

# A Half Double case study

SAS Ground Handling pilot project

# A HALF DOUBLE CASE STUDY

## SAS Ground Handling pilot project

### Company and pilot project

**SAS Ground Handling** is the largest Scandinavian ground handler, processing as an average 20,000 pieces of luggage and 35,000 people on 375 flights daily at Copenhagen Airport alone. The company is part of SAS Group and has an average employee tenure of more than 12 years.

- 1,750 employees, with an FTE count of 1,500
- Head offices: Stockholm and Copenhagen
- Part of SAS Group

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

**The pilot project** is categorized as a process optimization project. SAS Ground Handling aspires to improve the customer experience in the Ground Handling area by increasing the number of on-time luggage at Copenhagen Airport.

The organization has already created significant impact by reducing the number of delayed transfer bags from 2014 to 2016 with 40%. The target for 2017 was to reduce the number of delayed transfer bags even more to 60% compared to 2014 - which among others was achieved using the Half Double Methodology. The target of a 60% reduction compared to 2014 was believed to be ambitious, yet realistic, taking the conditions and development of the current infrastructure, working environment and traffic program into consideration. With the decreasing prices of commercial air traffic, resulting in a boom of passengers, SAS Ground Handling faced issues of capacity limitations due to the infrastructure of Copenhagen Airport. In addition, SAS Ground Handling was challenged by deviations from standard procedure, caused by irregularities such as faulty equipment, lack of equipment, and resource volatility. In order to achieve its objective, SAS Ground Handling had to re-think its current operations and find improvements in its already established processes.

The project started in the beginning of March 2017 and ended early June 2017.

Below is an overview of the project's key activities.

**Table 1: Overview of the pilot project's key activities**

TIMING	DESCRIPTION
<b>March 2017</b>	<p>Pilot project initiation</p> <p>Designing and defining impact case - departing from goal hierarchy with key performance indicators to track impact</p> <p>Impact definition workshop and kick off with core team: brainstorming and prioritizing hypotheses to reach target – key in securing stakeholder alignment and ownership and driving impact focus</p> <p>Colocation design: planning and preparing a colocation room for the entire project period</p> <p>Pulse checks: introducing core team to pulse checks</p> <p>Identification of key participants and detail planning of workshops</p> <p>First two impact solution design workshops</p>

TIMING	DESCRIPTION
<b>April-May 2017</b>	Following up on impact and continuous improvements Institutionalize changes at managerial level to ensure sustainability Adding one more hypothesis to work on Pulse check
<b>May-June 2017</b>	Following up on impact and continuous improvements Institutionalize changes at managerial level to ensure sustainability Pulse check

Table 2 provides an overview of the project’s targets and their fulfilment.

**Table 2: Overall success criteria and their fulfilment**

SUCCESS CRITERIA		
	Target	Actual / Expected
#1	Cost savings (number removed from public report)	Achieved
#2	Reduced ratio of delayed bags from 100% to 67%	Achieved - partly*
#3	Reduced lead time of transfer bags from unloading aircraft to pick-up conveyer belt	Achieved
#4	All employees involved have an “on time” mindset	Achieved
#5	Key employees are trained in effective unloading process	Achieved
#6	Key interfaces are prioritized based on “on time” thinking and handled in the appropriate sequence	Achieved
#7	Roles and responsibilities during unloading are clear	Achieved

\* Success criterion #2 is achieved during the first three months after project closure - but not during the following six months. Due to large fluctuations in the data, it is difficult to evaluate the target in a short timeframe. When more data is available, further research can evaluate the target one year after project closure and correct for season fluctuations.

### Comparing pilot and reference projects

The pilot project is evaluated and benchmarked against three comparable reference projects. The basic idea of the comparison is to evaluate in practical terms to which extent the pilot project performs better (or worse) than the reference projects.

Although most projects show unique characteristics, it is also clear that there may be a family resemblance among projects. This fact is used in our comparison where we have asked for three reference projects, which are as similar with the pilot project as possible. Table 3 below shows individual characteristics of the pilot project and the three reference projects.

**Table 3: Proxies for size and characteristics of pilot and reference project**

PROJECT CHARACTERISTICS SUMMARIZED					
No.	Proxy for size and unit	Pilot Project	Reference Project #1	Reference Project #2	Reference Project #3
1	Resources (hours)	0,75 FTE	330	n/a	5,5 FTE
2	All Cost (capex)	0	0	0	3m DKK
3	Diamond model factor (scale from 0 to 16)	6,79	4,83	5,75	7,33
4	Project complexity factor (scale from 0 to 4)	1,79	1,33	1,75	1,83
5	A composite proxy size qualitatively derived from item 1, 2, 3 and 4 above	2	4	3	1

The last row of table 3 shows a relative score derived by summarizing and comparing information from all projects – including project size measured in resources and costs as well as project characteristics in terms of pace, novelty, technology and complexity. The scoring shows that the pilot project scores 2: therefore, it is characterized as a medium project.

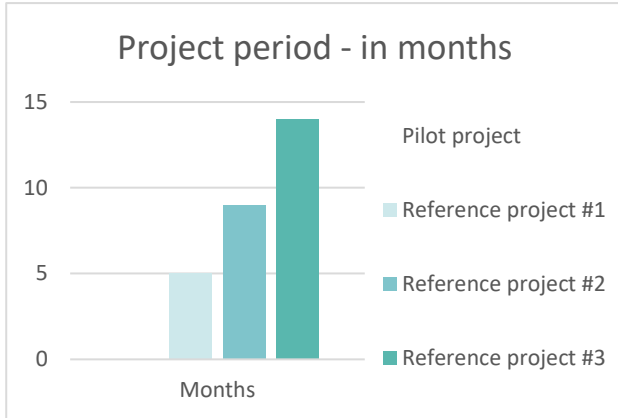
Moreover, when comparing the projects, it should be taken into consideration that the largest project, which is reference project 3 (scoring 1 in table 3) is the first project in a series of baggage projects where the pilot project is the second. Consequently, the pilot project has benefitted from the foundational analyses and initial decisions taken in reference project 3 as well as the learning achieved throughout the project, which is assumed to positively influence the pilot project by reducing time and increasing impact. Moreover, the pilot project has benefitted from a managerial decision to increase the number of minimum minutes for a transfer from 30 to 35 minutes after reference project 3 and prior to the pilot project. The extra 5 minutes are assumed to

positively influence the pilot project’s key performance indicator by decreasing the number of delayed bags. On the other hand, as the number of delayed bags decreases, it becomes more difficult to achieve further reductions: it is easier to reduce the number of delayed bags in the early baggage optimization initiatives than in the latter. These diminishing returns on optimization investments are assumed to negatively influence the key performance indicator by slowing down the decrease in the number of delayed bags. These circumstances should be taken into account when evaluating and comparing the projects’ relative performance.

In consideration of the overall objective of the Half Double Methodology, the projects are evaluated in terms of their duration (time) and impact (quality).

In terms of time, figure 1, shows the projects’ duration counted in months.

**Figure 1: Project period – in months**



The pilot project manager explains how the team worked dedicatedly with the Half Double Methodology in order to increase the project speed. The result is a very short project compared to the reference projects. The pilot project is by far the shortest project: it is almost half the time of reference project 1 (13 weeks compared to 21 weeks), only one third of the time of reference project 2 (three months compared to nine months), and more than four times as fast as reference project 3 (92 days compared to 427 days).

In terms of quality, the pilot project as well as reference project 1 and 3 relate to baggage handling and aim at reducing the number of delayed transfer bags per 1,000 passengers.

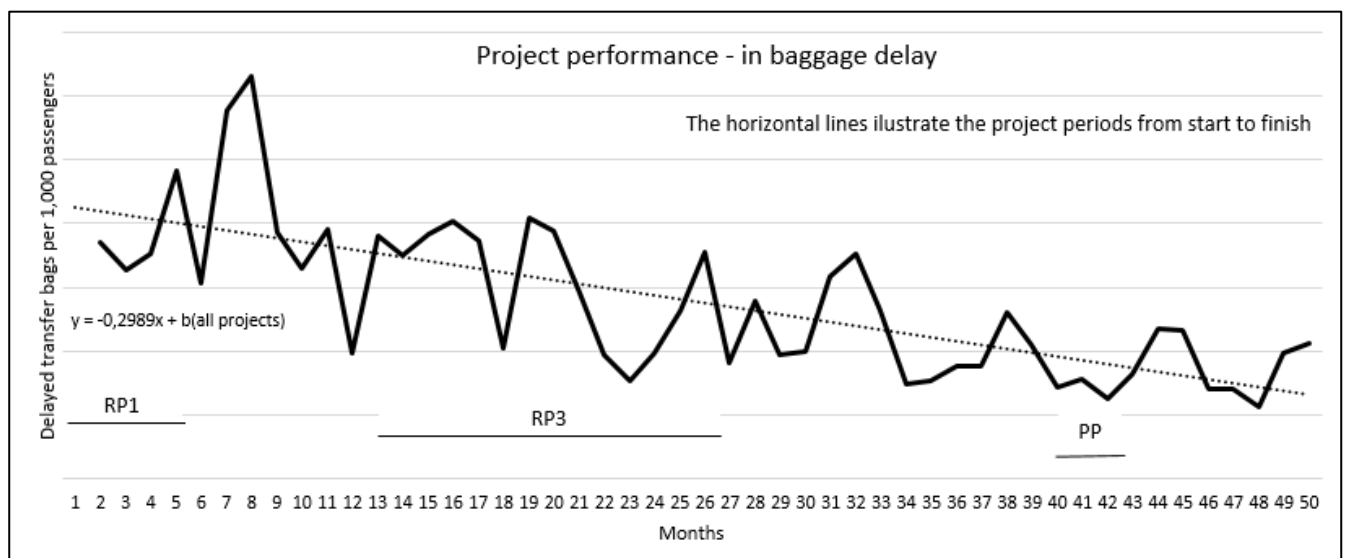
These three projects can be mapped in the same graph as illustrated in figure 2.

Reference project 2 deviates from the other projects in its nature and objective and it does not make sense to measure this project in terms of delayed bags. Therefore, reference project 2 is not included in the impact section illustrating and describing the projects' relative performance.

Figure 2 shows the development in transfer baggage delay from the first project starts until six months after the last project is closed. The horizontal lines show the duration of the pilot project and of the reference project 1 and 3.

As the graph illustrates, baggage handling is characterized by many fluctuations. Therefore, we inserted a trend line, which shows an average reduction of 0,2989 in the number of delayed transfer bags per 1,000 passengers demonstrating

**Figure 2: Project performance - in baggage delay (all projects)**



clear quality improvements over the years from the first reference project 1 starts and until six months after the pilot project has closed.

In the next figure 3, this trend line is divided up in each of the three projects. The three graphs show baggage delay during the project period and the following six months after project closure for the pilot project and the two comparable reference projects.

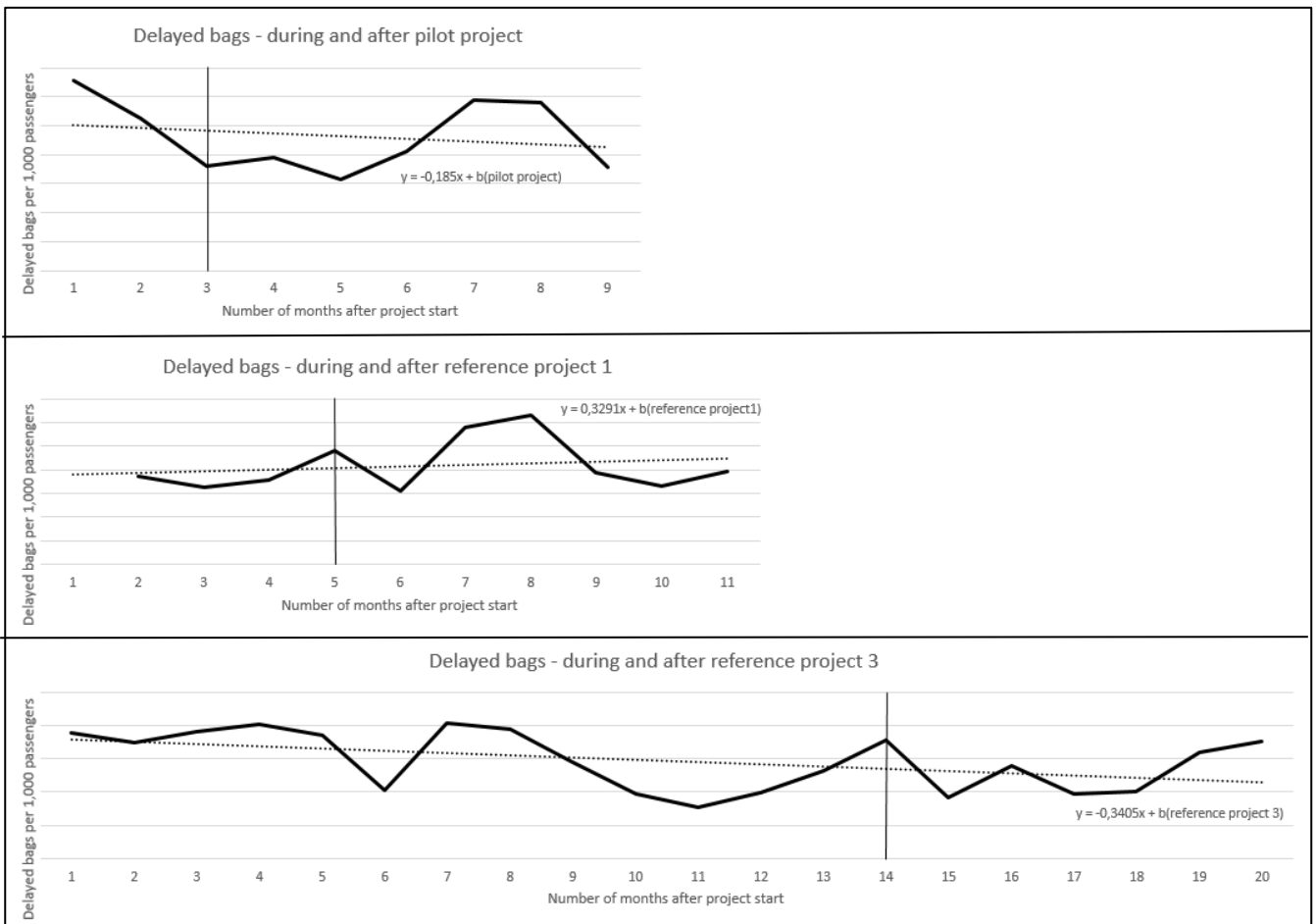
The vertical line in each graph illustrates the end of the project period.

Due to the large fluctuations, we have inserted a trend line and the calculated slope in each graph to show the average reduction or increase over and after the project period in the quality measure: delayed transfer bags.

As the first graph in figure 3 illustrates, the trend in delayed bags during and after the pilot project is a reduction equal to minus 0,185 degrees.

In reference project 1, the trend line shows a slight increase in delayed bags during and after the project period equal to plus 0,3291 degrees.

Figure 3: Project performance – in baggage delay (each project)



Finally in reference project 3, the trend line again shows a decrease in delayed bags equal to minus 0,3405.

Comparing the three graphs of figure 3, it becomes clear that the greatest development in terms of quality happens during and after reference project 3. Based on this key performance indicator, the pilot project performs better than reference project 1 but not as good as reference project 3. Therefore, it is classified as a fast medium performance project.

Note that the key performance indicator is characterized by large and many fluctuations due to the fact that baggage delay correlates with seasonal peak periods. Consequently, we will extend the evaluation period from six months to one year after project closure once the data becomes available. For now, the pilot project is evaluated and classified as a successful project achieving all its success criteria almost 100% and a medium performing high-speed project relative to the comparable reference projects.

**Explanations** for the fast pace and improvements in the quality measure during the pilot project period can be many. However, according to the pilot project manager who was also the manager of the comparable reference project 3, the Half Double methodology has positively influenced the pilot project - resulting in better progress and faster pace.

In the quest for reasons behind the pilot project's success compared to the success criteria and

medium impact on the key performance indicator, we examined the project practices.

We find that the pilot project distinguishes itself from the two comparable reference projects 1 and 3 in several Half Double practices. First, the pilot project has more focus on impact: the pilot project manager builds an impact case, designs an impact solution and checks the pulse of the stakeholders. The pilot project also distinguishes itself on most of the parameters related to flow: the pilot project manager works with visuals and ensures rhythm in key events. Furthermore, the pilot project members share a project room and work together two whole days per week. When it comes to leadership, the pilot project distinguishes itself from the reference projects by having a more active and engaged steering committee. Finally, the pilot project is loyal to the Half Double Methodology and therefore scores lower than reference projects 1 and 3 on one of the Half Double parameters related to customization of the practices to the uniqueness of the project. Whereas the pilot project was managed in accordance with the Half Double prescriptions, the management of the two reference projects was customized to fit the uniqueness of each project and followed no stringent methodology.

Overall, these findings suggest that a plausible explanation to the increased speed (shorter project period) and improved performance indicator (fewer delayed bags) in the pilot project resides in the Half Double Methodology.

## CONTACT AND FURTHER INFORMATION

Anna Le Gerstrøm Rode  
Department of Management  
Aarhus BSS, Aarhus University  
Fuglesangs Allé 4  
Building 2623, 213  
8210 Aarhus V  
Denmark  
[agerstroem@mgmt.au.dk](mailto:agerstroem@mgmt.au.dk)

Per Svejvig  
Department of Management  
Aarhus BSS, Aarhus University  
Fuglesangs Allé 4  
Building 2628, 205  
8210 Aarhus V  
Denmark  
[psve@mgmt.au.dk](mailto:psve@mgmt.au.dk)

### **Acknowledgements**

*The authors would like to thank the Danish Industry Foundation for funding this work and acknowledge contributions from SAS Ground Handling involved in Project Half Double - especially Mikael Jessen and Hans-Henrik Spangenberg.*