

Smarter robot vacuum cleaners for automated office cleaning

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Credit: Fraunhofer-Gesellschaft

Can you really use Outlook to make sure your office floor gets vacuumed? Absolutely! Fraunhofer IAO is currently developing an intelligent cleaning concept for smart offices. A robot vacuum cleaner automatically takes care of upcoming cleaning jobs that have been scheduled in Outlook.

One colleague has dirty shoes, another has drops cake crumbs on the carpet, the hole punch leaves a trail of confetti on the floor - and just like that, the conference room is dirty again. Bad enough that the cleaning crew isn't due to come in until next week. But bad turns to embarrassing when the company is expecting a visit from customers. This is where the Internet of Things (IoT) can come to the rescue: using IoT technology, Fraunhofer IAO is developing an intelligent [robot vacuum](#) cleaner concept for smart offices.

This Fraunhofer concept allows office workers to use an intelligent booking system in Outlook to schedule the automated services of an iRobot Roomba 650 robot vacuum cleaner. Taking existing bookings and the bookings for rooms with higher priority into account, the robot creates and updates its schedule in real time. If one booking clashes with another, it suggests alternative slots. What's more, it analyzes when conference rooms have been reserved and autonomously works out

the best way to ensure those rooms are always clean for the next meeting or event.

Navigation via a virtual map

To find its way from its charging station to the room that requires cleaning, Roomba uses a virtual map. The only thing it needs a human to do is to open the door, which it signals by playing a predefined melody. After it is done vacuuming, Roomba returns to its charging station.

Plans are already under way to expand this concept once the first version has been successfully implemented. Proposed functions include Roomba being able to enter rooms without human assistance by means of automatic doors, smarter door locks or by connecting Roomba to speech assistants such as Amazon Alexa.

Unlike the latest Roomba models, where [office](#) map data is uploaded to the cloud and sold, the Fraunhofer [concept](#) ensures the maps are saved locally and are used solely for the purpose of cleaning offices.

Removing platform restrictions

Integrating the robot vacuum cleaner into the ecosystem of the ENTOURAGE research project removes platform restrictions that plague existing IoT and smart services devices. The ENTOURAGE ecosystem enables cross-platform use of smart services, thus allowing the Roomba vacuum assistant to communicate with speech assistants of different manufacturers, including Amazon's Alexa and Apple's Siri, as well as to coordinate with other devices such as a robot floor mop.

Provided by Fraunhofer-Gesellschaft

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