Self-service technologies in the hospitality industry: An exploratory analysis of interaction design issues

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Abstract
The paper presents three different implementations of self-check in technologies at Norwegian hotels: an integrated assisted self-service solution, a standalone self-check in kiosk, and an ad-hoc configuration of available technological modules. The analysis of these cases allows us to identify a tentative list of interaction design issues for further analysis. The list includes: setting expectations/orientation, help and emergency assistance, spatial attention management, disambiguation, and cross-device coordination.

Author Keywords
Self-service technologies (SSTs); interaction design; usability; user experience; appropriation.

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction
The current move toward self-service technologies is a significant trend in the service sector. In March 2014, Olea [6] observed:
“In retrospect, 2013 was a year filled with advances in self-service kiosk technologies, which are evolving rapidly to solve real business issues in retail, healthcare, hospitality and other sectors.” [6]

The “self service revolution” is especially visible in recent years in the hospitality industry. An increasing number of hotels, in particular, small- and medium-sized hotels in Northern Europe, are adopting self-service technologies to cut operational costs and offer competitive room prices to their customers. The introduction of technologies replacing service-providing people means a radical change in the tasks that hotel guests have to carry out in order to enjoy hotel services, and issues falling into the general category of “interaction design” are become central for successful implementation of the technologies. In this paper, building on previous research [1,2,4,7,8], we explore some of such issues by analyzing three cases of self-service technologies implemented at different Norwegian hotels.

**Case A: Integrated assisted self-service solution**

The hotel implementing this solution is one of the first self-service check-in hotels in Northern Europe; it was open in early 2011. The hotel is somewhat unconventional: it was envisioned as a modern, smart, stylish, and, at the same time, inexpensive place to stay in a big city. This vision is embodied in a consistent design of the hotel as a whole. Instead of a regular lobby the hotel features a line of self check-in terminals complemented with an assistant’s station next to the self check-in terminals. The location and orientation of the station makes it possible for the assistant to detect guests’ problems with using the technology and help them, if necessary.

**Case B: Standalone self-service check in/check out kiosk**

Another solution we analyzed was implemented at a budget hotel mostly intended for tourists; it employed a standalone self-service kiosk shown in Fig. 2 and Fig. 3. Guests are supposed to make online room reservation in advance and then use the reservation number and credit card to make payment and retrieve a keycard. The kiosk has a set of small lockers on the side, but this feature appears to be redundant: during the actual check in the keycard was provided through a narrow slot under the payment terminal (Fig. 3).
There is no receptionist at the hotel. The general manager who is present there (except for nighttime) is not in any way involved in checking in or checking out the guests. The kiosk is located in a small and otherwise empty foyer separated by sliding doors from both the street and the inner space of the hotel. The inner door is always locked; the outer one is locked at nighttime and can be unlocked by swiping either a keycard or any credit card.

**Case C. Low tech locker solution**

Yet another kind of self-service technology is implemented at a smaller hotel, located in a busy (and noisy) central area of a city. It is announced that the self-service solution is supposed to be used only when guests arrive “after hours” (that is, after 17:00), otherwise they are supposed to be assisted by a receptionist. However, in practice the hotel is staying unmanned virtually all the time.

The self-service solution is implemented as follows. The hotel contacts the guest before his/her arrival and informs about the locker code the guest has to use to retrieve the keycard. The locker box is located behind the entrance door, which is usually locked. To unlock the door the guest needs to swipe any credit card through a vertical slot outside the entrance door. The door can also be unlocked by the room keycard.

**Emerging issues**

The cases were studied by obtaining first-hand experience of using the technologies as a part of actual staying at the hotels (at least one night in each of them). The following issues emerged as significant factors influencing user experience: general orientation, help and assistance, spatial attention management, disambiguation, and cross-device coordination.

**Setting expectations / orientation**

At traditional hotels, one just needs to present himself or herself to the receptionist, who gives instructions, explains everything of importance, and answers possible questions. When checking in to a self-service hotel for the first time one may not have a consistent set of expectations and often has to learn by trial and error. A lack of general orientation, therefore, may cause uncertainty and frustration, especially in first time guests.

**Help and emergency assistance**

In case of emergency, for instance, if locked out, people staying at traditional hotels usually have a possibility to ask local personnel for assistance. If no human assistant is present at a hotel (e.g., cases B and C, after hours) getting help can be problematic. The cost of error (e.g., loosing one’s keycard) can be high, and realizing that can negatively affect customer experience even if no emergency actually happens.

**Spatial attention management**

Human service providers often direct our attention to important objects or elements of the environment (e.g., “Please sign here” or “The elevator is over there”). This natural aspect of human-human interaction is not inherently included in our interaction with technology, and needs to be supported explicitly (see Fig. 3). If such support is insufficient, customers are likely to experience confusion. For instance, the unusual placement of the credit card slot of the self-service kiosk in case B (see Fig. 3), which made it difficult to
locate the slot when standing by the kiosk, was the reason why using the technology was associated with certain stress. In case C finding a locker with the room key took considerable time: while the instructions pointed to “the reception area”, the locker was in fact located on the wall right across the reception.

Disambiguation
This issue is somewhat similar to the previous one but at the same time it is different. Sometimes the user is confused not because he or she does not know where to look for important information but rather because it is not clear which alternative to choose. The alternatives themselves can be obvious, but choosing the right one might require additional explanation or trial and error. For instance, as shown in Figure 2, there are two possible orientations of the credit card’s magnetic strip when swiping the card through a vertical slot.

Cross-device coordination
Self-service technologies at hotels usually comprise a configuration of devices. It is especially obvious in case C, but even in case B a standalone kiosk is complemented with other devices, such as room locks and a box in which keycards are to be left when checking out. The use of such devices needs to be coordinated, or user experience can be undermined.

Conclusion
The issues described above comprise a tentative list, which needs to be further explored in future research, including both empirical studies and theoretical analyses (employing, for instance, the concepts of affordances and signifiers [2,5]). The issues can be addressed in a variety of ways, such as re-designing existing artifacts, designing new ones (e.g., mobile phone apps), re-configuring and contextualizing existing artifacts, or combining all the above.

References