Communication Robot for Persons with Dementia - Based on Field-based Innovation

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Communication Robots
(ICT & Robot Exhibition @ Sky Studio)

PARO (Daiwa House Industry)
Kabochan (Pip)
Pepper (SoftBank)
NAO (Aldebaran Robotics)
PaPeRo (NEC)
PALRO (FUJISOFT)
There is no answer on the desk nor in the laboratory.

Why do we use these robots for persons with dementia?

What kinds of services do persons with dementia want?

How do we use these robots?

There is no answer on the desk nor in the laboratory.

Answers must be in the use field.

Field-based innovation.
Field-based Innovation

- Matching technology with the user’s needs
- Concept design

- User’s characteristics
- Usage environment
- Consensus among the stakeholders

- Prototype
- Evaluation (Safety and usability)

- Service model incl. human support
- Field test
- Social receptivity
  - Efficacy
  - Social cost etc...

Whole process must be implemented in the proposed usage fields
Development of an information support robot for the elderly with cognitive disabilities

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It’s time to go to nursing home.

Really? Oh, Thank you.

Take care!

How to develop useful technologies for the elderly?

Information support robot for persons with dementia???
Decision process of the system concept based on field-based innovation

① Matching technology to users at the living environment
- Possibility of information support using the robot
- Suitable synthesized speech
- Speech recognition 78.9%
- Information acquisition >90%
- Suitable method according to the cognitive function of the elderly

Participant observation
Mock-up evaluation
User experiment

② Making system concept in the community (Izu city)
- Group interview (124 older people)
  (40 professionals)
  Interview (9 families)
  Workshop (2 families and related professionals)
- 172 needs from the elderly
- 36 support scenarios

③ Business model
- Target users:
  > Home-bound elderly with forgetfulness; incl. MCI and Mild dementia
- Services:
  > Medication adherence
  > Schedule indication
- Provision form:
  > Rental provision
- Related professionals:
  > Home cares
  > Area comprehensive support center
Technology for transmitting information with certainty
Technology for recognizing meaning of the users’ answer
Flexible interface for function of each user

Conversational information support protocol

Input of the information
Share of the information

Information share system
Users and their families input the information and share them with professionals

Service Model (Human support)

Target users
- Elderly with forgetfulness
- MCI
- Mild dementia

Schedule - Medication

It’s time to take medicine.

Memory
Important information for daily living; date, time, schedule and so on

Activity
Timely information about necessary activities
Community and use field create innovation.
Acknowledgement

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Empowerment of all stakeholders in the community

Field-based Innovation Cycle with Many Kinds of Stakeholders

- Users
- Users’ association
- AD professionals
- Medical professionals
- Welfare professionals
- Care givers
- Family
- Providers
- Commercialization
- Provisions
- Researchers
- Engineers
- Manufacturers
- Evaluation
- Regulation organization
- Empowerment of all stakeholders in the community