Towards a Smart Bathroom Maid

Introduction

The topic of this project is exploring design directions towards a smart private-bathroom service/product. It is often the case that a bathroom is used by multiple people after each other. An unclean bathroom environment can hinder the user experience. The shared bathroom also involves a peak usage issue. These two points will cause dissatisfaction among users. So, the design goal is to (1) reduce user's effort when cleaning the bathroom and (2) assist users in using the bathroom together by a technical solution.

The final output is a smart toilet lid with three interaction concepts of different smart levels. Through evaluation and analysis, I found that users with high acceptance of smart products tend to choose smart products as an "assistant"; on the contrary, users with low acceptance of smart products tend to choose "tools". For the former, they are more concerned about what personal data is collected and they expect a balance between personal data and smart services.

Problem description

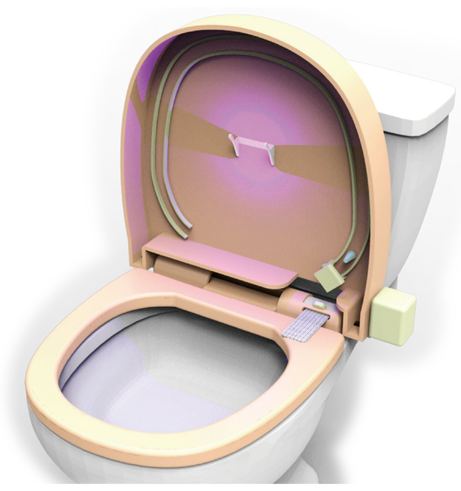
The reasons for users' dissatisfaction can be classified into two categories:

Insufficient cleaning time (happened mostly when the bathroom is in great demand).

Not clean or not clean enough (happened mostly after using the toilet, after bathing).

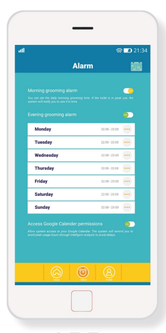
Aiming at the scene after using the toilet, I produced product concept and interaction concepts to explore how smart product to resolve these two problems.

Exploring solutions

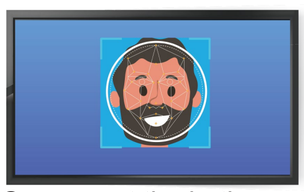


Product concept

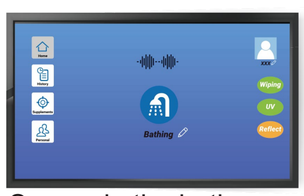
- A retrofitted smart toilet seat
- It can automatically clean the seat.



APP



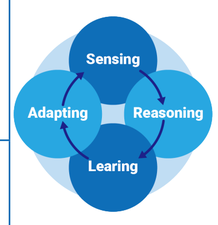
Screen out the bathroom



Screen in the bathroom

Interaction concepts

- Three interaction concepts with different smart level.
- APP is not involved in Concept 3.

	Iteration system	Main functions	User
Concept 1 High-smart level		• Automatically opening the toilet lid. • Coordinating peak usage	Providing personalized data
Concept 2 Middle-smart level		• Automatically opening the toilet lid.	Providing collective data
Concept 3 Low smart level			Operatiing by user him/ herself

Three smart levels

- Three interaction concepts with different smart level.

Conclusion

Smart levels VS User value

Through testing, I found that as the level of product smart decreases, participants tend to give higher scores for criteria "controllable" and "trustfull". Through the interview, participants indicated that products with low smart were more like a tool, and they had a stronger sense of control, because the decision of the product mainly depends on the users themselves.

Conversely, as the level of smart increases, scoring of criteria "intimate" and "convenient" will be relatively higher. Users implied that smart products are like assistants, understanding their preferences and behaviors, so they feel more intimate. Smarter products also mean more services for users, which is more convenient.

"Assistant" VS "Tool"

The user's own acceptance of smart products determines whether they want an "assistant" or a "tool." For participants with low acceptance, the smarter the products, the more they feel insecure. This is because (i) smart product will collect their personal information,(ii) product's self-iteration and smart services will bring them uncertainty. They think this will increase their burden.

For participants with a high degree of acceptance, they are concerned with what personal data the product collects. For example, participants who chose Concept 2 as their favorite concept said that Concept 2 does not provide personalized services as Concept 1, but it does not collect personal information as much as Concept 1 does. They feel that Concept 2 will give them a sense of balance, which provides both smart services and makes them feel safe. They want to achieve a balance between smart services and personal data.

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