

Bestell-Nr: ILL-A087117630  
lok. Nr: A087041715  
PPN: 520710096  
Bestelldatum: 2008-07-07 11:25:12

Universitätsbibliothek Kiel

Rb 1345/ 10 wir 621a



## ONLINE-BESTELLUNG GBV

NORMAL

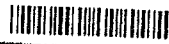
<7> SUB Goettingen  
Fernleihe / 00071733779 / Kolbe, L.M.  
Platz der Goettinger Sieben 1  
37070 Goettingen

*Inst. f. Wirtschaftsinformatik*

Bestellende Bibliothek: <0007>  
<7> SUB Goettingen  
Fernleihe  
Platz der Goettinger Sieben 1  
37070 Goettingen

USER-GROUP-0

Benutzer-Ausweisnummer  
1594



Lieferbibliothek: <8>  
Universitätsbibliothek Kiel  
Zentralbibliothek  
Leibnizstr. 9

24118 Kiel

Bearbeitungsvermerke:

Leihfrist für Bücher 4 Wochen

verkürzte Leihfrist

Leihfrist für Zeitschriften 2 Wochen

nur im Lesesaal zu benutzen

Tel.: +49(0)431/880-4703 Fax: +49(0)431/880-5503  
E-Mail: fernleihe@ub.uni-kiel.de

Wir weisen Sie als Empfänger darauf hin, dass Sie nach geltendem Urheberrecht die von uns überreichten Vervielfältigungsgüter ausschließlich zum privaten oder sonstigen eigenen Gebrauch verwenden dürfen und weder entgeltlich noch unentgeltlich in Papierform oder als elektronische Kopien verbreiten dürfen.



Unter Anerkennung der Benutzungsbedingungen wird bestellt:

Verfasser: Kolbe, L. Schierholz, R. Glissmann, S.  
(Aufsatz)

Standort:

Rb 1345/ 10 wir 621a

Titel: Mobile Customer Services at Deutsche Lufthansa  
(Aufsatz)

Seiten: 631-644

Band/Heft:

Jahr

2007-00-00

Titel (Monographie/ Zeitschrift)

Management information systems : managing the digital firm

Lieferform:

Lieferart:

Pearson/Prentice Hall  
Upper Saddle River, NJ 2007  
Laudon, Kenneth C.

KOPIE

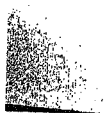
ARIEL

0-13-230461-9

Lieferung erwünscht bis:  
2008-07-25 11:29:03

ing: <517 ausgel.> ; 07-07-08

ILL-A087117630



# INTERNATIONAL CASE STUDY

## CASE STUDY 1:

### Mobile Customer Services at Deutsche Lufthansa

Walter Brenner, Lutz M. Kolbe, and Adrian Bueren  
University of St. Gallen (Switzerland)

#### **"Sorry, I have to catch my flight..."**

*With a quick wave of a hand, John Smith rushes out of the business meeting for the drive to the airport. He had forgotten to check in online and will now have to check in at the airport at least 45 minutes before departure. On arriving at the airport, he runs to the check-in machine. There is a short waiting line but after a few minutes' wait he has his boarding pass. He checks the boarding pass for his gate number and realizes that the flight has been delayed. He is now not only exhausted but also annoyed that he has an hour to kill and nothing to keep him occupied. So John makes a couple of phone calls and finally kills time by listening to music on his MP3-enabled cell phone. Shortly before the due departure time he walks to his gate, but notices that the gate has changed since his check-in. He runs to the new gate through the crowded terminal, barely making it in time to board. When he takes his seat, he notices some of the other passengers' annoyed looks; his neighbor on the plane tells him that he had been paged twice and the plane had been delayed further waiting for him.*

#### **LUFTHANSA—GROWTH IN A TOUGH COMPETITION**

The airline industry has undergone dramatic changes in recent years. Reduced revenues after September 11, 2001, oil prices at a historical high, and the increasing number of no-frills airlines have resulted in a fierce price war. Nevertheless, it is still a growth market with forecasted annual

growth rates of 5–7 percent (in the number of bookings, not in revenue). To retain their revenue streams and cut costs, airlines must manage their customer relations very carefully. The major challenges are to invest in relations with valuable customers and to reduce the costs of handling less valuable customers. Full service carriers have consequently adopted the no-frills carriers' low priced minimal service, while simultaneously still offering their traditional higher priced premium service. To ensure that this price differentiation will succeed in the long run, full service carriers aim at providing different service levels in their customer interaction channels.

Deutsche Lufthansa is an aviation corporation that was initially founded in 1926, closed in the aftermath of World War II, and refounded in 1951 as a government-owned German flag carrier. The first public listing on stock markets was 1966, and privatization was completed in 1997. Lufthansa's major business is the "Passage" business area (passenger aviation) that comprises 63 percent of Lufthansa's corporate sales. In total, Lufthansa realized €16,965 million revenue and serviced 50 million passengers in 2004<sup>1</sup>. Lufthansa therefore transported more passengers on international routes than any other IATA<sup>2</sup> airline and was the world's top cargo carrier. Lufthansa's image is that of a premium brand promising quality, reliability, safety, competence and innovation. Lufthansa was, for example, the first airline worldwide to use the Boeing 747 as a cargo aircraft; Lufthansa's maintenance, repair, and overhaul (MRO) unit "Lufthansa Technik" has been certified as the first aviation company

authorized to install a wireless radio connection (such as WirelessLAN for Web access and Voice over IP services) inside an aircraft cabin. Lufthansa itself uses these capabilities for its own passenger fleet under the product name "FlyNet".

Many customers still perceive Lufthansa as a high-priced premium service brand, even though it also offers tariffs that compete with those of discount airlines. In order to attract these price-sensitive customers, Lufthansa wants to improve awareness of its competitive price offerings. The company consequently started e-mail campaigns to convey their newest special offers: extremely low prices for flights on which there is undercapacity. Each Friday these offers are communicated by e-mail to those customers who have given their permission (by opting in, a legal requirement to fight spam in most countries). The conditions pertaining to these low tariffs include a reservation no later than the following Monday and departure no later than the following Friday. Lufthansa's competitors are usually unable to respond quickly to such short notice, making Lufthansa's price the cheapest on the market for the specific flights.

Lufthansa positions itself as a full-service provider and aims at meeting the specific requirements of each customer segment in the market. Like most other airlines, Lufthansa differentiates three product lines that provide different service levels: first class, business class, and economy class. To increase customer loyalty, the company, similar to most other airlines, offers a frequent flyer program called "Miles & More" (M&M) that offers members bonus miles for each flight they take with Lufthansa or a partner. Within the M&M program, a customer is allocated one of four different statuses (see Table 1), depending on the customer's bonus miles balance. The statuses are associated with product lines, e.g., a Senator status customer receives first-class service, a Frequent Traveler status customer receives business-class service, even when flying economy class (with very few exceptions, such as the first-class terminal in Frankfurt). Table 1 provides an overview of the different M&M member statuses, their qualifying characteristics, and their association with Lufthansa product lines:

Customers' expectations and requirements of the service of these segments vary. The Non-members (NM) are mostly customers who only fly

**TABLE 1 CUSTOMER SEGMENTATION AT LUFTHANSA**

M&M MEMBER STATUSES	CHARACTERISTICS	LUFTHANSA PRODUCT LINES
Honorable Circle (HON)	600,000 miles within two year	First Class
Senator (SEN)	150,000 miles within one year	
Frequent Traveller (FTL)	50,000 miles within one year	Business Class
Basic Members	M&M membership	
Non-members	Not a M&M member, a prospective or non-customer	Economy Class

occasionally, or who are not very loyal to Lufthansa. In general, their primary requirement is a low flight price. They are, to a certain extent, even willing to accept delays as long as the fare is low. Lufthansa's profit margin from this customer segment is small and the cost pressure high. Cost-cutting through self-services is often not feasible, since many of these customers are inexperienced in standard handling procedures (e.g., the check-in process). The Basic members have the same requirements and consequences for Lufthansa as the non-members. However, this segment flies more frequently and is therefore

more familiar with standard handling procedures. Self-service is suitable for this customer segment.

The Frequent Travelers (FTL) and the Senators (SEN) expect fast and efficient handling procedures as well as a high flexibility in respect of the changing of bookings. They are less price-sensitive and Lufthansa meets their requirements by providing better levels of service than to Basic members or Non-members. Self-services are very appropriate for the FTL and SEN, since they know the handling procedures well and are very interested in self-services for the time-saving that these allow. The difference between the FTL and SEN is

noticeable in the Senator's additional service features (e.g., access to the Senator Lounge). The Honorable Circle (HON) has the same requirements as the FTL and SEN. Furthermore, HONs pay a great deal of attention to individual service, such as that provided by the new first class terminal in Frankfurt for the exclusive use of first-class and HON customers. Self-services are therefore not suitable for this customer segment.

Lufthansa aims to reflect the different service levels for its customer segments in each interaction, such as in check-in procedures, in-flight service or other offerings. FTL, SEN, and HON will specifically be able to perceive better service than the Non-members and Basic members.

## **THERE'S NO BETTER WAY TO FLY**

---

### **TRAVELING WITH LUFTHANSA— AN ONLINE EXPERIENCE**

Since the late 1990s, Lufthansa has offered numerous information and transaction services online at [www.lufthansa.com](http://www.lufthansa.com). These include a booking service with electronic tickets (etix®), check-in, redemption of bonus miles on bookings or other items from Lufthansa's online shop, information about M&M account balances, or simply up-to-date information on flight arrivals and departures that notes the most recent gate changes, delays, and cancellations. By providing these services as online self-services, Lufthansa was able to reduce the workload spent on standard requests in staffed channels, such as the call center, and dedicate more time and effort to more complex requests. The customers benefit from the check-in deadline being 35 minutes prior to departure for online check-in as opposed to 45 minutes prior to check-in at the counter.

The travel process, with the full use of Lufthansa's self-services (starting with the check-in), occurs as follows: Starting at 18:00 the day before the flight's departure (24 hours before departure at the earliest), flights are ready for check-in through the Lufthansa check-in system. Customers can then complete the check-in procedure online at [www.lufthansa.com](http://www.lufthansa.com). This must be done at least 35 minutes prior to departure (at smaller airports 25 minutes). On the day of the flight, passengers must pick up a

boarding pass at the Quick-Check-In machines located in the airport terminal. For identification, passengers need their M&M membership card or the credit card used to pay for the flight. Check-in baggage must be checked in at the counters. However, there are ten airports throughout Germany where Quick-Check-In machines are already capable of handling the check-in of baggage. Based on a predefined set of rules, the check-in machine may suggest an upgrade in exchange for bonus miles<sup>3</sup>. If the customer accepts this offer, he or she will receive a boarding pass for the higher class. Bonus miles are automatically deducted from the customer's account. With the boarding pass, the customer proceeds through the security check to the departure gate, where his or her boarding pass and identity are again checked. Boarding should commence about 20 minutes prior to departure. Quick Boarding turnstiles, which allow the boarding of etix® passengers without Lufthansa staff's involvement, have been installed at six airports throughout Germany. On arrival at a final destination, the customer picks up his or her check-in baggage at the baggage claim.

Figure 1 depicts the travel process (starting with the check-in) for a customer who uses all online self-service options.

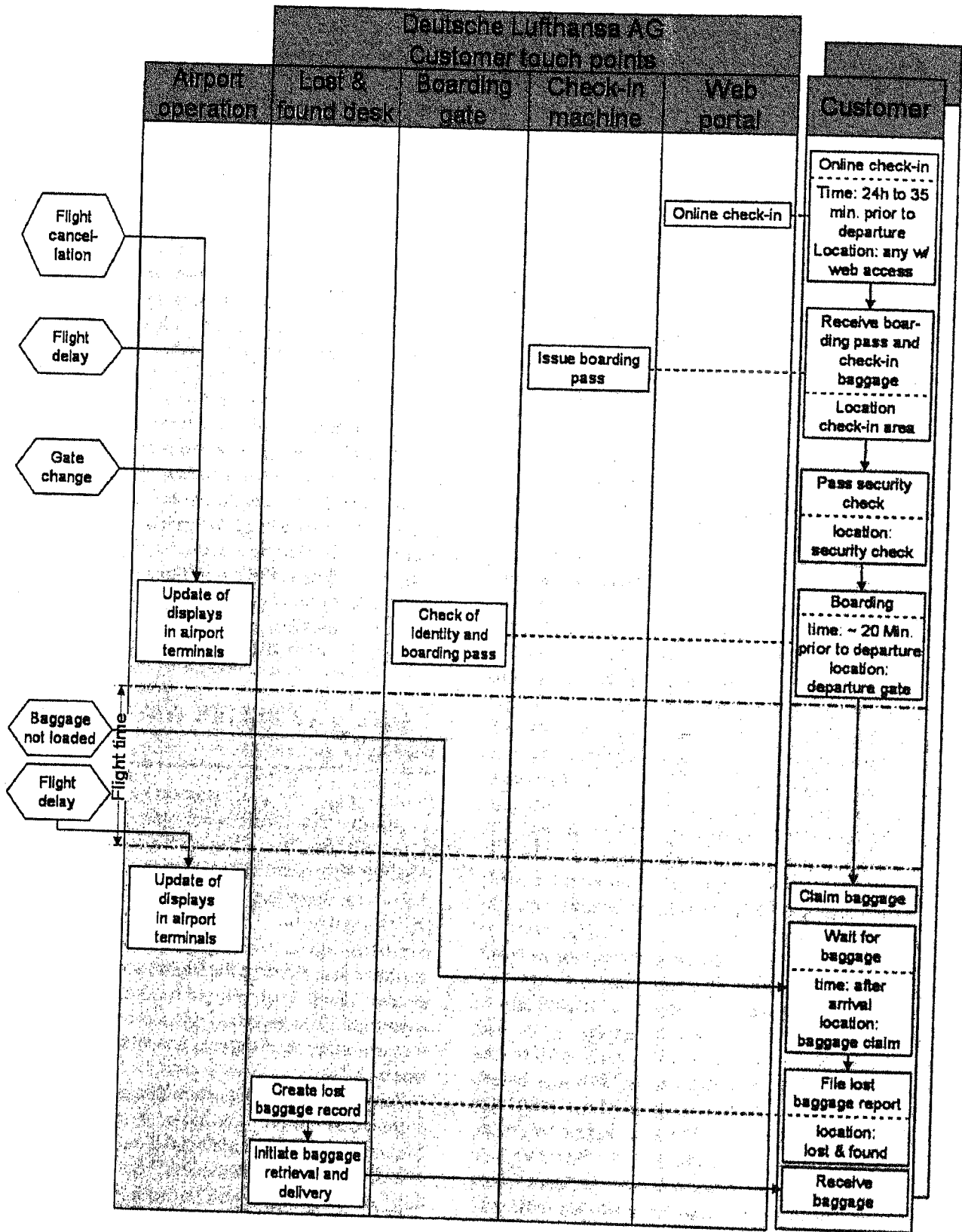
### **THERE'S NO BETTER WAY TO FLY— REALLY?**

---

Prior to the flight, the customer can check online for possible gate changes, delays, or flight cancellations. Without Web access, this is obviously not possible. The customer is, however, notified about the newest departure time and gate when checking in. Nevertheless, Lufthansa does not actively communicate any changes that occur after the customer has checked the flight's status on the Web or after check-in (online or at the airport) to the customer. The customer must periodically check the terminal's displays that show the newest flight statuses.

To reduce the time customers spend waiting for connecting flights, Lufthansa has optimized its flight plans at its major hubs in Frankfurt and Munich. The effectiveness of this measure does depend, of course, on all flights being punctual as well as on customers receiving up-to-date information on departure times and gates. During

FIGURE 1 TRAVEL PROCESS WITH ONLINE SELF-SERVICE OPTIONS



the flight, all communication has to be done personally, because the electronic channels are not accessible onboard. FlyNet, Lufthansa's in-flight Internet access via wireless LAN, should open this opportunity. However, it is not available on all flights and, secondly, it cannot be assumed that all customers carry the necessary laptop or wireless PDA with them.

After a flight, the customer collects his or her baggage at the baggage claim. If the baggage was not loaded onto the aircraft, the customer usually has to wait for the last baggage to arrive before he or she can file a lost baggage report at the Lost & Found desk. Lufthansa, however, has the information about the displaced baggage already, approximately 30 minutes after departure, in its baggage tracing systems. Once the baggage has been located and delivered to the destination, it is sent to the customer's address as given on the lost baggage record.

## FACING COST PRESSURE

Lufthansa itself recognizes certain impediments that call for further improvement. Despite replacing staff involvement in some activities of the travel process with self-services, several cost drivers are still in place. On the one hand, the Quick-Check-In machines have replaced costly labor, but they are both costly to purchase as well as to maintain.

Another cost driver is balancing M&M members' bonus miles. Bonus miles are, in fact, Lufthansa's liabilities in respect of their customers, and are therefore reflected on the balance sheet as accrued liabilities. While the automatic upgrade offer at the Quick-Check-In machines was designed to encourage customers to use their bonus miles more frequently, it wasn't initially as successful as expected. The number of offers actually made was significantly lower, while the rate of acceptance of those offers was higher than initially expected. To counter this underachievement, Lufthansa adapted the set of rules, allowing more upgrade offers to be made.

## THERE'S A BETTER WAY TO FLY— MOBILE CUSTOMERS, MOBILE INFORMATION

As described above, customers are cut off from access to information during large parts of their travel. Providing customers with information at the exact time when they need this information would improve the customer experience and the travel process's efficiency.

*"Our customers are mobile by nature, so our service offerings should also be!" says Annette R., Manager CRM Strategy and Customer Processes.*

In 2000, Lufthansa formed a strategic partnership with Vodafone, one of the largest European cellular network operators. The company began to analyze the existing processes and services for potential support by means of mobile technologies as well as to develop ideas for new processes and services based on mobile technologies. A new project, called Mobile Services, was initiated as part of a large CRM development project.

The project goals were diverse: First of all, the information supply to customers during a flight had to be improved. Secondly, the handling procedures had to be redesigned to improve efficiency in respect of both customers and Lufthansa. Thirdly, the project aimed at improving the exploitation of cross-selling potentials, particularly by encouraging customers to spend more of their bonus miles. Finally, Lufthansa's innovative image had to be stressed by demonstrating the company's capability to design new and innovative solutions for its customers and bringing them to market.

A typical business case was not calculated prior to project initialization. This was primarily due to the lack of experience with mobile services and the resulting uncertainty about customers' acceptance thereof. Potential savings through improved process efficiency are highly dependent on the number of transactions that the new processes carry out. But a reliable projection of such numbers is impossible without actual experience. Additional difficulties were encountered because the new procedures would mostly extend the service offerings, but would not replace previous procedures. Furthermore, much of the project's potential was seen as improving customer service and customer satisfaction, benefits which are hard to quantify in a business case. The management therefore accepted the project, without a proper business case due to the project's innovative nature

and the plausible arguments for improved customer satisfaction.

The project was led by the Strategic CRM Development group, which is generally responsible for the development of Lufthansa's CRM strategy and processes. Since the targeted processes were primarily those associated with the handling procedures on the ground and not on board, the project was realized in close cooperation with the Global Passenger Processes department which is responsible for processes such as check-in and customer service outside aircrafts. The main project tasks were:

- *Development of business concepts:* The design of the ground stations (check-in areas, boarding gates etc.), design of the processes (check in, boarding, and lost & found).
- *Management of process-level problems:* During the project, several non-technical issues regarding the designed processes were raised and had to be addressed, e.g., the process to obtain customers' permission for Lufthansa to contact them on their cell phone had to be redesigned.
- *Identification of new potentials:* Throughout the course of the project, permanent monitoring of the affected processes and those connected to them were necessary to identify further potentials for future mobile services.
- *Management of relationships with other departments:* Even though the project mainly affected the ground processes, a number of other departments were affected, or had to be involved (e.g., Marketing, Call Centers, Lost & Found staff).

Lufthansa Systems, the company's IT service subsidiary, handled the technical aspects of the project. The main technical tasks were the following:

- *Operation, maintenance, and further development:* Development, operation, and maintenance of interfaces between Lufthansa's various systems and between Lufthansa's systems and those of the service providers.
- *Assessment of business concepts and transformation into IT concepts:* Business concepts' technical feasibility had to be assessed and estimates regarding implementation time and costs provided; IT concepts had to be designed and realized to implement the concepts; and a new business logic had to be implemented within the existing and new systems.

- *Selection and management of service providers:* External service providers had to be selected for certain services (e.g., SLAs<sup>4</sup> had to be developed and managed), after which the relationships with the chosen service providers had to be managed.
- *Documentation:* New systems as well as changes to existing systems had to be correctly documented, which was also required for the contracts and SLAs with service providers.
- *Bug fixing:* During the course of the projects, technical issues as well as bugs in the systems were identified which needed to be fixed.

Prior to the project's start, some content such as contact information was already available for mobile browsers using the Wireless Application Protocol (WAP). The entire project for the introduction of mobile services as described here took approximately one man-year (FTE<sup>5</sup>) (5 man-months in the business areas, and 7 man-months in the technical areas), and was partially done by service providers. Overall, the project budget, including software licenses and fees as well as other fixed costs, was more or less €200,000. Since most of the staff came from the Strategic CRM Development group, the daily business was unaffected. It was possible to handle the coordination with the Global Passenger Processes department besides the daily business.

*"Almost all passengers have a mobile phone on them. The first thing most of them do after touch-down is to switch it on and check for messages. There simply had to be a way for Lufthansa to take advantage of this!" says Sylvia A., Senior Manager CRM Strategy and Customer Processes.*

In 2000, SMS<sup>6</sup> pull services were first introduced in addition to the existing WAP content. SMS pull services deliver information to users on request. The content of these services mainly comprised content already available on the Web, e.g., flight-related information such as departure and arrival times (see below for a detailed description). Initially the use of these services was below expectations. In 2002, SMS push services were added. These are services that Lufthansa uses to actively push communication to its customers. These services require prior permission from the user for compliance with most countries' anti-spam legislation. The content of these services comprises information about newest Lufthansa events, such as gate changes or flight delays (see below for a detailed description). With the advent

of the SMS push service, all mobile services' frequency of use increased significantly.

The first project meetings already generated several ideas for mobile services. These had to be prioritized in order to build a mobile services portfolio to be implemented in the project. In alignment with the project goals, two dimensions were used for the prioritization: benefits for the customer (i.e., customer satisfaction) and benefits for Lufthansa (i.e., efficiency gains). The main criteria, against which the different services' customer benefits would be assessed, were:

- *Increased flexibility:* When customers are actively informed about irregular events that require them to react (e.g., a change of departure gate requires them to show up for boarding at a new gate).
- *Increased efficiency:* When the customer's process activities can be eliminated, or waiting times can at least be reduced.
- *Increased mobility:* When process activities can be carried out from anywhere and/or anytime.

Similarly, the benefits for Lufthansa were assessed in respect to the following criteria:

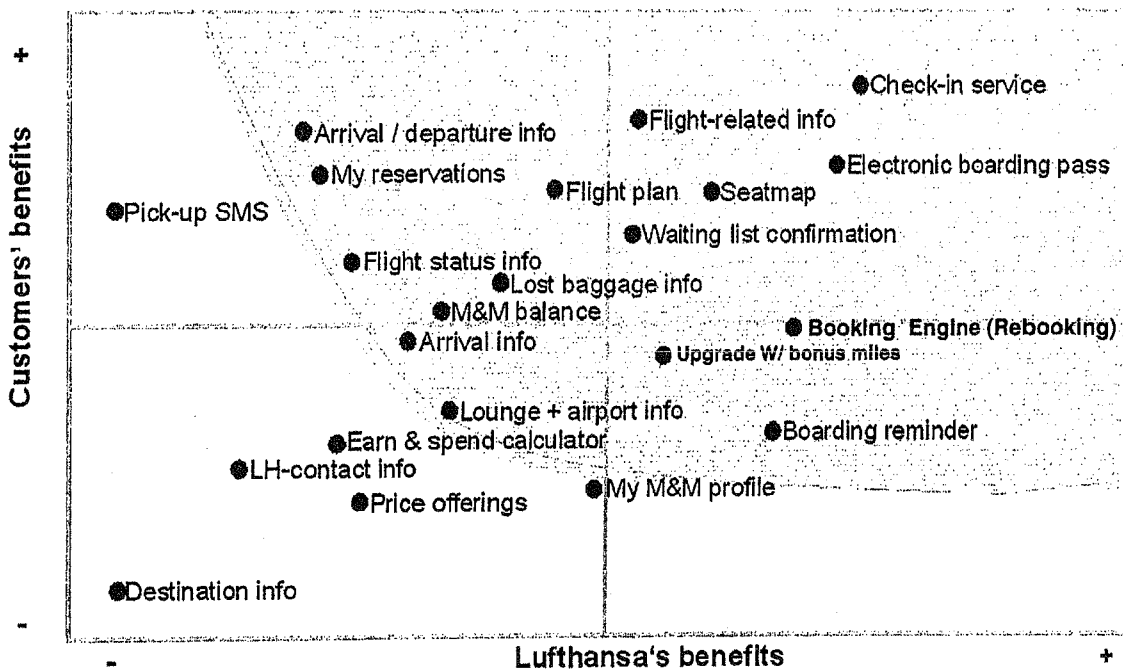
- *Implementation efforts:* The efforts and costs of the new service offerings' implementation.
- *Operation efforts:* The efforts and costs of running the new service in the operational environment.
- *Efficiency gains:* The savings in personal, transaction, and other costs which can be gained with the new service.

The result of the assessment is depicted in Figure 2. Before implementation, the suggested services (in the shaded area) were analyzed in more depth.

Prior to the selected services being designed in detail, they were classified according to the following task characteristics:

- *Intended use:* Why do customers use the service? This could be for purposes of transaction processing, access to information, or notification.
- *Task type:* What type of user task is supported by the service? Is it a routine, every-day task, or is there a need to respond to an irregularity?
- *Predictability:* How predictable in respect of the customer (either Lufthansa or the customer) is the service's relevance?

FIGURE 2 PRIORITY MATRIX OF SUGGESTIONS FOR MOBILE SERVICES





Finally, the service characteristics were determined. These were technical characteristics such as the type of application and communication as well as the target group for whom the services were intended, allowing for a service-level differentiation of mobile services as well. The choice of a type of application is between text messaging (the SMS service in the GSM networks that are common in Europe), or wireless Web (WAP services). The type of communication could be either push, i.e., Lufthansa automatically initiates the service's communication, or pull, i.e., the customer requests the service manually. In effect, the push type is only available if the text messaging type of application is chosen. There are technical standards available for WAP push services, but these are not widely accepted by users and are SMS-based anyway. In most countries, push services require the user's permission, they therefore only apply to registered users; in Lufthansa's case this means to members of the M&M program. Both the type of communication and application largely affect the chosen service's user friendliness. User-friendliness can, for example, be determined by how much text the customer needs to type, the number of steps, the difficulty and number of parameters to remember (e.g., username, password, and self-chosen vs. predefined usernames).

In order to allow for a manageable service level differentiation based on Lufthansa's customer segmentation (see Table 1), the following target groups were defined: Status customers (SC), comprising the Frequent Traveler, Senator, as well as Honorable Circle M&M members, Basic customers (BC) comprising the basic M&M members, and Non-members (NM) comprising other customers and non-customers (see Table 2). In this case, the product lines are not reflected in the segmentation; service level differentiation mostly happens within the M&M member groups. Partially this is a means to increase customer loyalty by giving another

incentive to become a member, partially this is also a technical requirement since push services can only be delivered to customers who have subscribed to the service. This subscription is handled within the M&M member profile.

Subject to the task and service characteristics, a matrix was developed mapping the mobile services' characteristics to target groups (see Table 3).

The project phase ended in November 2005 with the transferral of the operational responsibility for the services to the Global Passenger Processes department. In order to cope with the additional workload and to transfer knowledge of the mobile services to the department, a full-time employee from the Strategic CRM Development department was transferred to Global Passenger Processes.

In order to gain experience with the mobile services within a manageable environment, and due to budget and time restrictions, the mobile services are initially only available on Lufthansa-operated flights departing from Germany. The SMS services are currently also only available in Germany, i.e., for subscribers to German cellular networks. The following mobile services have been developed:

- (1) *Mobile check-in service:* Using the mobile check-in service, customers can complete the check-in procedure (*data processing*). The check-in procedure is a *routine task* that is *predictable* (within a limited time-frame prior to departure). The service differs in respect of Status and Basic customers. It is not provided to Non-members. Prior to departure, Status customers receive an invitation to check in via SMS (push). After the customer's confirmation, he or she receives a confirmation SMS with the flight information, or a rejection SMS (only if the deadline for check in has passed at the time of the customer's response). The customer simply needs to reply a "y" for yes followed by the flight number that was given in the invitation-to-check-in message.

**TABLE 2 CUSTOMER SEGMENTATION IN RESPECT OF MOBILE SERVICES AT LUFTHANSA**

M&M MEMBER STATUSES	TARGET GROUPS FOR MOBILE SERVICES
Honorable Circle (HON)	Status customers (SC)
Senator (SEN)	
Frequent Traveller (FTL)	
Miles & More Members	Basic customers (BC)
Non-members	Non-members (NM)

TABLE 3 LUFTHANSA'S MOBILE SERVICES—TASKS' AND MOBILE SERVICES' CHARACTERISTICS

	TASK CHARACTERISTICS			MOBILE SERVICE CHARACTERISTICS		
	Intended use	Task type	Predictability	Communication type	Application type	Target group
Mobile check-in	Data processing	Routine task	Predictable	Push Pull	SMS WAP	SC BC, NM
Flight-related information	Notification	needs to handle irregularity	Unpredictable	Push	SMS	SC, BC
Arrival/departure information	Information access	Routine task	Unpredictable	Pull	SMS/ WAP	all
Flight plan	Information access	Routine task	Unpredictable	Pull	WAP	all
Miles & More balance	Information access	Routine task	Unpredictable	Pull	SMS/ WAP	SC, BC
Lufthansa contact information	Information access	Routine task	Unpredictable	Pull	WAP	all
Price information	Notification	Routine task	Unpredictable	Push	SMS	all

In contrast to Status customers, *Basic customers* must initiate the check-in service themselves via WAP (pull). In a five-step process, they must enter the URL (which can be bookmarked), their Miles & More number or credit card number, as well as their surname. They can then select a flight. Both customer groups benefit from later check-in deadlines (25 minutes prior to departure in Frankfurt and Munich, 20 minutes at all other German airports), the reduced waiting time, and a check-in process that they can activate anywhere. Status customers benefit additionally from the convenience of not having to wait in any line at check-in and not having to remember their credit card or Miles & More membership number. For further convenience, no messages are sent between 22:00 until 04:00, while only urgent messages, i.e., those messages urging check-in for a flight departing within the next 90 minutes, are sent between 04:00 and 09:00.

- (2) *Flight-related information service*: The flight-related information service notifies customers about events such as gate changes, flight delays, or flight cancellations (*notification*). These events are *unpredictable* and create a *need to handle irregularity*, e.g., departing from a different gate. This service is the same for both Status and Basic customers, but is not provided to Non-members. As soon as one of the events listed above occurs, Status customers as well as Basic customers will receive an SMS alert (*push*) that does not

require a reply (see Figure 3).

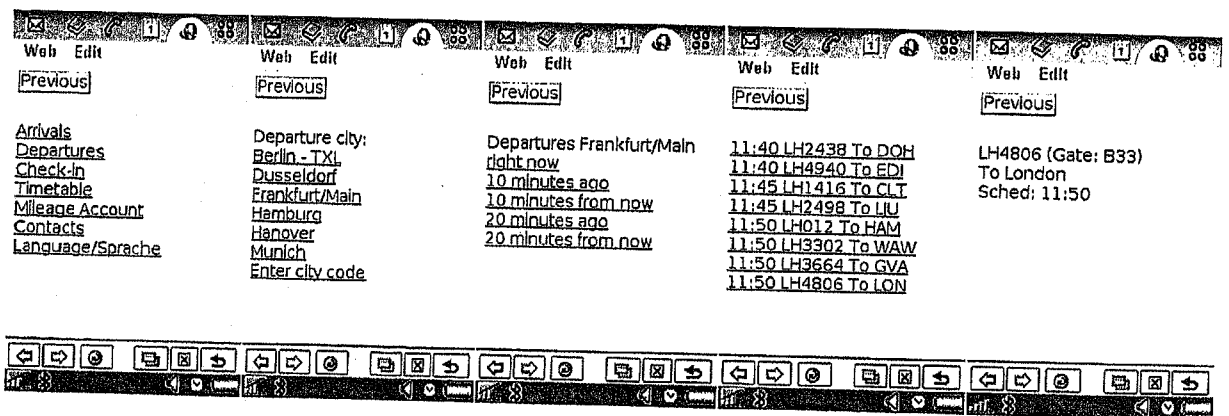
This service furthermore allows both customer groups to postpone their departure to the airport if their flight has been delayed. The waiting time at the airport and the associated discomfort are therefore reduced or eliminated. The customer can react directly to changes at the airport.

- (3) *Arrival/departure information service*: The arrival/departure information service allows customers to access information on a specific flight (e.g., arrival and departure time, punctuality or gate number) (*information access*). The service is a routine task, but is initiated by the customer and therefore unpredictable for Lufthansa. The service is the same for Status, Basic, and Non-members. One way of accessing this flight information is by sending an SMS with "d" (for departures) or "a" for arrivals, followed by the flight number (*pull*). Another way is to apply the WAP service (*pull*) (see Figure 4). Four steps are necessary to receive such information using the WAP service: The customer must enter the URL (which can be bookmarked), select a departure or arrival location from a list of major airports or enter a city code, select the scheduled time (choices are "currently", "in 10 minutes", "10 minutes ago", "in 20 minutes" and "20 minutes ago"), and finally select the flight (*medium ease of use*). The customer can use this service anytime and anywhere.

FIGURE 3 A SAMPLE SMS ALERT ABOUT A GATE CHANGE



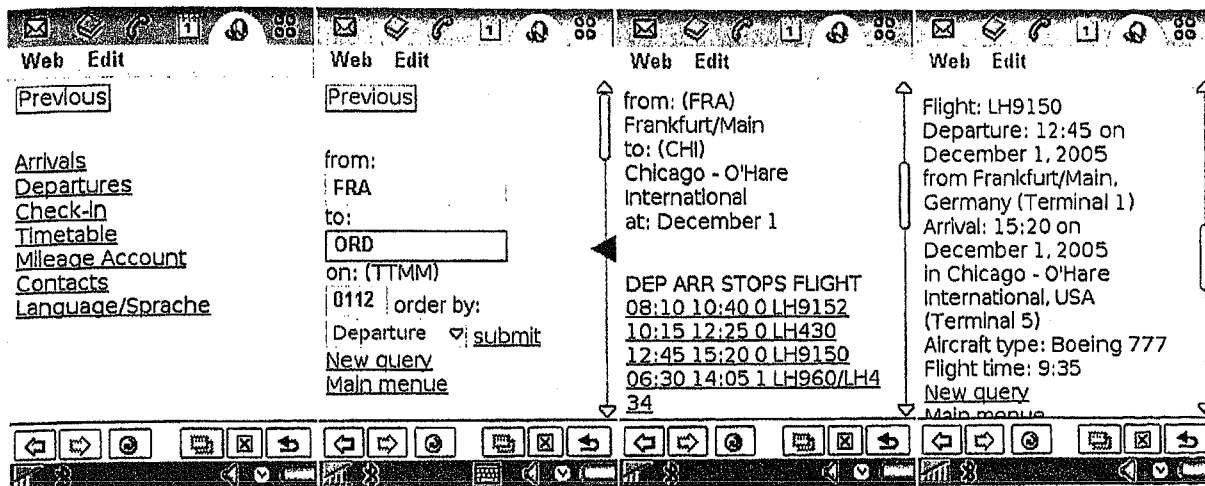
FIGURE 4 A SAMPLE WALK-THROUGH OF THE ARRIVAL INFORMATION SERVICE



- (4) *Flight plan service:* The flight plan service allows any customer to request flight plans for specific dates and arrival or departure locations (*information access*). The service characteristics are similar to those of the previous service. The major difference is that it is not available via SMS pull, but only as WAP pull (see Figure 5). The customer must enter the URL, the departure and arrival locations, and select a date. The next step is to select a connecting flight from the list of connecting flights between the requested locations on the requested dates. The information the customer receives includes flight numbers, departure and arrival terminals as well as the make and type of aircraft used on the flights.
- (5) *Miles & More balance service:* The Miles & More balance service allows the customer to access

- his or her Miles & More account's balance (*information access*). The service is a *routine* task initiated by the customer and therefore *unpredictable for Lufthansa*. It is the same for both Status and Basic customers, but does not apply to Non-members. The service is provided via SMS or WAP pull. Via WAP, the customer enters the URL and either a Miles & More number or username and password (*pull*). The customer sends the word "account" or "miles" to Lufthansa via SMS (*pull*).
- (6) *Lufthansa contact information service:* The contact information service allows the customer to look up Lufthansa's contact phone numbers (*information access*). The service is a routine task, initiated by the customer and therefore *unpredictable for Lufthansa*. It is the same for Status and Basic customers as well as

FIGURE 5 A SAMPLE WALK-THROUGH OF THE FLIGHT PLAN SERVICE FOR FRANKFURT TO CHICAGO O'HARE



Non-members. The customer enters the URL via WAP and selects the Lufthansa contact information service (*pull*). The customer can then access Lufthansa's contact information regardless of the time or place without having to remember the phone numbers.

- (7) *Price information service*: The price information service notifies the customer about the newest price offers (*notification*). The service is a *routine task* initiated by Lufthansa and is *unpredictable for the customer* since he or she can only make a decision regarding the offers after receiving them. It is the same for all target groups: M&M members can grant permission in their online profile, others can subscribe via SMS. Every Friday, Lufthansa sends an SMS (*push*) to draw the customer's attention to an e-mail (also *push*) with attractive price information. Customers benefit from this service because they do not need to do any research regarding this information themselves.

## THERE'S NO BETTER WAY TO FLY— LUFTHANSA'S MOBILE SERVICES!

With the advent of its mobile services, Lufthansa aims to provide its customers with a higher quality of service and to live up to its reputation of being innovative. The quality of service can be increased through mobile services by saving customers' time or making it possible for them to use idle time resourcefully. Innovation is reflected in the perceived connotation of innovativeness associated

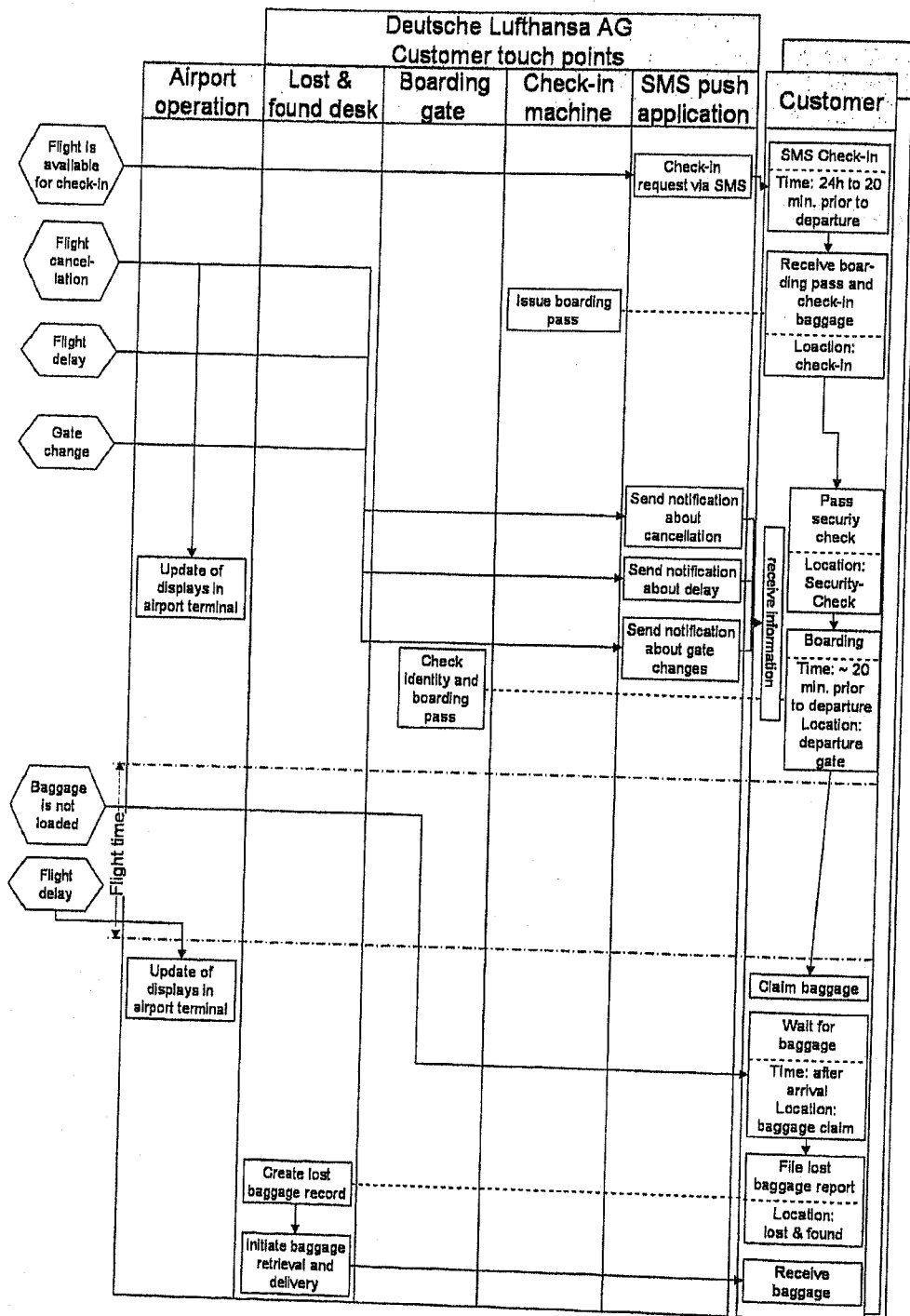
with mobile services. In the following, the travel process is described once again and the support provided by mobile services is shown where applicable. Our customer is again an M&M member with a frequent traveler status. We furthermore assume that all the required permission has been obtained.

After the customer has booked a flight, he or she is notified about the gate changes that could occur, as well as any booked flights that have been rescheduled or cancelled. Every 15 minutes the mobile check-in service checks the availability of the flight in the check-in system. As soon as the flight is available, an SMS message is sent inviting the customer to check in, while respecting the telephone silence required between 22:00 and 09:00. The customer replies to the message by typing "y", followed by the flight number, which can be copied from the check-in notification. The reply must be sent only 20 minutes prior to departure (at Frankfurt and Munich airports 25 minutes). (Basic customers can complete the mobile check-in via WAP but must initiate the service themselves.) To receive a boarding pass and pass through security, the customer follows the same procedure as after the Web check-in as described above. An upgrade is offered following the same rules. If the flight's departure time or departure gate has changed, the customer is notified via SMS. No further notifications about delays or gate changes are sent 20 minutes before the expected departure, since boarding is supposed to be in process at this time. Cellular devices have to be switched off

onboard anyway, so the customer is no longer able to receive messages. If the customer's connecting flight has been changed, an SMS message noting the new departure time and gate is sent to his or

her cell phone. After arrival at the final destination, the customer picks up his or her check-in baggage at the baggage claim. Figure 6 depicts the process by means of mobile services.

FIGURE 6 TRAVEL PROCESS USING THE NEW MOBILE SERVICES



## A LONG WAY

Although Lufthansa's mobile services were successfully implemented and customers' acceptance of them is at a satisfactory level and still growing, some issues did arise during the project, some of which are yet to be resolved.

One challenge was to obtain the customers' permission to contact them on their mobile phone. In most countries, anti-spam legislation requires permission to be obtained for commercial e-mail, but also for commercial SMS messages. Similar to other service providers, Lufthansa offers customers the choice to accept commercial communication appropriate to their member profile. This permission can be granted at the *lufthansa.com* Web portal. Initially, Lufthansa's obtained permission covered all of the company's commercial communications to the customer's mobile phone. Most customers had concerns about granting such a general permission and, consequently, the number of permissions granted was very low. After Lufthansa had changed the online forms in the member profile to allow for permission to be granted separately for each service (see Figure 7), the granting of permission grew significantly, since the customers felt they could better control the communications that they would receive.

Another challenge was caused by the dual-bill option offered by many cellular network operators. This feature is generally used to allow the seamless use of a single cellular device on both a corporate and a private bill. Dual-bill customers receive two phone numbers, a separate SIM<sup>®</sup> card and a separate bill for each number. Customers can have one card logged into the network at a time. Calls and messages to both numbers are forwarded to the currently logged-in SIM card, while outgoing messages and calls are placed with the active card's number as the sender ID. If such a dual-bill customer has registered his corporate cell phone number in his M&M profile, messages are sent to this number and he can receive them, no matter which SIM card is active. However, while his private SIM card is active, he will respond to received messages with a sender ID that Lufthansa's system does not recognize, thus the message cannot be properly processed. This problem could be handled by adding a second field to the M&M profile that will allow two cellular numbers and matching sender IDs to be stored in both fields when retrieving for the appropriate member profile.

The third challenge is based on the twin-card concept, which allows the seamless usage of two cellular devices with one phone number and one bill. Twin-card customers receive two SIM cards with identical subscriber information. Each SIM card can be inserted into a different cellular device, e.g., one phone installed in a car and a handset. All calls and messages will be received by whichever device is switched on at the time. The challenge arises because SMS messages are stored on the device rather than on the network. If a customer receives, for example, a check-in message while the first device is active (e.g., the car phone receives the message while the customer is driving to the airport), but switches to the other device and wishes to respond (e.g., from the hand set while in the shuttle from the parking lot to the terminal), the message is not available. This problem can be solved if the customer stores Lufthansa's response service number in her phones' address books (or the SIM card's). She would nevertheless have to remember her flight number to be able to send the proper response. Another solution would be if she could simply request the system to resend the last message by sending a message with a special keyword. At present this is, however, not yet available.

## "DON'T WORRY, I'LL CATCH MY FLIGHT..."

*John Smith is again at a business meeting. He had received a check-in invitation via SMS the evening before. Now he can check in until 20 minutes prior to departure and won't have to stand in line again. Already having checked in, he will only have to obtain his boarding pass before boarding. This means that he has a few precious minutes more with his clients! Almost simultaneously to realizing that the meeting would take longer than scheduled, he receives a second SMS saying that his flight has been delayed for an hour. This means that John can stay until the meeting is over. After the meeting, he answers the check-in invitation, drives to the airport at a leisurely speed and obtains his boarding pass. On his way to the gate, his cell phone beeps again, there's another SMS message from Lufthansa warning him that the departure gate has been changed. John changes direction to the new gate and boards the aircraft on time. In the plane, he sits down, relaxes, and looks back on his day: a successful business meeting, satisfied clients, no rush, and now a relaxed flight home.*

## CASE STUDY QUESTIONS

---

1. Describe the benefits that Lufthansa's mobile services provide for users. Compare the travel process before and after the introduction of the mobile services. Under which circumstances do the mobile services provide benefits to the customer? How does Lufthansa avoid contacting the customer with irrelevant information?
2. Extend Table 3 with two additional mobile service characteristics: "Ease of use" and "Benefits to the user". Assess the ease of use for each service and classify the benefits to users in each target group. Which services provide different service levels, and which do not? How do services with different service levels differ from those without?
3. Analyze the travel process using the mobile services. Where do you see further potential for mobile services? Describe the mobile services that you would add, and justify their benefits for either the user or Lufthansa. Do you see additional categories of benefits? Can service level differentiation be implemented in the services you suggest? If so, how?

4. Compare Lufthansa's mobile services to the service offering of your favorite airline or another public transport service (such as the railway, metropolitan trains etc.). What can these service providers learn from Lufthansa's services? In what aspects are they already ahead of Lufthansa?

## ENDNOTES

<sup>1</sup>For further information about the company visit <http://www.lufthansa.com/>

<sup>2</sup>IATA: International Air Transport Association

<sup>3</sup>E.g., when a Status customer with a sufficient bonus mile balance checks in for economy class and enough seats are available in the higher classes.

<sup>4</sup>SLA: Service-level agreement

<sup>5</sup>FTE: Full-time equivalent

<sup>6</sup>SMS: Short message service, a text messaging service standard in GSM cellular networks.

GSM: Global system for mobile communications, a cellular network standard.

<sup>7</sup>These screenshots were taken on a device using the SymbianOS operating system with the UIQ user interface and the mobile edition of the Opera™ browser.

<sup>8</sup>Subscriber Identification Module, the chip card which identifies a cellular device for the network in GSM networks.