



GERONTECH AND INNOVATION EXPO CUM SUMMIT 2017, HONG KONG

G-TECH VILLA – FACILITATING THAT CARING EMBRACEMENT BETWEEN GENERATIONS



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2017/06/17

Gerontechnology Research Center | Yuan Ze University

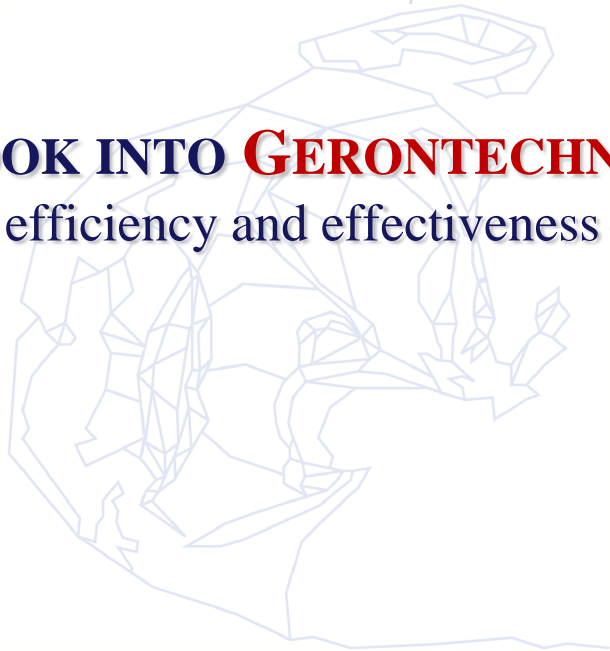
老人福祉科技研究中心 | 元智大學

THE SINOPHONE (CHINESE SPEAKING) WORLD IS AGING, FAST

- Mainland China has the world's largest aging population.
- Taiwan, Hong Kong, Macao, and Singapore are hit simultaneously by rapid population aging and extremely low birth rate.

2015	Hong Kong	Taiwan	Macao	Singapore
Crude birth rate	9.23 (206/224)	8.88 (211/224)	8.47 (216/224)	8.27 (219/224)
Fertility rate	1.18 (221/224)	1.13 (222/224)	0.94 (223/224)	0.81 (224/224)

- **LOOK INTO GERONTECHNOLOGY** as a positive solution in maximizing the efficiency and effectiveness of manpower and resource in elderly care.



“3Gs” FOR THE AGING SOCIETY

Gerontology_(7,270,000), Geriatrics_(9,200,000), Gerontechnology_(74,000)

- First International Congress on Gerontechnology in 1991
- International Society for Gerontechnology (ISG) in 1997



“Designing technology and environment for independent living and social participation of older persons in good health, comfort and safety”

- Scope of gerontechnology: **health, housing, mobility, communication, leisure, and work.**
- **Gerontechnology Research Center** Yuan Ze University was established in January 2003, the pioneering research center in the field of gerontechnology in Taiwan.

TRADITIONAL VALUE SHARED ACROSS THE SINOPHONE WORLD

- Filial piety

- Still an essential element of Chinese culture shared across the Sinophone world, where children growing up are constantly and emphatically taught to be filial to their parents and respectful to their elders.

“The young kid carries the older person on the back.”

“The young kid lends an arm to support the older person.”



**“THE CARING EMBRACEMENT BETWEEN THE OLDER PERSON
AND THE YOUNG KID”**

CARE NEEDS OF THE OLDER ADULTS, PROPOSED 2500 YEARS AGO

曾子曰：孝子之養老也，

【禮記，內則】

樂其心 不違其志
樂其耳目 安其寢處

“To take care of the older parents, you should make them happy, and let them do what they will; help them see well, hear well, and provide them a safe and comfortable living environment.”

(Zeng, a disciple of Confucius, about 2,500 years ago)

THE PURPOSES OF GERONTECHNOLOGY...

「啣指心痛」 – “FINGER BITING CAUSING HEARTACHE”



From the “24 stories of filial piety”

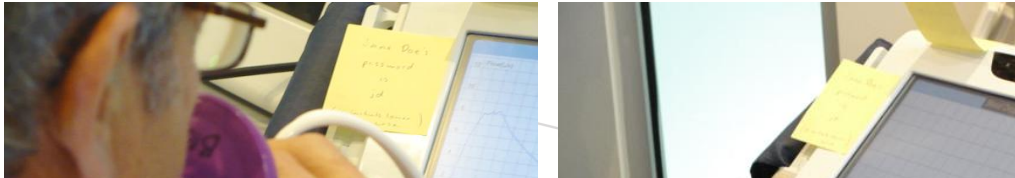
One day when Zeng was out cutting wood among the mountains, there came a visitor to his house. After awaiting her son’s return in vein, his mother bit her finger.

Zeng felt heartache all of a sudden and knew there was an emergency. He rushed back home with a burden of wood, and on arrival, knelt down to asked his mother what happened. His mother replied, “Here is a visitor who needs you urgently. So I bit my finger to awake you to come back...”

THE BEGINNING OF TELEHEALTH...

ICT IN HEALTHCARE: HOME TELEHEALTH

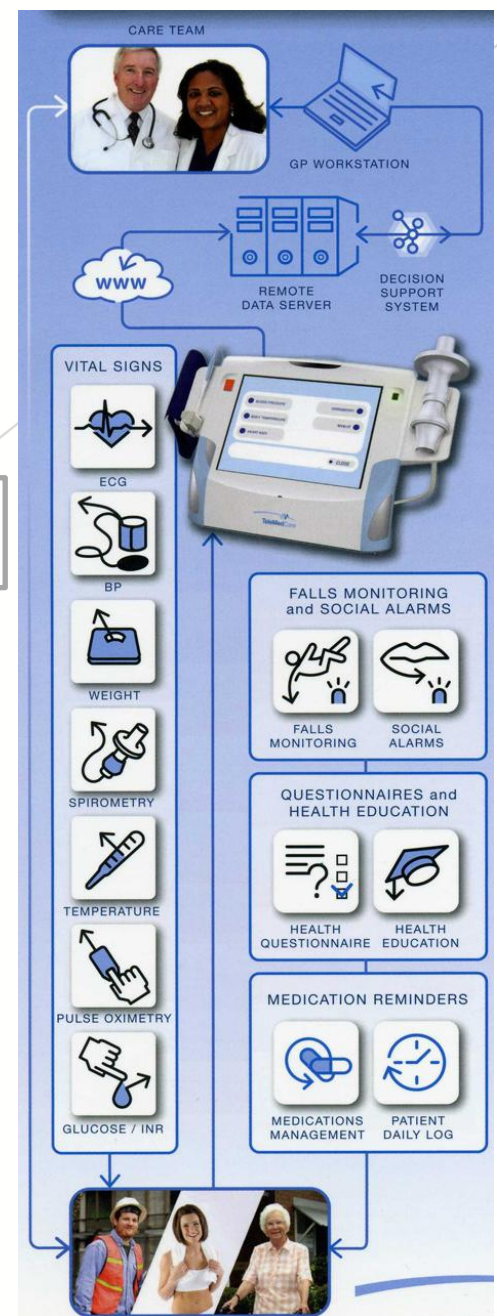
- 10 years after the major “Ubiquitous Care” project, home telehealth proved to be a failure in Taiwan...



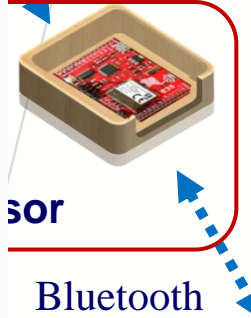
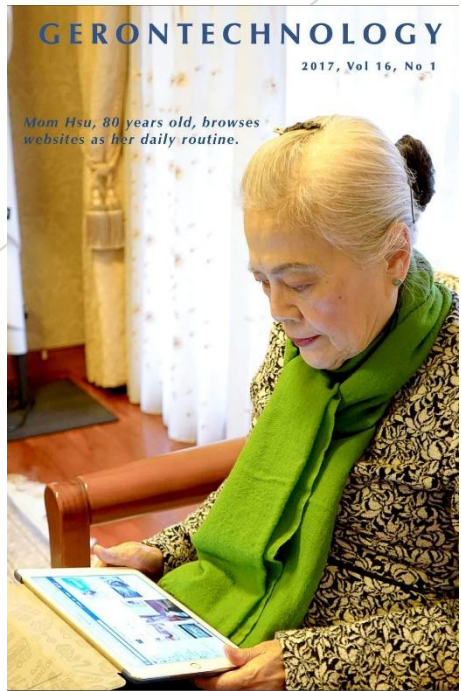
WHO ARE MISSING IN THE PICTURES?



TELEHEALTH SOLUTIONS
PROF. BRANKO CELLER, AUSTRALIA



IF THE VITAL SIGN MEASUREMENTS ARE SENT TO CHILDREN, FAMILY MEMBERS, RATHER THAN MEDICAL DOCTORS?



BP and BG Measurement

CARE, INTERACTION, CONNECTION, IN ADDITION TO HEALTH MONITORING

ARE YOU WEARING THESE WEARABLE DEVICES?



Google Glass



sgnl



Nike FuelBand



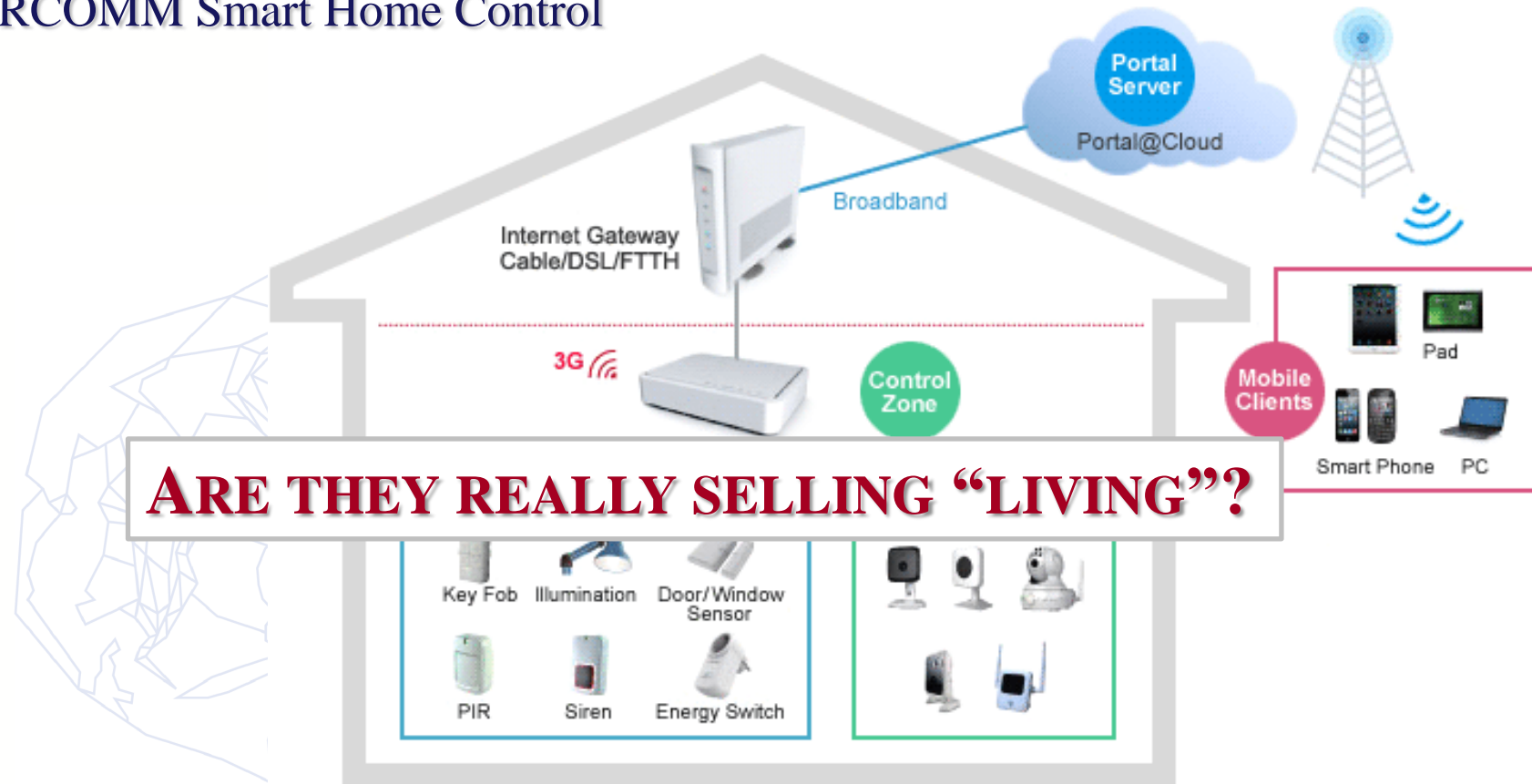
Whistle Activity



Mi Band

SMART HOME / SMART LIVING?

- CHT Smart Home
 - Service controller, wireless gas detector, wireless motion detector, wireless smart plug, wireless temperature/humidity sensor, wireless smoke detector, wireless reed switch, wireless IP camera, wireless remote controller
- SERCOMM Smart Home Control



ARE THEY REALLY SELLING "LIVING"?

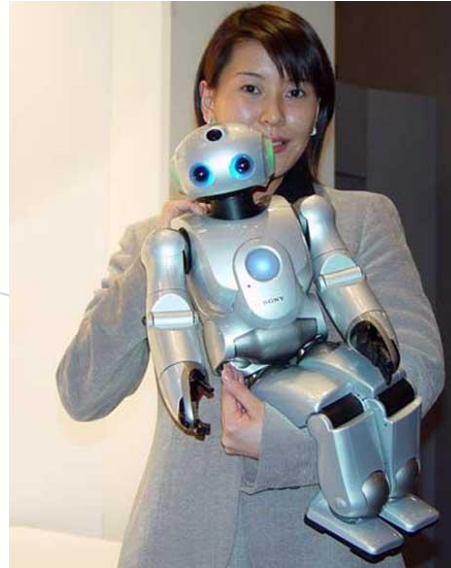
Key Fob Illumination Door/Window Sensor
PIR Siren Energy Switch

Smart Camera Smart Camera Smart Camera
Smart Phone Smart Phone

DO YOU HAVE A ROBOT @ HOME?



iRobot



Sony QRIO



Honda ASIMO



Robot @ Home!

iRobot (2002)



Paro – World's Most Therapeutic Robot certified by Guinness World Records available for lease for \$200 per month, or can be bought outright for \$6000

WHAT DO YOU SEE IN THESE PHOTOS?



GERONTECHNOLOGY IS MORE ABOUT DESIGN

- 老(old) = 弱(frail)、病(ill)、殘(disable)、窮(poor) ?
- “Need” may not necessarily turns into “**motivation**”
- “Enjoyment as a source of life”, more fun than functions!

樂其心
孝

Facilitating that caring embracement between generations!

- Gerontechnology is only valuable if the designs can be turned into products.

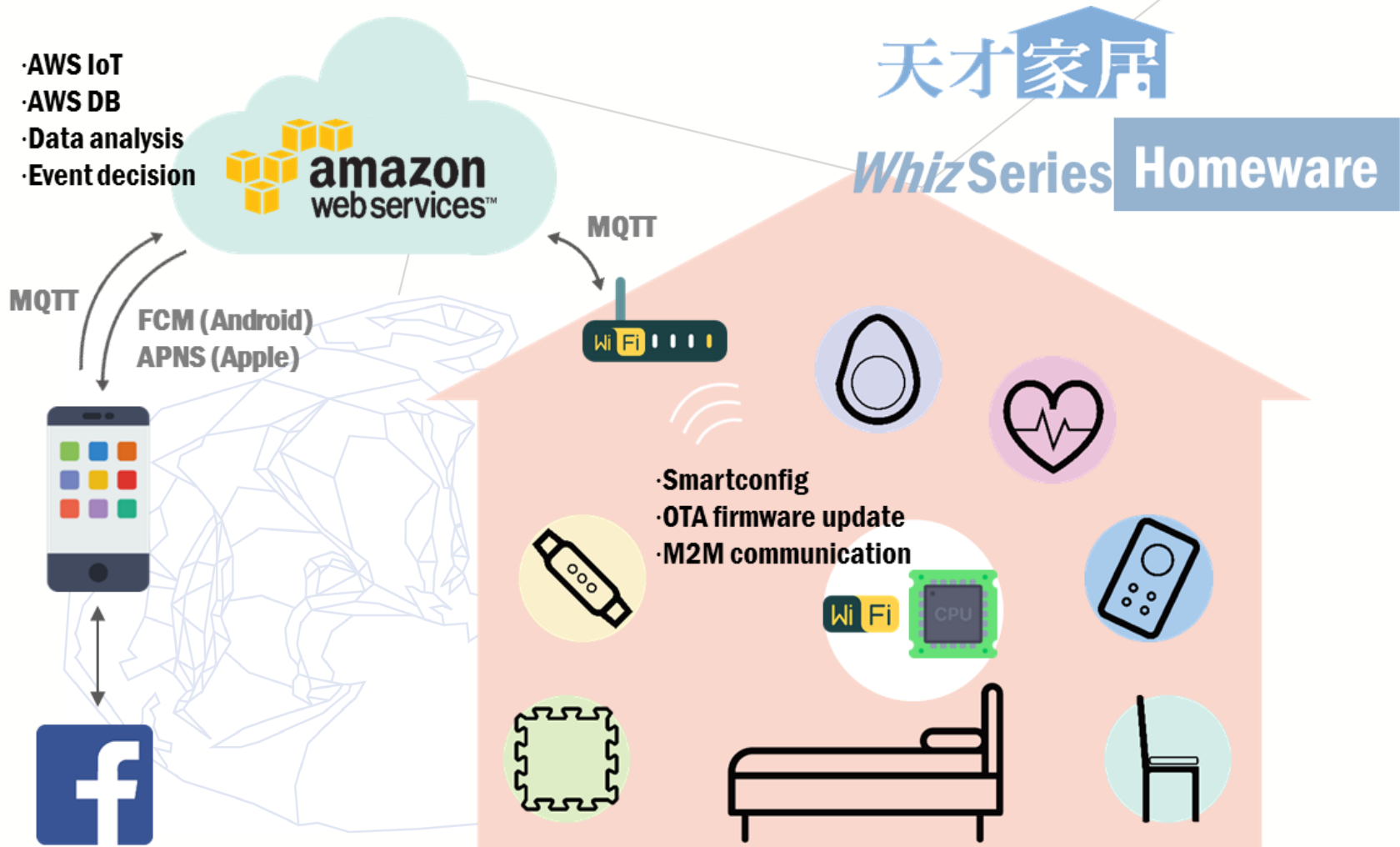


世大智科 天才家居

智慧生活 / 物聯網 / 老人福祉科技

Creativity → Prototype → Products → Sales

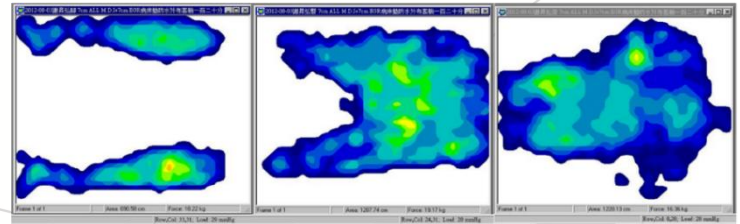
- Put “smart” into “living”: Transform artifacts commonly seen in everyday lives into Internet of Things (IoT)



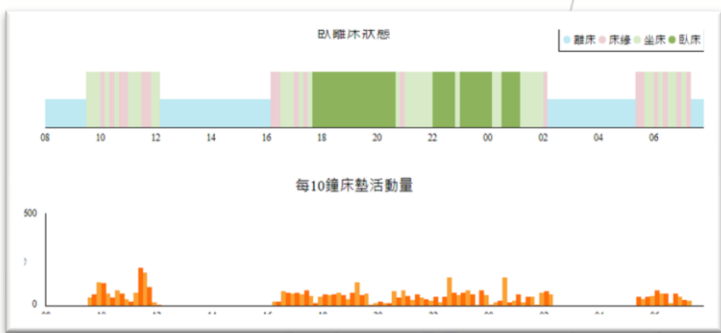
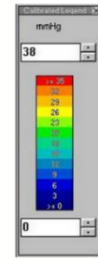
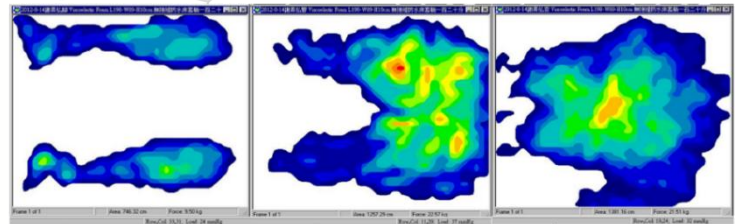
CENTERED AROUND THE BEDROOM: *WHIZPAD* IS A VERY COMFORTABLE MATTRESS CAPABLE OF MOTION SENSING

- Special foam to reduce the risk of bed ulcer
- Leave bed alarm in 3 stages to reduce risk of fall
- In-bed activity / sleep quality monitoring

Motion-sensing Mattress



Hospital Standard Mattress



RELIEVED CARE SYSTEM
安心臥 照護系統

SEDA 世大化成 世大智科

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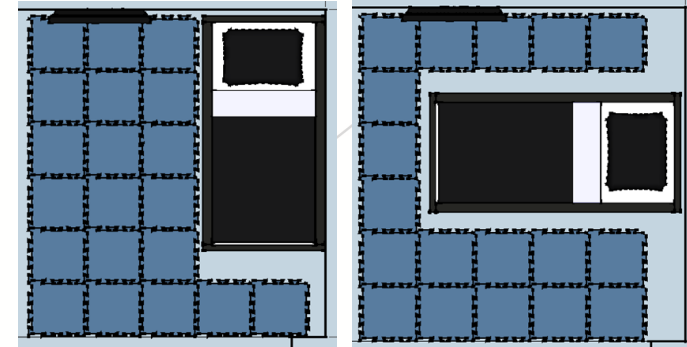
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308房1床 WP005	308房2床 WP006	308房3床 WP007	308房6床 WP008	309房1床 WP001

- 307房1床-離床
06-13 12:24:00
- 307房1床-床緣
06-13 12:23:58
- 308房3床-床緣
06-13 12:23:06
- 308房3床-臥床
06-13 12:23:04
- 308房3床-坐床
06-13 12:23:01
- 308房1床-坐床
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- 307房6床-臥床
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- 307房5床-床緣
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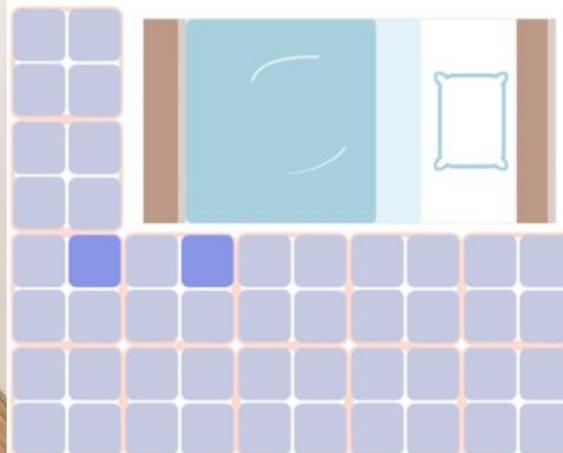


LOCALIZATION: FUNDAMENTAL TECHNOLOGY FOR SMART LIVING

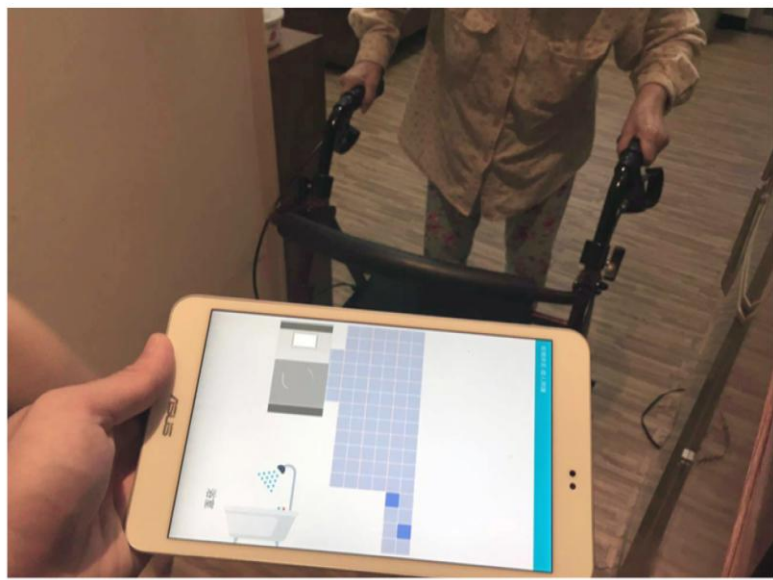
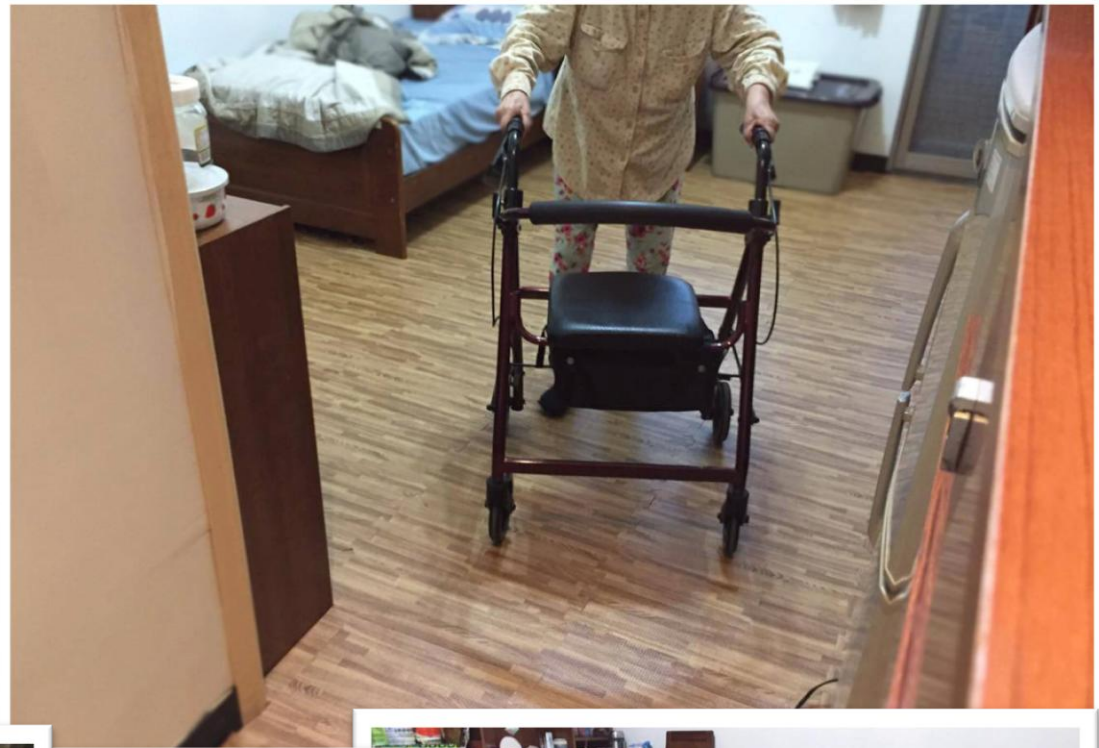
- Image processing, wearable device, floor sensors
- *WhizCarpet*: DIY assembly, flexibility in size, location and area
- Automatic mapping, real time location tracking from mobile devices
- Localization, mobility monitoring, **fall detection**, fall protection, leave bed alarm, rehabilitation, games...



G-Tech 天才家居

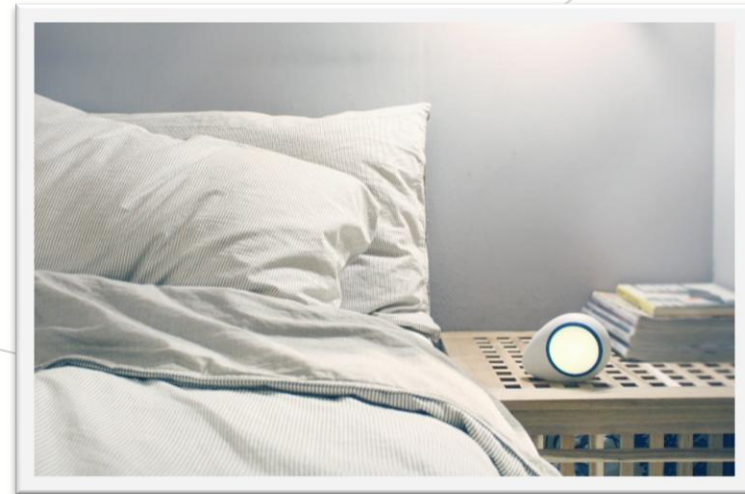
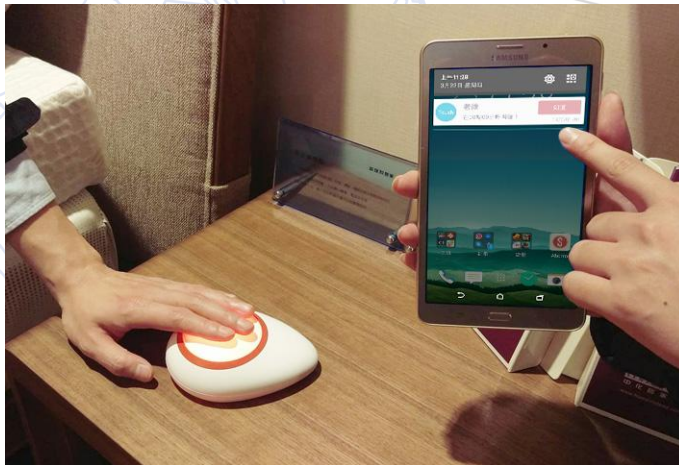
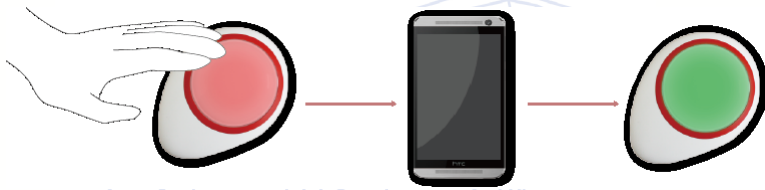


JULUNG APARTMENT FOR OLDER ADULTS



WHIZTOUCH: TWO-WAY IOT CALL BUTTON IN THE FORM OF A BED LIGHT

- IoT LED Light
 - Set up and adjust through mobile phone App
 - Machine 2 Machine control with *WhizPad*
- Two-way IoT call button
 - Caregiver receives call from mobile phone
 - Light changes from red to green when caregiver responds



WHIZLOCATOR: LOCALIZATION USING BLE DEVICES

Location info.



Alert messages



Put BLE receivers on desired locations and connect to Wi-Fi

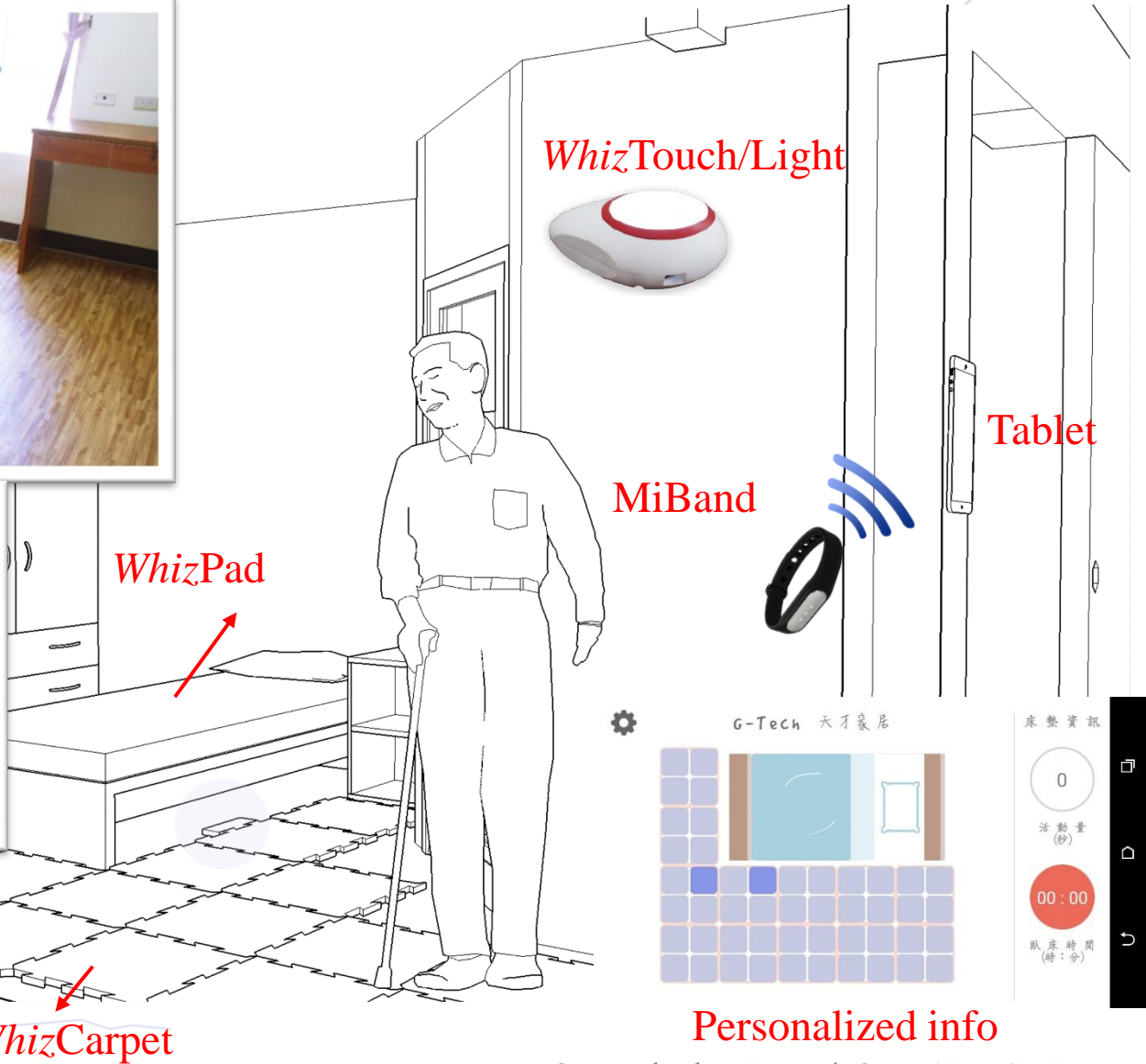


Simple registration and set up

If the older adult is willing to wear a BLE device, such as Mi Band



IoT BEDROOM IN BANCIAO DEMENTIA NURSING HOME



PHYSICAL EXERCISE / COGNITIVE TRAINING / MULTI-SENSORY STIMULATIONS

BASKETBALL

手把



可收納式

LED

IR Sensor



選擇遊戲模式

TIME CHALLENGE

SCORE CHALLENGE



分數重置

秒數

分數

開始鍵

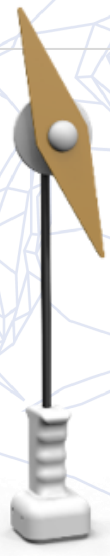
BASKETBALL 歌曲選擇

LED顏色

LED閃爍方式

分享至Facebook

PINWHEEL



WHIZTOYS



BANCIAO DEMENTIA NURSING HOME

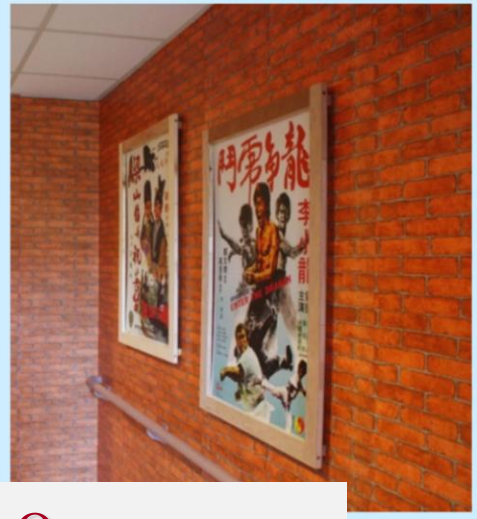


LIFE TREE



OLD DAYS

MUSIC CORNER



OLD THEATER

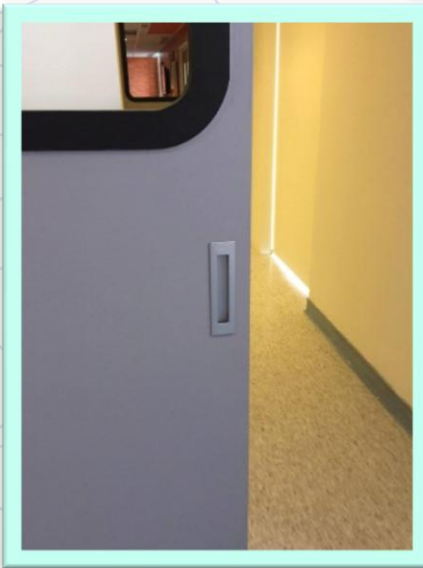
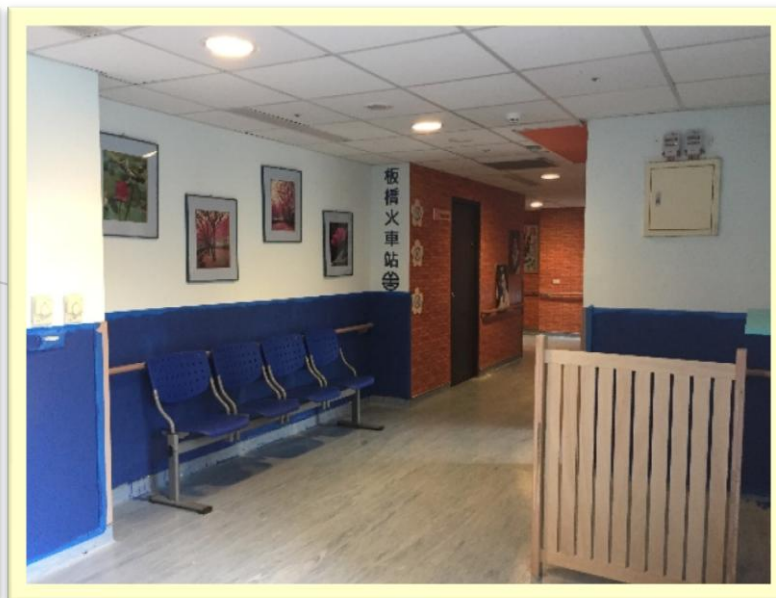


INTERACTIVE WALL



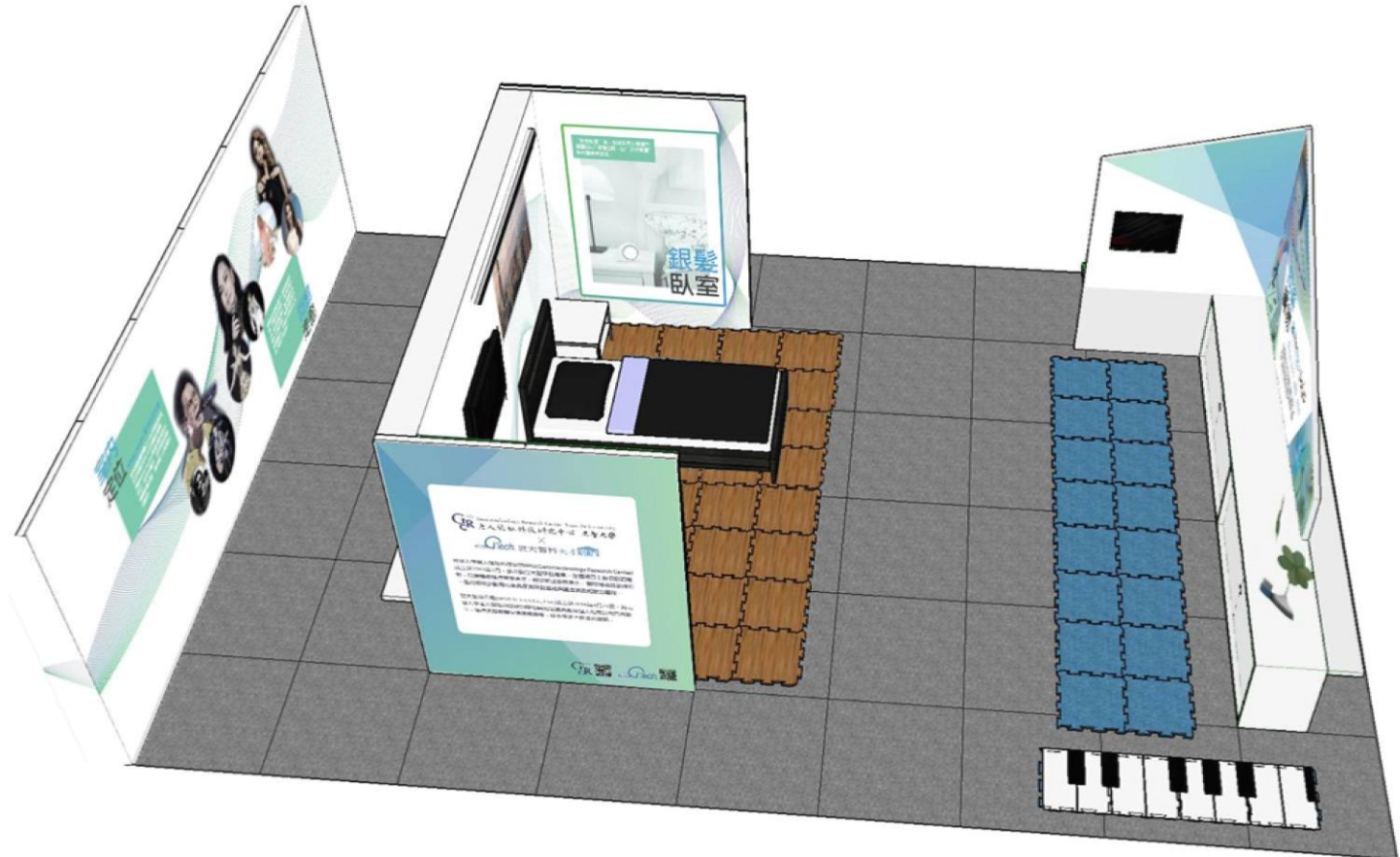
ACTIVITY ROOM

OLD BANCIAO TRAIN STATION IS NOT SAD ANYMORE...



BOOTH G03: G-TECH VILLA

- Silver Bedroom
- Memory Corridor
- Intergeneration Fun



THANK YOU

Yeh-Liang Hsu

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