제14차 한국 리빙랩 네트워크 포럼

한국·네덜란드,
스마트에이징 리빙랩에서 만나다!

| 일시 | 2019. 5. 17(금) 13:30 ~ 17:30

| 장 소 | 서울 양재 aT센터 5층 그랜드홀

주최 바른미래당 신용현 의원실 · 민주평화당 김경진 의원실 · STEPI 과학기술정책연구원 · 한국리빙랩네트워크(KNoLL)

주관 한국건강증진개발원 · KHIDI 한국보건산업진흥원 · 경희대학교 한고령옥성화대학원 SSK New Aging사업단

후원 과학기술정보통신부 · nuffic neso 네덜란드교육진흥원 · KOFST 한국과학기술단체총연합회

제14차 한국 리빙랩 네트워크 포럼

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프로그램 본 행사는 동시통역으로 진행

시간	세부내용
13:30 ~ 14:00	사전등록
14:00 ~ 14:20	**개회 및 참석자 소개** 사회: **양정윤** 네덜란드교육진흥원 원장 환영사 **조황희** 과학기술정책연구원 원장 축 사 **신용현** 바른미래당 의원 **김경진** 민주평화당 의원 인사말 **로디 엠브레흐츠** 주한 네덜란드 대사 **조인성** 한국건강증진개발원 원장
14:20 ~ 16:00	**발제** 한국 리빙랩 활동의 현황 **성지은** 과학기술정책연구원 연구위원 네덜란드 리빙랩 활동 소개 **모니카 페허르** 폰티스 실무중심대학 한국 스마트 에이징 현황과 방향 **김영선** 경희대학교 친고령특성화대학원 교수 네덜란드 고령화를 위한 리빙랩 사례연구: 과거, 현재 그리고 미래 **프란카 바커·라르스 호프만** 빈데스하임 실무중심대학
16:00 ~ 16:10	휴식 및 패널 토론준비
16:10 ~ 17:10	**토론 및 질의응답** 좌 장 **송위진** 과학기술정책연구원 선임연구위원 패 널 가나다 순 **다니엘러 나프스** 폰티스 실무중심대학 **서정주** 온랩(암생존자 리빙랩) 코디네이터 **오유미** 한국건강증진개발원 정책개발실장 **이보현** (주)엔유비즈 대표 **이행신** 한국보건산업진흥원 라이프케어산업단장 **정민원** 과학기술정보통신부 과학기술정책조정과장
17:10 ~ 17:30	사진촬영 및 종합정리
17:30 ~ 19:00	식사 및 네트워킹

14th Korean Network of Living Labs (KNoLL) Forum

Korea & The Netherlands meet at The Smart-aging Living Lab!

| Time | 2019. 5. 17(Fri.) 13:30-17:30 | Venue | Grand Hall, 5F, Yangjae aT Center, Seoul

Programme

Time	Contents
13:30 ~ 14:00	Registration
14:00 ~ 14:20	**Opening and introduction** ※ Master of ceremonies: **Yang Jung-yoon** Nuffic Neso Korea Welcoming Address **Hwang-Hee Cho** President of Science and Technology Policy Institute Congratulatory Remarks **Yong-hyun Shin** Congressperson, Member of the Bareunmirae Party **Kyung-jin Kim** Congressperson, Member of the Party for Democracy and Peace Greetings **Lody Embrechts** Ambassador of the Kingdom of the Netherlands **Cho In-sung** President of Korea Health Promotion Institute
14:20 ~ 16:00	**Presentation** Status of Korean Living Lab Activities **Jieun Seong** Research Fellow, Science and Technology Policy Institute Introduction to Living Lab Activities in The Netherlands **Monica Veeger** Fontys University of Applied Sciences Status and Direction of Smart Aging in Korea **Young-Sun Kim** Professor, Kyung Hee University Case Study Living Lab Ageing Well within The Netherlands: Past, present and future **Franka Bakker·Lars Hopman** Windesheim University of Applied Sciences
16:00 ~ 16:10	Break
16:10 ~ 17:10	**Panel Discussion** Chair **Wichin Song** Senior Research Fellow, Science and Technology Policy Institute Panel **Danielle Naafs** Fontys University of Applied Sciences **Seo Jeong-ju** Coordinator of OnLAB **Yoomi Oh** Chief of Policy Development Department, Korea Health Promotion Institute **Lee Bo-hyeon** CEO of NUbiz Inc. **Hang Shin Lee** Director of Department of Lifecare Industry, Korea Health Industry Development Institute **Min Won JEONG** Chief of Science and Technology Policy Coordination Division, Ministry of Science and ICT
17:10 ~ 17:30	Group photo & Recap
17:30 ~ 19:00	Networking

Contact info E-mail sueun@stepi.re.kr

〈제14차 한국 리빙랩 네트워크 포럼〉축사

안녕하십니까?
과학기술정책연구원 원장 조황희입니다.

네덜란드 연구팀과 함께하는 〈제14차 한국 리빙랩 네트워크 포럼〉에 참여해 주신 것을 감사드립니다.

오늘 이 자리를 마련하는데 도움을 주신 존경하는 바른미래당 신용현 의원님, 민주평화당 김경진 의원님, 그리고 로디 엠브레흐츠 주한 네덜란드 대사님께 감사의 말씀을 드립니다.

잘 아시는 바와 같이 한국사회는 급속도로 고령화되고 있습니다. 이 과정에서 과거에는 경험하지 못한 새로운 문제들에 직면하고 있습니다. 고령사회에서는 보건의료, 돌봄, 주거, 일자리, 교통, 식품 등의 분야에서 성장시대와는 다른 시스템을 구축해야 하기 때문입니다.

과학기술은 이 문제를 해결할 수 있는 중요한 수단이 될 수 있습니다. 새로운 제도 도입과 함께 과학기술을 활용하면 고령화에 대한 혁신적인 대안을 만들어낼 수 있습니다.

이 과정에서 전문가와 수요자인 시민들이 만나는 리빙랩은 중요한 역할을 할 것입니다. 수요자 중심, 문제해결 중심의 접근을 통해 현장에서 실제로 작동할 수 있는 대안 개발에 크게 기여할 것입니다.

오늘 이 자리가 한국과 네덜란드에서 진행되고 있는 고령화 문제의 대응 경험을 공유하고 새로운 방향을 모색하는 소중한 자리가 되었으면 합니다.

한국 리빙랩 네트워크에는 국책 연구소와 대학, 각 지역 중간지원조직, 사회혁신 조직, 지자체의 다양한 관계자들이 참여하고 있습니다. 국내 리빙랩 운동의 플랫폼 역할을 수행하는 동 네트워크가 이번 포럼을 통해 한 단계 성장하기를 기대합니다.

끝으로 귀중한 시간을 내주신 의원님들과 귀빈 여러분, 전문가와 시민들께 감사의 말씀을 드립니다.

2019년 5월 17일

과학기술정책연구원 원장 조 황 희

〈제14차 한국 리빙랩 네트워크 포럼〉축사

안녕하십니까? 바른미래당의 신용현 의원입니다.

네덜란드와 함께하는 〈제14차 한국 리빙랩 네트워크 포럼〉을 진심으로 축하합니다. 그리고 오늘 이 자리를 마련해 주신 과학기술정책연구원, 한국리빙랩네트워크 등 관련 기관 여러분께 감사의 말씀을 드립니다.

최근 과학기술은 경제발전을 넘어 우리 사회의 난제들을 해결하는 주체로 진화하고 있습니다. 그리고 이 과정에서 과학기술의 울타리를 넘어 국민들과 함께 하는 모델을 모색하고 있습니다. 매우 빠른 속도로 진행되는 고령화가 초래하는 문제도 과학기술이 담당해야 할 것입니다.

본 포럼에서 논의되는 스마트에이징은 그런 활동의 중요한 부분을 구성할 것입니다.

여기서 활용되는 리빙랩은 정부-기업-시민사회가 파트너십을 형성하여 연구개발활동을 수행하는 새로운 방법론으로 전 세계에서 활용되고 있습니다. 한국에서도 공급중심의 연구개발체제의 한계를 극복하는 수요자 중심 모델로서 리빙랩이 활성화되고 있습니다.

현재 리빙랩은 환경·복지 문제 해결, 재난·치안 대응 강화, 스마트시티 조성, 대학교육, 사회혁신 등 다양한 영역에 도입되고 있습니다.

이를 통해 공공기관, 대학, 기업, 시민들이 협력하는 시스템을 구축하고 실제 생활 현장에서 혁신활동을 진행하고 있습니다.

오늘 이 자리가 네덜란드와 한국에서 이루어지는 다양한 활동들의 경험을 교류하고 새로운 방향을 모색하는 소중한 자리가 되었으면 합니다.

감사합니다.

2019년 5월 17일

바른미래당 의원 신 용 현

〈제14차 한국 리빙랩 네트워크 포럼〉축사

안녕하십니까? 민주평화당의 김경진 의원입니다.

스마트에이징을 주제로 네덜란드 팀과 공동으로 개최하는 〈제14차 한국 리빙랩 네트워크 포럼〉을 축하드립니다. 그리고 이 자리를 마련해 주신 한국과 네덜란드의 관계자 분들께 감사의 말씀을 드립니다.

고령화는 한국 사회가 직면한 가장 큰 문제라고 할 수 있습니다. 우리가 경험해보지 못한 새로운 도전입니다.

고령화가 진행되면 생산방식과 소비방식, 문화, 법·제도 등 사회전반의 변화가 필요합니다. 그리고 그 대안을 모색하는 과정에서 많은 갈등을 겪을 것입니다.

이 과정에서 더 나은 대안을 찾기 위해서는 실험을 해야 합니다. 고령화는 불확실하고 애매한 문제이기 때문에 실험을 통해 더 나은 답안을 찾아나가야 합니다.

이런 측면에서 리빙랩은 좋은 실험 공간이 될 수 있습니다. 고령화와 관련된 이러저러한 문제를 겪고 있는 최종 사용자들과 전문가들이 협력하여 해결해야할 문제를 구체화하고 대안을 검토하는 활동이 이루어지기 때문입니다.

특히 우리가 그 동안 개발한 과학기술과 ICT는 해결책을 모색하는 과정에서 여러 가지 더 나은 대안을 제공해줄 수 있을 것입니다.

준비된 사람들에게 도전과 위기는 기회가 될 수 있습니다. 새롭고 어려운 문제이지만 고령화에 대응하는 과정에서 삶의 질을 높이고 새로운 성장의 기회를 잡을 수 있습니다.

오늘 이 자리가 네덜란드와 한국에서 이루어지는 새로운 도전과 그에 대한 대응방안을 함께 즐겁게 논의하는 자리가 되었으면 합니다.

감사합니다.

2019년 5월 17일

민주평화당 의원 김 경 진

〈제14차 한국 리빙랩 네트워크 포럼〉축사

한국의 리빙랩 관련 관계자 여러분들 안녕하십니까?
주한 네덜란드 대사 로디 엠브레흐츠입니다.

무엇보다도 이번 행사를 주관해 주시고 물심양면으로 많은 도움을 주신, 신용현 의원님과 김경진 의원님, 그리고 과학기술정책연구원과 한국리빙랩네크워크를 비롯한 많은 기관의 관계자 여러분들께 깊은 감사의 말씀을 전합니다.

스마트에이징 리빙랩은 2016년 9월 네덜란드의 마크 루터 총리가 방한했을 때 시작된 프로젝트로, 한국의 네덜란드교육진흥원의 주도 하에 폰티스 실무중심대학과 빈데스하임 실무중심대학이 한국의 건국대를 비롯한 파트너들과 긴밀한 협업 관계를 유지하며 발전할 수 있었습니다.

리빙랩의 가장 큰 특징이라고 한다면 함께 일하는 "co-work"시스템의 구현이라 할 수 있겠습니다. 민관의 벽을 넘어 함께 사회문제를 해결하고 새로운 방식의 연구를 추구하며, 결국에는 국가경쟁력을 결정짓는 이노베이션을 실현할 수 있는 가장 좋은 방법이라고 믿습니다.

이 방식은 네덜란드 사람들이 일하는 방식을 그대로 옮겨놓은 것이라 해도 과언이 아닙니다. 우리는 팀워크를 통한 의사를 결정하고 과제를 수행하는 것의 가치를 믿고 있습니다. 이런 환경을 만들기 위해, 학생과 고등교육기관, 기업과 지자체 그리고 중앙정부도 함께 일하는 문화를 중요시하고 있습니다. 그리고 이런 방식을 통해 우리 사회가 갖고 있는 문제를 다각적인 면에서 분석하고 그 해결방안을 찾아 볼

수 있기 때문에 결국에는 그 개선된 결과를 우리 모두가 함께 나눌 수 있습니다.

오늘의 포럼이 앞으로 양국의 리빙랩 교류 활동의 초석이 되어, TransLab을 구축할 수 있는 클러스터 모델이 되기를 진심으로 기원합니다.

감사합니다.

2019년 5월 17일

주한 네덜란드 대사 로디 엠브레흐츠

인 사 말

안녕하십니까. 반갑습니다. 한국건강증진개발원장 조인성입니다.

먼저 이번「14차 한국 리빙랩 네트워크 포럼」개최에 힘써 주신 바른미래당 신용현 의원님, 민주평화당 김경진 의원님, 그리고 과학기술정책연구원 조황희 원장님께 깊은 감사의 말씀을 전합니다.

또한, 오늘 함께 해주시는 네덜란드 로디 엠브레흐츠 대사님, 네덜란드교육진흥원 양정윤 원장님, 그리고 리빙랩의 발전을 위해 발제해주실 과학기술정책연구원 성지은 연구위원님과 발제자님들, 토론을 맡아주실 과학기술정책연구원 송위진 선임연구위원님을 비롯한 토론자님들 그리고, 여러 바쁘신 일정에도 불구하고 이 자리에 참석해 주신 국내외 전문가 분들과 참석자 모든 여러분께 감사의 말씀드립니다.

최근 우리나라의 정책추진, 연구개발, 지역개발, 산업혁신 등의 발전이 한계에 부딪히게 되었고, 이로 인해 다양한 사회문제 해결을 위해 기술을 활용하는 방식의 리빙랩이 국내·외적으로 변화의 선두주자로 등장하기 시작하였습니다. 그 변화의 중심에는 오늘의 '한국 리빙랩 네트워크 포럼'이 있다고 생각합니다.

한국 리빙랩 네트워크 포럼은 2017년 3월에 시작하여, 현재까지 14차례 진행하였으며, 다양한 사회문제해결을 위해 현장에서 활동하고 실질적인 방법을 제안하는 논의의 장입니다.

특히 이번 포럼은 저희 한국건강증진개발원이 처음으로 공동 개최하게 되어 뜻깊게 생각하며, 앞으로도 상호 협력을 통해 건강증진분야에서의 리빙랩 도입이라는 실질적인 결실을 맺기 기대합니다.

저희 한국건강증진개발원은 국민건강증진법에 의거, 2014년 설립된 보건복지부 산하 준정부기관입니다. 국민건강증진기금의 효율적인 운영과 국민건강증진사업의 원활한 추진을 위하여 필요한 정책수립의 지원과 사업평가를 담당하며 국민의 건강증진에 이바지하고 있습니다. 또한 이런 사업들을 효과적으로 추진하기 위해 2018년부터 건강증진 R&D사업을 수행하고 있으며, 향후 투자 확대를 통해 더욱 더 확대하고자하는 우리원의 중점사업 중 하나입니다.

앞으로 R&D 사업에서는 연구 과제의 기획부터 수행, 평가까지, 수요자의 참여를 유도하여 연구 성과를 보건소, 일차의료기관 등 현장에 바로 활용할 수 있도록 중장기 발전방향을 기획하고 있습니다.

특히 이번 포럼은 리빙랩 선도 국가인 네덜란드와 공동 개최함으로 상호 학습을 통해 협력적 네트워크를 구축하는 계기가 되고, 이미 고령화·에너지·교통 등 다양한 영역에서 리빙랩을 도입하고 있는 네덜란드 연구진들의 경험을 들을 수 있는 귀한 기회가 될 것입니다.

오늘 공유하는 다양한 경험과 의견이 향후 사회문제해결의 리빙랩 도입 및 성공이 실현되기 위한 시작점이 되길 기대하며, 저희 한국건강증진개발원도 보다 역량 있는 리빙랩의 사업 및 연구 지원을 통해 전문성을 배양하고 현장 적용 가능성을 높이고자 더욱 소통하겠습니다.

다시 한 번 이번 포럼에 참석해주신 모든 내·외빈 분들께 감사의 말씀을 드리며, 오늘 이 자리가 리빙랩 발전전략에 대해 심도 깊게 논의하는 자리가 되기를 바랍니다. 감사합니다.

2019년 5월 17일

한국건강증진개발원장 조 인 성

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Status of Korean Living Lab Activities

- Seong Ji Eun -

Status of
Korean Living Lab Activities

Seong Ji Eun
Research Fellow
STEPI(Science and Technology Policy Institute)

Contents of Presentation

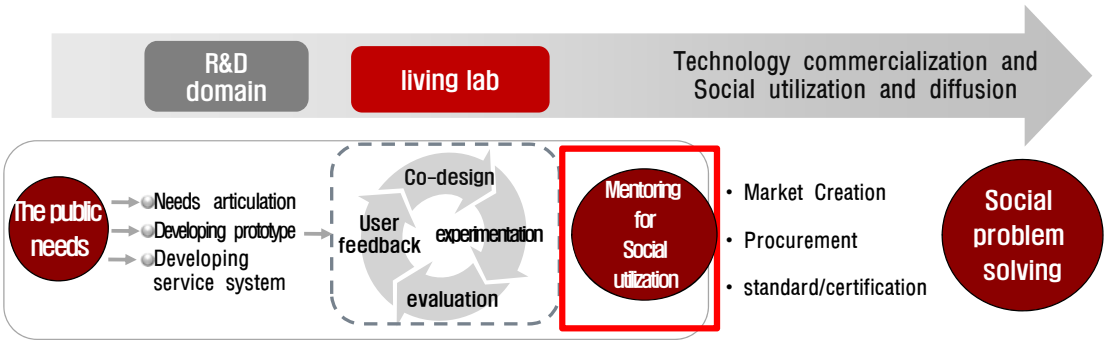
- ❖ Living Lab Cases in South Korea
- ❖ Policy Challenges

1. Living Lab Cases in Korea

Central government-led Living Labs

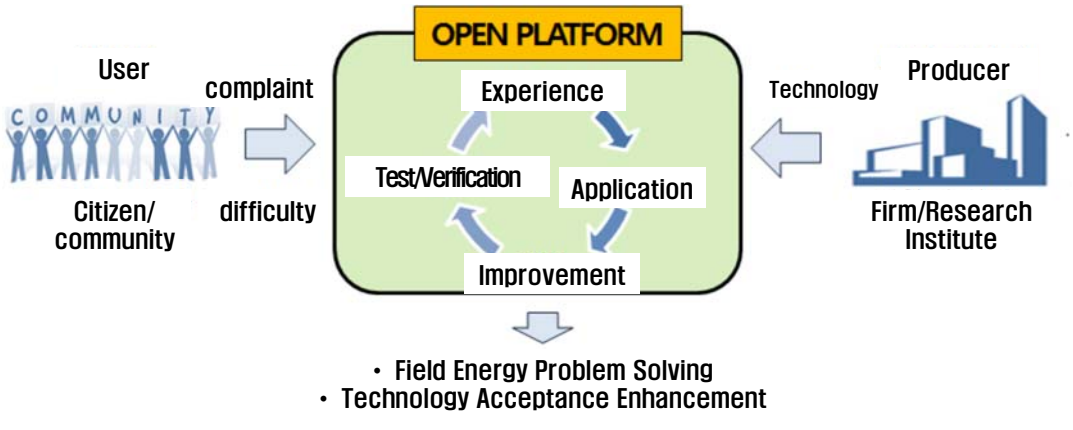
Status of application(1)

- Method of 'Social problem-solving R&D Project by MSIT(Ministry of Science and ICT)
  - New innovation paradigm from R&D/technology-centered to user/demand-driven
  - R&D → R&SD(Research & Solution Development)



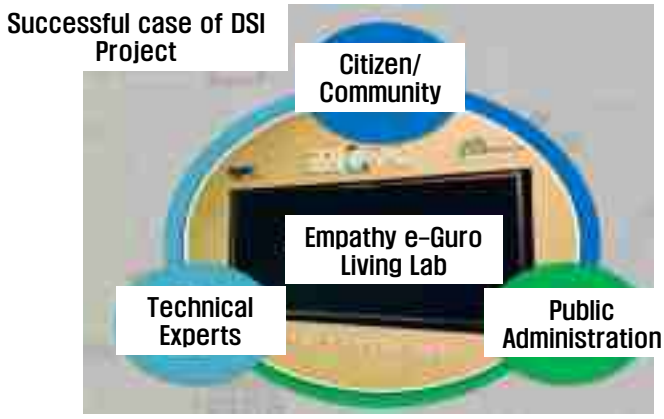
Status of application(2)

- 'Energy Technology Acceptance Project' by MOTIE(Ministry of Trade, Industry and Energy)
  - Government led → Public-Private-People Partnerships(4Ps) for problem-solving



Status of application(3)

- ‘Digital Social innovation Project’ by MOIS(Ministry of the Interior and Safety)
  - Methodology for digital social innovation and solving community problems by government-civil society cooperation model



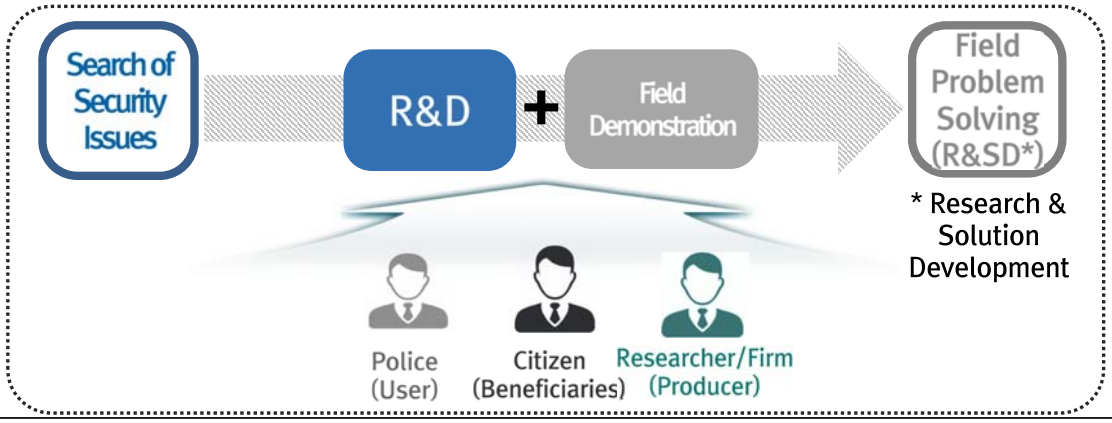
Status of application(4)

- K-Smart City Project by MOLIT(Ministry of Land, Infrastructure and Transport)
  - From technology and infrastructure to people an d services oriented
  - Emphasize city as strategic experiment loci and new business platform

Status of application(5)

☐ 'Police Lab' by MSIT & National Police Agency

- Emphasis on diversity and specificity of security field
- Promotion on customized R&D based needs of beneficiaries(citizens) and users(police)



Local Government-led Living Labs

Status of application(1)

☐ Seoul *Bukchon Hanok* Village IoT Living Lab

- Seoul Metropolitan City Government promoted *Bukchon* IoT test bed project cooperated with the central government and private companies

[Smart disaster prevention (integrated sensor and CCTV linkage)]

Status of application(2)

☐ 100 day's Living Lab experiment to change Pohang city

- Regional social innovation model based on local endogenous capability+ citizen involvement

Pohang Coastal Garbage Problem

Status of application(3)

- *Ohjung-dong* Agri-food Market Living Lab by Daejeon city government
  - Problem-solving model by community involvement

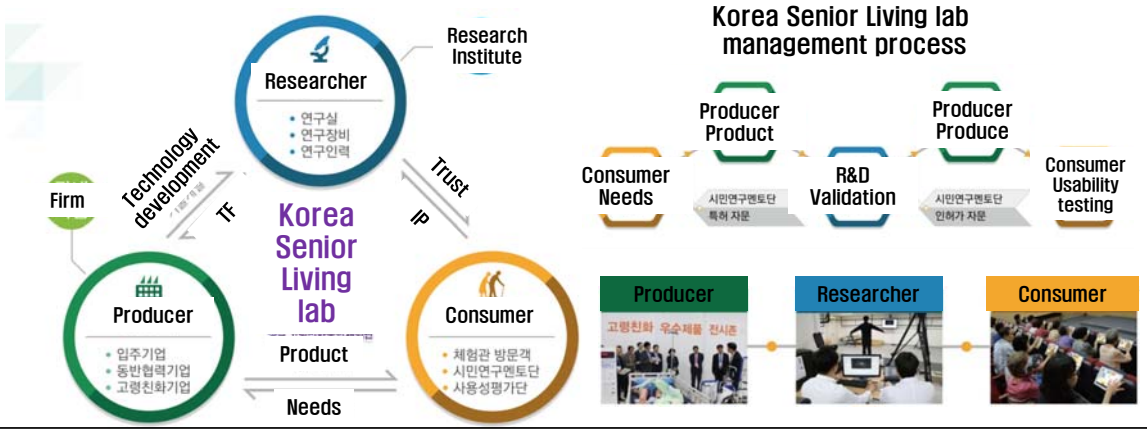
Ohjung-dong Agri-food Market

Intermediate organization-led Living Lab

Status of application(1)

☐ Korea Senior Living Lab by Seongnam Senior Complex

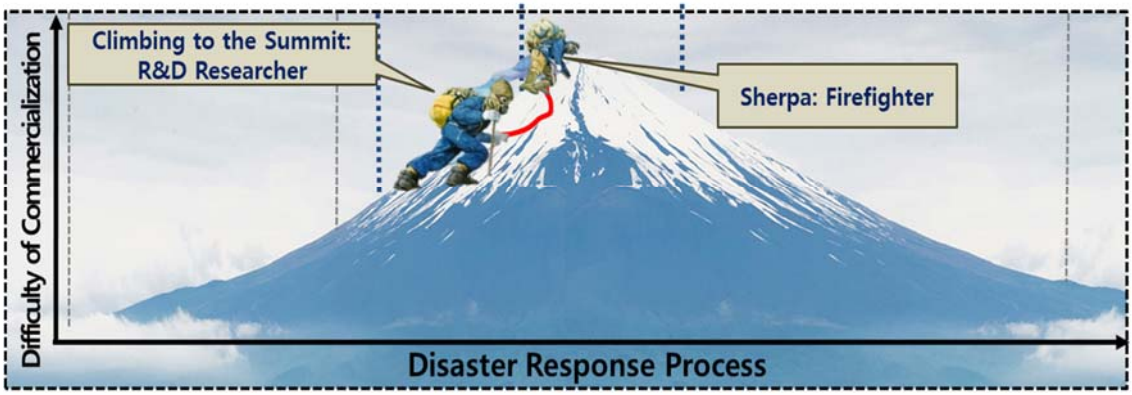
- Development of Elderly-friendly industry through a ctive participation of seniors
- Health promotion center where the elder life counseling and health care services are provided



Status of application(2)

☐ 119 Lab by National Fire Service Academy

- Reflection the voice of the field from the stage of R&D
- Survey and research for firefighters field problem
- Perform pilot research to strengthen practical use



University-led Living Labs

Status of application

- Living Lab and LINC+(Leaders in Industry-University Cooperation) Project
  - Changes of education, research, and service for community symbiosis and social roles
  - *Dongguk, Daejeon, Kyungnam*, *Hanbat* University

Goal of Dongguk University LINC+ Project

Grassroots-led Living Lab

Status of application(1)

- *SeongDeaGol* Energy Transition Living Lab
  - Sustainable transition lab
  - Urban lab, Urban transition lab

Status of application(2)

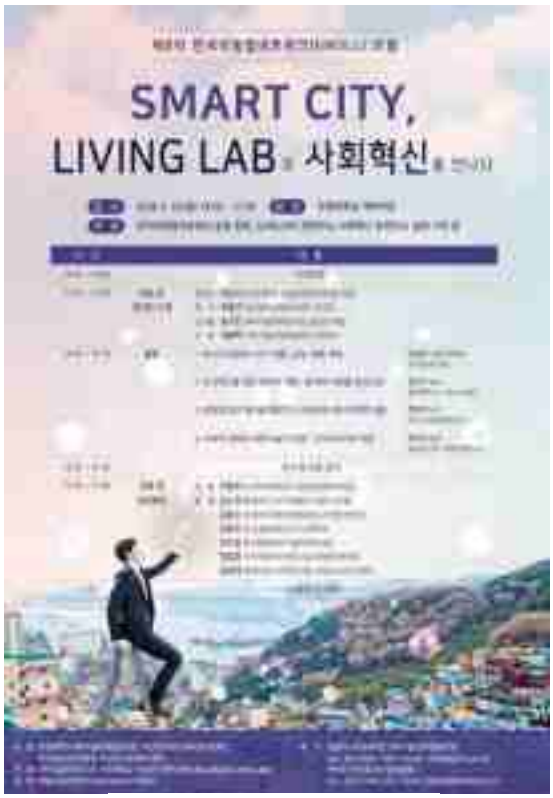
- *Geonneoyu* living lab
  - Living Lab by citizens involvement
  - Small experiment starting at 2 million won

→ Cases of digital social innovation

Korean Network of Living Labs (KNoLL) Forum

Korean Network of Living Labs (KNoLL) Forum

- Bimonthly-held Forums from March 2017
  - Cooperation of Living Lab activists
  - Members: Central/local governments, research organization, colleges, NGOs, social enterprise
  - Sharing of know-how, experiences and Networking



Poster of 8th KNoLL Forum

Poster of 9th KNoLL Forum

11th KNoLL Forum

13th KNoLL Forum

Forum Contents - 1

	Theme	Days	Location
1	Status-quo of Living Lab and Challenges	2017. 3. 30	Seongnam
2	Regional Living Labs, This is what we do!	2017. 5. 30	Pohang
3	Social innovation and Living Labs	2017. 7. 12	Seoul
4	Social Economy and Living Labs	2017. 9. 27	Daejeon
5	How do universities carry out Living Labs?	2017. 11. 15	Jeju
6	Cultural contents and Living Lab strategy / Smart Agriculture and Living Labs	2017. 1. 31 -2017. 2.1	Jeonju

Forum Contents - 2

7	Korean Living Lab activities and Challenges: Policy Perspective	2018. 3. 28	Sejong
8	Smart city and Living labs	2018. 5. 18	Busan
9	Urban Regeneration and Regional Social Innovation Living Lab	2018. 7. 12	Changwon
10	University Education and Living Lab	2018. 9. 7	National Assembly
11	Public institutions and Regional social innovation	2018. 11. 30	Gwangju
12	Community Care and Living Labs	2019. 1. 31	Seoul
13	Innovation for addressing Social Problems and Living Lab	2019. 4. 18	Seoul

2. Policy Challenges

Policy challenges(1)

- The Legacy of the Existing systems
  - Path dependency on technology-oriented R&D project
  - Strong professionalism of Korean Developmental State
- Distrust between Professional Organizations and Civil Society

Policy challenges(2)

- Limitations in the Participation of Civil Society
  - Organizing and Representing problem of Civil Society
- Difficulty in Linkage and Cooperation among Actors
  - Fragmentation & Segmentation

Policy challenges(3)

- Lack of Support Activities for living lab
  - Lack of Consulting and Facilitating Activities

- Sustainability Issues of living lab activities
  - Boom of Living Lab project
  - Evolution of a short-term Living Lab project to Living Lab platform providing Living Lab services to other organization

Thanks!!

http://blog.naver.com/sotech2017

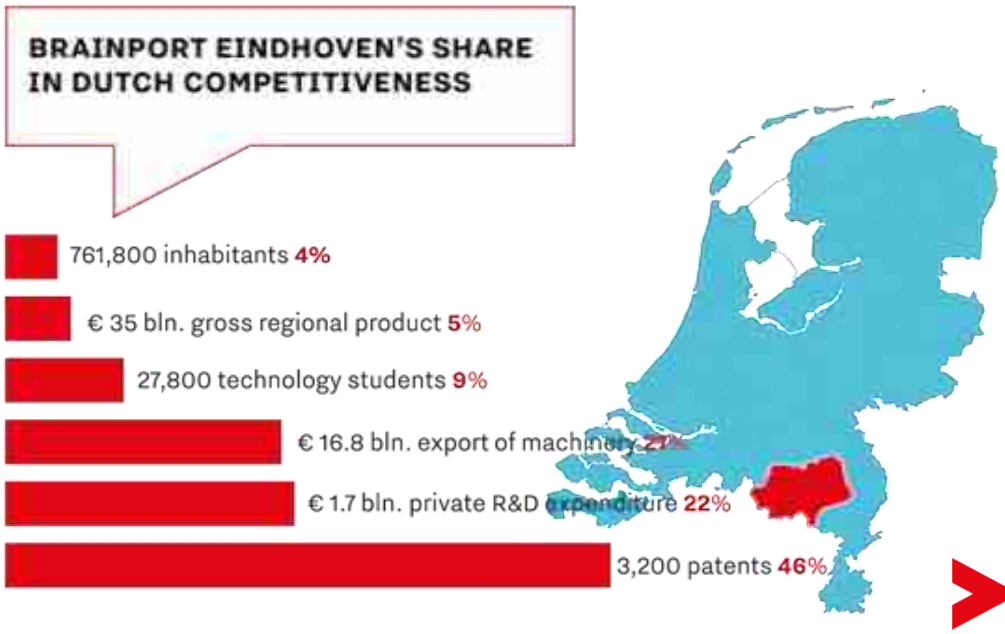
Fonys university of appliedsciences

- Monica Veeger -

Monica Veeger
Fonys university of applied sciences
m.veeger@fontys.nl

Fontys
ACADEMY FOR CREATIVE INDUSTRIES

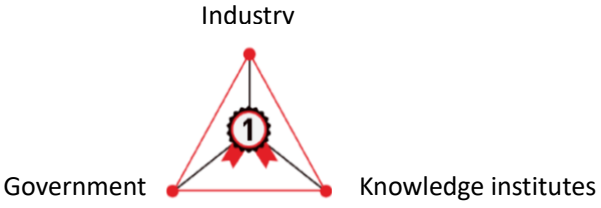
Brainport Eindhoven Facts



BRAINPORT EINDHOVEN

Award winning integrated collaboration – triple he

The culture of close collaboration is deeply rooted in Dutch society. Moreover Brainport Eindhoven is particularly well-known for its Triple Helix collaboration. Industry, governments and knowledge institutes work together closely. Forbes and the Financial Times internationally recognized us for our integrated collaborative approach and Brainport has been honoured with a Eurocities Award for its close collaboration. The region was also voted Intelligent Community of the Year in 2011.



BRAINPORT EINDHOVEN

PHILIPS & DAF LAID THE FOUNDATION

BRAINPORT EINDHOVEN

The Smart City of Brainport Eindhoven: the Right Conditions to Accelerate Innovations Implementation

Cars, fridges, cameras, smartphones, parking lots, heating systems and even running shoes. Imagine a city where everything around us interacts with each other and with us. Bicycle paths light up as cyclists approach. Cameras detect accidents and contact both the authorities as the nearest citizen with a first aid degree. Our car asks for the closest parking spot or tells our apartment to start heating up when we're heading home. The possibilities are simply endless.

Smart city technologies in specific are technologies that have to be tested extensively in public life. Therefore a high level of collaboration between users like government, knowledge institutes, research institutes, start-ups and multidisciplinary student teams is essential. The smart city of Brainport Eindhoven is the place where technological facilities, tech-minded government, early adopting citizens and the art of collaboration provide optimal conditions for developing, testing, piloting, implementing and launching smart city innovations.

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Eindhoven Capital of Innovation

Click on the image below to watch the movie for a short introduction

Brainport Eindhoven

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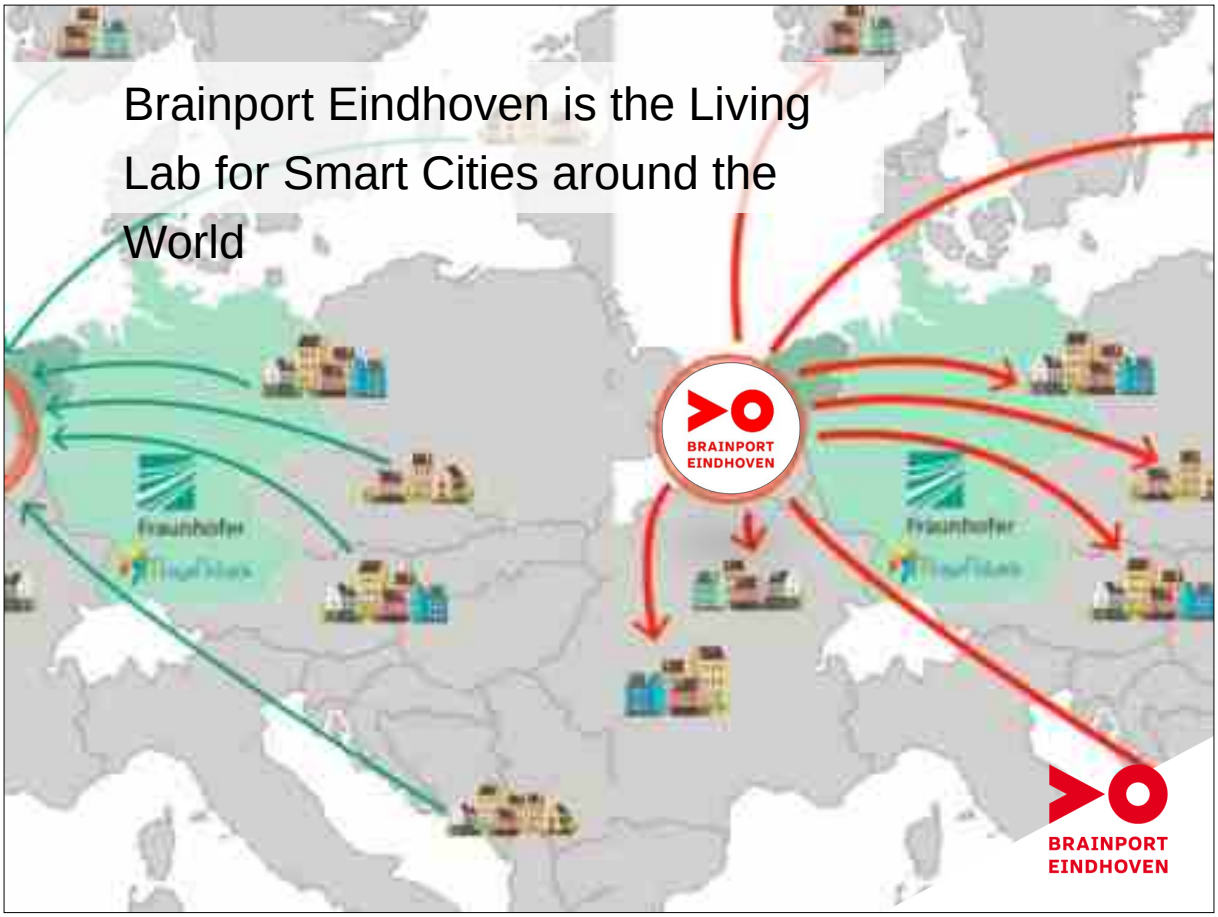
EINDHOVEN



Increase Success Rate with Excellent Conditions for Developing, Piloting, Launching & Scaling-Up

In Brainport Eindhoven we believe that the success of smart city innovations does not depend on breakthrough technologies, but on the possibilities you have to experiment with new technologies and ideas in the operating environment of the city. Smart city innovations are regularly achieved by collaboration between end-users and enablers.

You find conditions like:

- High-tech legacy, design, tech-minded government and early adapting citizens who find each other in platforms where industry, government and knowledge institutes come together.
- Regional smart city industrial powerhouses like TomTom, NXP, Philips, TU/e and Siemens. Together with parties like Eneco, Solliance, DIFFER and Holst Centre, Brainport Eindhoven provides solutions for the smart city of tomorrow.
- Smart city partnerships and living-labs that facilitate experimenting, pilots and showcases.
- International networks and partnerships that facilitate upscaling.

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Tech Minded Government Planning for the Future

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Innovative Government, aiming for co-creation with private parties
Cities are no longer only shaped by institutes. Citizens and stakeholders have an increasingly large part in shaping the city. The triple helix of government, knowledge institutes and entrepreneurs is extended to the quadruple helix with active citizen participation. Governments following top-down pre-decided policy plans are changing their approach to bottom-up co-creation tuning in on new developments and chances.
In Brainport Eindhoven the government is tech-minded. Public-private partnerships with room for experiment result in innovation. The government is involved and wants to actively collaborate with private parties. Tender offers are not what they used to be and offer room for co-creation.
A good example is the smart city lighting roadmap. The municipality of Eindhoven has awarded the contract for the 2030 Eindhoven City Lighting Roadmap ('Roadmap Urban Lighting Eindhoven 2030') to the Philips Lighting/Heijmans consortium. At the base lie pilots in cooperation with residents, industry, government and knowledge institutes.
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Tech-Minded Government: Development of a National Smart City Strategy
5 main themes:
1. Safe and standardised digital infrastructure
2. Public-private partnership with room to experiment
3. Co-creating together with citizens
4. Education and employability
5. Regional collaborations with cities at its core
Our focus is smart society:
• Safeguard public interest
• Stimulate economic development and ecosystem
• Support the existing organic approach
• Futureproof: prepare to change
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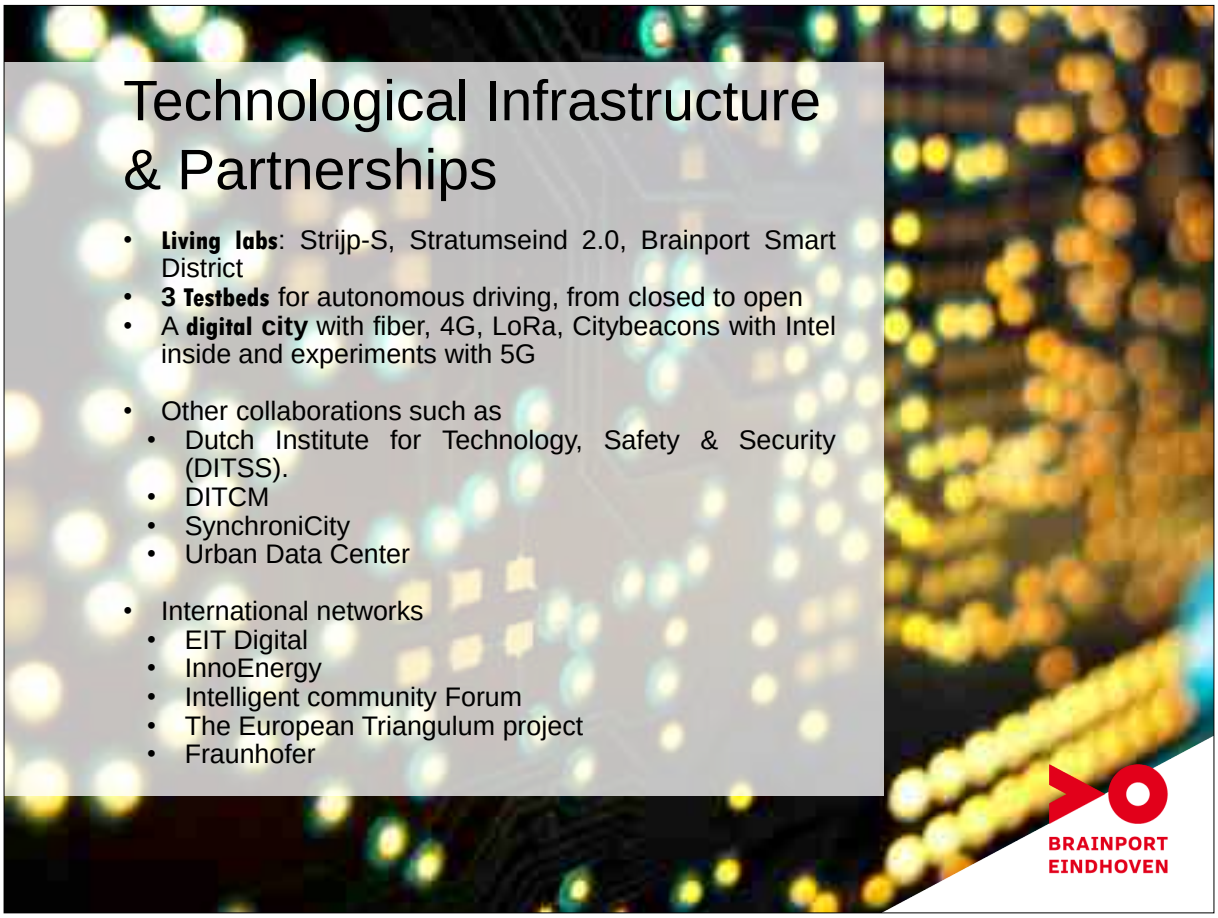
Technological Infrastructure
& Partnerships
• Living labs: Strijp-S, Stratumseind 2.0, Brainport Smart District
• 3 Testbeds for autonomous driving, from closed to open
• A digital city with fiber, 4G, LoRa, Citybeacons with Intel inside and experiments with 5G
• Other collaborations such as
• Dutch Institute for Technology, Safety & Security (DITSS).
• DITCM
• SynchroniCity
• Urban Data Center
• International networks
• EIT Digital
• InnoEnergy
• Intelligent community Forum
• The European Triangulum project
• Fraunhofer
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Living Labs for Smart Cities
the city
as a
living lab
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Brainport Eindhoven is the R&D Unit and Living Lab for Smart City Solutions

As they are embedded in the everyday life of ordinary citizens, living labs are ideal experimental settings for action research: citizens, entrepreneurs, governmental bodies and knowledge institutes can study, develop, test and evaluate together, in co-creation, real life and pressing urban issues and solutions. There are numerous regional and national projects that operate in practice to develop new concepts. We can design, set up and realise actual projects in the environment. These are relatively small, but successful and scalable to bigger countries and regions. Our strength is to design and implement successful smart city pilots. We are the R&D incubator of smart city solutions.

Some of our living labs:

- **Stratumseind 2.0**: Defusing escalating behaviour through the use of interactive light scenarios.
- **Strijp S**: The aim is to build up nearly zero or low energy districts, integrated infrastructures and sustainable urban mobility.
- **Brainport Smart District**: working hands-on towards a smarter, better, more sustainable, more social and more beautiful district.
- **TU/e**: there are several living labs and student teams at the university with a focus on smart cities.
- **Eckart Vaartbroek**: interactive housing renovation.
- **High Tech Campus**: Smart Campus Development

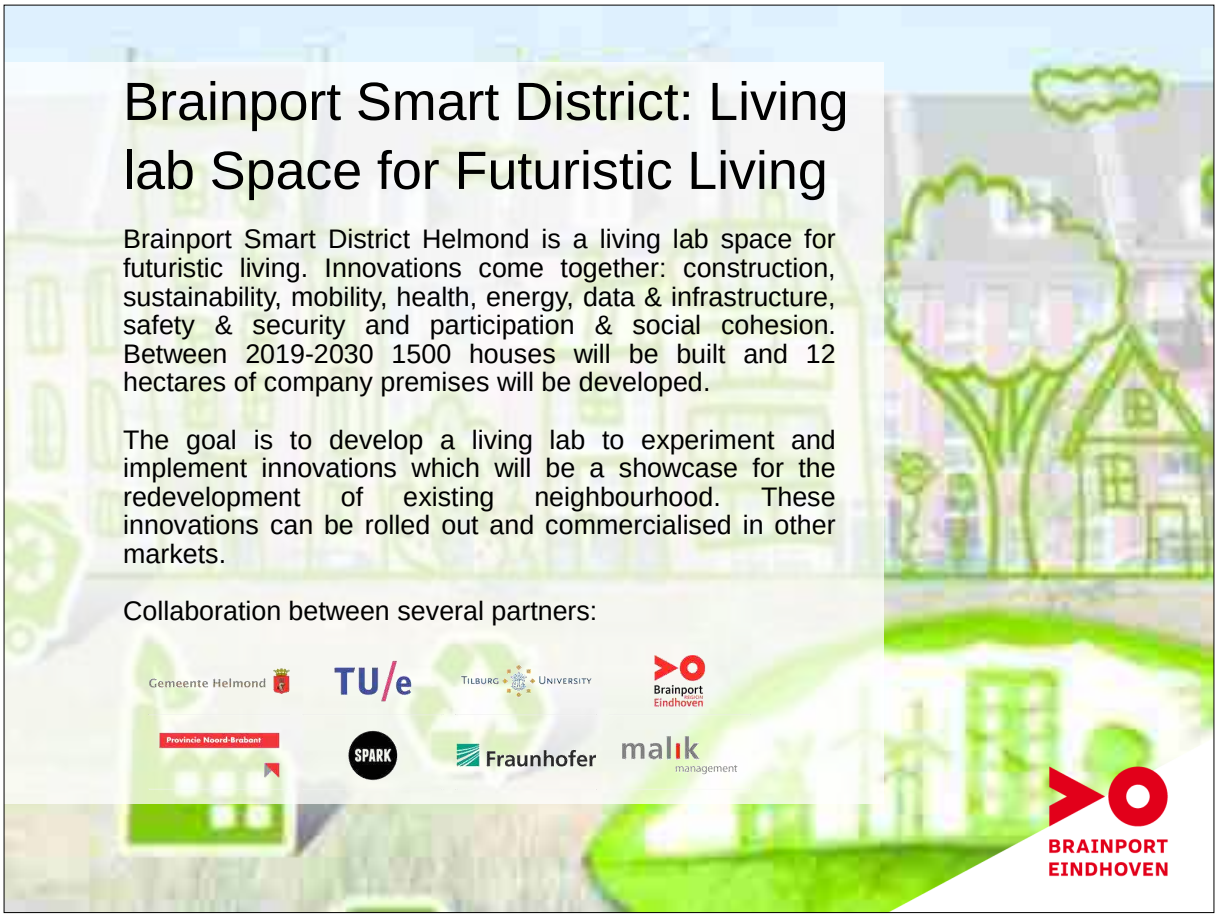
BRAINPORT EINDHOVEN

Strijp-S: Living Lab for Smart City Initiatives

Strijp-S is a former Philips industrial plant, covering 67 acres. The Eindhoven municipality and VolkerWessels have been redeveloping the area since 2002, with the goal of creating a highly dynamic urban environment. This area functions as a launch market where ideas can be developed into solutions that can be scaled and replicated in other smart cities. A smart society for sustainable urban innovation, empowered by living lab facilities like a high quality, flexible data and communication backbone.

The interaction between three layers (the cloud, the liveable layer and the


iCity Tender: Developing Strijp-S together with Start-
Recently Eindhoven city selected six start-ups that each get 20,000 euros to further develop their concepts and prototypes into products.
• Abby solutions: sustainable source of energy that makes electric bicycles smarter
• Atelier Veeger: interactive billboard that enables users and residents to respond 24/7 to their environment
• BitSensor: new security solution for IoT
• Octo: optimizing occupancy of workplaces by monitoring real-time data
• ViNotion: smart cameras for emergency situations.
• Omines: platform on which data from smart cities can be collected, processed, and analysed
Photo: E52
BRAINPORT EINDHOVEN


Brainport Smart District: Living lab Space for Futuristic Living
Brainport Smart District Helmond is a living lab space for futuristic living. Innovations come together: construction, sustainability, mobility, health, energy, data & infrastructure, safety & security and participation & social cohesion. Between 2019-2030 1500 houses will be built and 12 hectares of company premises will be developed.
The goal is to develop a living lab to experiment and implement innovations which will be a showcase for the redevelopment of existing neighbourhood. These innovations can be rolled out and commercialised in other markets.
Collaboration between several partners:
Gemeente Helmond
TU/e
Tilburg University
Brainport Eindhoven
Provincie Noord-Brabant
SPARK
Fraunhofer
malik management
BRAINPORT EINDHOVEN

Smart Safety in and around Smart Cities

BRAINPORT EINDHOVEN

Eindhoven CityPulse: Using Big Data for Real Time Incident Response Management

Many cities are considering how to extract the maximum benefit from the opportunities presented by big data. Eindhoven is one step ahead and is already putting them into action with an innovative pilot project to manage a busy area of the city that's famous for its nightlife.

The CityPulse pilot scheme leads to the formation of DITSS (Dutch Insitute for Technology, Safety and Security) to lead a Public Private Partnership. Its aim is to help the city of Eindhoven manage a street in the centre of town – Stratumseind – the longest and most vibrant street in the Netherlands with more than 50 bars and nightclubs and where 15-20,000 people visit every weekend.

Brainport Eindhoven

EINDHOVEN

Atos

ViNotion

RTR - NL

Sorama

POLITIE Brabant Zuid-Oost

intel

TU/e Technische Universiteit Eindhoven University of Technology

PHILIPS

TILBURG UNIVERSITY

DITSS Dutch Institute for Technology Safety & Security

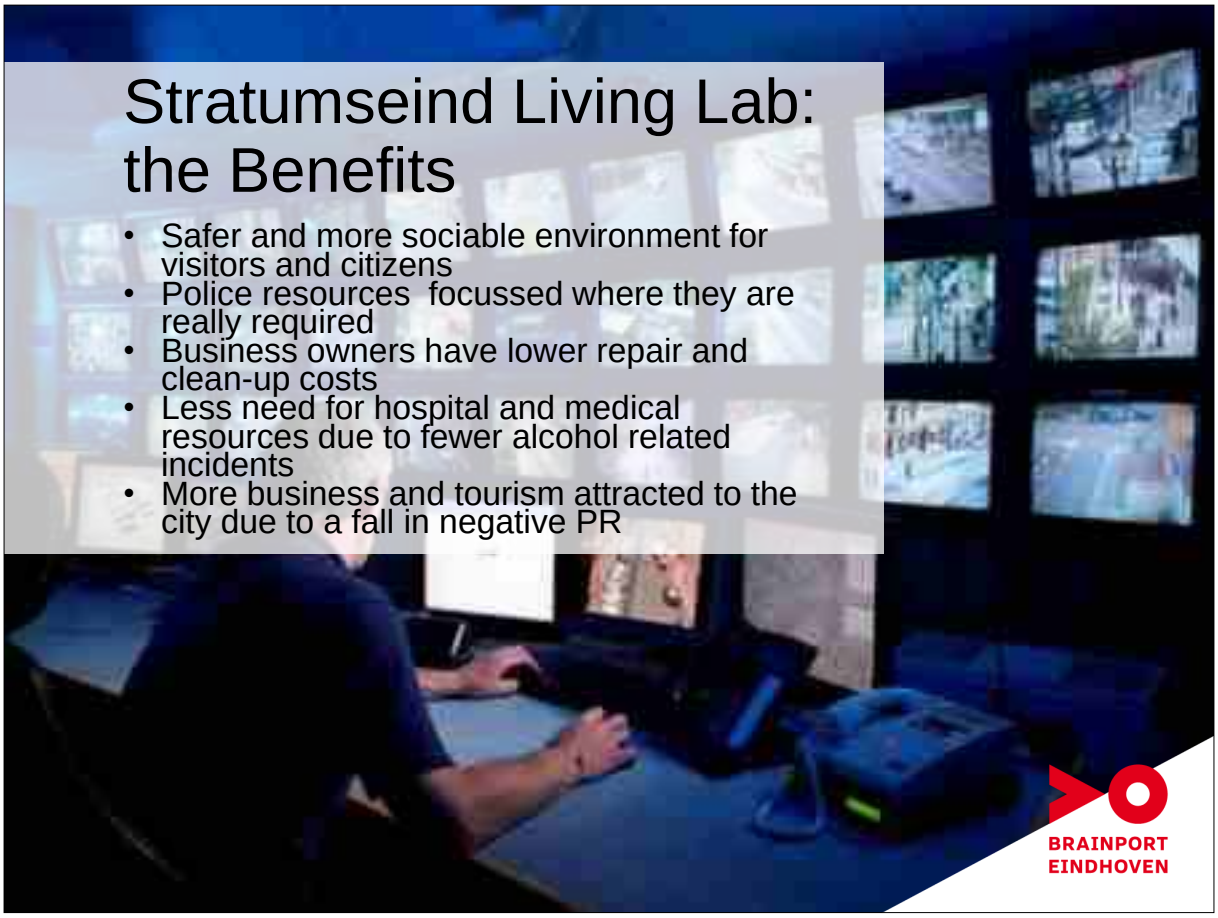
Stratumseind 2.0 Living Lab: Making it a Safer and More Enjoyable Place

- 15,000-20,000 visitors every weekend
- 100,000 people when Eindhoven Football team became national champion last year, at only 2,500 square meters.
- Creation of Living Lab Stratumseind
  - Cameras to count the number of people
  - Detecting walking patterns
  - Sound analysis
  - Social media analysis

All this information comes together in one control desk of the video surveillance room of the police.

Learn more

BRAINPORT EINDHOVEN



Stratumseind Living Lab: the Benefits

- Safer and more sociable environment for visitors and citizens
- Police resources focussed where they are really required
- Business owners have lower repair and clean-up costs
- Less need for hospital and medical resources due to fewer alcohol related incidents
- More business and tourism attracted to the city due to a fall in negative PR

BRAINPORT EINDHOVEN

Status & Direction of Smart Aging in South Korea

- Young Sun Kim -

14th Korean Network of Living Labs(KNoLL) Forum : Korea-The Netherlands Meet

Status & Direction of Smart Aging in Korea

: Smart Aging Service Living Lab in Super-Aged Society

2019. 5. 17

KyungHee University
Graduate School of Gerontology & SSK New Aging Center
Young Sun Kim (ysunkim@khu.ac.kr)

경희대학교 KYUNG HEE UNIVERSITY

[Introduction_1]

경희대학교 친고령특성화대학원 노인학과 교수_ SSK New Aging 사업단장

경력

- 저출산고령사회위원회 고령화특별위원회 위원(2018) 및 미래기획분과위원회 민간위원(2017-현재)
- 대통령직속 일자리위원회 보건의료특별위원회 위원(2018-현재)
- 중앙치매센터 전문위원(2017-현재)
- 국가 치매R&D 기획위원(치매예방-진단-치료-돌봄재활분과) (보건복지부·과학기술부) (2017)
- 보건복지부 보건의료기술정책심의위원회 공공복지증진(서비스R&D) 전문위원 (2017-현재)

연구

- 4차산업혁명과 혁신적 사회시스템 : 고령자 기술수용모델(Senior Technology Adoption Model) 개발(한국연구재단, 2018-2020)
- 사람/현장중심의 돌봄로봇 리빙랩 및 서비스모델 개발 (산업기술기술평가관리원, 2019-2021)
- 고령자맞춤형 이동성 기술개발 과학기술-인문사회 융합연구(한국연구재단, 2016) 및 이동지원서비스 기획연구
- 치매 이해능력 척도 개발 및 App 등 중재기술 효과성 검증(한국연구재단, 2015-2017)
- 노쇠(Frailty) 이해능력 척도 개발 및 App 등 중재기술 효과성 검증(한국보건산업진흥원, 2015-2019)
- Intelligent Medical Platforms (노인질환·Wellness) 개발 연구(과학기술정보통신부) (2016-2020)
- 4차산업혁명 등 미래 환경변화에 따른 사회서비스 일자리 창출방안 (일자리위원회) (2017)
- 4차산업혁명과 고령친화산업 미래 일자리 전망(고령친화산업정책포럼, 한국보건산업진흥원) (2017)
- Healthcare Innovation과 일자리 전망(조선일보-조선비즈 헬스케어 이노베이션포럼) (2017)

실천

- 경희대학교 친고령특성화대학원 : 고령친화산업특성화대학원(2015-2019)
- 경희대학교 고령친화융합과학연구센터 센터장(2018)
- 고령친화산학협력네트워크(IOG) : KT, 한화생명, KB골든라이프케어, 아모레퍼시픽 등
  일본 ㈜파나소닉, 인터리하, 홋또리하리시스템즈 등 30개 국내외 기업과의 산학협력네트워크(Industrial Liaison Program)

학회

- 한국노인복지학회 고령친화융합기술분과위원장
- 한국노년학회 이사 및 스마트에이징포럼 위원
- 한국사회보장학회 학술이사
- 미국노년학회(GSA) 정회원

[Introduction_2] 'Senior Business Liaison Program' & 'New Aging Research Center'

고령친화 산학협력 네트워크 참여기업 현황 : 44개 기업

고령친화 용품 분야
- 롯데렌탈
- ㈜엠씨텍
- 란달 유디케어스
- 해피베드
- 큐라코
- 파나소닉ES신동아㈜
- 큐라코
- 롯데렌탈

고령친화 투자분야
- ㈜센트럴투자파트너스

고령친화 이동서비스 분야
- ㈜창림모아츠
- Toyota

고령친화 고령친화 문화·운동서비스 분야
- 굿볼아카데미*
- 한양ENG
- 파미니티
- 국가대표체형교정센터

고령친화 식품 분야
- 풀무원 푸드머스
- 매일유업
- ㈜대상

고령친화 의약품·화장품 분야
- 아모레퍼시픽 기술연구소
- 메디포스트연구소
- 오상헬스케어
- GI시그널
- 바이오노트
- 안전성평가연구소
- Nosquest*
- 휴레이포지티브

고령친화 금융·자산관리서비스 분야
- 한화생명 은퇴연구소
- 한국주택금융공사
- 미래에셋은퇴연구소

고령친화 요양서비스 분야
- 일산다스림요양병원
- 비지팅엔젤스코리아
- ㈜LF글로벌휴먼스
- ㈜KB골든라이프케
- Polestar Healthcare
- 대한노인회
- 한국노인복지관협회
- 홋도리하바리시스템즈 코리아

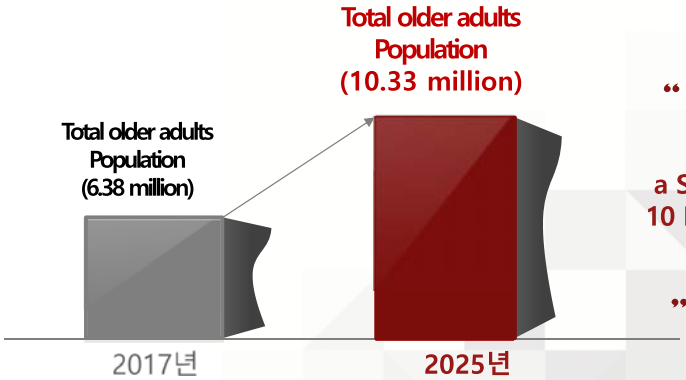
고령친화 스마트 에이징분야
- KT
- 인성정보
- 피플링크

고령친화 주거 서비스 분야
- 노블카운티
- 사이언스빌리지

Paradigm Shift in a Super-aged Society 2025

The number of people aged 65 or older reaches 20% of its total population = "10 million older Adults"

- (Core Values) caring older adults → "Person-Centered Care" → "Independent Living"
- (Seniors) "Self-Determined Living" and "Autonomy"
- (Ecosystem) Nation-Community-Business-Caregiver-Enduser(older adults/familiy)-Technology
- (New Governance) "Platform Governance"
- (Living Lab) Technology(product)-Tailored Service Collaborative system(Public Policy Living Lab)



"As of 2025
a Super-aged Society
10 Million older Adults"

Source: National Institute of Statistics (2017)

CONTENTS

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Ⅰ Aging and the Status of Korean Older Adults

01

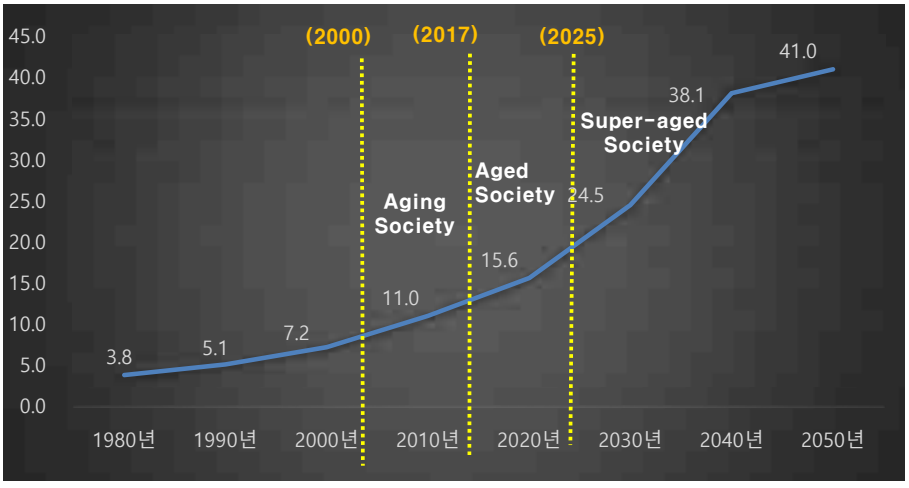
General Characteristics of Korean Older Adults

1. Status of Aging in Korea

Ratio of the Elderly Population in Korea

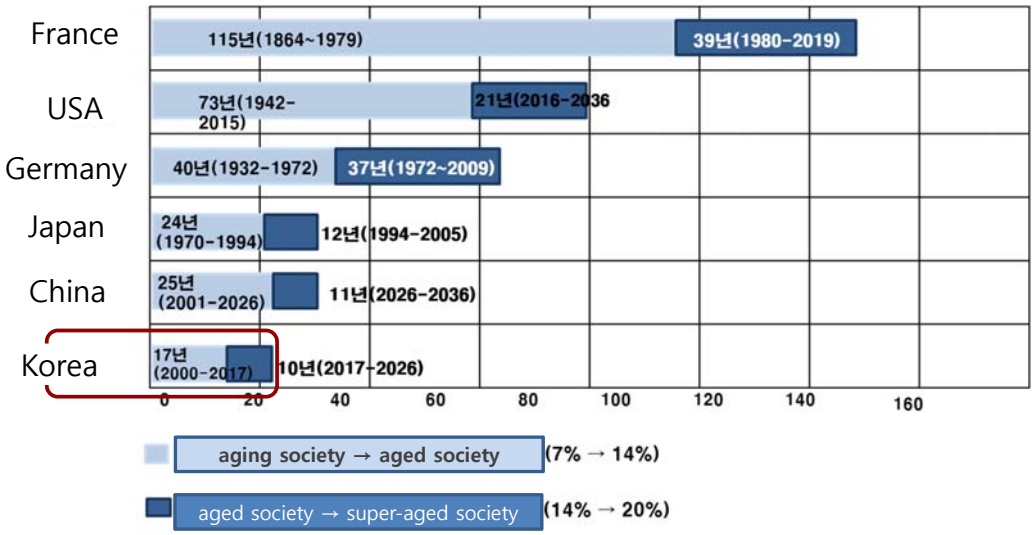
☑ Korea is expected to become **a super-aged society by 2025, where the elderly population will account for over 20%,** and this will break the Japan's record of the fastest aging in the shortest time frame.

Figure Rates of entering an ageing society by Korea



Skyrocketing Speed of Population Aging, Not Learn..

speed of Population Aging



Ref : 한국보건사회연구원, 2015

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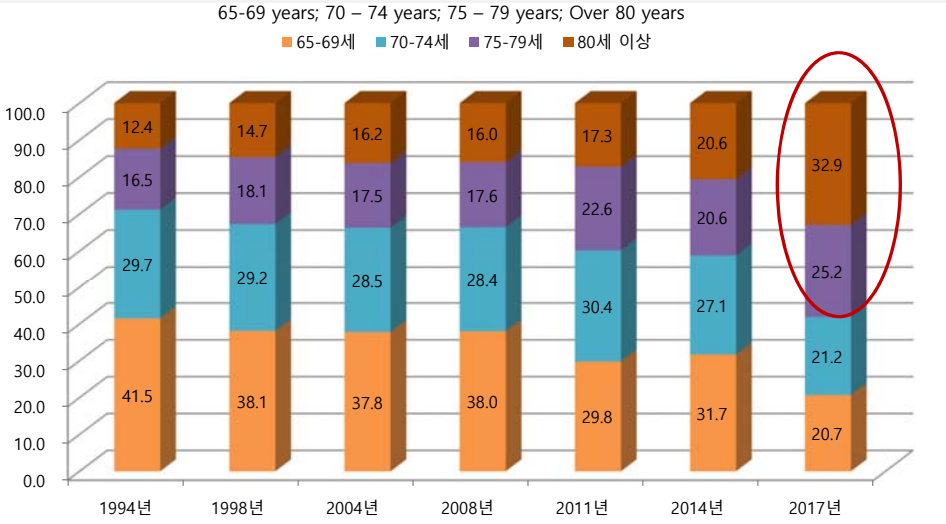
2. Super-aging over 80 Years

Changes in demographic characteristics of the general elderly (1)

☑ Increase **in the elderly over 80 years of age : about 33%**

Older adults over **75 years of age** account for **58%**



Source: : 2017 Survey on the Elderly (Ministry of Health and Welfare·Korea Institute for Health and Social Affairs)

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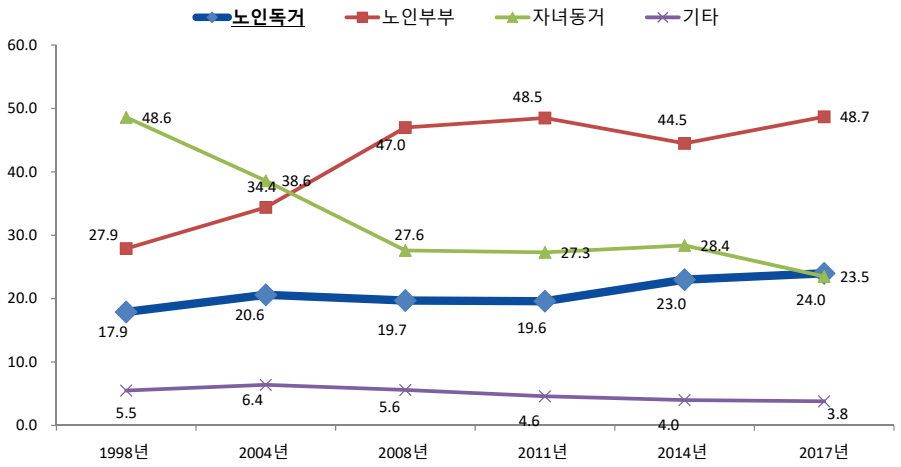
3. Increase in the Ratio of Elderly Households

- **The ratio of the elderly who live alone is high and increasing consistently: 24% (2017 Survey on the Elderly)**
- **Ratio of households consisting only of the elderly: 72.7% (the elderly who live alone + the elderly couple households)**

the elderly who live alone; the elderly couples; the elderly who live with children; others



Source: 2017 Survey on the Elderly (Ministry of Health and Welfare & Korea Institute for Health and Social Affairs)

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[Ⅰ] Aging and the Status of Korean Older Adults

02

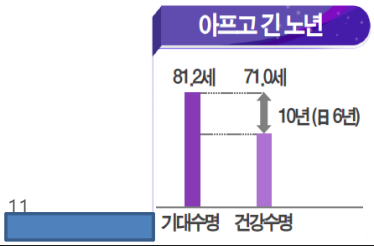
Health and Social Characteristics of Korean Older Adults

: Unmet Needs for Care Technology

Unmet Needs of Korean Older Adults

Healthy Life Expectancy

- Healthy life expectancy = Average life expectancy minus duration when one is inactive due to illness and injuries.
- An index calculated focusing on 'how long one lives a healthy life' rather than 'how long one simply lives'.



Living Longer, But Sicker

- [Functional Health] Frailty (Functional Decline)
- [Physical Health] More Diseases
- [Cognitive Health] Dementia
- [Mental Health] Depression
- [Social Health] Social Isolation
- [Nutrition] Malnutrition

Live Alone + Older Adults couples : 72.7%

Assisted Living Technology

* 4th Healthy People 2020

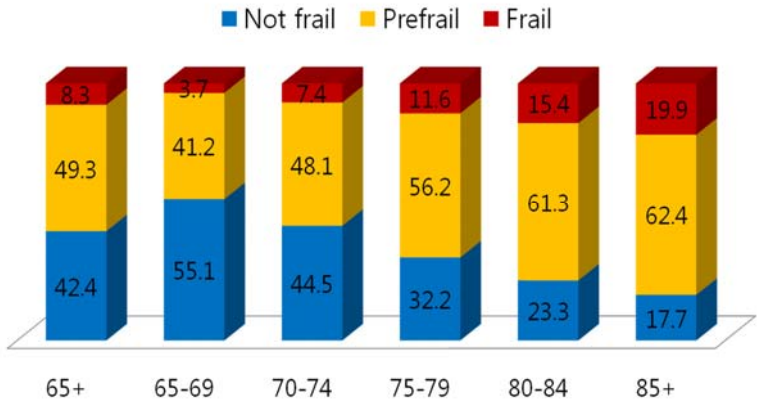
1. Functional Health Status in Korean Older Adults

Frailty

☑ In the elderly over 65 years of age, 40% robust, 50% prefrail and 10% frail.

- Frailty : A stage of age-related physiologic vulnerability resulting from impaired homeostatic reserve and reduced of the organism to withstand stress(*Fried L et al, 1998*) → Disability or Longterm Care → mortality

Figure Frailty



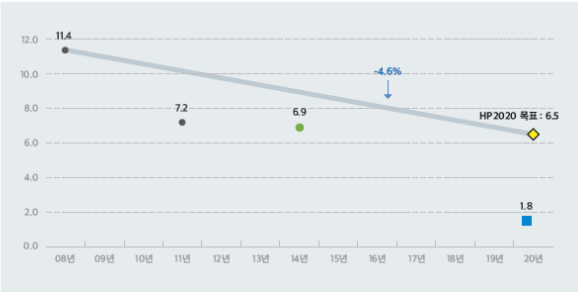
• Frailty criteria : Weight loss, exhaustion, physical activity, walking speed, grip strength: 0: Not frail, 1-2: Prefrail; 3-5: Frail

Source : 2017 Survey on the Elderly

1. Functional Health Status in Korean Older Adults

Key Performance Indicator : Healthy People 2020

Main Topic	22. Health of Seniors							
Goal	22-1. Maintains the rate of disability for the elderly.							
Status Indicator and Target Value		'08	'09	'10	'11	'12	'14	'20 (Target)
	Rate of Disability for ADL of Seniors (%)	11.4	-	-	7.2	-	-	6.9	6.5
Definition of Indicators	The number of senior citizens/all ages who have limited physical function ADL(7): Dressing, washing a face, brushing teeth, washing hair, bathing, showering, dining out of the room, getting out of the room, using the toilet, and controlling the bowels.							
Grounds for Setting Goal	In 2008, ADL's disability rate was 11.4% in the survey of senior citizens (The survey in 2004 was 22.2%) The goal is set to maintain the current level because of the very fast aging rate (U.S. disability rate is 0.36% per year, the point is in the trend of decreasing, 1983-2005)							
Source of Materials	Survey of senior citizens (Ministry of Health and Welfare, Korea Institute for Health and Social Affairs)							



- In 2008, 11.4% of disability rate on seniors' ADL should be decreased by 4.5% every year to 6.5% of goal in 2020
- As of 2014, the current value is 6.9%, which is shown as the status of 'Achieved' as it makes the 19.8% difference against the expected value (8.6%). It is estimated to achieve the goal of 195.9% compared to the target value (6.5%) as expected value in 2020 would be 1.8%

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2. Cognitive Health Status in Korean Older Adults

Dementia

- Dementia Prevalence : 9.76%(2018)
  Ratio of the elderly with dementia : **increase** from 10.37% in 2024 to 16.09% in 2050

Source : 2018 Dementia Prevalence Survey (Ministry of Health and Welfare)

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3. Mental Health Status in Korean Older Adults

Mental Health State of the Elderly: Symptoms of depression

☑ **(Symptoms of depression) 33.1% of the elderly show symptoms of depression**
- Higher in the female elderly, in the older age, in the elderly with lower income and in the elderly with functional impairments

☑ **(The elderly suicide rate) increasing consistently every year**
- The elderly suicide rate in 2000 was 34.2 → It doubled in 10 years, increasing to 80.3 in 2010. 4 times of the OECD average

Figure Symptoms of depression

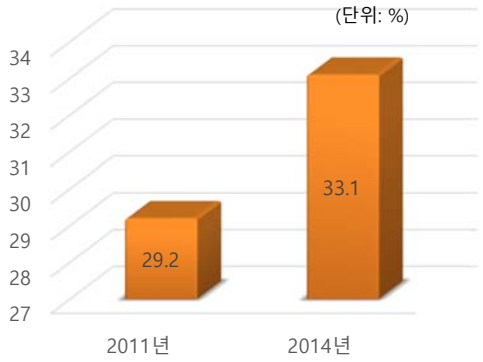
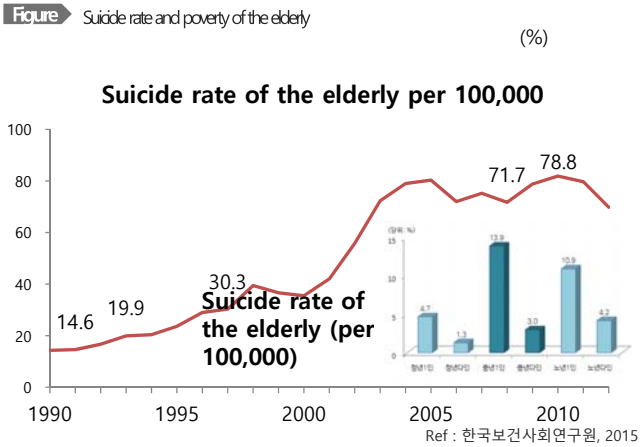


Figure Suicide rate and poverty of the elderly



Ref : 한국보건사회연구원, 2015

Source : 2017 survey on the Elderly (Ministry of Health and Welfare·Korea Institute for Health and Social Affairs)

4. Social Health Status in Korean Older Adults

Social Health State of the Elderly: low Social Contact

* Social contact : Sum of contact frequency and meeting frequency Four Social groups(non-cohabiting children, children and grand children, relatives, friends and acquaintances) [range: 0-32]

그림 Social contact (1) Total & Gender

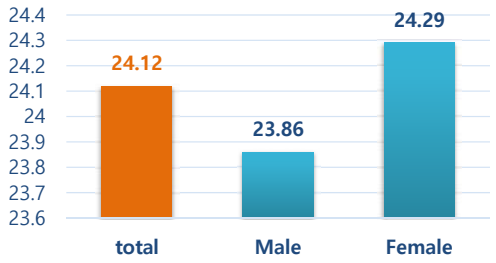


그림 Social contact (2) Region

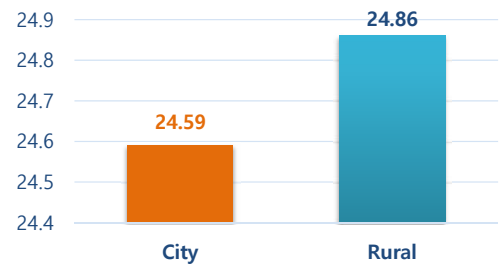
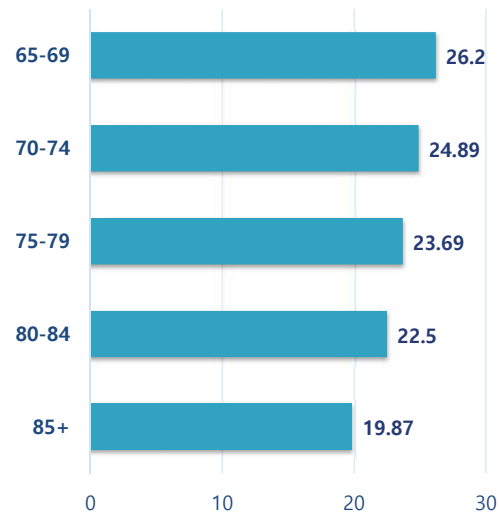


그림 Social contact (3) Age Group



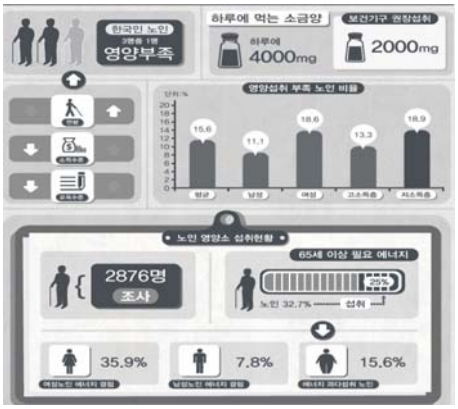
Source : 2017 survey on the Elderly (Ministry of Health and Welfare·Korea Institute for Health and Social Affairs)

5. Nutritional Health Status in Korean Older Adults

Nutrition state of the elderly in Korea

- In a survey on 2,876 elderly people, **32.7% of the elderly in the age over 65** could not take in necessary calories, and showed serious **malnutrition.** (Korea Centers for Disease Control and Prevention, 2011)

Report of Intake of Nutrition by the Elderly

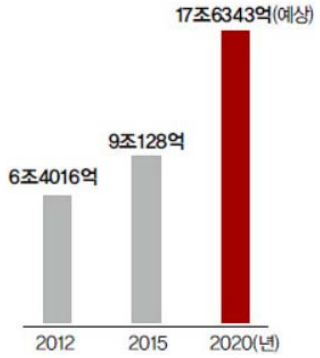


Source : Disease control center, National Health and Nutrition Examination Survey (2010-2012)

Status of Nutrition-related Industry

- Industry involving delivery service and education service is increasing
- **Food safety and nutrition education materials for the elderly are insufficient compared to other age groups (Eun-Sil Lee, 2012)**
- **Although some mobile healthcare industry covers nutrition, preparation for future environmental change is not sufficient.**
- **It is difficult to get food for the elderly, but with increasing interest in health and nutrition, the needs for the elderly-friendly food are increasing.**

Prospect for the elderly-friendly food market



Source : Korea Health Industry Development Agency (2015)

6. Economic Status in Korean Older Adults

Poor Korean Older Adults

☑ Korea is expected to become a super-aged society for a short period of time, and the senior poverty rate among OECD members is 49.6%, more than four times higher than the OECD average (12.4%)
- Although there have been discussions on various income security systems for the elderly in poverty, most of discussions focus on the basic and public pension and it is necessary to discuss various income security systems, such as housing-related old age guarantees.

Comparison of Senior Poverty Rate Among OCED Members

Ref : OECD, 2015

03

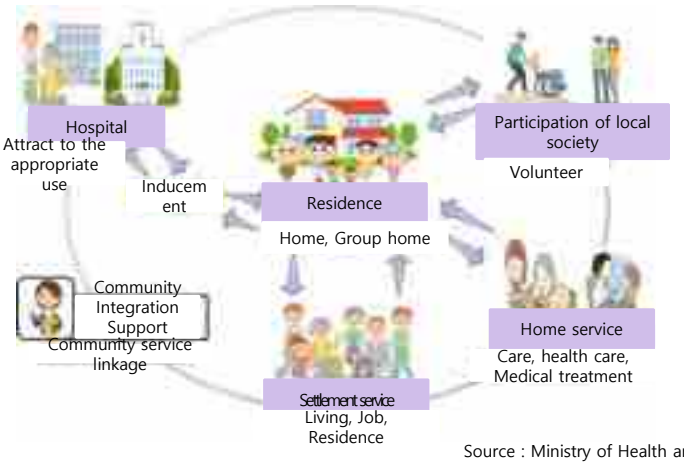
Korean Social Security Systems

1. Social Security Systems and Community Care

Social Security Systems

- Social Insurance : National Healthcare Insurance System
  National Long-term Care Insurance System
  National Employment Insurance System
  Industrial Accident Compensation Insurance
  National Pension System
- National Basic Livelihood Security
- Social Services

Community Care



Source : Ministry of Health and Welfare (2018)

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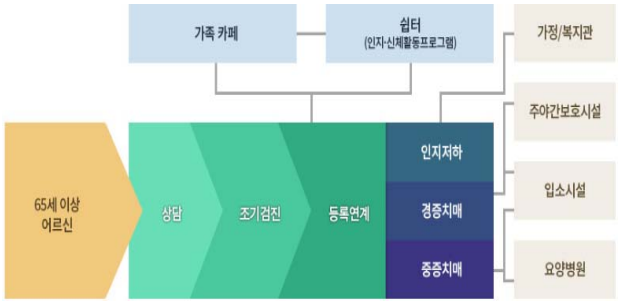
2. National Dementia Support System

- (Background) The needs for proactive responses to the social problems predicted due to dementia, and complementation of the existing poor protective system for the elderly with dementia have arisen.
  - Population aging and increase in the population with dementia/ deepening of pains among family of people with dementia such as family disorganization/increase in social burden due to dementia
  - Problems in the existing first – third national dementia management plans such as lack of information and specialized facilities, high cost and poor policy and implementation systems
- (Goal) The system was implemented with the goal of making a happy country without the burden of dementia, and facilities such as "dementia support center (47)/dementia relief center (205)/dementia specialized hospital (79) were expanded, and implementation of services such as customized case management, long-term care expansion and strengthening of healthcare support was aimed at.

- Personalized case management
- Large expansion of long-term care service
- Strengthening of medical support for dementia patients
- Relieving the medical and care cost for dementia
- Prevention of dementia and creation of dementia-friendly environments
- Dementia R&D
- Organizing dementia policy and administrative systems



Source: Central Dementia Support Center hompage https://www.nid.or.kr/

3. Technology-based Public Policies

Direction of technology Policy

01 Leading infrastructure for the 4th Industrial Revolution
- Presidential committee 'Fourth Industrial Revolution Committee'
- Establishment of '4th Industrial Revolution Response Plan'

02 Autonomous & Responsible Science and Technology Innovation Ecosystem
- Establishment of 'Science and Technology Innovation Headquarters'
- Launched 'National Science and Technology Advisory Council'
- Discovery of the innovation agenda

03 Based on R&D innovation
- the package type R&D investment system
- R&D preliminary feasibility system
- Creation of economy of bio-health R&D

04 Regulatory revolution & Small and medium-sized venture support
- ICT Regulatory Sandbox

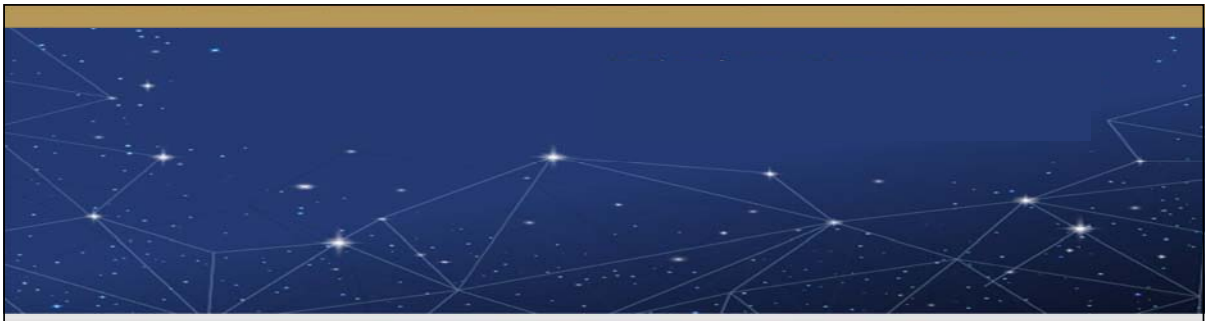
Source: KISTEP Center for Science and Technology Policy (2015) Moon Jae-In Government Science and Technology Policy Achievement and Future Tasks

Elderly Living alone Service using technology

01 Second Comprehensive Support Plan for the Elderly living alone (Ministry of Health and Welfare, 2018.4)
- Expansion of IoT-based care service and development of artificial intelligence robots using private resources: Ease of loneliness
- (Case 1- KT) Test-application of a relief care solution for the elderly with dementia: Send it to life managers through IoT-based location tracker and a secure LED solution
- (Case 2 - SK hynix) Silver Home: Providing singing, broadcasting and weather through artificial intelligence speakers

02 Local Government-SK affiliated 'Happiness Community Project' (2019.4)
- Seoul, Gangnam, Seongdong, Yangcheon, Yeongdeungpo, Seodaemun, Junggu, Daejeon, Hwaseong City agreement with eco phones and SK Telecom
- Provide health management solutions such as monitoring the environment of the elderly living alone

Source: Ministry of Health and Welfare (2018)



경희대학교 KYUNG HEE UNIVERSITY

Ⅱ Smart Aging-Living Lab Situation in South Korea

1 Smart Aging Technology Situation

2 Unmet Needs of Smart Aging

01 Smart Aging Technology Situation in South Korea

1. Smart Aging Situation in South Korea_(1)

[Current Status] Smart Technology Situation in South Korea

- **Overall technology level in Korea is rapidly growing**
- It has grown to 78.60% as of 2016 compared to the world's highest technology level
- [IoT sector] Home IoT sector and Manufacturing IoT Technology level has grown
- [Health sector] diagnosing the diseases and health data has higher level of technology, but infrastructure(facilities and equipment) is insufficient

[Current Status] Smart Aging Technology Situation in South Korea

- Healthcare technology has developed a lot recently. Start-ups are in the growth phase
- Care technology is also progressing to the initial stage of commercialization
- Demand for Smart home and Smart city is increasing and actively supported at national level

[Direction] Technology Development for Person-centered Smart Society

- KISTEP selected keys issues for future Korean society and means to improve not only social and economic effect but also social responsiveness
- As a result, KISTEP ten promising technologies for the implementation of **person-centered smart societies** were selected

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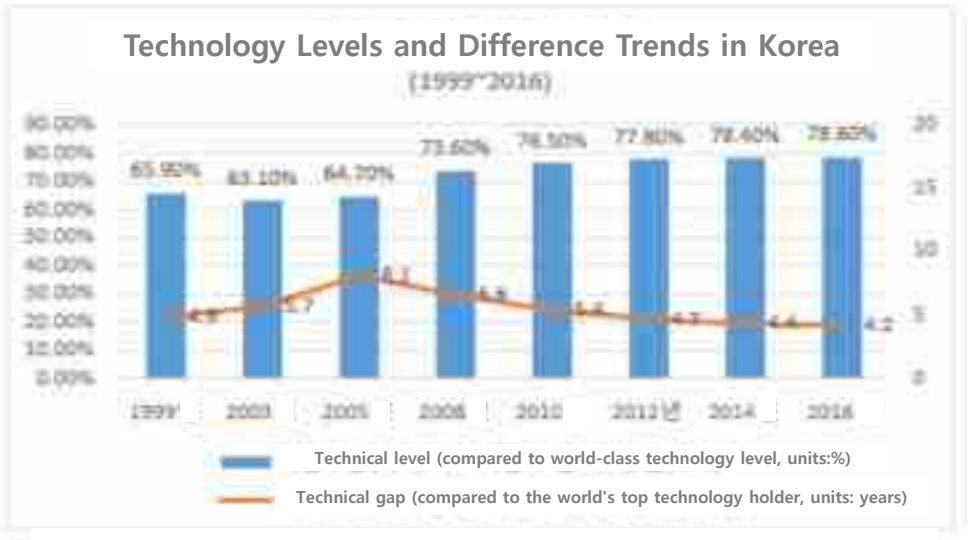
1. Smart Technology Situation in South Korea_(2)

Technology Levels and Difference Trends in Korea (1999~2016)



[Picture 1-1] Technology Levels and Difference Trends in Korea(1999-2016)

- As the technology level in 2008 and 2010 was assessed as the technology level compared to the ultimate technology, it was recalculated as the "relative ratio of the technology level of Korea to the technology level of the world's best country."

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Source: Lee Seung-gyu (2018)2017 Technology Level Assessment, KISTEP

1. Smart Technology Situation in South Korea_(3)

Smart Technology Situation in South Korea

Sort	Domestic	Overseas
HealthCare	• Healthcare R&D using artificial intelligence ▲ • Startups are growing up	• USA : Health IT planning (diagnostics) • Japan : Digital medical devices. • China : Digital Healthcare with Noninvasive Medical Girder
Care	• Medical robot development and commercialization • Need standardization and basic technology	• In USA, Europe, innovative research on Medical robot • Start-ups are active
Smart Home	• Various kinds of home appliances and home sensors have been released • Home energy management, Home security ▲	• USA :World's top supplier of smart home markets • Voice-recognition AI devices and wearable devices ▲
Smart City	• The Ministry of Land : Smart City for Urban Innovation and Creating Future Growth Powers	• USA : Government lead project to solve urban problems • China : Economic growth and urban problem solving • Japan : Energy security and disaster safety
Mobility	• Research on small cars ▲ • Utilize self-driving technology for personal mobility	• Diverse personal mobility (motorcycles, kickboards, vehicles, and carts) • Utilize self-driving technology for various types of personal mobility
Platform	• Advanced countries-level technical skills in collecting and managing life logs	• USA : Having the largest number of big data and artificial intelligence technologies

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2. Smart Health Care Technology

Smart Healthcare

Situation of Smart Healthcare

☑ Medical, sports and nutrition sectors and health care are combined with the IoT, big data AI
- Recent changes in the healthcare paradigm have mitigated information asymmetry, with the increase in medical information
- Products/services that enable active participation of consumers are developing more actively than before (STEPI, 2017)

☑ Smart Healthcare Advantages
- contribute to solving problems such as increased use of medical expenses/services for chronic diseases and the elderly (STEPI, 2017)

Wearable device for dementia-prevention : Y BRAIN

☑ designed to enhance the connection of brain cells directly related to dementia through electrical stimulation

(Source:Health Chosun, 2015)

Smart diabetic glucose meter 'ELEMARK DUAL CHECK'

☑ helps measure and manage blood sugar and ketone for diabetics, with a function to enable real-time monitoring

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(Source: Chosun Dotcom, 2015)

3. Smart Care Technology

Care Sector

Situation of Care Sector

- ☑ 70%of patients receiving rehabilitation treatment at senior hospitals answered that a care robot were found to be necessary (National Rehabilitation Institute, 2012)
- ☑ 77.5% of caregivers working at hospitals and facilities : willing to use the robot and expected to reduce their burden
- ☑ Demand for care services and market increase rapidly, but care work needs to be improved

Dementia-prevention robot : Silbot

☑ developed by the KIST's Intelligent Robot Business to prevent loneliness and depression among the elderly

(Source: Robocare, 2019)

A Meal assistant robot 'Care Meal'

☑ provides food support for the disabled and the elderly and food assistance to the caregiver

(Source: National Rehabilitation Institute, 2019)

4. Smart Home Technology

Smart Home

Situation of Smart Home

- ☑ A technology that remotely controls a variety of devices and devices in the home, and that combines with AI
  - ICT technologies(smart devices, high-speed wireless networks, cloud and big data) are converging to develop into a large industry
  - Home appliance and telecommunication businesses and furniture manufacturers are working together to expand development of smart furniture technology based on information communication and IoT technology.
- ☑ Smart home advantages
  - satisfies basic human needs such as convenience, pleasure and comfort of life and creates high value added in a wide range of areas.
  - provides access to and control of the home environment, robust security, and a range of interactive entertainment services
  - Housing that can reflect the diversity of residents is insufficient

Service for prevent death from solitude : Ribon Care

☑ detects 24 hours of activity on 365 days for emergency situations and allows to care for Elderly parents from a distance

AI speaker 'Silver Friends'

☑ SK Hynix provides communication and voice control services to senior citizens living alone through ICT such as AI and IoT

5. Smart City Technology

Smart City

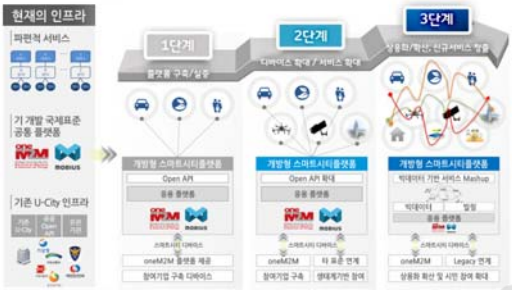
Smart City Technology Status

☑ Recently, the concept of smart city that solves urban problems with fourth industrial revolution technology has emerged.
- Smart City technology is divided into platform technology, smart transportation, smart energy, smart water, and smart government

☑ Smart City Advantage
- Smart City solves urban problems by collecting information from all over the city and analyzing it to inject resources where necessary, or by inducing efficient use of existing resources.

Global SmartCity : Busan

☑ 'IoT-based Smart City' that focuses on Haeundae Centum City is organized by Ministry of Science, ICT and Future Planning.



Source : Global SmartCity

Sejong SmartCity

☑ Built as an optimized space for seven services: mobility and healthcare, education, energy and environment, culture and shopping, governance, and jobs

Source : SeJong SmartCity

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7. Smart Mobility Technology

Mobility

Mobility Technology Status

☑ Personal mobility is a common term for electrically driven personal mobility driving near and medium distances
- As a means of solving problems associated with aging, it is necessary to provide small personal mobility to prevent the elderly from becoming isolated and to utilize medical and welfare facilities to maintain their health
- In December 2017, approximately 30 CAV test vehicles were licensed for temporary operation by the Ministry of Land, Infrastructure and Transport.

☑ Personal mobility Advantage
- Best model for creating and upgrading next-generation smart car technology through convergence with ICT industry

Renault TWIZY

☑ TWIIZY can be charged with 220V socket-outlets for ordinary households and can drive up to 80km/h.

Source : Renault

Development of Smart Personal Mobility Platform

☑ AICT have developed a smart personal mobility platform especially designed for improving the mobility of handicapped or elderly people.

Source : Advanced Institute of Convergence Technology 2015

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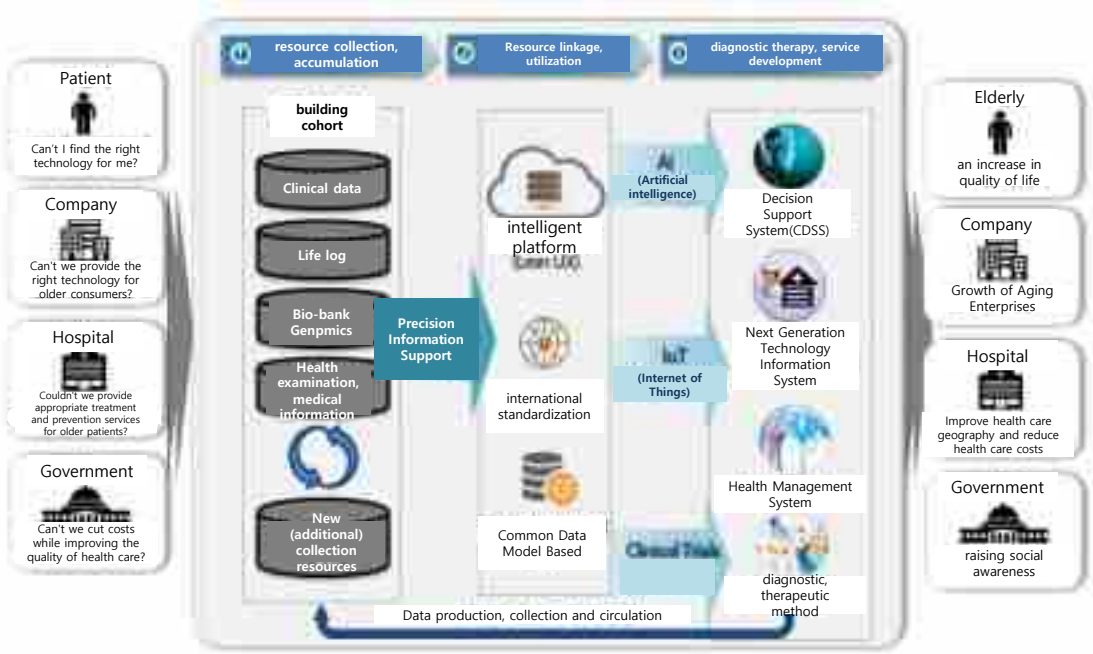
6. AI-Based Platform_(1) : Precision Medicine



6. AI-Based Platform_(2) : Evolutionary Knowledge Machine(EKM)

7. Living Lab for Seniors in South Korea

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ICT Good Imagination Project

- Project to resolve pending issues in the region with ICT technology

Korea Senior Living Lab, Seongnam

Operate the experience center as a living lab for the development of products and services that older adults need

Remote Health Monitoring System

Health care service is provided to the elderly who are unable to use medical services because they are far from health care facilities

Implementation of IoT-based silver care service for senior citizens

Real-time behavior detection by applying IoT and sensing technology in the housing to respond quickly to dangerous situations

[Ⅱ] Smart Aging-Living Lab Situation in South Korea

02

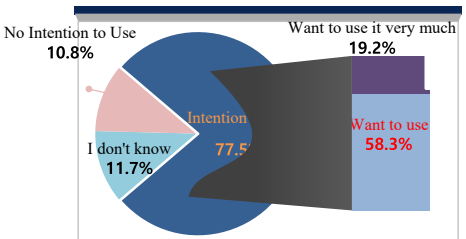
Unmet Needs of Smart Aging in South Korea

1. Needs of Smart Aging : High-Demand

Needs of Smart Aging in Korea

Seniors & Families, Caregivers ensure that everyone has a high demand for care technology

Caregiver



77.5 percent of the caretakers said they were sick.
A Study on the Consciousness of Utilization for Care Robot

It is expected that the robot will alleviate the burden of physical and psychological care.

Source Kyung Hee University (2019)

Senior & Family

93% of elderly respondents intend to buy a smartphone

Reasons for intent to purchase a smartphone
1st place : Free use of the Internet
2nd place : communication with others

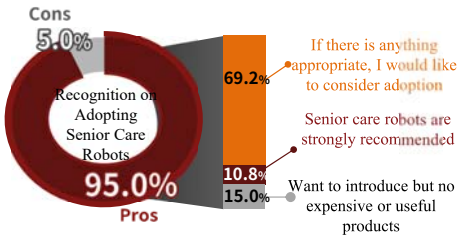
Older people want to communicate on the Internet and smartphones like young people.

Source: LG Electronics' Report on the Utilization of Senior Citizens, Korea (2015)

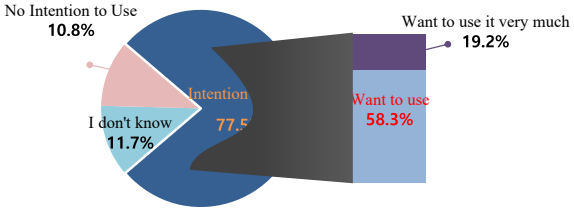
2. [Caregiver] Survey for senior care robot

Survey overview: Identify the demand for senior care robots for caregivers working in hospitals and nursing homes
▶ Surveyors: 120 Caregivers ▶ Survey Period: 2019. 03. 11~15 ▶ Survey Method : Online Survey

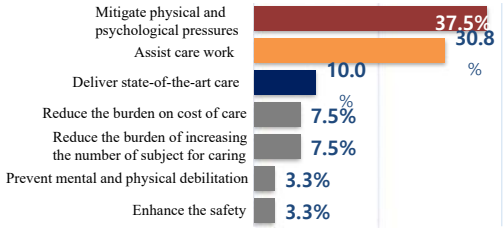
01 Recognition on Adopting Senior Care Robots



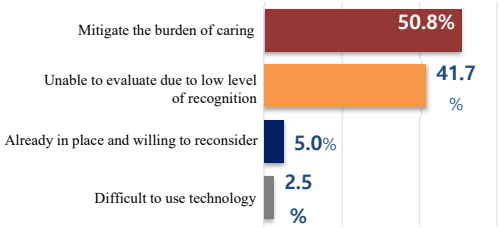
02 Intent to Use Senior Care Robots



03 Expectation on Senior Care Robots



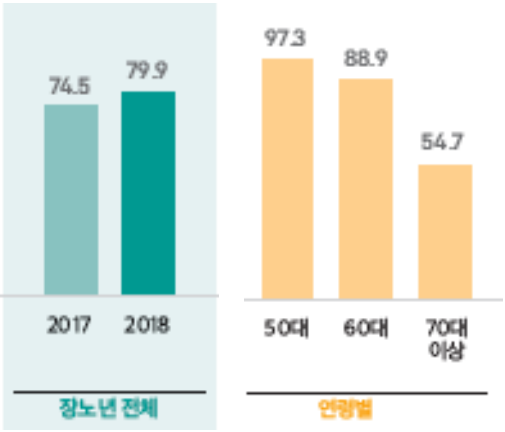
04 Assessment of Applying to Caring Site



3. [Older Adults] Internet usage rate and Smartphone retention rate

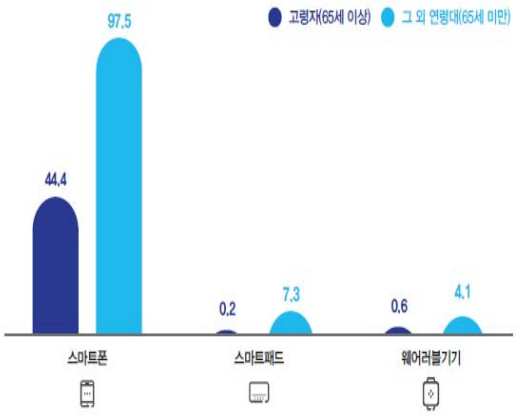
Internet usage rate for the elderly

- The Internet usage rate of households in the elderly is 79.9%, up 5.4% from 2017
- The rate of Internet usage for the elderly more than tripled from five years ago.



Smartphone retention rate for the elderly

- The retention rate of mobile smart devices in old age is 68.7%. In particular, 70s and older (35.1%) are much lower than the general population (89.7%)
  * 50s: 93.9%, 60s: 79.2%, 70sand older: 35.1%
- The retention rate of smartphone in the old age is 68.8%, lower than that of the general public(91.0%)



Source : Ministry of Science and ICT - The Report on the Digital Divide (2018)

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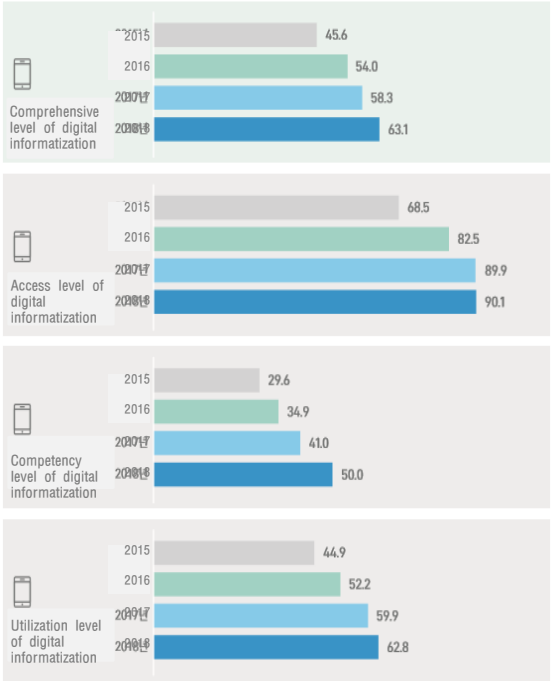
4. [Older Adults] Digital Adoption Level_(2)

Digital Informatization Level of the Old Age



Source: NIA(2018)

Electronic devices available by age(65+)

Sort	65-69	70-74	75-79	80-84	85+
Receive text	82.2	67.9	51.2	33.5	20.4
Texting	60.9	38.3	24.3	13.2	7.4
Searching	39.9	22.9	14.4	7.3	3.1
Photo shoot	56.4	36.4	22.1	10.6	5.6
Listening music	31.2	17.5	10.5	4.9	3.1
Game	14.5	6.4	3.7	2.4	1.3
Watch a video	23.1	12.6	7.5	3.6	2.2
SNS	46.5	25.1	14.7	7.2	4.4
Shoping	8.4	4.3	2.1	1.1	0.5
The others	0.6	0.4	0.2	0.1	0.0
Sum	100.0	100.0	100.0	100.0	100.0
(person)	(3,314)	(2,536)	(2,137)	(1,314)	(774)

Source : Survey of Living Conditions of Elderly Individual (2017)

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5. [Older Adults] Case of Technological divide of _(1)

a good use of technology

☑ **A Case Study of Active Senior Utilizing Technology in the Fourth Industrial Revolution Era**
Park Mak-rye, a YouTube star in Korea : Life as a Creator actively communicates with new technology and the younger generation.

성공사례 01

Park Mak-rye, a 72-year-old YouTube star in her 70s
"The age is just a number"
[MOM] Thank you for communicating through the Internet.
[SUN] Thanks to you, I'm happy and happy.

성공사례 02

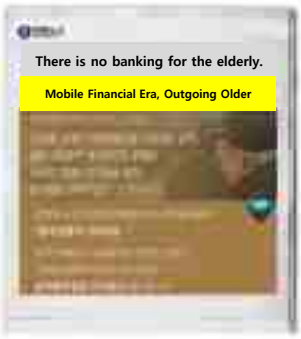
Cooking Contents Youtuber
Cho Sun-ja, a 63-year-old
"Creator activity is a vital part of life."

source : https://www.youtube.com

5. [Older Adults] Case of Technological Divide_(2)

"Technical Use Difficulties of the Elderly"

Fintech-Internet Financial Difficulties



Difficulty in using fast food kiosks

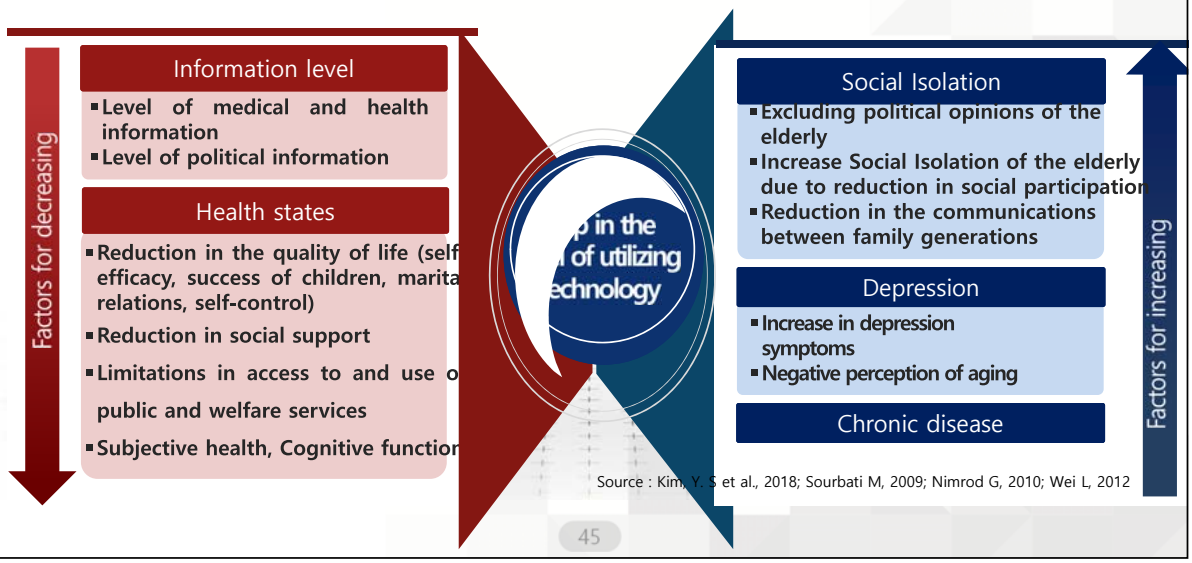
Lower technology preference at high level

New technologies such as online service and self-driving cars have emerged, but utilization rates of senior citizens and disabled people and technology preferences are low

6. Gap between level of utilizing technology and health outcomes

☑ Many studies reported that lowered level of health information, reduction in the quality of life, social alienation and increase in depression have increased among older adults due to **the gap in level of utilizing technologies**.

☑ Digital(Technological) Divide in South Korea was related to various areas of healthy Aging ; Physical health, chronic disease, cognitive function, depression, social Isolation and social relationships (Kim, Y. S et al., 2018)



Source : Kim, Y. S et al., 2018; Sourbati M, 2009; Nimrod G, 2010; Wei L, 2012

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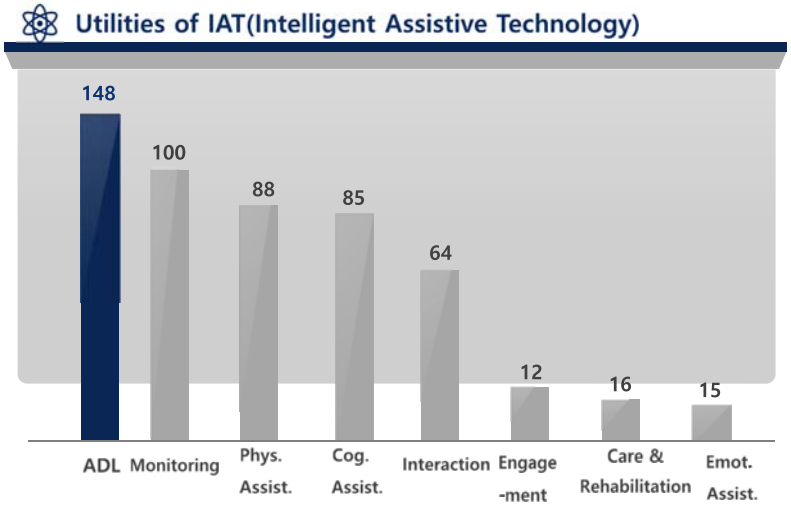
7. Intelligent Assistive Technology

Utility of IAT(Intelligent Assistive Technology) in Dementia Care and General Care

☑ **Dementia Care Technology is used in a diverse way, and the most frequent use is to assist activities of daily living (ADL), followed by monitoring, physical assistance and cognitive assistance.**



* ADL(activity of Daily Living): assisting activities of daily living such as eating, bathing, wearing clothes, defacation, and urination.

Source : Kim, Y. S.(2017), Ienca et al.,(2017)

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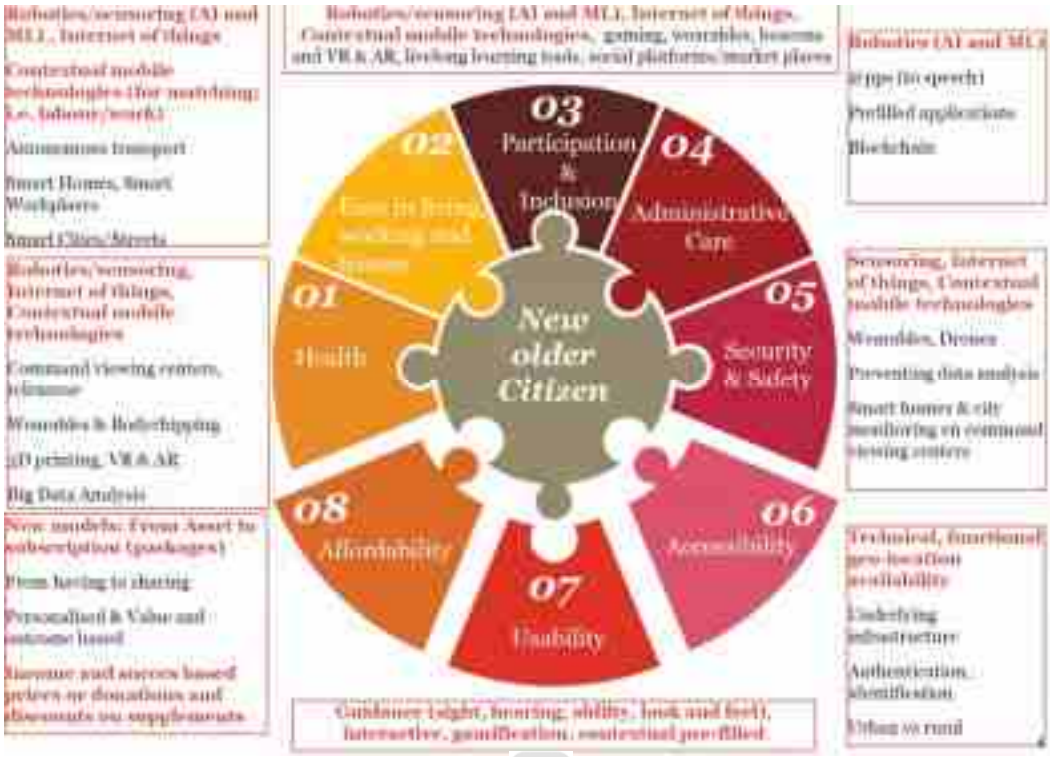
[Reference] Emerging technologies and our 'new' older citizen



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Source: IFA 13th Global Conference (2016)

8. Technology levels for Older Adults

Subdivision of technology adoption according to technology level

- ☑ In the case of dementia care technology, which has high needs among healthcare innovations, devices that are not difficult to use but can help in real life, such as power wheelchairs, communication devices, and walkers, are preferred (Li & Sellers, 2009).
- ☑ In the follow-up researches, a significant difference between the age groups is expected high-end technology and low-end technology are distinguished.

Something New
in Korean Older Adults

- Product : (H/W) Device....
  (S/W) App
  Voice Recognition....
- Service
- Pin Tech : online finance
- Online Shopping
- New Knowledge

.....

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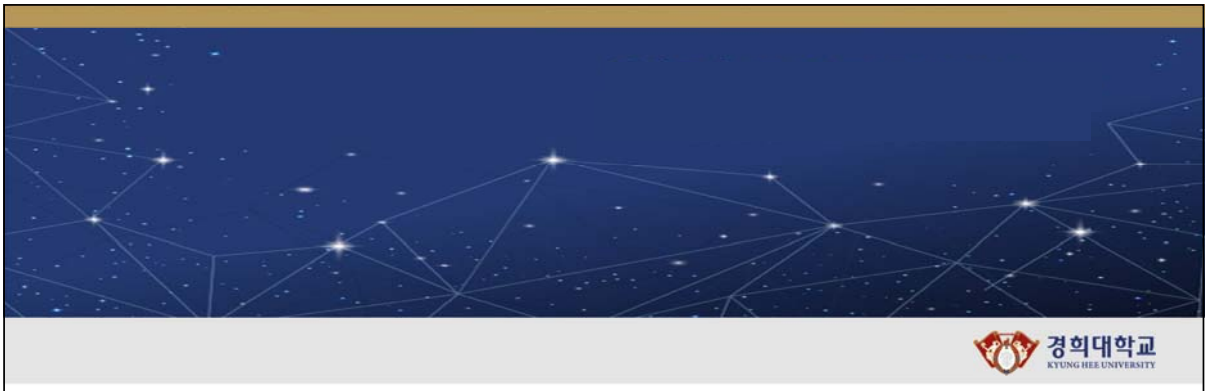
Source : Li & Sellers (2009)



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Ⅲ Directions of Smart Aging Living Lab

1 | Paradigm Shift for Smart Aging in South Korea
2 | Smart Aging Service Living Lab & Public Policy Living Lab
3 | Senior Technology Adoption
4 | Ecosystem of Smart Aging Living Lab

Directions of Smart Aging and Living Lab

Directions of Smart Aging and Living Lab

	AS-IS	TO-BE
Direction	• Caring for Older Adults • (about 20% for Public Criteria)	• Independent Living • Self-Determined Living • (over 80% of general older adults)
	• Provider(Developer & Researcher)-centered	• Person-Centered Care(PCC) • End-user-Centered
	• Research-Based Approach	• Real-World Contexts Approach • Community and Practice-based Approach
Diffusion	• Research Performances	• Technology Adoption for Seniors • Technology(Product)-Service (Collaborative) Model • To apply to Public Policies
Living Lab	• Meaningful trials	• Smart Aging Service Living Lab • Public Policy Living Lab
Governance	• Government-driven	• Ecosystem Platform • PPP Partnership - Public(Nation/community) - Private(Business/NPO) - People(Older Adults/Family/Workforce) Partnership

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01

Paradigm Shift for Smart Aging in South Korea

1. Core Value : Self-Determined Living

Person-centered Approach

- A person-centered approach is a concept derived from the disabled area,, but currently used in various areas. The person-centered approach means the support focused on the needs of the patients and their family (NDP, 2016).

*NDP: National Disability Practitioners

Independent Living

- Independent living is possible through the combination of various environmental and personal factors that enables one to control one's own life, and includes the substantial choice and determination on where, with whom and how to live. (UN, 2012)

Self-Determined Living

- Self-Determined Living means the self-control of one's own living. In other words, it means that one can make a decision on every area and every problem in one's own life on one's own (DeLoach, 2983)

Dictionary meaning of Self-Determination

- Self-determination is one's right to determine and resolve things related to oneself, and the right to choose something on a free will based on the principle of equality and equal opportunity.

Autonomy

- Autonomy means the control of one's own actions based on the interest and values that one gives oneself even when there is an influence from an eternal resource (Deci & Ryan, 200C)

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[Ⅲ] Directions of Smart Aging Living Lab

02

Smart Aging + Real-World Living Lab
- Smart Aging Service Living Lab
- Public Policy Living Lab
with Real-World Evidence

[Reference]
"Care Assistive Robots Development : practice-centered Living Lab-Tailored Service Model" R&D Project(2019-2021)
Kim,Y.S.(Kyunghee Univ), Weon Chul Shin (Medical school of Kyunghee Univ.), Man&Tel, KIST, Korea University

1. Intro : R&D Pathway

- ☑ R&D is divided into the steps as invention->assessment->adoption->expansion so that the final results can be delivered to patients and the public as a benefit with various organizations taking each step
- ☑ Living Labs are to bridge the gap between academia and 'real-world' practice
  + to bridge to National Policies and Business Model (pubic/service)
  : Public policy Living Lab

INVENTION	EVALUATION	ADOPTION	DIFFUSION
Creation	Assessment	Uptake	Spread
• New things • New ideas • New techniques • New approaches	• New things • New ideas • New techniques • New approaches	• New things • New ideas • New techniques • New approaches	• New things • New ideas • New techniques • New approaches
Basic Research	Applied Research	Commissioning	Patient Care
NRF	KHIDI / KEIT	NECA	Public Policy - National Health Insurance - National LTC Insurance, etc

Better Quality, Better Value

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2. Care Robots

'Ministry of Health and Welfare' and 'Ministry of Industry and Trade' on application of Care Robots (4 fast track in 9 items)

01 R&D Support (start in 2019)

02 * Supporting Subsidies for the Purchase of Nursing homes(facilities)

03 *Supporting National Insurance (Healthcare/Long-term care) Fee for care-beneficiaries

* suggestion

Smart Monitoring & Coaching	Assist for patient transfer	Mobility support
		
Modification support	Excretion support	Bath support
		
Manipulator	Exercise support	Communcation Robot
		

Source: National Institute of Rehabilitation(2018)

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3. Living Lab in Real-World contexts

evaluate the effective usability through 'Practice-centered Usability Test'

- ☑ Representative institutions: Signed MOUs with a total of 11 institutions, including Gangdong Kyung Hee University Hospital (Healing Care Service Hospital) and Seoul Nursing Center (National Health Insurance Corporation), etc. (Four nursing hospitals, five senior nursing facilities, three local governments, etc.)
- ☑ Develop the educational materials for using the boarding support robot for caregivers (most of caregivers are women in 50s)

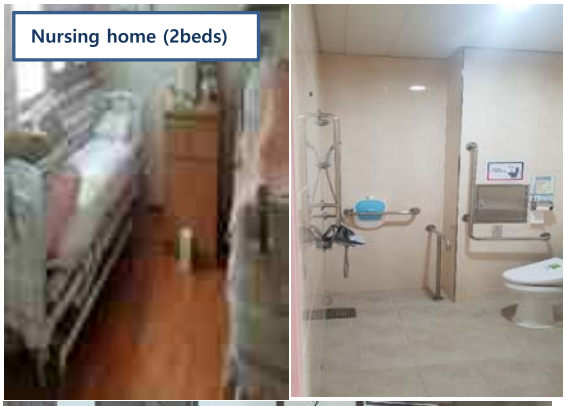
Assist-Robot for Patient Transfer
「 Living Lab in Real-World contexts」

Hospital		Nursing Home		Community	
4 facilities		5 facilities		3 cities	
대표기관	강동경희대병원 (간호간병서비스병원)	대표기관	서울요양원 (국민건강보험공단 직영 노인요양시설)	대표단체	용산구
공공	서울시립북부 요양병원	공공	서울시립서부 노인전문요양센터	지자체	인천시
민간	보바스재활병원	공공	서울시립동부 노인전문요양센터	협력단체	고령친화용품 산업협회
민간	늘푸른재활병원	공공	구립용산 노인전문요양원		
		민간	노블카운티 너싱홈		

60 [Reference] "Assist-Robot for Patient Transfer" R&D Project by ManTel, KIST, Korea University, Kyungpook University

[Example] Living Lab in Real-World contexts : Nursing home + Long-term Care Service

Nursing home (2beds)



Nursing home (4beds)

Bathroom

Usability Test

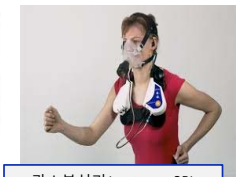
Confirmation of usability assessment indicators through the practical pilot test of boarding support robot

- ☑ **Pilot test is carried out in Living Lab with safety in consideration of the safety of the target**
- ☑ **Implement the multi-dimensional (Quantitative + Qualitative Indicators) usability assessment for caregivers and care-beneficiaries**

Classification	Technology Acceptive Indicators		Clinical Indicator	Subjective Satisfaction Indicator
Caregivers (Care Worker, Nurse, Etc)	Qualitative Assessment Indicators	• (Safety) Product safety-based indicator assessment • (Operability) Assessment of indicators based on operability of products (operation assessment) • (In-depth interview)	• (Occupational Health) Overall business risk: REBA assessment • (Physical Health) Musculoskeletal disease (back, shoulder, wrist, etc.) muscular dystrophy, etc. • (Mental Health) Depression, quality of life	• (Subjective Satisfaction) Intention to re-use and recommend to others • Occupational satisfaction • (Organization) Relations with bosses and colleagues
	Quantitative Assessment Indicators	• (Performance Time: to Shorten of Working Time • (Performance Failure Rate) • (Energy Consumption) • (Muscle Usage) • Development of check sheet and manual		

Devices for Usability Test

근전도계(noraxon)
: 근육사용량 측정



가스분석기(metamax3B)
: 에너지소비량 측정

동작분석기(motion analysis)
: 동작효율성, 수행에러율 측정

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4. To Bridge between Living Labs and Public Policies

Bridge between Public and Private Sectors

Linkage with Public Policies(examples)

01 ▪ **Expand to National Long-term Care insurance for seniors**

* Apply the care robot insurance of Japan and German's 's care insurance

02 ▪ **Expand to National Healthcare insurance for patients and seniors**

-Trial fees for of nursing care services, recognition of new medical technology, etc.
* Apply the care robot insurance of Japan and German's care insurance

03
- **Apply local government social service**
- **public health center business (voucher, etc.)**
- **Connect with Community Care ('18 11)**

04 **A project to supply 1,000 care robots for seniors**
[Ministry of Industry and Trade]
(Three local governments, including Gwangyang-si, 2019-2020)

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[Ⅲ] Directions of Smart Aging Living Lab

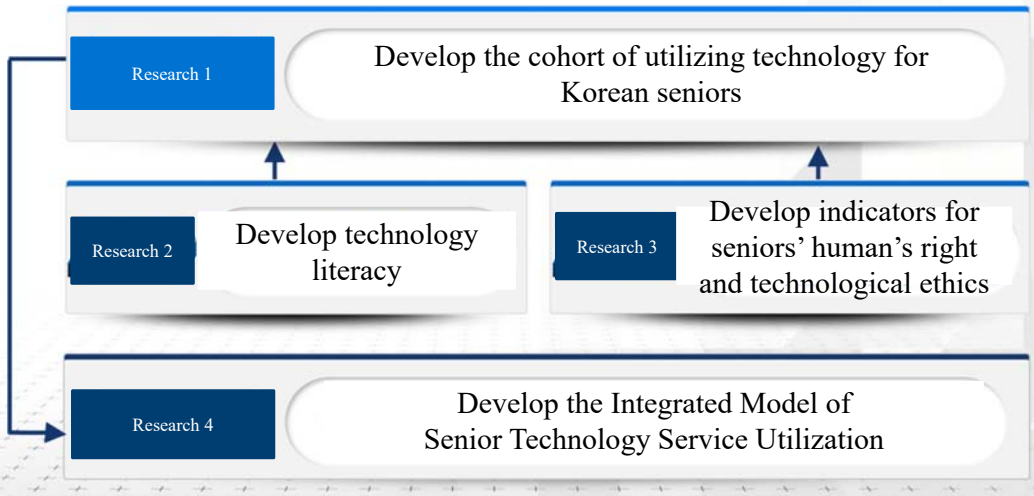
03

"Senior Technology Adoption Model" (S-TAM)

[Reference]
Person-centered "Senior Technology Adoption" R&D Project
- **Kim, Y.S. (2018-2020),** Hee Yun Lee (Social Work, Univ. of Alabama), Seung Ryoung Lee (Computer Science, Kyunghee Univ.), Weon Chul Shin (M.D, Ph. D. Medical school of Kyunghee Univ.)

Overview of "Senior Technology Adoption Model(S-TAM)"

Establishing an Innovative Social System to Respond to the Fourth Industrial Revolution
A Social Science Model for the Development and Utilization of Human-centered Technology for the Elderly)



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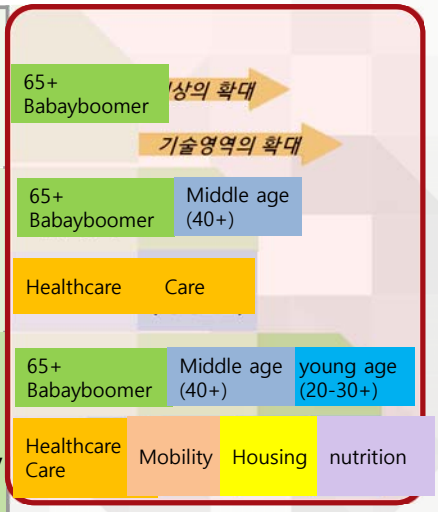
[Case] Build-up of 『Korean Senior Technology Adoption Cohort』

	1. Cohort Utilization of intelligent platform	2.Technology Literacy Improvement in personal competence	3. Ethics of Technology Social consideration	4.Integrated Senior Technology Adoption Model
1step	**Establishment of cohorts for determining needs related to senior technology**	Development of **technology literacy scales** through surveys	Development of human rights index through surveys	**Development of a theoretical model of technology literacy through determining needs**
2step	**Development of personalized needs-technology mapping service** based on cohort research	Development of educational materials using community living lab	Development of educational materials using community living lab	**Development of an empirical model of technology literacy using community living lab**
3step	**Expansion of personalized needs-technology mapping service based on intelligent platform**	**Distribution of manuals and provision of educational services**	**Development of educational materials using community living lab**	**Development of an empirical model of technology literacy using community living lab**

Expansion of subject-area-technology level



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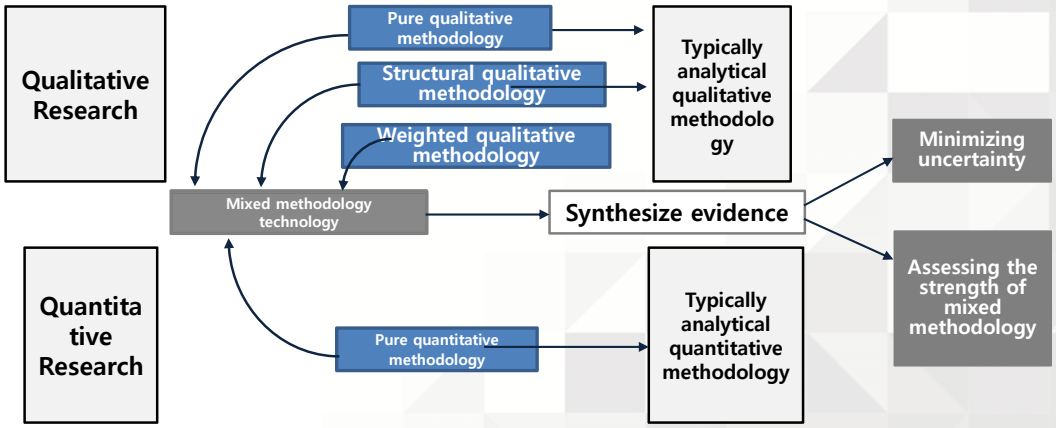
3. [Method] Establishment of the Mixed Cohort

Adoption of mixed research methodology: Establishment of a cohort that allows quantitative and qualitative research methods simultaneously

- ☑ Qualitative cohort: Qualitative research method, investigating the perceptions and attitudes of the elderly
- ☑ Quantitative cohort: Quantitative research method, reflecting social demographic, economic, physical, and psychological factors, investigation of technology adoption factors, and contents from the qualitative cohort(Kim, Y.s et al, 2018)

➔ **Establish and operate a mixed cohort expected to allow in-depth understanding of the elderly and universal application for the elderly in Korea**

[Figure] Research process of the mixed research methodology



Source: http://studio-wt.com/evidence/

[Reference] Research Contents of Technology Literacy

"Senior Technological Literacy"

Concept of Technology Literacy

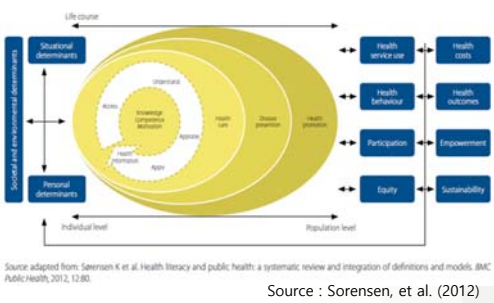
- Technology literacy means accessibility to technology, usability to solve problems using technology, and productivity to creatively produce things by manipulating technology (Hobbs, 2010)

※ The terms similar to technology literacy are Digital literacy, ICT literacy, digital competence, media literacy, and Internet literacy. Among them, technology literacy, which means digital understanding ability and utilization of a wider range of technologies, is actively used (Lemke, 2002; Van Joolingen, 2004; 2016; Christ & Potter, 1998; Hofstetter, 2003).

Broad interpretation of technology

- Technology is not just a computer or an electronic device; It means everything that changes a natural environment for people to achieve their purpose, such as books, furniture, road construction, and airplane.
- In other words, technology can be defined as "the whole of innovation, change, and modification of the natural environment" to meet human needs (ITEA, 2000)

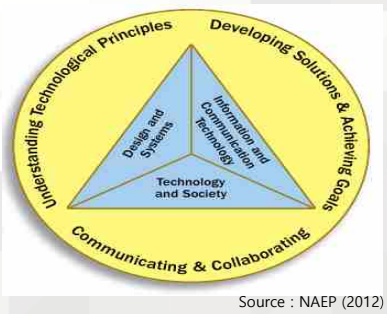
Figure WHO Health Literacy



Source adapted from: Sørensen K et al. Health literacy and public health: a systematic review and integration of definitions and models. BMC Public Health, 2012, 12:80.

Source : Sorensen, et al. (2012)

Figure Technology & Engineering Literacy Framework



Source : NAEP (2012)

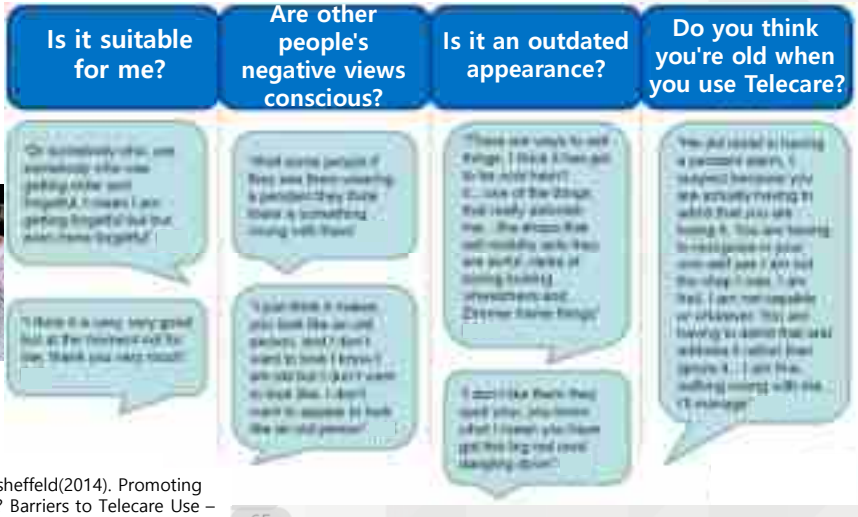
[Reference] A Study on the Advancement of Technology of Ethics

Current Status and Problems of Human Rights Violation and Technological Ethics in Technology Development

Enduser

- Dual use: Double use of advanced technology may result in problems
- Data problems such as personal information: 4th Industrial Revolution technology such as big data, IT technology, and clouding computer services has resulted in privacy infringement and information security problems
- Ethical dilemma: experience of ethical dilemma by limiting the provision of universal service in the use of technology to improve the well-being of people involved in health and social welfare.

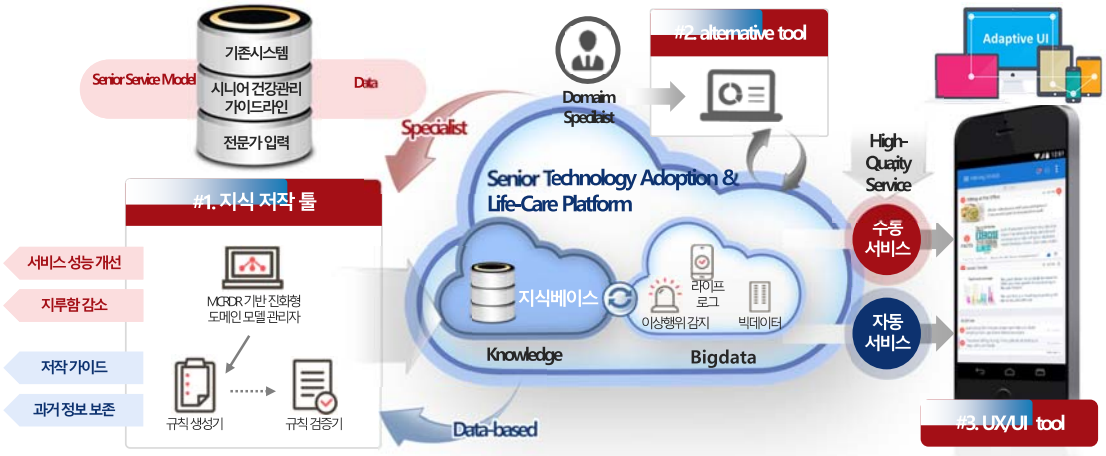
Stigma



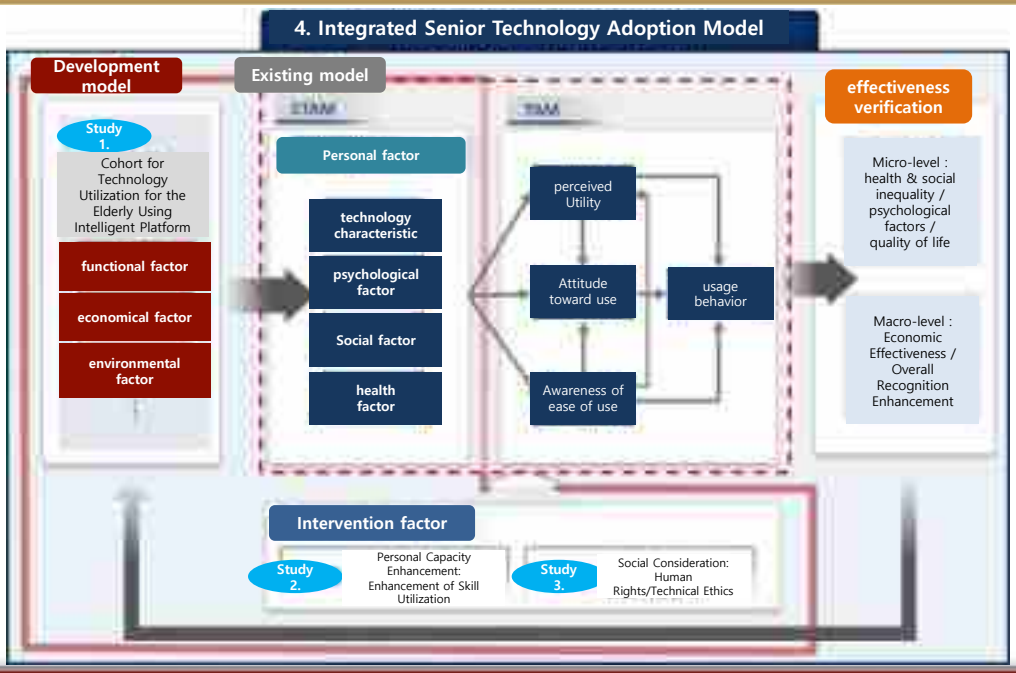
Source: 김영선(2018); The university of sheffeld(2014). Promoting Dependence rather than Independence? Barriers to Telecare Use – Final Results

3. [Method] Intelligent Platform for Senior Life-care

Development and Mapping of Personalized Technology Utilization Services by Connecting Cohort and Intelligent Platforms for the Elderly



4. Integrated Senior Technology Adoption(Senior-TAM) Model



- A Study on Factors Affecting Senior Technology Adoption in South Korea
- Verification of Senior Technology Adoption Model Considering Psychological and Social Characteristics

[Reference] Integrated Senior Technology Adoption Model

☑ Develops integrated senior technology literacy model which is advanced from existing S-TAM, considering the elements of personal competence enhancement aspect (technology literacy ability) and social consideration aspect (technical ethics) of social infrastructure factors

- (Personal Factors) Based on the existing senior technology acceptance model that analyzed the psychological and social factors such as the self-efficacy, anxiety, and concern of the elderly, the project team will explore the factors affecting the elderly in Korea
- (Social infrastructure factors) According to the integrated theory of technology adoption, the facilitating factor (Degree of trust in infrastructure for technology use) is the core of technology adoption (Venkatesh, 2012). Since the technology use of the elderly is sensitive to the surrounding environment, it is necessary to build and consider an age-friendly social infrastructure (Kim. et al, 2018)

Table **Factors Affecting Technology Acceptance Model (TAM)**

Classification	Technology adoption factors	Items
TAM	Perceived usefulness	Perceived life influence, perceived usefulness, satisfaction of needs, perceived benefits, perceived convenience
	Awareness towards usability	Perceived ease of use, age-oriented interface, perceived easiness, system reliability
	Attitude towards use	Attitudes towards technology use
	Demographic and sociological factors	Gender, age, education level, income, marital status, experience

Source: Ma et al. (2015)

04

Ecosystem for Smart Aging Living Lab

1. Governance : Ecosystem Platform

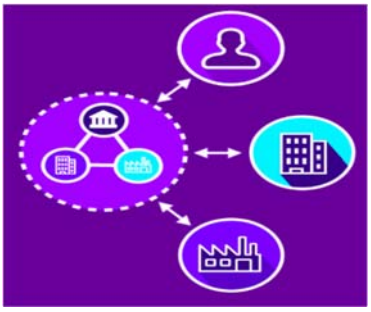
Four types of platform governance

☑ According to the 2017 Accenture Technology Vision survey, 68% of public service managers surveyed said the digital ecosystem already has a significant impact on the industry

- The most effective platform should be designed according to specific goals, contextual needs, current capacity levels.Present four types of platform governance with diverse communication channels and ecosystem for public service delivery (Accenture, 2017)

TYPE (1) Ecosystem Platform

Ref : Acceunture(2017) ; Y.S.Kim(2017)



- (Concept) Ecosystem platforms are performance-oriented open platform types in which the government jointly provides services in cooperation with agencies in non-governmental areas.
- Governance acts as a hub for various collaborators
- According to the 2017 Accenture Tech Vision survey, 91% of public service managers value adopting a platform-based business model and building an ecosystem with digital partners
- In addition, governments are increasingly looking for partners in non-public areas.
- Specifically, digital ecosystem strategies are the best way to address complex policy issues that cannot be resolved by a single service provider

Ref : Acceunture, https://www.accenture.com/us-en/insight-government-platform)

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2. Advanced Empowerment of Workforce for older adults

01 Learning ability

Requires ability to learn skills in a new environment of the Fourth Industrial Revolution and to apply learned skills to performance creation

02 Ability to solve complex problems

About 36% of the world's jobs are expected to require the ability to solve complex problems in 2020

03 Ability to use digital

Requires original thinking and problem solving ability using software and data. Needs the ability to use digital in addition to software manipulation.

04 Ability to design platform

Ability to find and use a common logic and structure in company's activities and products, which is a competence that workforce must possess

*** Data Literacy : Ability to understand and use computational thinking ability and data**

Source: World Economic Forum (2009); World Economic Forum (2016); Future Organization 4.0 (2018)

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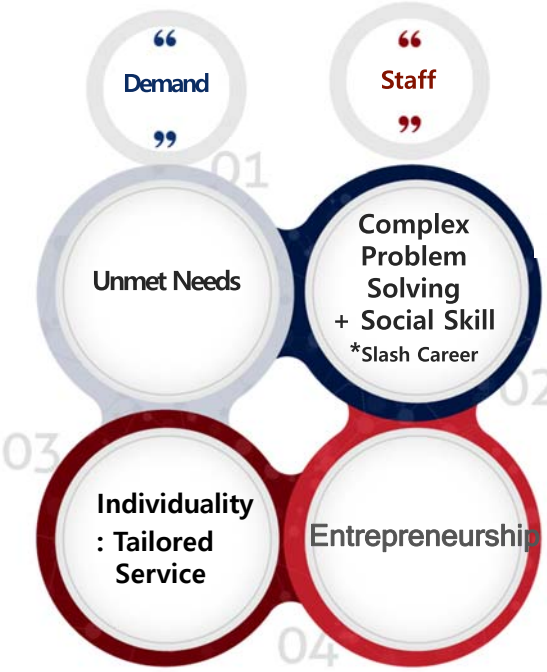
3. "Public-Private-People Partnership"

PPP, Public-Private-People Partnership

- **Senior Welfare Center**
  - **Product and Service Standardization**
  - **Consulting cost (National support plan)**
- **A Study on the Field-Based Participation of Enterprise-University-Regional Society** (community-based research)
- **An integrated approach to customized products-services that can be used not only by the audience and carers but also by the general public**



- **Expert workforce maximizes ability to respond to 4th Industrial Revolution (Science/Social change)**

* Slash/Hybrid career : **the phenomenon of having various jobs/skills for problem solving**

- **Preparing to respond to new business models**

※ Korea's '17 Global Entrepreneurship Index' (World Entrepreneurship Development Organization) : 27th (23rd out of 34 OECD countries)

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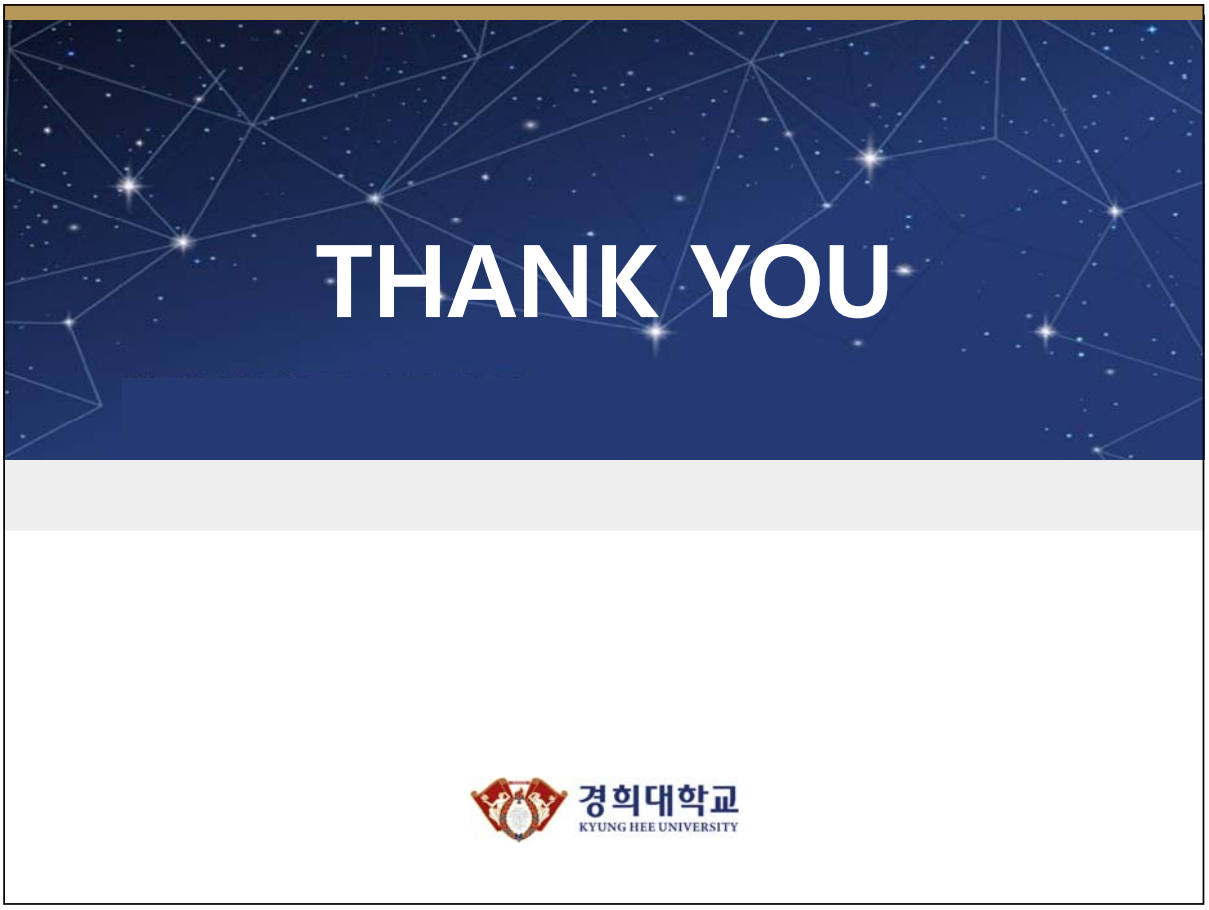

THANK YOU
경희대학교
KYUNG HEE UNIVERSITY

Living Lab ageing well in Zwolle

- Franka Bakker -

Case study: Living Lab ageing well in Zwolle (Netherlands)

Co-creating age friendly innovations with future clients and stakeholders

Windesheim makes knowledge work

Who are we?

Lars Hopman, BSc
Project leader Living Lab
Applied Gerontology
l.hopman@windesheim.nl

Dr. Franka Bakker
Associate professor
Innovating with Older Adults
fc.bakker@windesheim.nl

Windesheim makes knowledge work

Four years ago...

Lars Hopman | Ms. Lagerweij | Renske Leistra
Living Lab Ageing Well team 2016

LivingLab 2015-2016

https://www.youtube.com/watch?v=YkeyTg-TAGw

Applied Gerontology - BSc program | 4 years

Age friendly services in co-creation with older adults

Applied Gerontology provides state-of-the-art solutions to ageing issues in the Netherlands and the EU. Our mission is to train enterprising and valuable Applied Gerontologists as ageing specialist to co-create with older adults in answering ageing issues. To this end, we are setting up a powerful learning environment of excellence in co-creation with older adults, students, faculty and researchers.

Netherlands – Zwolle – Windesheim University of Applied Sciences – www.windesheim.nl

Windesheim makes knowledge work

Co-creation

a core competence for applied gerontologists

Co-creation with older adults :
'Professional interactions between a gerontologist and older adults, professionals, organizations, businesses, governmental agencies in order to enable older adults as consumers to co-create definitions of needs, demands and choices as well as design and implement innovative opportunities, products, resources and services for the growing older adult community'.

Windesheim makes knowledge work

One year later...

Outcomes

Personal

Importance of co-creation

Consumer based innovation

Network of interested stakeholders

Ms. Lagerweij

The feeling of being included

Being heard

Increased network of social contacts

Broader vision on her community

The story continued...

Windesheim makes knowledge work

Future collaboration

Windesheim makes knowledge work

Co-creating age-friendly communities: *research*

"Applied Gerontology and G-OLD LAB work from
a holistic view on ageing well
and always works wíth older adults.

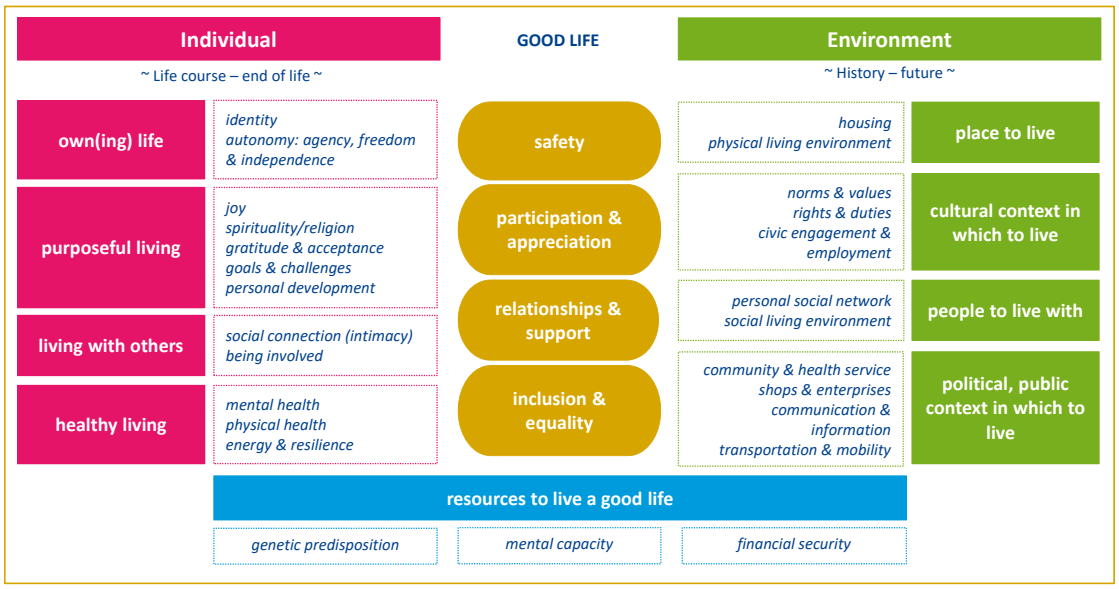
Through projects in innovation-work-learning-environments (**labs**)
we facilitate co-research
and co-creation of innovations concerning
age-friendly services, products and environments."

Holistic view on ageing (well)

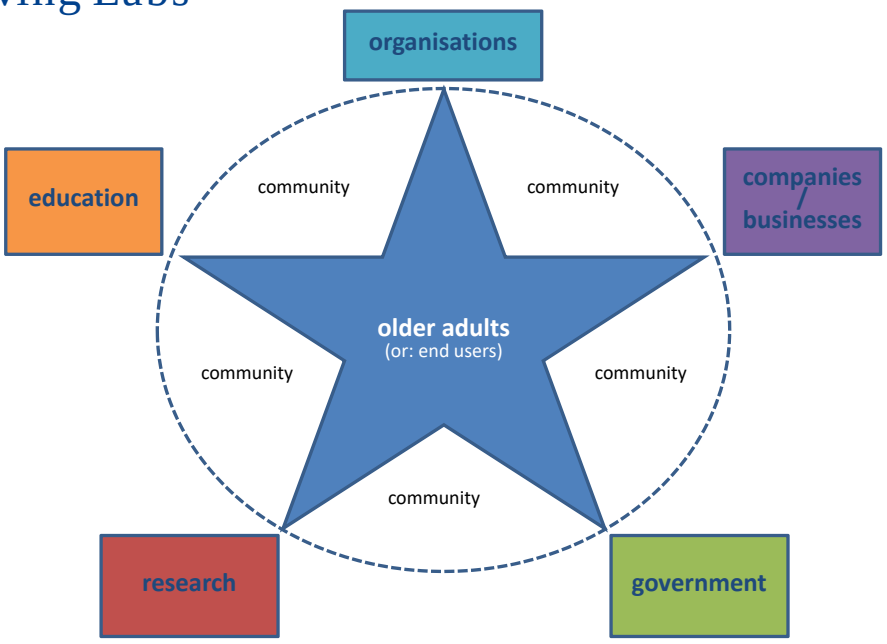
Different perspectives on ageing (well):

- Psychogerontology: psychological aspects of ageing
- Biogerontology: biological aspects of ageing
- Social gerontology: social aspects of ageing
- Filosophy of gerontology: filosophical aspects of ageing
- Environmental gerontology: ageing in place

Gerontological framework of *a good life* (Bakker et al., 2019)



Living Labs



G-OLD LAB; *co-innovating for ageing well*

(part of research group Innovating with Older Adults)

- **Examples of projects:**
  - Living Lab Good Life; Applied Gerontology, Windesheim
  - Living Lab Smart Ageing Seoul, South Korea
  - Older adults as co-researchers: experiences with ageing in a place to which one has moved at a higher age
  - Co-creating health services for Turkish seniors with dementia, with their informal caregivers
  - Domestic care; the role of housekeeping in a good life
  - (in)visible talents of 80+ people in need of support
  - Community lab; informal and mutual support
  - Knarrenhof; impact of a new living concept
- **Participation of older adults and other stakeholders**

Living Lab Good Life; *yields?*

older adults	students	community professionals
• **Social contacts and networks**: with students • **Mutual learning proces and personal development**: awareness of ageing, feeling useful (again), talents are used, involved in life learning experience, mutual acknowledgement, confidence, intergenerational awareness	• **Contacts and networks**: with older adults and professionals • **Mutual learning process and personal and professional development**: mature, confident, thoughtful, collaborating, project-based working, admiration for older adults' coping strategies, intergenerational awareness, diversity	• **Contacts and networks**: with other professionals • **Practical, interesting ideas for products and services;** mostly ideas on paper, some physical products/ changes (e.g. street app, game) • **Knowledge and information about older adults**, in a certain neighbourhood

Living Lab Good Life; *conditions*

Theme	Subtheme
Communication (strategy)	Method, between whom, evaluation and feedback, expectation (management), trust (in living lab), interest in each other / willing to learn
Clarity about responsibilities	Student guidance, tasks and organisation, ownership, roles
Extent of involvement	Motivation, collaboration, utilise expertise, time investment, common goals
Process	Meetings, quality of (student) work
Research done by students	Target group, methods, quality
Sustainability and future perspectives	Further development of ideas including implementation, involvement of older adults and …

Future perspectives

- Continuing development of framework ageing well / good life
- Continuing research for improving success of living labs
- Developing consortia to collaborate and share knowledge

Questions / discussion

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Windesheim makes knowledge work

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