

Social assistive robots for elderly

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Content of the presentation

- Who is that robot?
- Background on its existence
- Experimentation
 - Design
 - Results
 - Conclusion
 - Recommendations

Meet Buddy: a social assistive robot



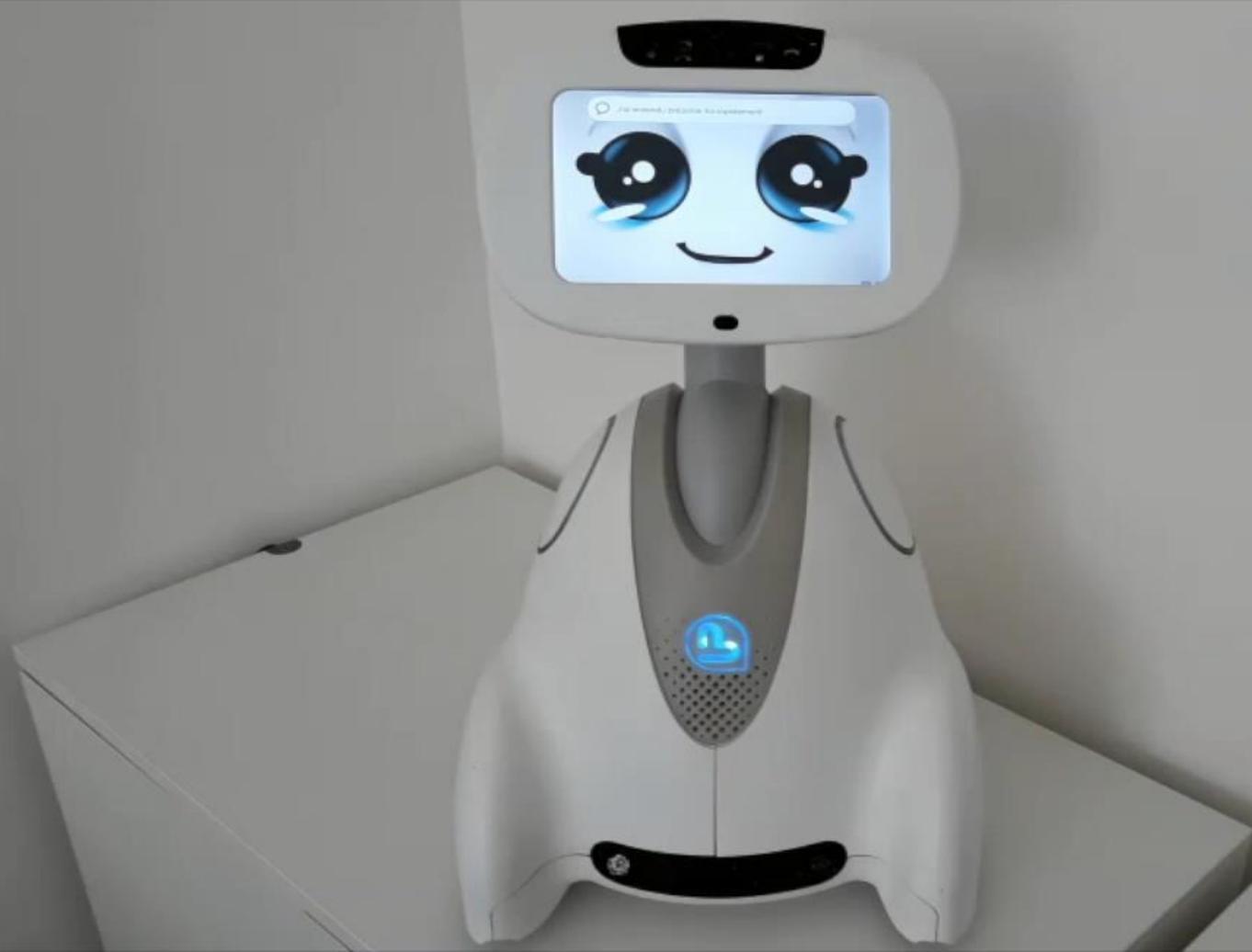
Social assistive robots are robots that enhance the physical and/or mental wellbeing of elderly through social interaction

What can Buddy do

- Make and take video phone calls
- Take, send and archive pictures
- Get and send emails
- Set reminders
- Tell jokes, fun facts, answer prefixed questions
- Play a quiz
- Dance
- Exercise
- Ask for cuddles
- Walk
- Monitoring



BuddyApp on tablet



Buddy's founders

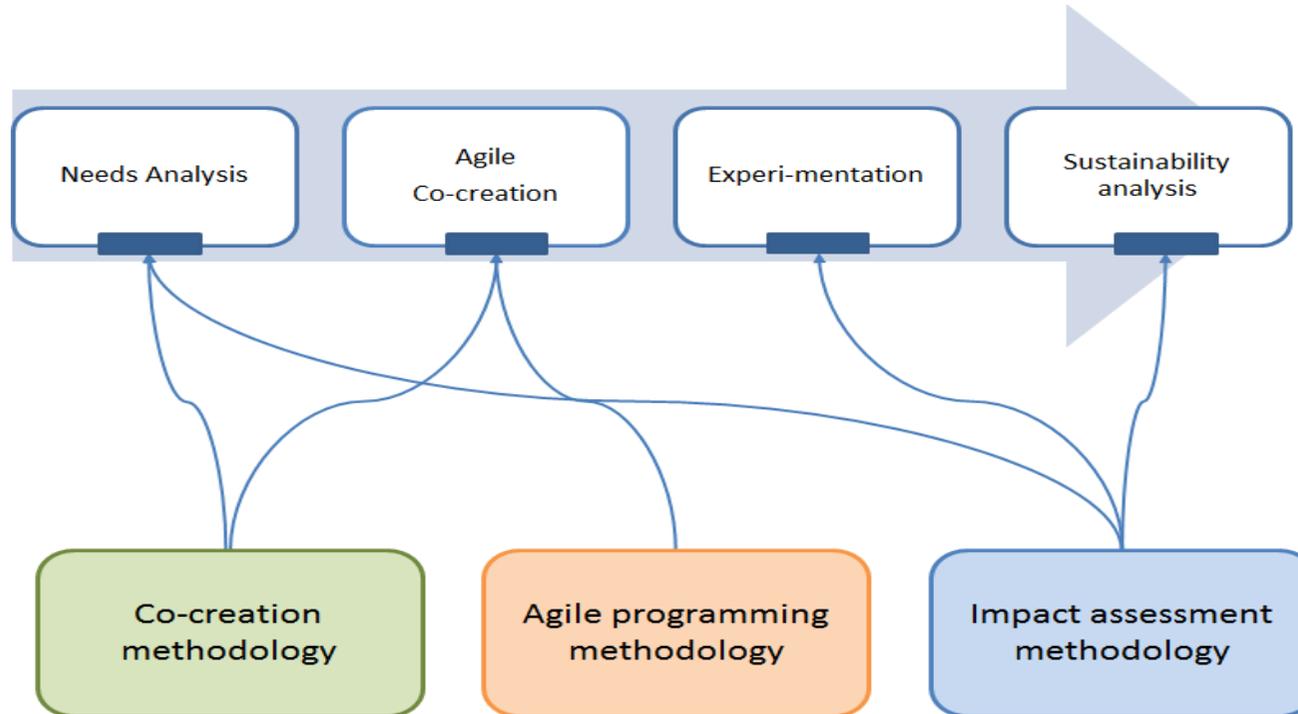
BLUEFROG WITHIN THE ACCRA-PROJECT



THE ACCRA PROJECT FOCUSSES ON BUILDING ROBOTIC APPLICATIONS IN ORDER TO SUPPORT OLDER PEOPLE IN ORDINARY DAILY LIFE AT HOME AND IN CARE FACILITIES.

European-Japanese consortium: multidisciplinary team of 6 European partners and 3 Japanese partners

Buddy's development cycle



The experiment

What is the value of Buddy for elderly persons?

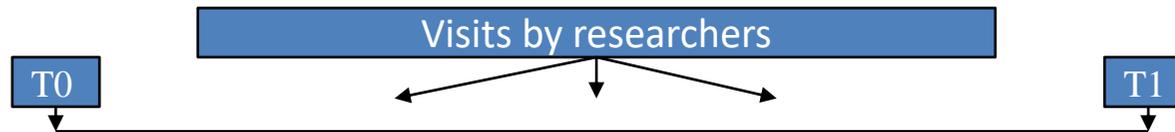
Satisfaction with appearance	Godspeed Questionnaires series
Safety	Godspeed Questionnaires series
Usability	System Usability Scale (SUS)
Acceptance	Unified Theory of Acceptance and Use of Technology (UTAUT)
User experience	User Experience Questionnaire (UEQ)
Impact: -quality of life -loneliness -self reliance -social activity	EQ-6D and ICECAP Loneliness scale KATZ Technology use for social acceptance

Before and after design without a control group

Mixed methods: survey, interviews, registration

Buddy 3 weeks in residence elderly person (n=32)

- First signs of loss of autonomy
- Absence of cognitive, speech, physical and hearing impairments that impede the (safe) use of Buddy
- Absence of fear for Buddy
- Living in a house or apartment where Buddy can move around in
- Age is 60 years or older



Results appearance

Aspect	Appraisal	Score T1 (scale)	Difference T0
Humanlike	+/-	2,5 (1-5)	No
Lively	+	3,0 (1-5)	No
Attractive	Good	1,59 (-3 to 3)	Was excellent
Novelty	Above average	0,68 (-3 to 3)	Was good

Quite positive

Results acceptance

Aspect	Appraisal	Score T1 (scale 1-7)	Difference T0
Effort expectancy	+	5,0	No
Attitude	+	5,1	No
Self-efficacy	+	5,3	No
Social influence	+/-	3,3	No
Facilitating conditions	+	5,2	More compatible with other systems than expected
Anxiety	+	1,8	Less fear of losing information and making mistakes
Safety (Godspeed)	++	4,5 (1-5)	No

Quite positive



Results appropriateness and ability to use

Aspect	Appraisal	Score T1 (scale)	Difference T0
Usability (SUS)	C-	63 (0-100)	No
Perspiciuity	Above average	1,26 (-3 to 3)	No
Efficiency	Bad	0,03 (-3 to 3)	Was below average
Dependability	Bad	0,69 (-3 to 3)	Was below average
Stimulation	Below average	0,98 (-3 to 3)	Was good

Quite negative

Results impact

~~Quality of life~~

~~Loneliness~~

No impact

~~Social activity~~

~~Self reliance~~

Negative

So what is the positive story here?

Positive

Social companionship

Presence

Easy to learn

Voice controlled

Fun



Quotes interview

"We feel less alone"
"we have a life partner"
"He brings life into the home"

*"It's pleasant, he becomes a company,
there's an exchange and when he leaves it's
going to be hard."*

"When he reacted to me it was nice. I liked his jokes. I liked it when I asked to my wife, 'do you want tea?' and he responded with 'I only eat electricity'."

What are the more critical points?

Critical points

Limited features

Other devices have better features

Lonely elderly persons main interested group

Difficult to use/control:

- Having to say “Ok Buddy”
- No reaction
- Wrong reaction
- Prefixed sentences/ commands
- Volume

Quotes interview

"You can only exchange with Buddy through a few sentences or he doesn't understand what you tell him."

"Sometimes, Buddy is not reacting, or reacting wrong. Because of this, Buddy does not react to the orders/questions we gave him. He did not always react on questions and this is a pity in the use."

"With the phone I can make pictures from several angles. Buddy stands still. With my phone I can do more."

Conclusion and recommendations

Mainly companionship for lonely elderly persons

Needs further development

Social companion

- Sing songs
- Read
- Tell stories
- Follow you around
- Recipes
- Games
- Play music
- Group activities

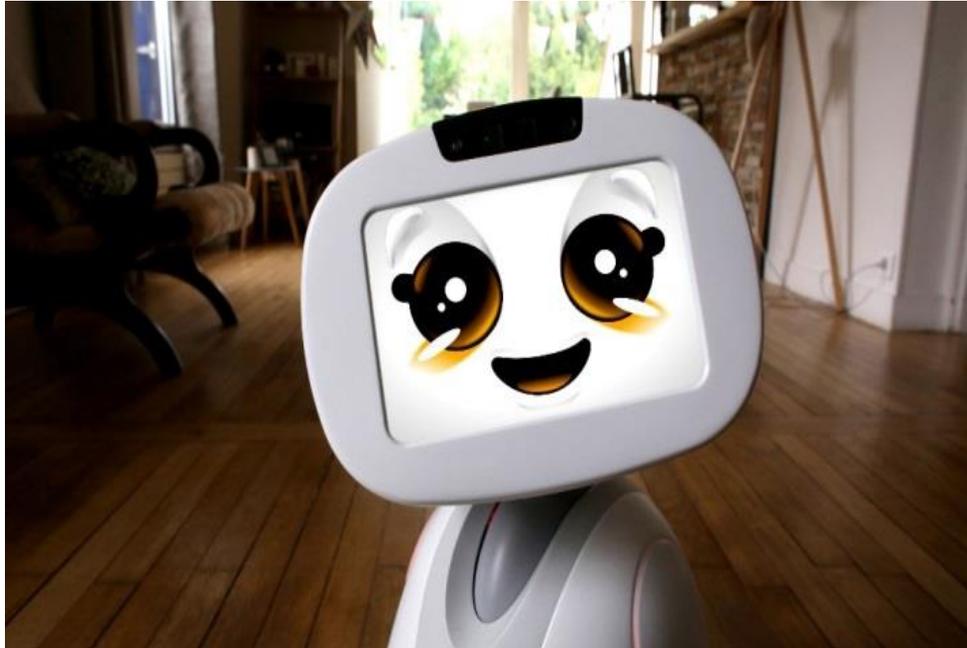
Support care

- Archiving and monitoring device
- Calling for help
- Pick up or bring things
- Joint agenda
- Remote reminder setting
- Make calls

Technical

- Improve voice control
- Volume

Thank you for your attention



Questions