

robotics⁺

Swiss National
Centre of Competence
in Research



Intelligent Robots for Improving the Quality of Life

A robot at home? People's perception of a domestic service robot

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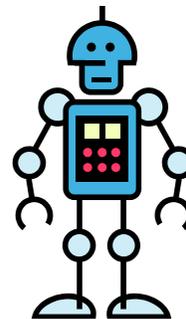
Bridging the Robotics Gap
11th-12th July 2011, Enschede, the Netherlands



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are a research instrument of the Swiss National Science Foundation.

Overview

- Background: NCCR Robotics Switzerland
 - Bringing together various disciplines through robotics
- Human-robot interaction (HRI) in the home
 - A longitudinal ethnographic study with Roomba
- Social implications of robots in daily life
 - People's perception, acceptance, trust and use patterns



Background: NCCR Robotics Switzerland

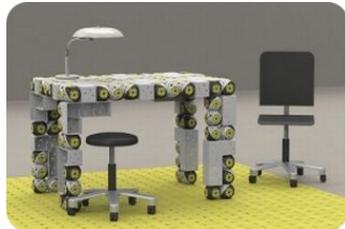


Project 1
Bio-mimetic
sensing, actuation
and mobility

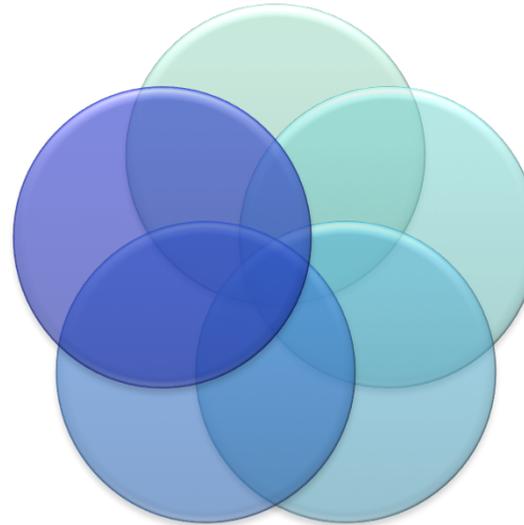


Project 2
Interaction and
Manipulation

Project 5
Robots for
daily life



Project 4
Distributed
Robotics



Project 3
Prosthetic
Robotics



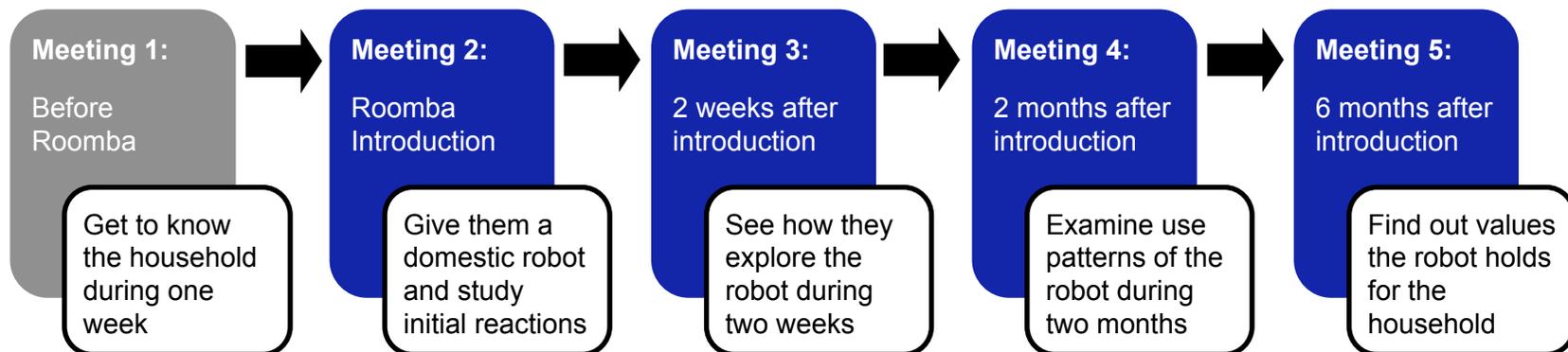
www.nccr-robotics.ch



Intelligent Robots for Improving the Quality of Life

A longitudinal ethnographic study

- From novelty effects to patterns of usage → long-term study
- Challenges:
 - Capture HRI despite constraints (privacy, temporality in the home)
 - Uncover information though routines of usage are less conscious
- A longitudinal ethnographic study with Roomba



Preliminary results (after 2 months)

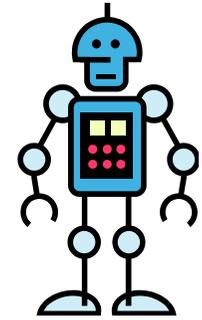


- Cleaning without Roomba:
 - **Women** carry out more cleaning activities than men.
 - Some **small things** make the huge proportion of cleaning.
 - Cleaning becomes less during the week with a peak on **Sundays**.
 - Cleaning tends to happen related to **events that produce dirt**.
 - About half of the cleaning activities take place in the **kitchen**.
 - The great part of cleaning doesn't take longer than **a couple of minutes**.

Preliminary results (after 2 months)

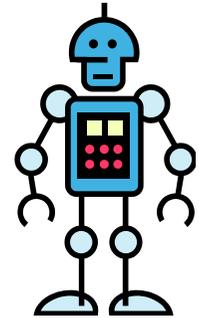
- **Who** uses Roomba?

- Women / wives
- Men / husbands
- Babies
- Infants / children / teens
- Elderly
- Guests, visitors, neighbors
- Cleaning lady
- Domestic pets



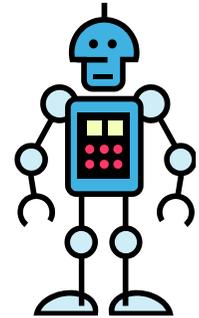
Preliminary results (after 2 months)

- **What** do people do with Roomba?
 - Cleaning
 - Watch for fun
 - Offer as gift
 - Give a demo
 - Photo / video
 - Personalize
 - Give a name
 - Talk to / greet
 - Play / experiment
 - Hack internal system
 - Discuss about it
 - Adjust furniture



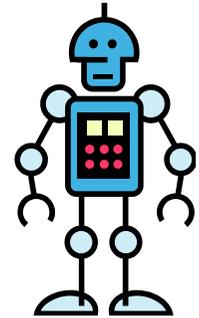
Preliminary results (after 2 months)

- **When** do people use Roomba?
 - “Adopters”: *“I switch it on and leave.”*
 - Daily or every other day
 - Mostly mornings or evenings
 - Rather longer slots (30-60 min)
 - Let it run until Roomba stops automatically
 - “Non-adopters”: *“You have to observe it!”*
 - Sporadically
 - Various times during the day
 - Rather short slots (10-20 min)
 - Stop it manually



Preliminary results (after 2 months)

- **Where** do people use Roomba?
 - Benefits:
 - Where a lot of dirt is produced (kitchen, entrance hall)
 - Under furniture
 - Drawbacks:
 - Corners
 - Tiny places
 - “Adopters”: *“Just let it work!”*
 - Prepare first than let Roomba go everywhere
 - “Non-adopters”: *“It doesn’t stay in the kitchen!”*
 - Keep Roomba in one area



Conclusion

- Cleanliness is a delicate topic and very private
 - Reflects personal and shared values
- Roomba involves the whole household
 - Even though there emerges one main user, for adoption the whole household has to be taken into account
- Roomba evokes changes
 - One has to be willing to adapt / adjust / change ...
- Roomba leaves huge space for improvement 😊
- Is Roomba a robot?



References

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