinking aids" (Geraldi & Arlt, 2013), and visual project management integrates such thinking aids and data visualization methodologies with more traditional project communication, reporting and facilitation practices to improve awareness of critical project information data and key performance metrics (Williams, 2015). Data visualization may transform complex and large data sets into simple and effective communication tools. In fact, research argues that to improve project communication and collaboration, and to envision processes and work flows, visual aids are key to leading and managing projects (Geraldi & Arlt, 2013; Williams, 2015).

Ideally, using visuals is beneficial to project managers, project teams and key stakeholders in giving, receiving and making sense of important project matters. Visuals can set a direction and provide clarity, visibility and transparency of the project status, scope, and resources. As a tool for project managers, Williams (2015) argues that visual representations may:

- present the status of project planning, execution, monitoring, and control activities in a single, at-a-glance, and easy to understand view
- improve the clarity, visibility, and understanding of the scope and overall operational plan of the project effort
- clarify resource allocation levels across the project, or multiple projects
- clarify the impacts of changes to the scope, plan, priority, or resource allocations in real-time

- deliver information in such a way that anyone can consume it at a time, place, and manner that is most convenient to them.

Visual representation can thus play an important role in enhancing decision-makers' ability to make sense of data. Consequently, it is a powerful instrument and can be deceiving if misused. Visual representations can be misleading, since they can bias decisions due to their simplicity and focus on a limited set of alternatives (Geraldi & Arlt, 2013). Consequently, "poor visuals" may have a negative impact on sense-making and decision-making processes and outcomes. Therefore, it is important to stress that visuals do not improve people's ability to think. According to Geraldi and Arlt (2013), they only bring complex problems under control and reduce the effort required to understand a decision problem and process the related data. Therefore, knowledge and skills are necessary to utilize this powerful thinking aid in the best possible way. However, research suggests that project team members may have a fairly low level of competence when it comes to working with visuals (Nielsen & Svejvig, 2016). This means that there may be a need to heighten the level of illustration skills. Nielsen and Svejvig (2016, p. 167) argue that one of the most significant barriers for using visuals is that people do not see themselves as creative. Hence, not only does the production and use of visuals require a certain set of skills. It may also require a new conception of the project manager.

Half Double visuals

Visual thinking is an integral part of the Half Double Methodology.

It is manifested in the way the concept is presented as a circle that shows how different principles, methods and tools are connected (see Appendix A).

Furthermore, during the Half Double training program, trainers distribute several artefacts –

including a small and a big-sized pamphlet as well as a circular mouse pad illustrating the concept.

These artefacts are depicted in Photo 1: Half Double training materials.
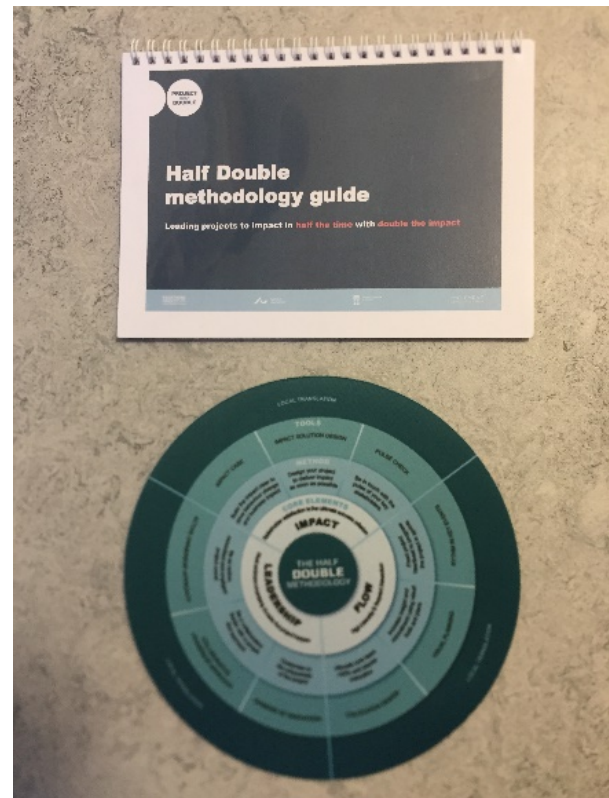

Photo 1: Half Double training materials

More specifically, the use of visuals is central to securing flow in projects. The methodology suggests that visuals may be used for prototyping, problem solving and facilitation of group sessions as well as for sprint planning, etc. Particularly visual sprint planning has been highlighted as a tool which provides a quick overview making it easier to understand how each activity is linked to an overall idea. It supports teamwork coordination and idea improvement. In that way, planning posters may become center for a range of activities, which according to this methodology helps to secure project workflow and progression.
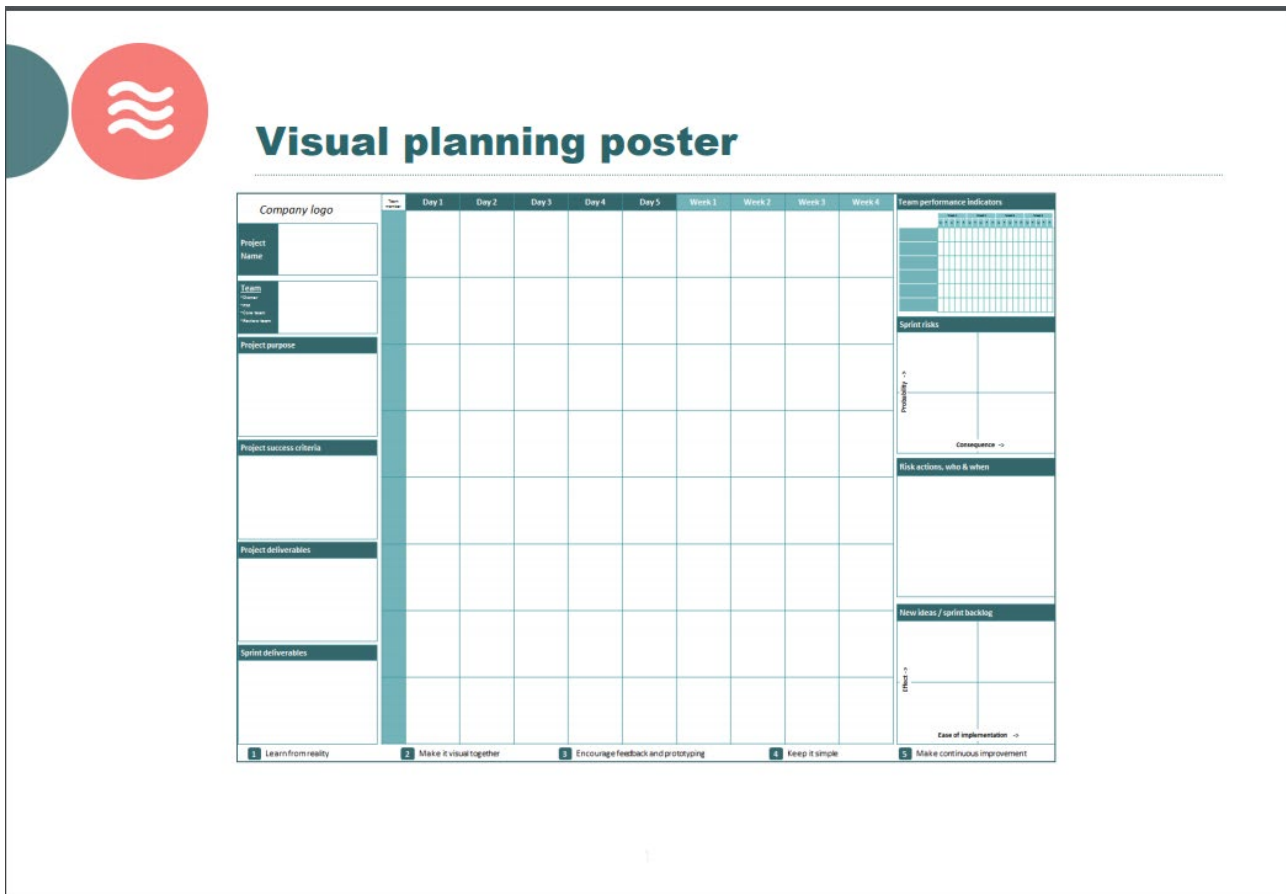
Picture 2: Half Double sprint plan

Error! Reference source not found. provides an example of a Half Double visual: a template of a monthly sprint plan.

A visual planning poster enables breaking down activities into days and weeks. It facilitates discussions on deliveries and outputs, which may support collaboration between team members working in parallel rather than waterfall. Moreover, it is argued that visual planning can enable the definition of team performance indicators and help the team follow up on progression and evaluate possible project risks and actions to mitigate them. The project team can stick post-its onto the poster and move them around dynamically to illustrate and track progress. Importantly, this plan can also be virtual and used in project teams working in different locations.

Pilot project visuals

Research on the use of visuals in Half Double pilot projects finds empirical support for the benefits of working with visuals – but concerns and challenges do exist.

In almost all pilot projects, visuals were used to a high extent. In general, visuals are used to a higher extent in the pilot projects than in the comparable reference projects. All pilot project managers report positive experience of working with visuals – but some also report problems.

Specifically, visual planning was highlighted as an efficient tool supporting important discussion and collaboration in the project team. Several project managers stressed how the shared creation of the visual sprint plan, writing post-it notes and sticking

them on the planning board contributed to project transparency as well as a sense of ownership and togetherness which energized the project team. Moreover, these visual representations worked as a way to showcase and display the project towards important stakeholders. This experience reflects the literature emphasizing these benefits from working visually.

However, it is important to note that for visual planning to be a success, a suitable co-location project room for sharing the visual representations is required. That was not the case for all pilot projects and it seriously affected their visual work. Additionally, in some projects, this way of working required some time getting used to – and that time is not always available. Due to changes in pace, the Novo Nordisk project manager explains how they had to discard the visual planning for a period when they perhaps needed it the most. In very agile projects such as the pilot project in Lantmännen Unibake, the weekly planning on posters did not completely convince the full project team of its efficiency and good use. Planning meetings were considered time consuming as plans often changed.

The experience from working visually also points towards other challenges. Especially with regard to project teams dispersed in various geographical locations where the visuals had to be shared in digital formats. However, as some of the project managers highlight, it is not the visual in itself which makes it an effective and beneficial project management tool. Rather, it is the discussion, decision-making and teamwork around the visual representations. Several project managers are concerned that the full benefit of working with visuals may be harder to reap for people at distant locations. Such geographical and physical conditions still require some attention.

Finally, as documented by the pilot project managers' experience, visuals are powerful instruments in supporting team collaboration and decision-making processes. Working effectively with visual representations requires not only creative skills for making the visual but also leadership skills in facilitating discussion and decision-making processes. Yet, visual representations can bias decisions and thus have a negative impact on sense-making and decision making (Geraldi & Arlt, 2013). None of the pilot project managers report such circumstances. It is noteworthy, however, that all pilot project managers were coached by Implement Consulting Group on how to employ and make use of the visual templates. Therefore, the question is still unsolved whether this is a tool that anyone can start using without prior training or whether some specific knowledge and skills are necessary to utilize this powerful thinking aid in the best possible way.

Photo 2, Photo 3, Photo 5 and Photo 4 show how Half Double practitioners worked with visuals in their pilot projects.

In the last sub-sections, we summarize some of the benefits and challenges of working with visuals across the Half Double pilot projects. The sub-section is structured around three areas – covering visual 1) *forms*, 2) *applications* and 3) *implications*.

Form

We found different visual forms across projects. Some forms are used more frequently than others. The most typical forms are posters and post-it notes. These are often stuck on walls primarily in a co-location project room. A challenge was reported in project teams that did not have a project room to co-locate team members. Often, teams consist of members who work in different buildings or are spread out geographically across countries. Such physical arrangements condition the visual form and application. For instance in Coloplast, the project manager explains how challenging it is to include the Hungarian site.
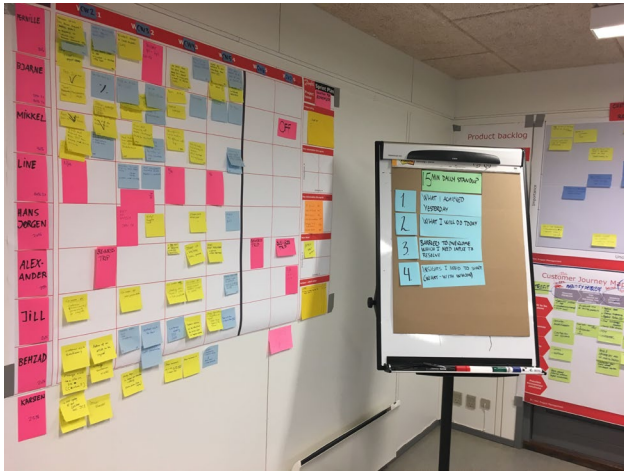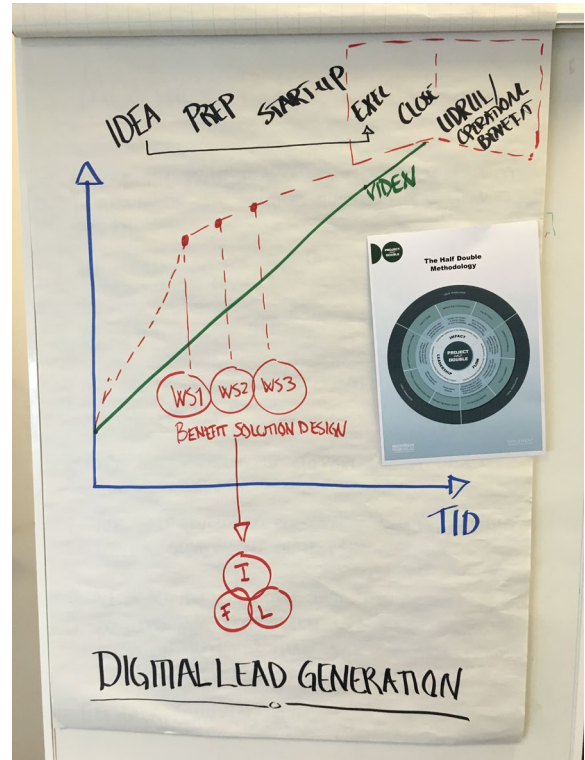
Photo 2: visual example 1
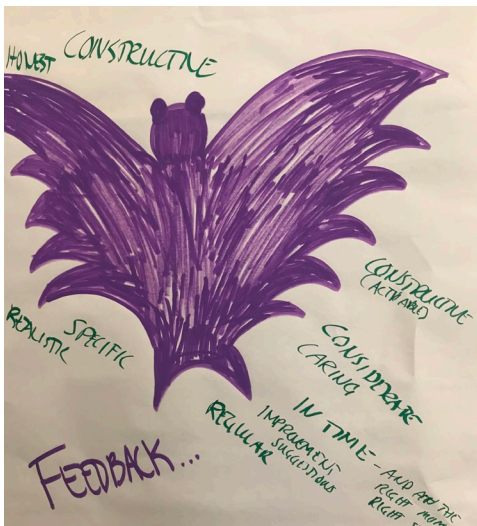

Photo 3: visual example 2
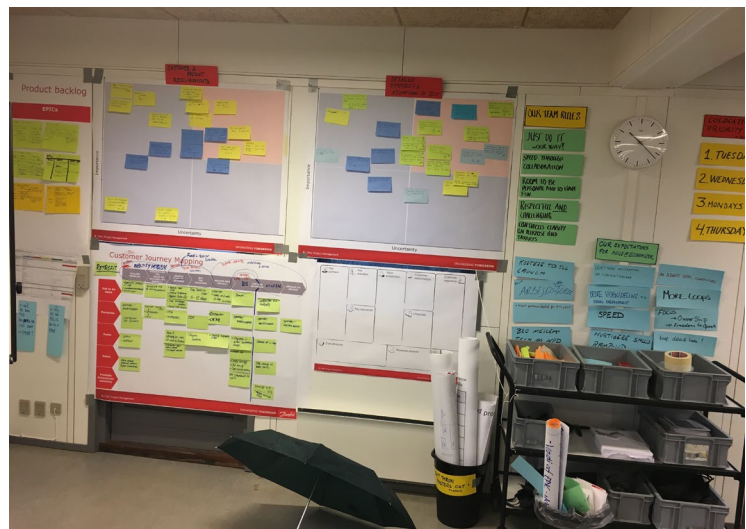

Photo 5: visual example 3

Photo 4: visual example 4

In such circumstances, a solution might be to have a digital and an analogue version of the visuals. To operate with a double version of all or some of the visuals demands discipline and meticulous updating of all changes. It requires extra hours, which can be difficult to allocate. The risk is that one of the versions is not up to date. Lack of correspondence between digital and analogue versions will cause confusion and potentially result in inappropriate or biased action, decision-making and use of resources. However, if the project team can juggle the double version formatting, they can get an additional benefit from the documentation and storage of the visuals after the project has closed down – which is a concern to some project managers. If posters and post-it notes are not kept in a digital version – like a log file (Lantmännen Unibake), the organization risks losing the meaning and value of the visuals.

Application

We found different visual applications across projects. In general, the project team worked with visuals to document, display and share information – such as customer preferences (Grundfos). Working with visuals has also increased transparency (Novozymes). Visuals are often used to get an overview and serve as a basis for decision-making processes. Some teams used visuals to demonstrate a prototype of a product. At Novozymes, for instance, visual prototypes allow team members and others to smell a product and feel the texture of it. Besides using visuals to present the end product of the project, most projects used visuals to illustrate the process of the project. At Coloplast, for instance, they used early mapping of the project to uncover risks. Across most projects, visuals were used to enable planning and highlight task responsibility: who does what and when.

Implication

We found different visual implications across projects. At Lantmännen Unibake, visuals indicated seriousness and progress. In many organizations working with visuals increased motivation and engagement (Siemens) and promoted ownership and commitment (Novo Nordisk). At Novozymes, the manager explains how working with visuals created positive energy: that it makes a difference when team members write things down by hand on post-it notes together in the same room – compared to doing it alone on a computer. Working with visuals is often done in a social setting: visuals seem to bring people together. They facilitate discussion and collaboration in and between groups. We found visuals appearing in interaction with several groups. Besides the project team, visuals were used in steering committee meetings and in communicating with customers and stakeholders (Siemens).

Concluding remarks – on working with visuals

On average, most pilot project managers worked more visually as compared to the reference project managers. They reported mixed experience of working with visuals – encompassing both benefits and challenges. In general, however, their attitude was positive.

The typical visual forms are posters and post-it notes – which are used to stick on the walls of a shared project room. The typical application of visuals is information documentation and knowledge sharing – of the project process and results. The typical implications of working with visuals are increased ownership, engagement and motivation – among different groups of stakeholders.

A typical concern is how to manage double (analogue and digital) versions of the visuals – to circumvent the challenges with working with visuals in virtual project teams with members spread across geographical regions.

3. PRACTICE REFLECTIONS

One thing is to train reflective practitioners and learn the Half Double Methodology and tools like visuals. Another thing is to stay reflective and practice Half Double back home in the host organization. What often happens in practice – when trainees leave class and return to their organization to work with the challenges of their real life projects – is that they restrain from reflection and "go with the flow". It is common knowledge that people tend to go back to old habits and usual ways of working when things get tough. Despite all good training intensions, we can expect project managers to refrain from reflection and comply with available truths and norms when they get back. To help the reflective practitioners stay reflective, this chapter presents two tools for reflection in and on practice.

The chapter is structured as follows. First, we present a Half Double reflection tool for the reflective project manager, developed by Aarhus University. Second, we present a Half Double reflective tool for local translation, developed by Implement Consulting Group. Acknowledging that the Half Double Methodology will not be the preferable choice in all instances, but may work better in some situations than in others, the chapter ends with ideas for how to choose a suitable project management methodology.

A Half Double reflection tool

Taking point of departure in the Half Double Methodology, the research team at Aarhus University developed a reflection tool for the reflective project manager.

The aim is to provide the reflective project manager with a set of questions that he or she can use to stimulate reflection in and on practice.

The reflection tool is shown in Table 6.

The nine questions cover the three principles and the nine methods taking the practitioner through the cornerstones of the Half Double Methodology.

Based on some simple questions, the project manager is supposed to ask to what extent he or she follows the Half Double Methodology: to a low, to a medium or to a high extent. The following "why" questions are meant to stimulate reflection on the reasons for the current practices. There can be many good reasons for not following the Half Double Methodology in a certain project, in a certain situation or at a certain point in time.

Therefore, it is important to note that a high score is not necessarily a good score. A lower score might be the best way to lead a given project in a given situation at a given point in time. This corresponds to the logic behind the flexibility thinking illustrated in the outer circle of the Half Double Methodology labeled "local translation".

Following these lines, the reflection tool can be used to evaluate to what degree the project manager follows the Half Double Methodology. But more importantly, it can give the project manager a sense of whether he or she is taking the most appropriate approach – or if it would be feasible to change the course of action.

Therefore, after each method question follows a change question – asking the project manager if he or she wants to score higher or lower in the future. The following "how" questions stimulates reflection on what the project manager can do to change the matters and decrease or increase a score in the future.

Thus, the first method questions are analytical questions – detecting "how and why things are the way they are".

The second "change" questions are more action oriented – asking "if things are as they should be and if not – what can be done to change things".

The greatest potential of the reflection tool lies in combining these two types of questions, to analyze matters, set the course and act accordingly.

PRINCIPLE	PRACTICE	LOW	MEDIUM	HIGH	NOTES
Impact	**To what extent do you design your project to deliver impact as soon as possible – and why?** To what extent do you want to change this practice – and how?				
	To what extent do you consider stakeholders' satisfaction – and why? To what extent do you want to change this practice – and how?				
	To what extent do you drive behavioral change and business impact – and why? To what extent do you want to change this practice – and how?				
Flow	**To what extent is your core team co-located and allocated more than 50% – and why?** To what extent do you want to change this practice – and how?				
	To what extent do you work with visuals – and why? To what extent do you want to change this practice – and how?				
	To what extent do you work in sprints and fixed rhythms – and why? To what extent do you want to change this practice – and how?				
Leadership	**To what extent is your project owner active, committed and engaged – and why?** To what extent do you want to change this practice – and how?				
	To what extent do you have a collaborative leadership approach – and why? To what extent do you want to change this practice – and how?				
	To what extent do you apply a reflective and adaptive mindset – and why? To what extent do you want to change this practice – and how?				

Table 6: Half Double reflection tool for reflective project managers

The reflection tool can be used on a continuous basis – throughout the project.

Although the reflection questions are written in the present tense, they can be used in advance (ex-ante: "to what extend do I…") and in hindsight (ex-post: "to what extent did I…" and "to what extent would I…").

For instance, the reflective project manager can start out by setting the goals for the way he or she is going to work in a specific project ex-ante: before it starts. Then half way through, the reflective project manager can use the reflection tool once again: he or she can compare the mid-way scores with the original target scores – and

adjust according to the new targets. Finally, when the project is finished, the reflective project manager can use the reflection tool in hindsight ex-post: to evaluate his or her practices throughout the project. To enhance learning, the reflective practitioner can re-phrase the "change" questions and use them to ask him or herself: "what would I do differently if I could run the project again?"

This approach may be suitable in projects with a rather short time horizon. Other projects with a long time horizon might benefit from using the reflection tool more often. A rule of thumb can be to run through the questions every two or three month. Another idea is to use the reflection tool before every steering committee meeting – and to add it to the agenda for the meeting. Having it up for discussion could start an open dialog about current and alternative ways of working – and possibly engage the project owner in the question and method concerning his or her role: the active ownership approach. The tool can also be used in other project meetings, for instance, with the core team or key stakeholders to get their input on current and alternative ways of managing the project.

Having the tool on the agenda in various project meetings is a way to stimulate collective reflection and circumvent some of the challenges of introducing and implementing a new project management methodology in a routine-based organization characterized by established habits and ingrained truths.

While these are some of the ways in which the reflection tool can be used to the benefit of the reflective project manager and his or her project, there are many other ways of using the tool – and some might be more appropriate in specific situations. A final note is that the reflection tool is designed for the reflective project manager – and ways of using it is up to him or her.

A Half Double reflective tool

Taking point of departure in the Half Double Methodology, the trainer team at Implement Consulting Group developed a reflective tool for local translation.

The aim is to provide the reflective project manager with a set of statements that he or she can use to stimulate reflection and evaluate own practice.

The reflective tool is shown in Figure 3.

Half Double reflective tool for local translation: Are we truly Half Double?

HALF DOUBLE APPROACH	…THIS PROJECT…			TRADITIONAL APPROACH
Trust and relationships as main driver	🔴	⚪	🟢	Contract and quality/time/cost as main driver
Adaptable to changes but focused on impact creation and stakeholder satisfaction	🔴	⚪	🟢	Early predictability in cost and specifications
High intensity in the project and weekly progression	🔴	⚪	🟢	Operational needs and hierarchy before the project
Intense and common session with deep dive work to handle complexity	🔴	⚪	🟢	Individual work when time allows
An active and committed project owner to support the project and ensure stakeholder satisfaction	🔴	⚪	🟢	Formal and remote steering committees with accuracy and predictability as primary need
Collaborative project leader with people focus to drive impact creation	🔴	⚪	🟢	Project manager focused on technical issues and systems to handle the project
Flexibility in governance and execution model to empower people and impact in gate decisions	🔴	⚪	🟢	Rules and standardised best practises before the needs of the specific project
Upper management sponsorship as key player in the change	🔴	⚪	🟢	No need to disturb upper management (work under the radar)
	HALF DOUBLE	NEUTRAL	TRADITIONAL	

Anchor the Half Double practice to pave the way for new results.

Figure 3: Half Double reflective tool for local translation

The eight statements take point of departure in the three principles and the nine methods of the Half Double Methodology.

Based on some simple statements, the project manager is supposed to ask to what extent he or she follows the Half Double approach or a more traditional approach – to evaluate if the current practice is Half Double, neutral or traditional.

Going through all statements, the reflective practitioner can assess if he or she is "truly Half Double".

An underlying assumption is that "the Half Double practice will pave the way for new results".

The suggestion is therefore to "anchor" Half Double to get these new results.

Half Double fits

The two tools are quite similar and designed around a principle of simplicity. They both encourage critical thinking processes for learning as they promote self-evaluation and may expose ingrained taken for granted assumptions and foster consideration of alternative perspectives and solutions.

The greatest difference is that the Aarhus University reflection tool is designed around questions and that the answers can be scored on a scale from low to high, whereas the Implement Consulting Group reflective tool is designed

around contradictory statements that are mutually exclusive. Implicit in the first tool is a message that the reflective project manager can apply both Half Double practices and more traditional practices. Implicit in the second tool is a message that the reflective project manager is either Half Double or traditional.

It is up to the project manager to decide which reflection tool should be used.

Both tools are designed with the flexible principle in mind: local translation. The underlying logic behind this principle is that some projects and contexts are better suited for the Half Double Methodology than others. Therefore, reflective project managers and others using these tools should be warned of the temptation to evaluate a high Half Double score as a good score. In some cases, a different approach might be more feasible. It is primarily the project manager's task to decide which approach fits a given project best in a given context at a given point in time.

As projects and their environments are seldom stable but constantly changing (Christensen & Kreiner, 1991; Kreiner, 1995), there is a continuous need to assess the situation and to adapt suitable approaches. The two reflection tools proposed above can assist the reflective project manager in making these decisions. Therefore, we suggest using one or the other tool on a continuous basis.

However, it should be noted that it might be difficult to shift the overall approach midway in a project – for instance from a very traditional approach to a "truly" Half Double approach. It is therefore worth considering the benefits of applying the Half Double approach "front-end" (Svejvig, Rode, & Frederiksen, 2017).

To decide which project management approach is most feasible for a given project, the reflective project manager can apply a contingency approach to elicit "best fits". A contingency approach to project management asserts that if certain project and/or context variables are known

and evaluated in a certain way, one project management methodology can be expected to be superior to another. Due to the nature of projects and their contexts, there will be many variations and the practical implementation and application of a chosen methodology may still put an end to a theoretically good fit and the related contingency thinking.

In recent years, choosing between project management methodologies has very much become a choice of traditional versus agile approaches – which share traits with the Half Double Methodology (Heeager, Svejvig, & Schlichter, 2016; Svejvig & Grex, 2016).

When contrasting traditional and agile project management, Nicholls, Lewis, and Eschenbach (2015) "…*assert that the underlying assumption is that better planning of the complete project will lead to better outcomes. [They] further assert that agile approaches to PM are needed when this underlying assumption cannot be satisfied.*"

In theory, we can find several ways to aid the choice between a traditional or agile methodology like Half Double.

For instance, Wysocki (2014, p. 8) presents a two-by-two matrix for determining the most effective methodology in a given context. Similarly, Thiry (2015, p. 17) suggests a two-by-two matrix for managing tasks ranging from routine to unsettling change. Nicholls et al. (2015) suggest an extensive but non-exhaustive list of conditions for which agile approaches are better suited than traditional approaches. Researchers also emphasize that agile approaches are generally applicable and not restricted to technological development projects, for which the agile approach was originally introduced with the agile manifest (Beck et al., 2001). Boehm and Turner (2003) distinguish between plan-driven and agile approaches and provide examples of both upsides and downsides to the various approaches with a focus on information technology projects. They sum up their model by the five dimensions:

Size, Criticality, Dynamism, Personnel, and Culture, where the various approaches are more or less well suited across the five dimensions.

The Half Double Methodology was inspired by the four dimensions suggested by Shenhar and Dvir's (2007) diamond model – covering Novelty, Technology, Complexity, and Pace. The Half Double Methodology seeks to handle an accelerating pace and increasing degree of novelty in relation to projects. These general project dimensions may help understand the nature of projects suited for the Half Double Methodology.

The brief literature review is summarized in Table 7 providing an overview of the different dimensions and classifications which can be used to analyze projects and project contexts in order to elicit suitable project management methodologies.

The literature cannot provide a recipe for deciding on a project methodology, rather it suggests a range of dimensions and classifications relevant to consider when choosing an approach. This means that it is a *design process* to choose a

project methodology (Boland & Collopy, 2004) where the dimensions and classifications can be seen as *design factors.*

While it is not possible to firmly state "best fit" variables for the Half Double Methodology, we do see some indicators of conditions under which the Half Double Methodology seems to work especially well. Such conditions have previously been verbalized as Half Double "sweet spots" (Rode & Svejvig 2018).

Early on, Svejvig et al. (2016) found Half Double sweet spots in innovative and transformative projects – such as market and product development, technology implementation and organizational change projects, which appear more applicable to the Half Double Methodology than long-term engineering projects.

These indicators are supported by later research showing that the Half Double Methodology seems to work especially well in small-sized supply chain optimization projects. On the other hand, the Half Double Methodology has difficult conditions in large-scale engineering projects (Rode & Svejvig, 2018).

AUTHOR	DIMENSIONS AND CLASSIFICATIONS
Boehm and Turner (2003)	Five dimensions to consider when selecting agile or plan-driven approaches: • Size • Criticality • Dynamism • Personnel • Culture
Nicholls et al. (2015)	Agile approaches are preferable in the following situations: • The project scope is unclear or poorly defined • Required task times are unknown or unknowable • The tasks and task dependencies are unknown • The availability of resources is unknown or continuously changing
Shenhar and Dvir (2007)	Four dimensions to consider when selecting project methodology approaches: • Technology • Complexity • Novelty • Pace

Thiry (2015, p. 16)	Matrix for how to manage tasks – based on two dimensions:
	• Uncertainty:
	  Low: typical operations
	  Medium: typical projects

AUTHOR	DIMENSIONS AND CLASSIFICATIONS
	High: typical breakthrough research • Ambiguity: 　Low: typical technical or operational change 　Medium: typical business solution 　High: typical organizational and societal change
Wysocki (2014, pp. 7-9)	Matrix for determining the most effective methodology – based on two dimensions: • Goal clear and solution clear: Traditional projects • Goal clear and solution not clear: Agile projects • Goal not clear and solution clear: Emertxe projects • Goal not clear and solution not clear: Extreme projects

Table 7: Dimensions and classifications related to selecting project methodology

In principle, the conditions to consider when deciding on a suitable project management methodology are infinite. They include variables such as market conditions, organizational structure, culture and maturity level, project governance structure, type and characteristics as well as team characteristics (Conforto, Amaral, da Silva, Di Felippo, & Kamikawachi, 2016; Conforto, Salum, Amaral, da Silva, & de Almeida, 2014; Rigby, Sutherland, & Takeuchi, 2016).

Further research may uncover more about the sweet spots and limits of the Half Double Methodology.

Concluding remarks – on practice reflections

Changing or learning new ways of working is difficult. Not relapsing into old habits requires time and constant reminders. Therefore, Aarhus University and Implement Consulting Group have developed two tools to help the reflective project manager stay reflective in and on his or her project practice.

The two tools are similar in their simple structure around the three principles and nine methods of the Half Double Methodology.

The two tools promote critical thinking and learning through self-evaluation and facilitate consideration of alternative routes of action.

We suggest the reflective project manager chooses and applies the tool he or she finds most appropriate.

The two tools can be used in many different ways – for instance to facilitate an open discussion about current and alternative ways of working with core team members or the steering committee.

However, it is important to keep in mind that the two reflection tools are designed for the reflective project manager and therefore it is up to him or her to decide how to use them.

It should be noted, though, that the benefits of applying the two tools also depend on the learning environment: a comfortable learning climate is key to critical thinking and self-evaluation.

4. SMALL AND MEDIUM-SIZED ENTERPRISES

The applicability of the Half Double Methodology varies across projects and contexts.

As small and medium-sized enterprises (SMEs) are a vital part of the Danish business landscape, it is highly relevant to look at how this large segment of organizations can utilize the Half Double Methodology.

The final chapter is structured as follows. First, we look at the definition and characteristics of SMEs. Then we summarize some of the limited research findings on projects and project management in SMEs. Finally, we outline the proportion and characteristics of SMEs in Project Half Double. We end the chapter by looking more closely at a single case study of one pilot project in a medium-sized enterprise.

Characteristics of SMEs

SMEs are important for economic prosperity and social well-being, and they generally dominate the business landscape.

SMEs play a key role in OECD countries, repre-senting almost the totality of the business popula-tion, and accounting for large shares of employ-ment and value added. In 2013, SMEs in the non-financial business sector of the OECD area

accounted for 99.7% of all enterprises and for 60% of total employment, and generated between 50% and 60% of value added on average. In all countries, micro-enterprises dominate the business landscape, accounting for 70% to 95% of all firms. However, there is a large heterogeneity in the structure and contributions of SMEs within and across OECD countries.

(OECD, 2017, p. 15)

Denmark has about 75 percent SMEs which are independent of other organizations (Jensen, Moltrup-Nielsen, & Nielsen, 2016), and it is there-fore highly relevant for Project Half Double to look at how this large segment of organizations can utilize the Half Double Methodology.

Definition of SMEs

There is no standard international definition of SMEs (OECD, 2017, p. 13) but various ways of operationalizing the term.

In this report we adopt and extend a common definition used in Denmark and EU and provided by the European Commision (2018).

This definition is shown in Table 8.

COMPANY CATEGORY	STAFF HEADCOUNT	TURNOVER	OR	BALANCE SHEET
Large Medium	< 1000	Not decided		Not decided
Medium	< 250	≤ € 50 m		≤ € 43 m
Small	< 50	≤ € 10 m		≤ € 10 m
Micro	< 10	≤ € 2 m		≤ € 2 m

Table 8: SME classification used in this report (adapted from EU definition)

Research on SMEs and project management

SMEs are different from larger organizations in a number of ways.

For instance, SMEs are characterized by:

- Less formal systems
- More informal and ad hoc information
- Increased resource scarcity
- Managers often fill several roles
- Typically a single person owns, manages and runs the company
- The owner primarily initiates the strategic development
- The company is often short of trained staff

(Pedersen & Arlbjørn, 2011, p. 38)

These SME characteristics relate to project management research in SMEs and shape projects and project management in SMEs.

Research on project management in SMEs is limited because there is a tendency to focus on larger projects – as there is more prestige and money in these projects (Pollack & Adler, 2016).

However, there are a few recent studies on project management in SMEs.

One study shows that using project management and technology skills to undertake core business activities significantly improves financial performance of SMEs (Pollack & Adler, 2016, p. 836). This finding is supported by another study which states that the benefit of project manage-ment outweighs the cost (Turner & Ledwith, 2016). The adopted project management practices are less bureaucratic versions of project management than traditional forms matching the nature of the firm (Turner & Ledwith, 2016; Turner, Ledwith, & Kelly, 2010). These examples point to project management practices being relevant and important for SMEs that become capable of improving their financial performance.

A study from Denmark involving 37 companies identifies several implications for working with projects and project management in SMEs.

Vestgaard et al. (2018, p. 56) explain:

"The study clearly shows considerable diversity in SME's approach to projects, project management and project work form, part of the reason being that most project owners and project managers are unaware of the field's self-perception, models and tools. The use of a certain project work form is not a particularly informed or systematic choice – often it is based on common sense, rules of thumb and gut feeling."

"Even so, SME managers' endeavours lead to results; the non-structure of their search for innovative prospects in order to become effective and to survive must be taken seriously. SME management tends to use the project mindset as a melting pot for ideas. The project concept can be used to retain an idea which then must be exposed to and put through the "melting pot". If the idea lives through the process – then an implementable project might result – even one with some structure to it."

The same study concludes with the following recommendations to SMEs working with projects and project management:

- The project work form is successful and is gaining foothold in many large and small companies nationally and internationally, which is why it should be interesting for SMEs in general to consider if and how – as well as to which extent – this work form may be productive in their company.
- For some SMEs, a classic project work form is preferable (management and control culture), whereas most would probably find an approach based on leadership and an entrepreneurial culture more appealing.
- The use of the project work form should remain a people-guided and not a system-guided format – the employees, the situation and the context define the effectiveness.

- Awareness in the choice of project models and tools is vital – there are many options and making the wrong choice may have adverse consequences.
- The project work form must be implemented and/or strengthened gradually.
- The work method should be assessed gradually to determine its value creation outcome, and
- If SMEs do not have the time or the capacity to venture into the above – then they should seek help.

(Vestgaard et al., 2018, p. 60)

This research background is the backdrop for a more specific presentation of the status of the Half Double Methodology in SMEs.

Half Double in SMEs

Based on the definition outlined above, 15 Project Half Double pilot organizations are operationalized based on number of employees and classified as a small, medium or large-medium-sized organization.

The results are shown in Table 9.

Four of the pilot organizations are classified as SMEs according to the operationalization used in this report, namely Lantmännen Schulstad A/S, Hydratech Industries, Fiberline and Schoeller Plast. These organizations are quite different – ranging from 42 to 613 employees. Some of them are part of a large organization.

Characteristics for these four organizations are shown in Table 10: Characteristics of SMEs using Half Double Methodology.

The table shows that two out of four pilot projects are completed (Lantmännen Unibake and Fiberline). One of the projects has had a positive impact from using Half Double Methodology and has fulfilled its success criteria (Rode & Svejvig, 2018). Data is not yet available for the three remaining pilot projects.

The Lantmännen Unibake is thus the only SME with a completed and evaluated pilot project. In fact, the pilot organization could also be classified as a 'large-medium-sized enterprise because it is part of a large organization. The Lantmännen Unibake pilot project is described in **Error! Reference source not found.**.

The LU case shows that a large-medium-sized organization can use the Half Double Methodology. However, we will have to wait for the results from the other cases to be able to draw more general and final conclusions.

Company	Number of Employess[1]	Part of large organization	SME classification	Pilot project status as of October 2018[2]
Grundfos	7.000	No		Completed
Siemens Wind Power	18.000	Yes		Completed
Lantmännen Schulstad A/S	613	Yes	Large medium	Completed
Coloplast	10.000	No		Completed
Novo Nordisk	41.600	No		Completed
GN Audio	1.000	Yes		Completed
Velux	9.500	No		Completed
Novozymes	6.485	No		In progress
SAS Ground Handling	1.500	Yes		Completed
Food Services Denmark	1.250	Yes		Completed
Linak	2.000	No		Completed
Hydratech Industries A/S	500	No	Large medium	In progress
Fiberline	290	No	Large medium	Completed
Schoeller Plast	42	No	Small	In progress
Terma	1.400	No		In progress
Numbers from web pages or annual reports *Completed means that products and/or services has been launched*				

Table 9: Mapping of Half Double pilot project organizations

Characteristic	Lantmännen Schulstad A/S	Hydratech Industries A/S	Fiberline	Schoeller Plast
Number of employees[1]	613	500	290	42
Part of large organization	Yes	No	No	No
SME classification	Large medium	Large medium	Large medium	Small
Pilot project status as of October 2018[2]	Completed	In progress	Completed	In progress
Project type	Market and product development	Moving factory to another country	Production optimization	Production optimization
Impact from Half Double Methodology[3]	Yes	Not available yet	Not available yet	Not available yet
Fulfilling success criteria[3]	Yes	Not available yet	Not available yet	Not available yet
Numbers from web pages or annual reports *Completed means that products and/or services have been launched. Impact will typically be measured at least one year after launch* *Please refer to High Level Research Findings from Project Half Double (Rode & Svejvig, 2018)*				

Table 10: Characteristics of SMEs using Half Double Methodology

Lantmännen Unibake (LU) is one of Europe's leading suppliers of high quality bakery products to retailers, wholesalers, and the food service industry; LU offers a wide range of solutions for both professional customers (B2B) and private consumers (B2C) and has 35 bakeries in 21 countries. LU's aim is to make bread a profitable business for its customers and to serve consumer needs through high-quality products and superior solutions, including a sustainable mindset and excellent food safety standards. The local organization in Denmark with about 600 employees focuses on operational activities and has a low project governance maturity.

The pilot project is a commercial concept development project. LU was approached by one of its store customers and tasked with the development of an entirely new concept with a range of bread and pastries for a new in-store concept to be launched in the spring of 2016. The position of the new concept was meant to contest the main competitors, while at the same time not replacing the existing product range already supplied to the customer, but serving as a novel concept appealing to consumers. The project's main purpose revolved around creating a new business model adding value for the parties involved by 1) developing a new in-store concept, including defining a range of products and new packaging; and 2) building closer relations with the customer. From the LU's perspective, the project helped the firm approach its vision of becoming the customer's preferred supplier within this specific type of concept, which is also the main driver for acceleration.

The project was initiated in August 2015. In December 2015, after four and a half months, the steering committee decided to terminate the initiative organized as a project and continue the implementation of the new concept in an operational setup headed by the previous project owner. During the project period, only limited experience of the accelerating practices was gained. In January 2016, the first launch was actualized: sales were generated six months after the project started, which was considerably shorter than reference projects which started to generate sales in 10–15 months.

Textbox 1: Lantmännen Unibake – case competition

Concluding remarks – on SMEs

SMEs are playing a key role in Denmark as a large share of companies are SMEs, and it is therefore highly relevant for Project Half Double to investigate how SMEs can utilize the Half Double Methodology. Four SME organizations ranging from small to large medium-sized organizations have used or are using the Half Double Methodology. Only one of these four organizations has been completed and evaluated so far. This case shows a positive impact from the Half Double Methodology. However, we will have to wait for the results from other cases to be able to draw more general and final conclusions.

CONCLUSION

The aim of this theme report was to document some of the learnings obtained throughout phase 1 and phase 2 of Project Half Double. Four themes were selected for this report: 1) practitioner training, 2) working with visuals, 3) practice reflections, and finally 4) small and medium-sized enterprises. Based on the chapters above, we can draw the following conclusions.

In line with the rethinking project management movement, the Half Double practitioner development program promotes a vision of the successful project manager as a reflective practitioner rather than a trained technician. The Half Double methods and tools require reflective practice by the project manager as well as the project team. To some extent, the development program also constructs settings to stimulate reflective practice and learning through various individual and group activities. However, even though the Half Double training program invites participants in organizational teams, it is still limited how it addresses the organizational level of learning and the required implementation of group and organizational reflective spaces. It is important to emphasize that becoming a reflective practitioner is an ongoing process. Participation in the Half Double practitioner development program may launch this journey, but it is the everyday organizational practice that is vital for this continuous learning and becoming. Consequently, in order to stimulate reflective practice in project work in organizations, it is not enough to make people participate in training programs. It is necessary to create reflective environments in the organizations as well: to make time and space for reflection and to allow critical inquiries. In that way, reflection is not solely about increasing self-awareness and reflective capacity in individuals, it is also a social practice, which needs fostering and nurturing in the organization itself. Hence, proper environments which can promote reflection, must be established in the organizations.

In the Half Double Methodology, working with visuals is one way of stimulating reflection beyond the individual. Visuals bring together people and facilitate dialog, discussion and collaboration in and among project teams and stakeholder groups. Visuals can facilitate goal setting and strategizing. In general, visuals can take many different forms and have many different implications. The forms most frequently used in Half Double pilot projects are post-it notes and posters. These were used to stick onto the walls of a co-located project room – if such a room was available. Many visuals were also made in an electronic version and shared across regions and office spaces. Often visuals were used to display, share and document information about the project process and product. Visuals are used to increase transparency and knowledge sharing, to get an overview and serve as a basis for decision-making processes. Across most projects, visuals are used to enable planning and to highlight task responsibility: who does what and when. In essence, working with visuals increases motivation and engagement and promotes ownership and commitment.

One thing is to train reflective practitioners and to learn the Half Double Methodology and tools like working with visuals. Another thing is to stay reflective and practice Half Double in the host organization. It is common knowledge that people tend to relapse into old habits and usual ways of working when things get tough. Despite all good training intension, we can expect project managers to refrain from reflection and comply with available truths and norms when they return to their home organization. To help reflective practitioners stay reflective, Aarhus University and Implement Consulting Group have developed two reflection tools. They are meant to help the reflective project manager stay reflective in and of his or her project work. The tools are similar in their structure around questions that take point of departure in the three principles and the nine methods of the Half Double Methodology. We

suggest the reflective project manager chooses and applies the tool he or she finds most appropriate. Keeping in mind that the tools are designed for the reflective project manager, they can be used in many different ways – for instance, to facilitate an open discussion about current project or organizational practices to create reflective spaces and build a structure supportive of reflective practice. Basically, it is up to the reflective project manager to define the limits to the ways the tools can be used. An important warning is to stay off the temptation to score high or very Half Double. This is not the intention. Rather it is to stimulate reflection about current practice, the reasons behind it and if it makes sense to change or modify behavior and if so, how this will be done.

The Half Double Methodology is not a "fits all" concept. There are and will be "sweet spots" in which the Half Double Methodology works better than in other contexts. Research seems to indicate that some of the favorable spots for the Half Double Methodology are small projects. It is still not known whether this also applies to organizational size. Most of the pilot projects take place in large organizations, but four organizations are small to medium-sized enterprises. The pilot projects in these organizations have not progressed to a stage enabling us to conclude if and how the Half Double Methodology works in these contexts. As the projects progress, further research can show how the methodology works out under the special conditions of the SMEs.

APPENDIX A: 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 demands 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.

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.
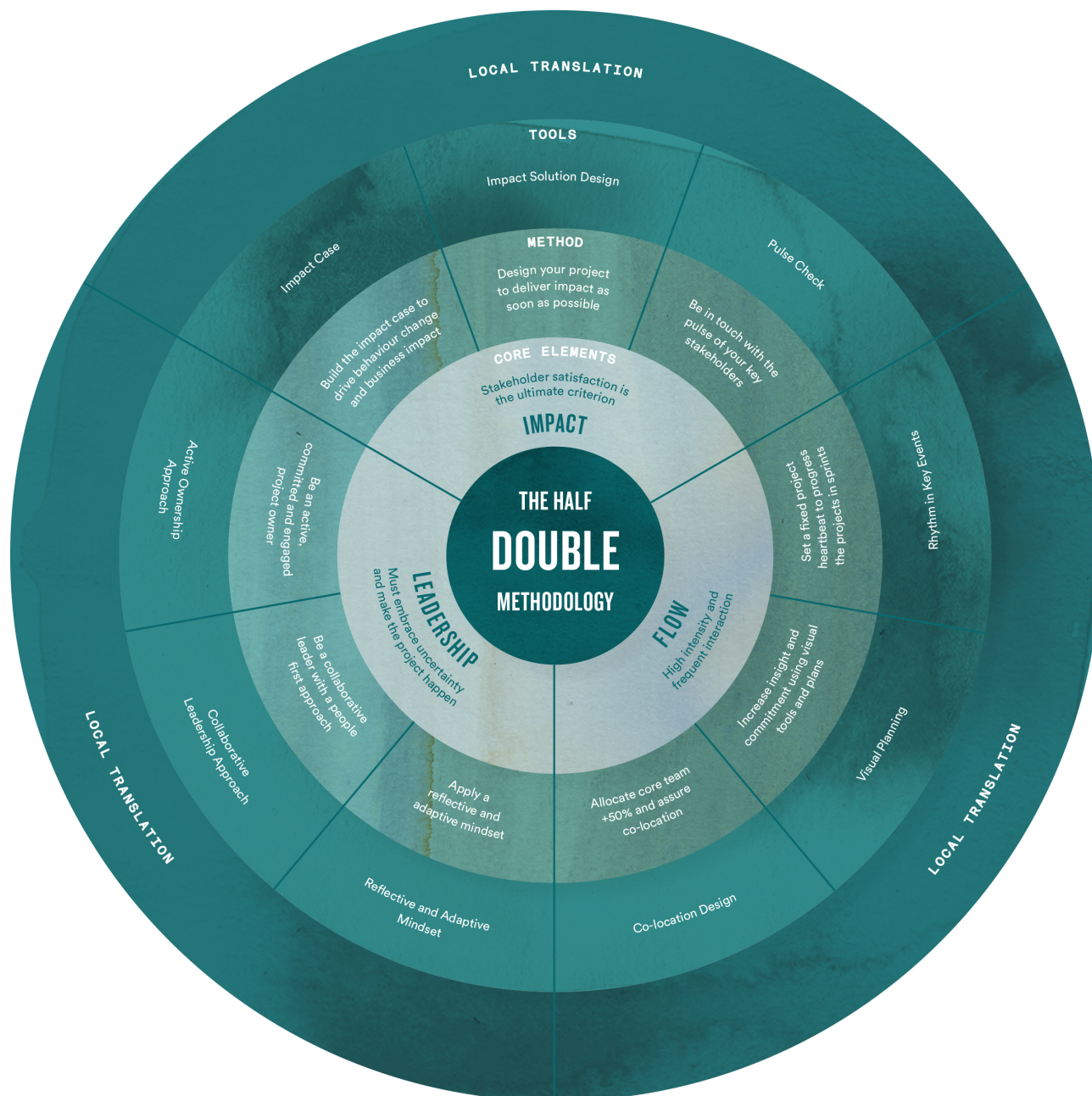
Figure 5: The Half Double Methodology

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 dialog 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 co-location. 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 co-location 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:** Co-location 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 dialog 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 co-location 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 month are a thing 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 idiosyncrasy 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 taps into their underlying motivational drivers and 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 willing-ness to think along new lines; abandoning the focus on early predictability in cost and specifi-cations 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 implementa-tion 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 dicussion 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

APPENDIX B: RESEARCH METHODOLOGY

Appendix B about the research methodology applied in the Project Half Double covers the research process in its entirety and is not particularly related to this report about the four themes.

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, p. 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 & 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, Henfridsson, Purao, Rossi, & Lindgren, 2011, p. 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 11, which outlines the action design research process (inspired by Gregor, Imran, & Turner, 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 the table, the ADR process entails a problem-solving cycle and a research cycle (Mathiassen, Chiasson, & Germonprez, 2012). These two cycles are intertwined (Svejvig & Hedegaard, 2016).

The research cycle designed a comparison framework. This artifact works at two operationalization levels (Pries-Heje & Baskerville, 2008) as a general comparison framework and as a specific comparison framework for each of the seven organizations involved in 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)
STAGE 1 Problem formulation		
Principle 1: Practice inspired research	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.
Principle 2: Theory-ingrained artifact	The HDM artifact is derived from lean and agile thinking (Axelos, 2015; Womack & Jones, 2003), and is related to the rethinking project management research stream (Svejvig & Andersen, 2015b; Winter et al., 2006).	The artifact "comparison framework" is based on open systems theory (Andersen, 2010; Chen, 2015), evaluation theory (Pawson & Tilley, 1997; Stufflebeam & Shinkfield, 2007), Diamond model for project characteristics (Shenhar & Dvir, 2007).
STAGE 2 Building, intervention, and evaluation		
Principle 3: Reciprocal shaping	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.
Principle 4: Mutually influential roles	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.	
Principle 5: Authentic and concurrent evaluation	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.
STAGE 3: Reflection and learning		
Principle 6: Guided emergence	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, p. 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.	
STAGE 4: Formalization of learning		
Principle 7: Generalized outcomes	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)

Table 11: The action design research process related to Project Half Double

The general comparison framework

The general comparison framework (GCF) is based on evaluation theory, models and applications (Patton, 1997; Stufflebeam & 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 (Biesta, 2010; Tashakkori & Teddlie, 1998). 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, 2002; Pawson & Tilley, 1997), which basically describes that the context and the mechanism (practices) used in a project lead to the outcome (Svejvig & Hedegaard, 2016). We acknowledge the complex causation between C, M and O (Befani, Ledermann, & Sager, 2007) and employ it conceptually to illustrate relationships between these elements, also known as a structural or interpretative explanation (Neuman, 2014, pp. 77-84). The basic CMO model is then merged with core concepts from project value creation consisting of project -> output -> outcome/change/impact (Laursen & Svejvig, 2016).

The figure below shows the evaluation areas in the template:
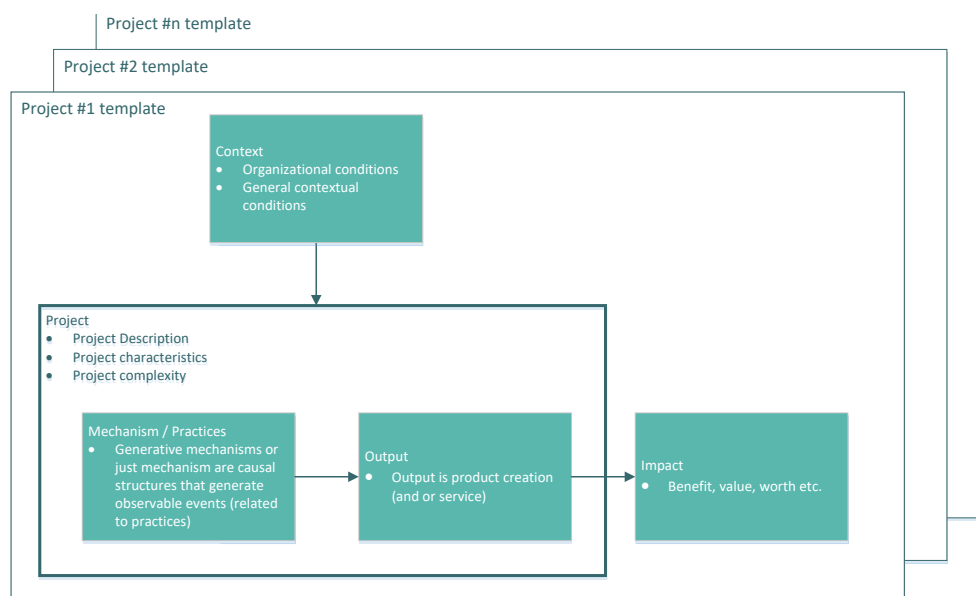
Figure 6: Project evaluation template

Figure 6 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 (Laursen & Svejvig, 2016; Serra & Kunc, 2015).

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 five and ten times at workshops and interviews. These interviews were supplemented by other relevant project documentation provided by the project managers (Myers, 2009).

Figure outlines the general research process and the various activities at different stages in every pilot organization. The process was iterative especially between stages 3 and 6.
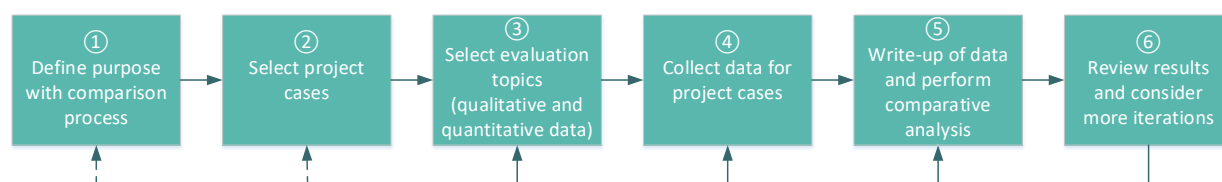

Figure 7: Research Process in pilot organizations (adapted from Svejvig and Hedegaard 2016)

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, 2005, 2010; Fangel & Bach, 2002) 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, Hällgren, Nilsson, & Söderholm, 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 & 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 & 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 C: RESEARCH LIMITATIONS

Appendix C about the limitations of the research on Project Half Double outlines the limitations in general and is not particularly related to this report about the four themes.

The research on the Half Double Methodology (HDM) 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 research findings; these are presented here.

First of all, the report is a comparative study in which a vital part of the evaluation includes systematic comparison (Bryman, 2008, pp. 58-61; Chen, 2015; Stufflebeam & Shinkfield, 2007, pp. 7-18) 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 & Sharp, 2007; Hernes & 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 (Baritz, 1960; Roethlisberger & Dickson, 1939) 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, p. 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 & 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 implycations for the knowledge they produce (Mathiesen & 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 & Müller, 2005) that lies in the eyes of the beholder (Joslin & Müller, 2016). 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 & 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 (Laursen & 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 & 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 & 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 & Müller, 2016), 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, Rode, 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.

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