

# 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

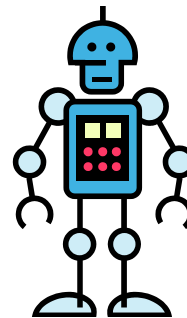


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# Overview

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- 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

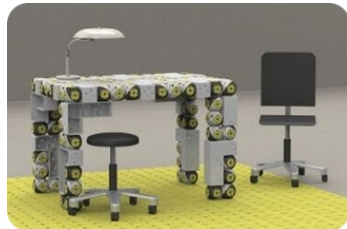


Project 1  
Bio-mimetic  
sensing, actuation  
and mobility

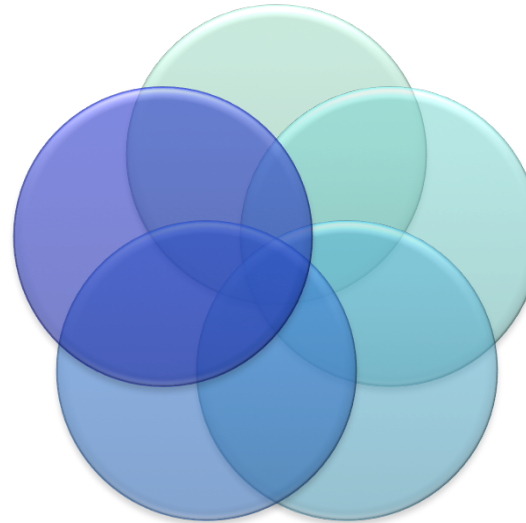


Project 2  
Interaction and  
Manipulation

Project 5  
Robots for  
daily life



Project 4  
Distributed  
Robotics



Project 3  
Prosthetic  
Robotics



[www.nccr-robotics.ch](http://www.nccr-robotics.ch)

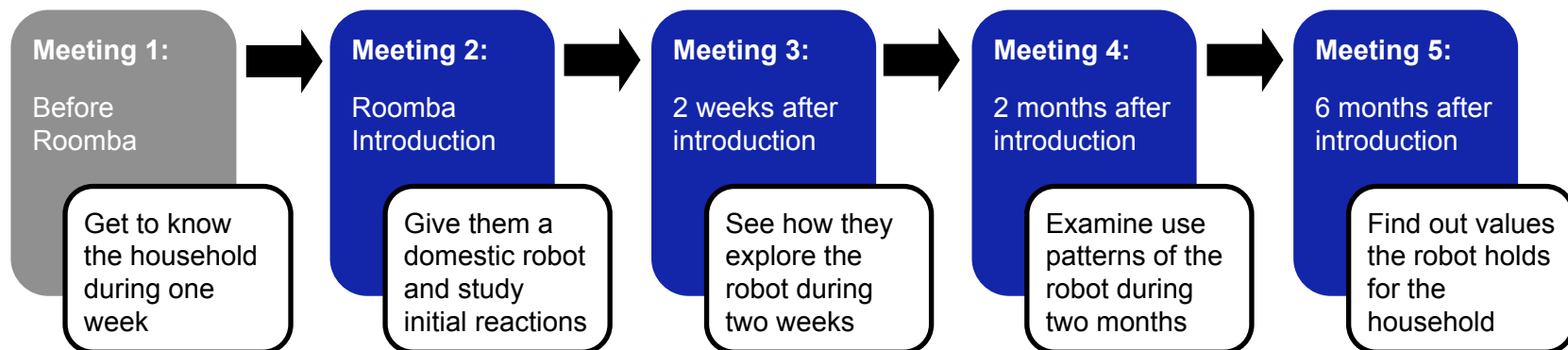


Intelligent Robots for Improving the Quality of Life

# A longitudinal ethnographic study

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- 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)

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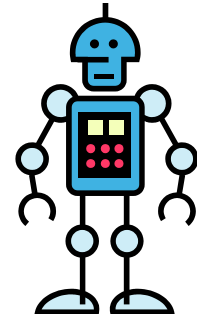


- Cleaning without Roomba:
  - **Women** carry out more cleaning activities than men.
  - Some **small things** make the huge proportion of cleaning.
  - Cleaning becomes less during the week with a peak on **Sundays**.
  - Cleaning tends to happen related to **events that produce dirt**.
  - About half 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)

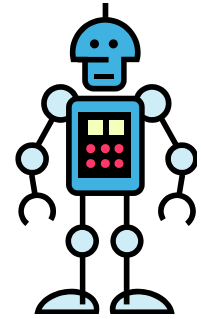
- **Who** uses Roomba?

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



# Preliminary results (after 2 months)

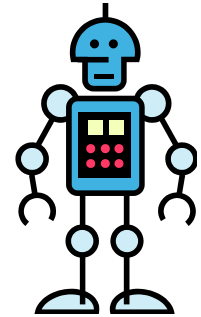
- **What** do people do with Roomba?
  - Cleaning
  - Watch for fun
  - Offer as gift
  - Give a demo
  - Photo / video
  - Personalize
  - Give a name
  - Talk to / greet
  - Play / experiment
  - Hack internal system
  - Discuss about it
  - Adjust furniture



# Preliminary results (after 2 months)

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- **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

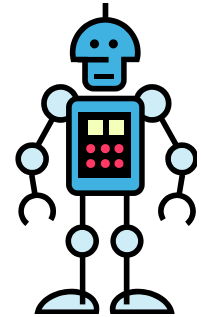




# Preliminary results (after 2 months)

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- **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

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- 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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