

# Let the Social Assistive Robot Help

## Advancement of Society

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# Quality of Life

What we can do for Dementia patients and their caregivers?



# Communication

Assist in improving the communication skill and behavior of the children with Autism.



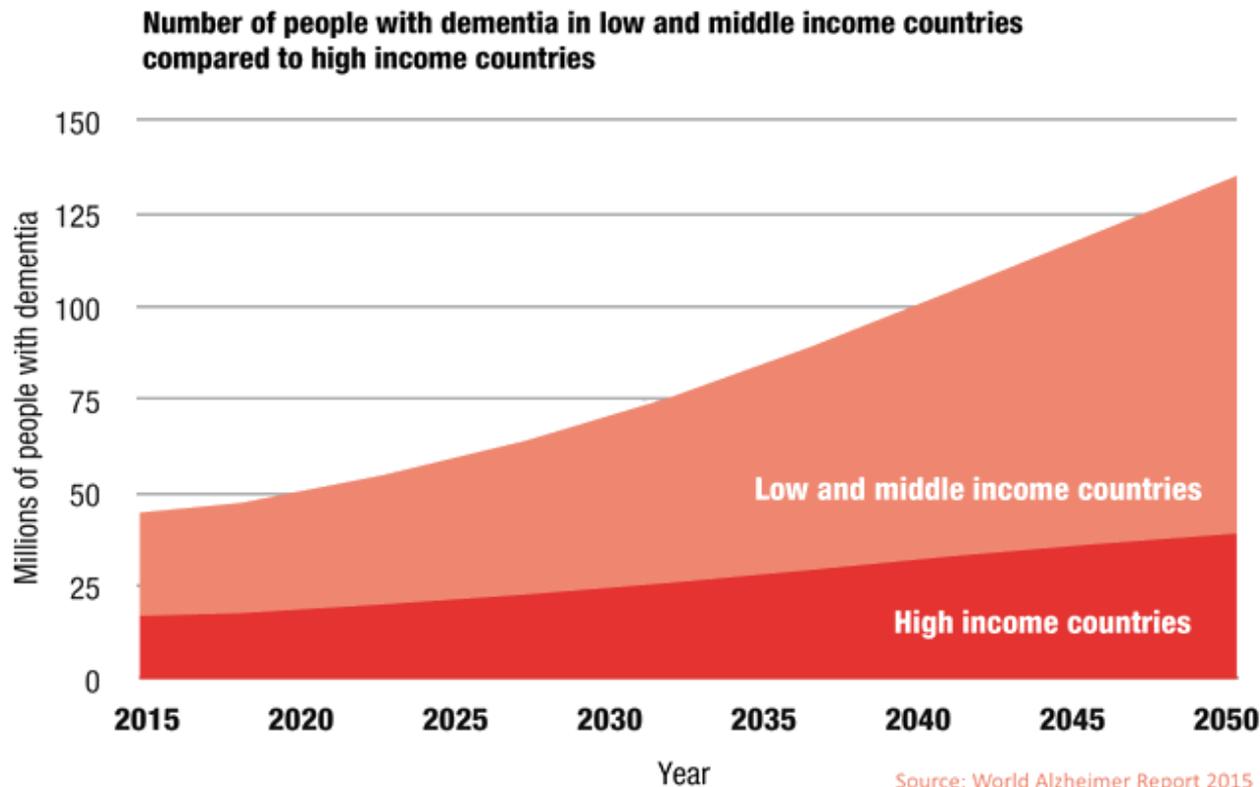
# Work Style

NEC will design diverse work styles that are free of the boundaries of generation, gender, nation, and organization, and people will cooperate even with AI and robots to create high-quality jobs and employment.

## NEC Social Robot – Dementia 認知障礙症



# Dementia 認知障礙症



**Technology innovation can help to reduce the cost of caring Dementia**

The total estimated **worldwide cost of dementia is US\$818 billion** in 2015, which represents 1.09% of global GDP. Dementia is a global challenge.

# Problems

## Patients:

1. Loss of abilities to **communicate**: Learning a New Language.
2. **Emotion problem**: Depression and it will leads to anger, frustration, anxiety and depression
3. **Memory problem**: forgetfulness
4. Behavior problem: inappropriate behavior
5. **Wandering**
6. Hallucinations and Delusions Associated
7. **Loneliness**

## Caregivers problems:

1. Not all the caregivers have the **right skills** to take care Dementia
2. May not be able to attend the needs of Dementia every minutes
3. Some Dementia do not want someone to assist them.
4. Caregivers have **difficult to approach** them.

## 初期

記憶力退化  
仍能獨立自顧  
處理熟悉的事情出現困難  
把東西放在不合適的地方  
判斷力減退  
對較抽象的觀念出現問題  
對時間、地點和人物感到混淆  
語言表達或理解有困難  
情緒/行為的轉變

## 中期

- 記憶力繼續衰退
- 自顧能力衰退
- 情緒不穩定
- 日落症
- 時間和地點混亂
- 分析能力退化
- 行為問題

## 後期

- 完全倚賴他人照顧
- 失去語言及溝通的能力
- 失去活動能力
- 大小便失禁

## 關顧者

- 照顧技巧
- 面對患者及自己
- 關顧重擔 **Carer Burden**
- 關顧壓力 **Carer Stress**
- 關顧者情感上的問題

## 預防

- 多用腦思考、多學習新事物
- 多運動、持續學習及多
- 參加社交活動被證實是預防腦退化症的有效方法。

# Robot Can Assist



Stimulate,  
Engage,  
Enable,  
Empower  
and  
importantly  
bring **fun** into  
the lives of  
older people  
and provide  
**support to  
their carers.**

# Communicative Robot



*Equipped with light, audio, temperature, posture, motion, audio sensors, face recognition, voice recognition and behavior detection.*

# Services provided

## Socially connected



- Video call to family, friends, or doctors.
- Audio phone call
- Send messages

## Interactive modalities



- Speech recognition
- Face & emotion recognition
- Touch interface
- Smart watches

## Healthy lifestyle



- Dancing with robot
- Proactive exercise reminder
- Diet improvement system

## Personalised services & Novelty



- Daily service pattern analytics
- Personalised services
- Uploading your own music, books, etc.
- Ongoing new services

## Group therapy games & quiz



- Cognitive (picture) quizzes
- Bingo games
- Calendar task planning and reminder

# Elderly Care Services



## Elderly Care Services:

- ◆ Suitable for elderly with Dementia for Home-based Personal Care
- ◆ Interactive Communication in Cantonese
- ◆ Companionship
- ◆ Interactive Modalities
- ◆ Socially Connection
- ◆ Healthy Lifestyle
- ◆ Personalized Services & Novelty
- ◆ Group Therapy Games & Quiz



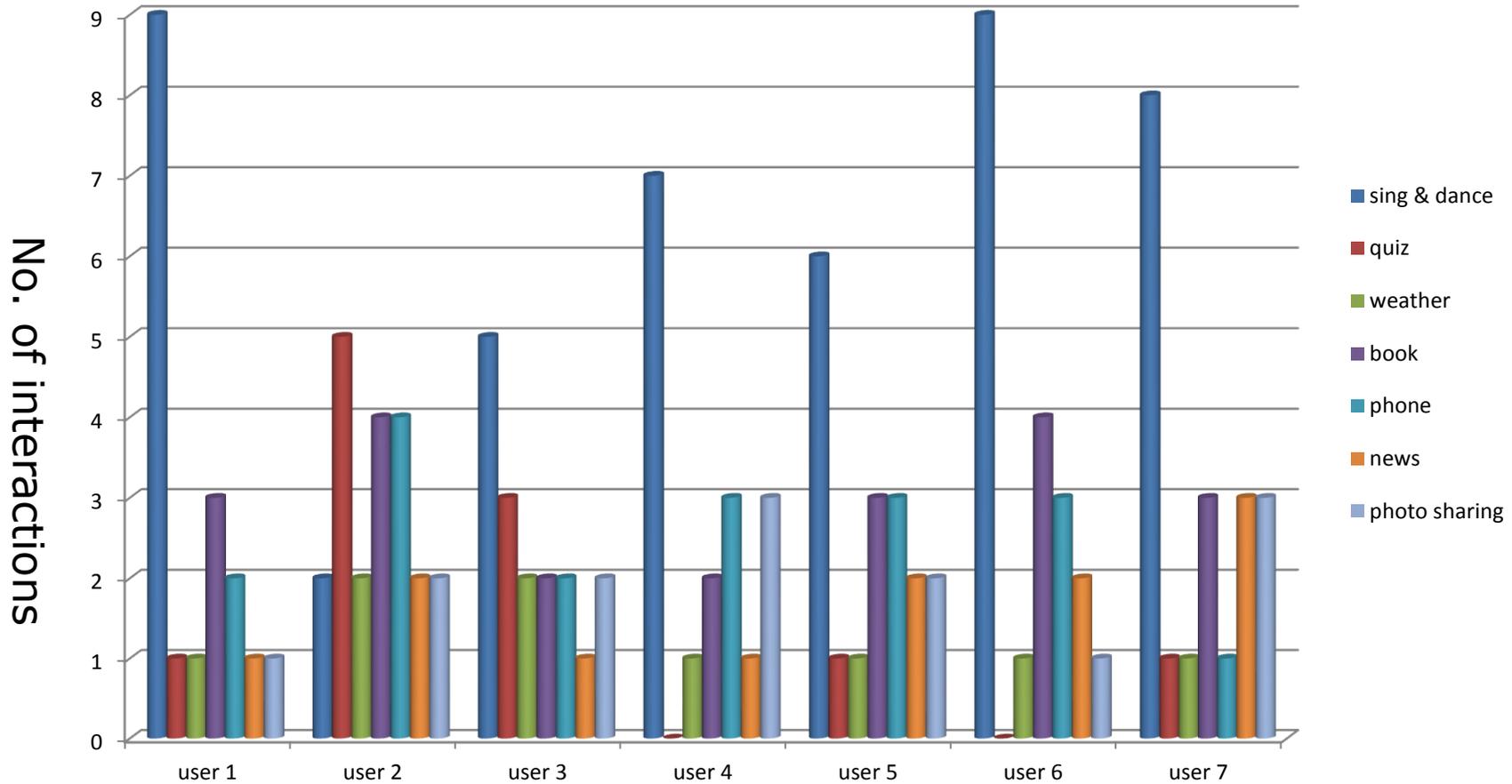
# Elderly Care Services



Elderly Learning at Home - Japan

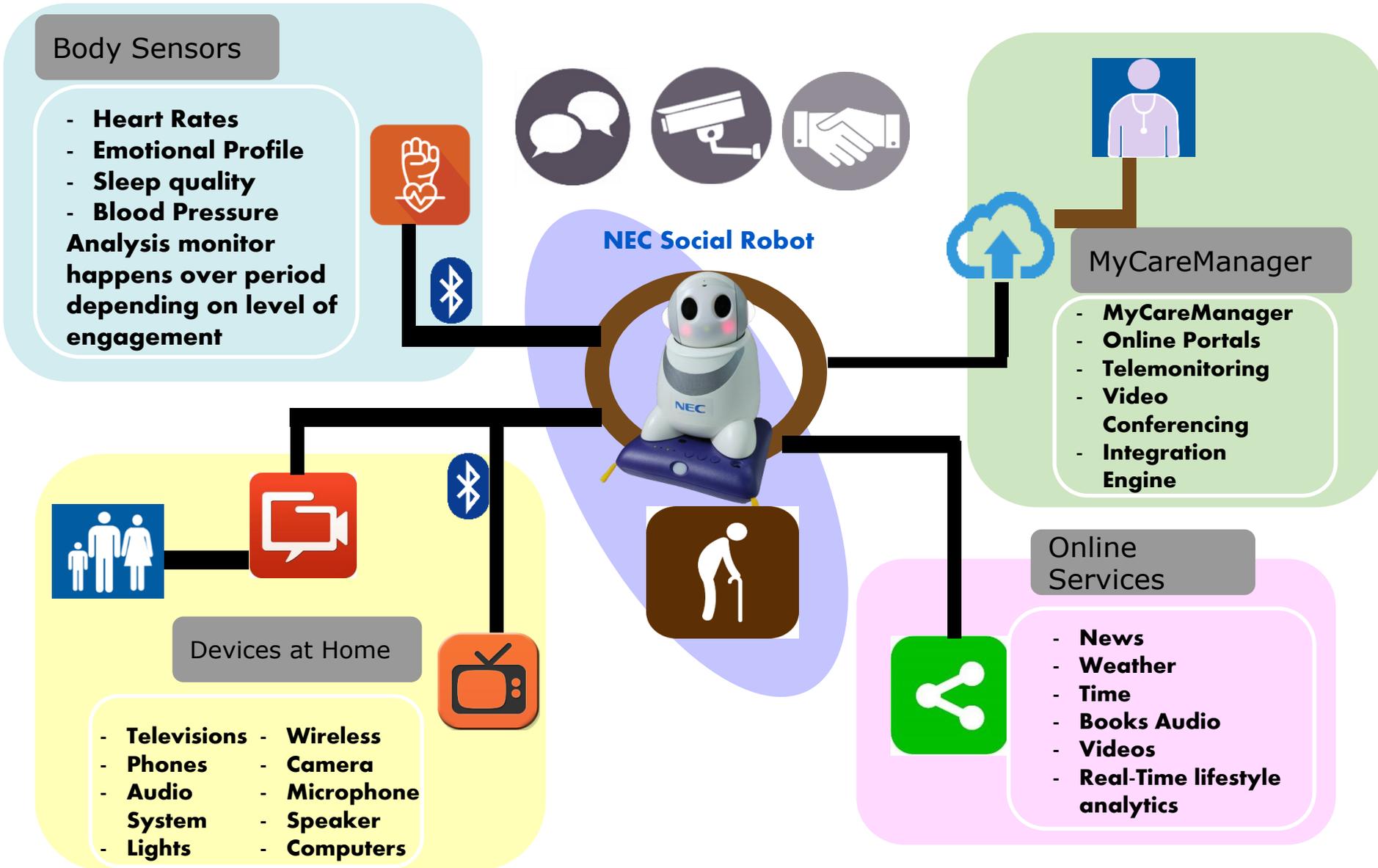


# User Experience



1. *Taking a sample of 7 users*
2. *Different functions tested are the common functions of the communication robots.*

# Services Model



# Findings and Value Proposition

Our solution is the outcome of 8 years of research and 35 field trials.

- 1. Engage, Enable** and **Empower** residents with lifestyle-centred multilingual services.
2. Improve *emotional* well-being.
3. Support carers in providing diversion therapy programs.
4. Enhance variety & novelty of services.
- 5. Reduce social cost of care.**
6. Facilitate social connectivity.
7. Help in capacity building.
- 8. Assist in staying home longer.**



## Stimulate, Engage, Enable, Empower both Clients and Caregivers

- By integrating technology with human-like engagement, NEC Social Robot HUMANE can enhance an individual's social and emotional well-being, whilst enriching their interactional environment.
- NEC Social Robot provides services that create a more sustainable and humane society by assisting individuals experiencing social isolation, dementia amongst other related conditions. Our goal is to stimulate, engage, enable, empower and importantly bringing fun into the lives of older people and provide support to their carers.



# Evolution of Robot

NEC develops communication robot for more than **20 years** and we have competed 35 field trials from 2016.



**Health Food Adviser Robot**  
**Year 2004**

Analyzed food using infrared spectrum analysis and without opening the packet



**Childcare Robot - PaPeRo**  
**Year 2005**

PaPeRo can locate the child and start playing with them when their parent calls PaPeRo by the build-in mobile phone . It can act as “Monitoring Agents” to care children



**Social Robot – HUMANE**  
**Year 2018**

Interactive Communication with human-like expression in Cantonese

# Applications of HUMANE

Our goal is to Stimulate, **Engage**, Enable, **Empower** and importantly bring **fun** into the lives of people and provide **support to their carers**.





## Educational Services:

- ◆ Suitable for children with autism spectrum disorders (ASD) to build up the positive relationship with HUMANE
- ◆ Educational Technology Platform to change the way of learning and thinking
- ◆ Interactive Communication in different languages (e.g. Cantonese, English, Japanese)
- ◆ 1 to 1 Teaching & Learning Tool
- ◆ Suitable for people aged 4 to 99





## Office Support Services:

- ◆ Reception Centre
- ◆ Attendance Management
- ◆ Presentation Tool
- ◆ Product Launch Tool



Reception Centre

HUMANE linkage with PowerPoint for Presentation

# Thank You



 **Orchestrating** a brighter world

**NEC**