The 28th STAG Board Meeting

Session III: Quality Living

Topic II:

Development Strategy for Telecare Services

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遠距照護 Telecare

Outline

- **Introduction and needs assessment**
- **Current status**
  - Goal of development
  - National/international evaluation
- **Promotion strategies**
  - Blue print for development and timeline
  - Promotion strategies and action plan
- **Conclusion**
  - Conclusion
  - Discussion agenda

Economic Values and Opportunities of Tele-healthcare

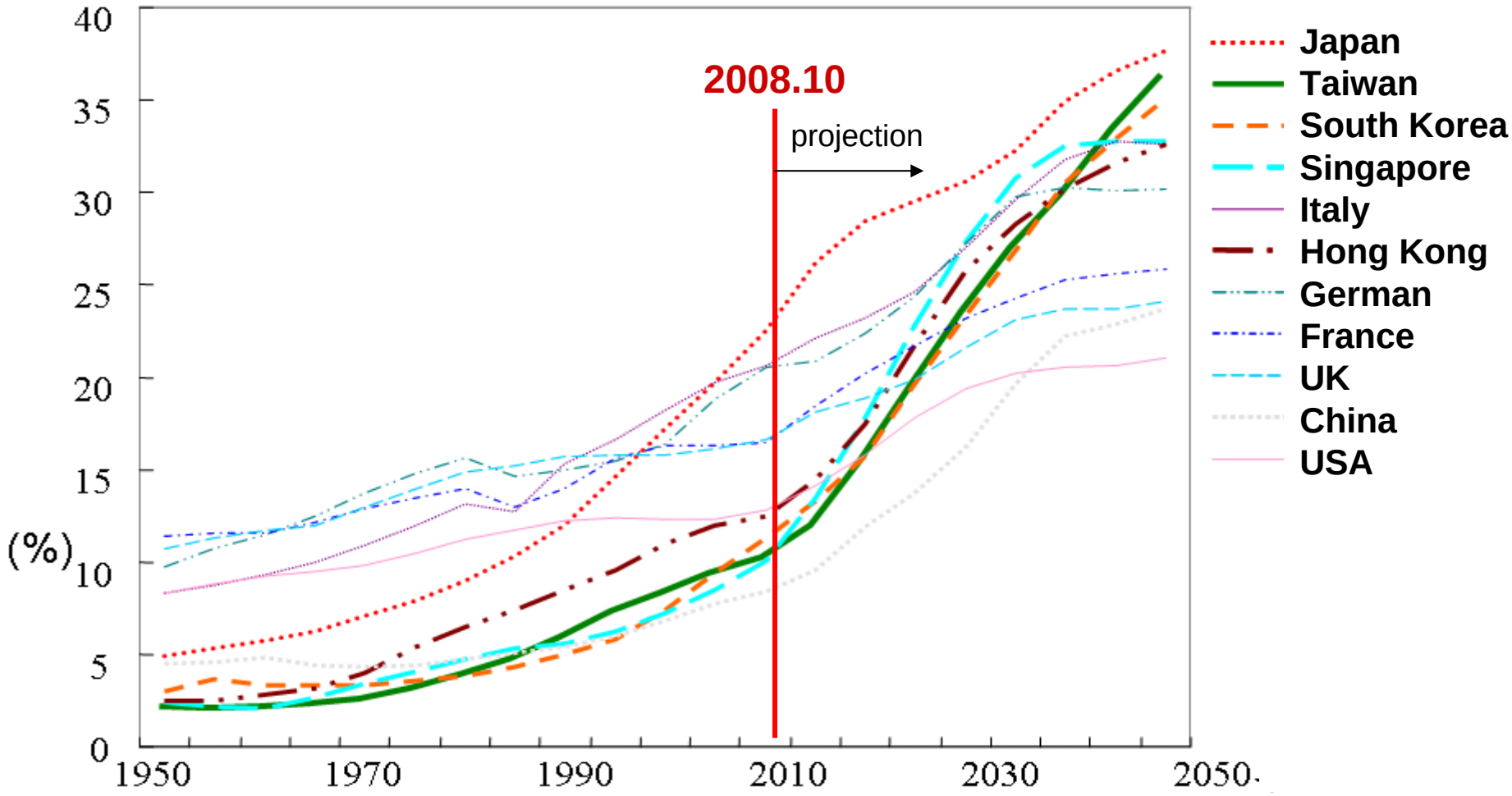
- **Japan**
  - **Before Telecare: visited 30 pts/m per public health RN**
  - **After Telecare: visited 85 pts/m per public health RN**
- **Canada**
  - **After Telecare: saved 1 billion in 3 years**
- **USA**
  - **Increase job opportunities in IT and home healthcare in the following 10 years due to the development of Telecare, estimated by U.S. Bureau of labor Statistics**
- **USD$1050 industry in elderly living care**
  - Include living care, life supports, retirement community services, monitoring and supports, etc. (Business Weekly Publication, Inc., 2007)

Introduction

- **Considering the long term care needs has been increasing along with the rapid growth of elderly population, long term care human resources and care model should be carefully planned.**
- **The current solution is high labor and low technology required which cannot resolve the baby boom aging problem.**
- **The increasing medical cost that causes the tremendous burden of NHI that needs the alternative highly efficient and effective health care model.**
- **At the national industry turning point, from producing type value chain switched to high supplementary value service type value chain, along with the increasing aging population, there is a great opportunity for the development of digital health care industry.**

Forecasting Aging of Population

- **Elderly (65+y/o) population forecast: 2008-10.4% (baseline), 2018-14.7%, 2028-22.5%, and 2056-37.5%**



Reference: CEPD, Population Forecast of ROC 2008~2056, 2008/10, summarized by ITRI

Challenges for Taiwan National Health Insurance(1)

- **Facts about elderly care**
  - NHI expenditure 7x more than population aged under 65y/o
  - need a financial plan to cover the LTC expenses

	0-14y/o	15-64y/o	65+y/o
Population*	**17.6%**	**72.2%**	**10.2%**
NHI expenditure**	**5.91%**	**50.53%**	**43.56%**

*MOI, Annual Life Surveillance 2006, 2008/6

**NHI, Statistic Report for 2006, summarized by ITRI, 2008/10

Challenges for Taiwan National Health Insurance (2)

- **Starting from 1995, coverage over 99%**
- **NHI expenditure NT$4,000 billion, NHI revenue NT$3,900 billion, government supports up to NT$939 billion (25%), 2007**

  -> Great financial burden

Unit: billion NT$	Revenue	Expenditure	Profit	Cumulative Profit
2001	2,917	3,073	-156	243
2002	3,114	3,270	-157	87
2003	3,388	3,392	-4	83
2004	3,533	3,573	-4	79
2005	3,669	3,732	-63	15
2006	3,861	3,864	-3	12
2007	3,919	4,056	-138	-126

Reference：NHI, NHI Financial Report, 2008/10

Taiwan IT Competitiveness Ranking World 2nd

	2008 score	2008 world ranking	2007world ranking
Business environment	87.6	19	11
IT infrastructure	52.0	20	18
Human capital	73.1	7	7
Legal environment	70.0	27	32
R&D environment	74.3	1	3
Support for IT industry development	65.3	28	19
Total score	69.2	2	6

Reference: The Economist Intelligence Unit, 2008/9

Development of Tele-healthcare System

- Developing digital healthcare service model and utilizing case management strategies, to ascertain the principles of health promotion and disease prevention in public health
- Exploit community resources actively, connect the related agencies and provide a universal service channel
- Developing information integration platform, connecting social and health resources
- Utilizing the advantages of Taiwan IT industry to promote innovative health service industry

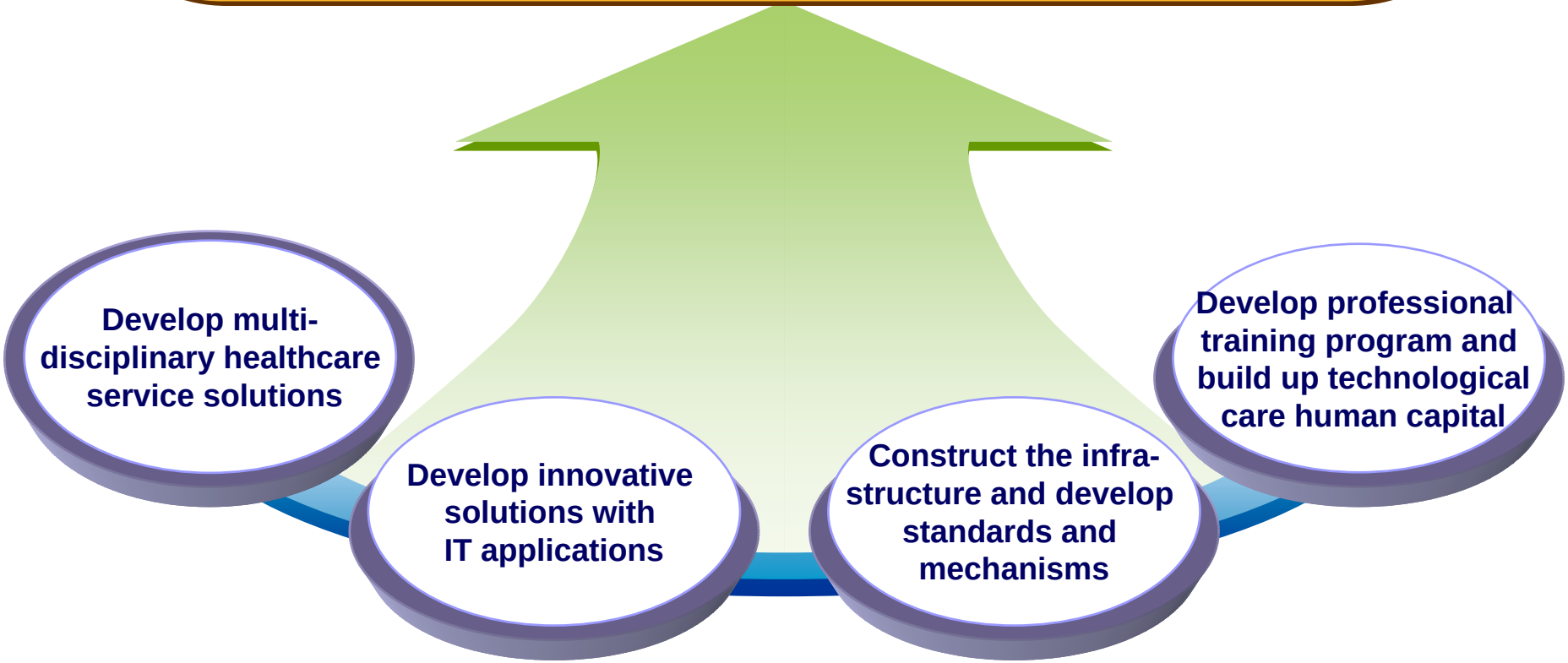
Type	TO-BE
Community care	■ By integrating community medical group and the local resources, to develop for multidisciplinary community care services that focus on health promotion
Home care	■ By Integrating medical and living resources and utilizing tele-services, to increase the accessibility of healthcare services and to develop the comprehensive continuum service system
Institution care	■ Supporting by the hospital, to improve service process by utilizing digital healthcare services and to promote efficacy and quality of nursing home services

Key Elements of Tele-healthcare

- **Tele-healthcare is not the end of care. Instead, it is considered the umbilical cord of care.**
- **Similar to medical care, there are six indicators for tele-healthcare.**
  - **Effective**
  - **Efficient**
  - **Timely**
  - **Patient-centered**
  - **Safety**
  - **Equitable**

Development Goal

Develop integrated Telecare service network
Establish successful business model
Take the leading position to promote Telecare services in Asia

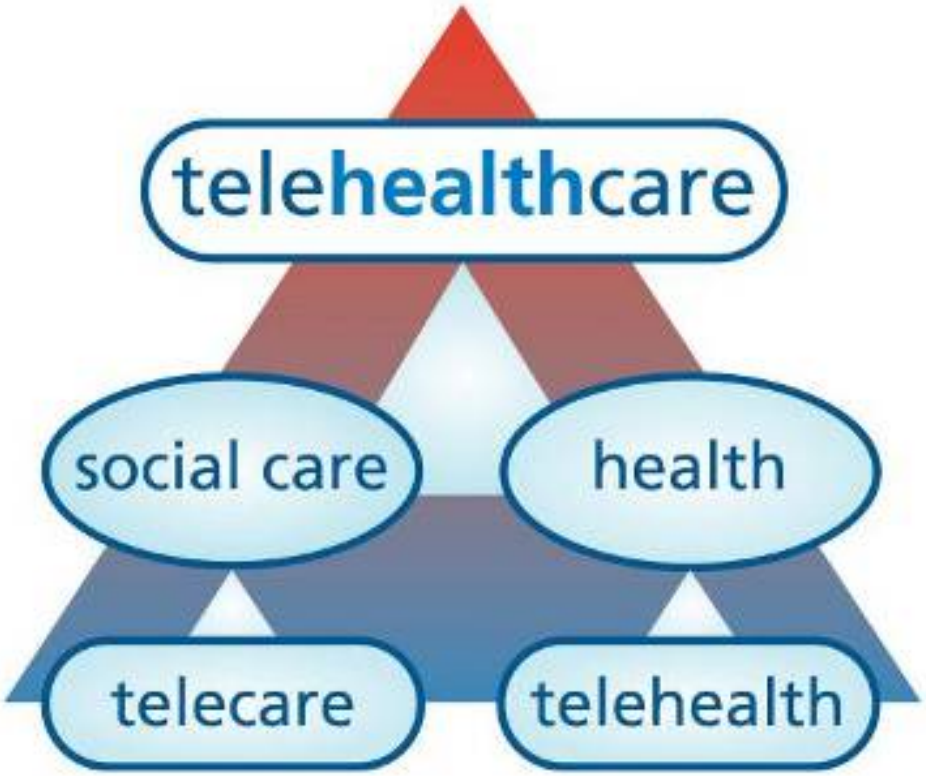


International Study(1): UK

- **Health statistics (2008/07)***
  - **Population: 60.9 million, 16% above 65y/o**
  - **Life expectancy: 78.85 y/o (male: 76.37, female: 81.46)**
- **Health insurance for LTC**
  - **NHS: National Health System**
- **Development of tele-care**
  - **Telecare (20 years)**
  - **Telehealth (2 years)**

*Reference：https://www.cia.gov/library/publications/the-world-factbook/geos/uk.html

Telehealthcare Conceptual Model, UK

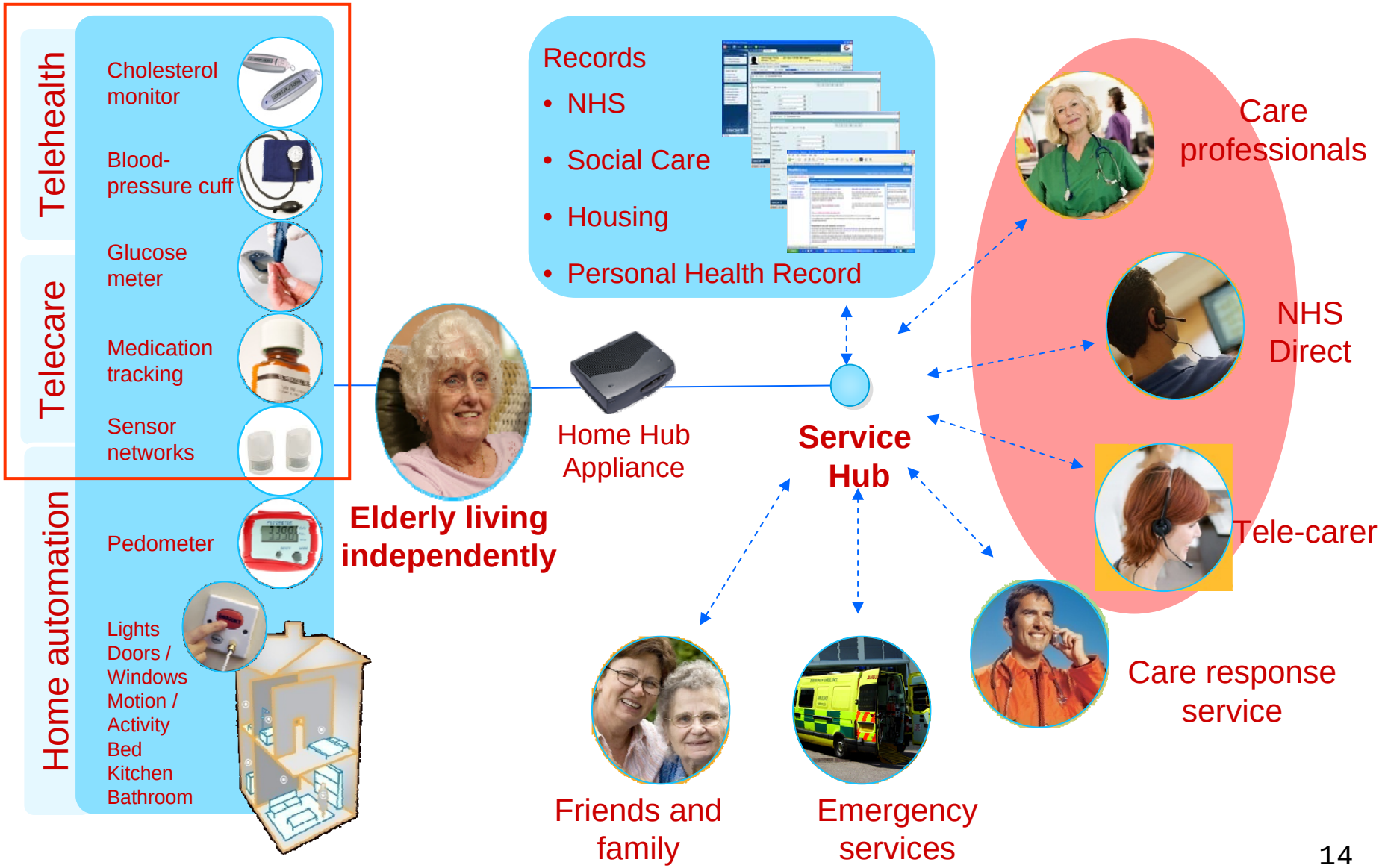


Aims of Telehealthcare :

- **Improved personal outcomes**
- **Improved quality of life**
- **Economic efficiencies**
- **Sustainable health and social care systems**
- **Preventative solutions**

Reference: Tunstall Healthcare Group Ltd., 2008/9/11

Telecare and Telehealth in UK



International Study(2): USA

- **Health statistics (2008/07)***
  - **Population: 304 million, 12.7% 65y/o or above**
  - **Life expectancy: 78.14y/o (male:75.29, female:81.13)**
- **Health insurance for LTC**
  - **Medicare, 1971～**
  - **Participants: 45 million**
- **Development of tele-care**
  - **IDEATel** Project，**
    1997～2006

*Reference：https://www.cia.gov/library/publications/the-world-factbook/geos/us.html#People
**IDEATel：Informatics for Diabetes Education and Telemedicine

IDEATel Project

- 777 NYC and 886 NY State residents with diagnosed DM
- Provide Glucose monitoring device, PC, web-camera, microphone, and Internet connection
- Case management by RN at the remote site

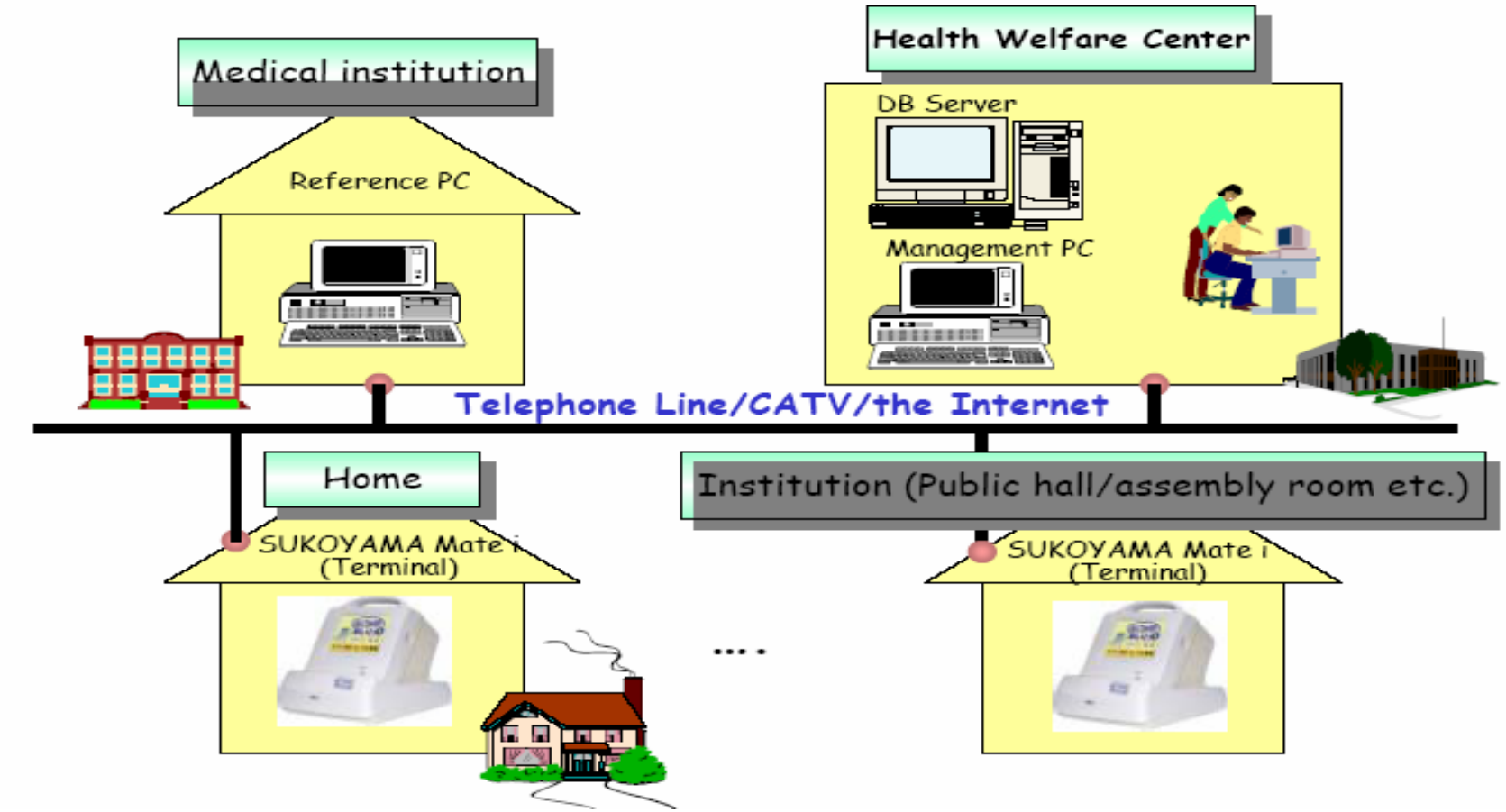
International Study(3): Japan

- **Health statistics (2008/07)** *
  - **Population: 127 million, 21.6% above 65y/o**
  - **Life expectancy: 82.07 y/o (male: 78.73, female: 85.59)**
- **LTC insurance**
  - **Starting from 2000**
  - **Home services and institution care**
- **Development of tele-care**
  - **Focused on video supported medical treatment for the mountain area and island**
  - **Between med institutions**
    - **Tele-pathological dx: 420**
    - **Tele-imaging dx: 1743**
    - **Home tele-med support: 968**
  - **Sukoyaka Family 21 Project (Home care)**

*Reference: https://www.cia.gov/library/publications/the-world-factbook/geos/ja.html#People

Sukoyaka Family 21 Project

- National project staring from 2000, supported by Ministry of Health Labor and Welfare
- Device and equipment provided by NEC: BP and EKG monitoring
- Data transferred through the Internet and store in HIS databank
- Pt can download personal health data



Evaluation of Current Issues related to Tele-healthcare in Taiwan

1. **Lack of integration between medical care and living support services that cannot satisfied the comprehensive care needs**
2. **Un-averaged distribution of medical care resources between rural and mountain/island areas**
3. **Lack of the comprehensive policies and matching interventions for digital healthcare services**
4. **Lack of the feasible business model**
5. **Lack of integration of information systems among healthcare and social care agencies that limits the development of continuum care**
6. **Lack of multidisciplinary prepared professions**

Telecare v.s. U-Care

Sponsorship	Bureau of Nursing and Health Services Development, DOH	DOIT, MOEA
Project	Pilot Telecare Project	U-care
Goal	■ Develop innovative business model ■ Enhance care quality and decrease healthcare cost ■ Info transmission to support continuum care	■ Develop innovative business model ■ Create business opportunities and revenue
Promotion Strategies	Develop the replication and distribution mechanisms	Develop sponsorship mechanisms
Information Platform	Develop the integrated,, open source, universal info platform for care information transmission and exchange	Independent info platform, no communication between platforms
Standards	■ EHR ■ Info exchange mechanisms that follow the international standards ■SOP	n/a
Evaluation	■ Develop the services evaluation indicators and mechanisms ■ Develop training programs and quality control mechanisms	Investment capital, output value

Pilot Telecare Project, DOH

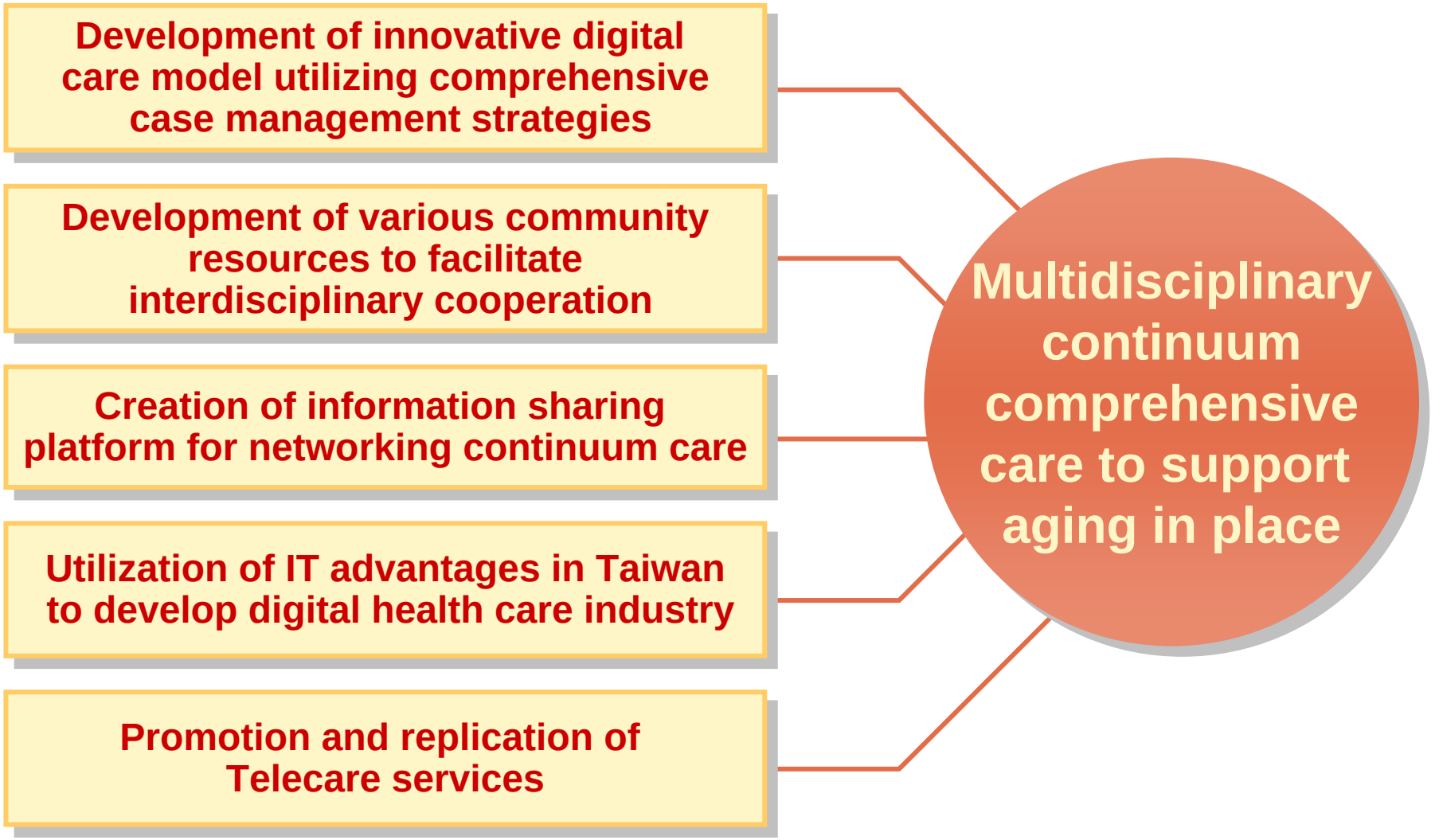
Project Type	Project title	Budget NT$	Organizer
Sub-project I	Development of the Telecare Information Network	85 million	ITRI
Sub-project II	Development the Evaluation Index and the Assessment of Telecare Services Outcome	9.35 million	NTU

Co-organizer:

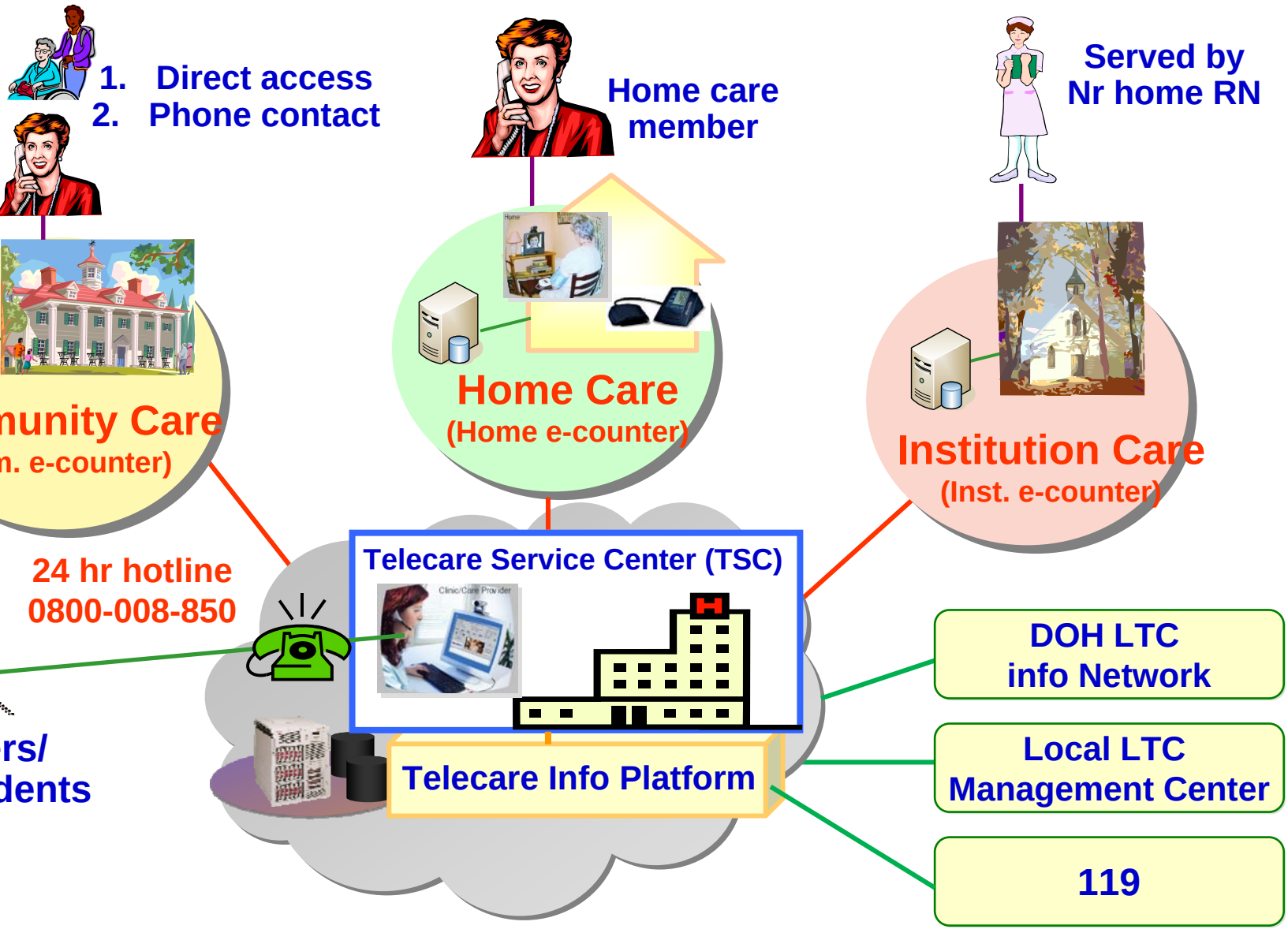
- Wan Fang Med Center (home care)
- Taipei Medical Univ. Hosp. (Com. care)
- Hsiao Chung Cheng Hosp. (Inst. care)
- SECOM
- Chunghwa Telecom
- Taiwan Long Term Care Professional Association
- Homecome Clinic
- GienAnn Nr. Home
- CanFull Nr. Home

Project period: 96/05/18~97/06/30

Aims of Telecare Promotion at DOH



Telecare Service Network



Community Care Service Model

TSC (WFMC)

24hr hotline & referral

Com. Care e-counter
(TMUH/SECOM)

(Prof. resources)

Taipei Med Univ Hosp

TIP (ITRT)

Client info

- Discharge preparation
- Nutritionist
- PT/OT
- Psychologist/SW

individual

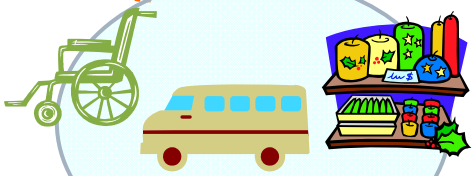
service info

Health management unit
(i.e., Community health station)

Ta-ann District LTC Center & Health Serv Center

HC clinic /pharmacy

Com. Medical liaison



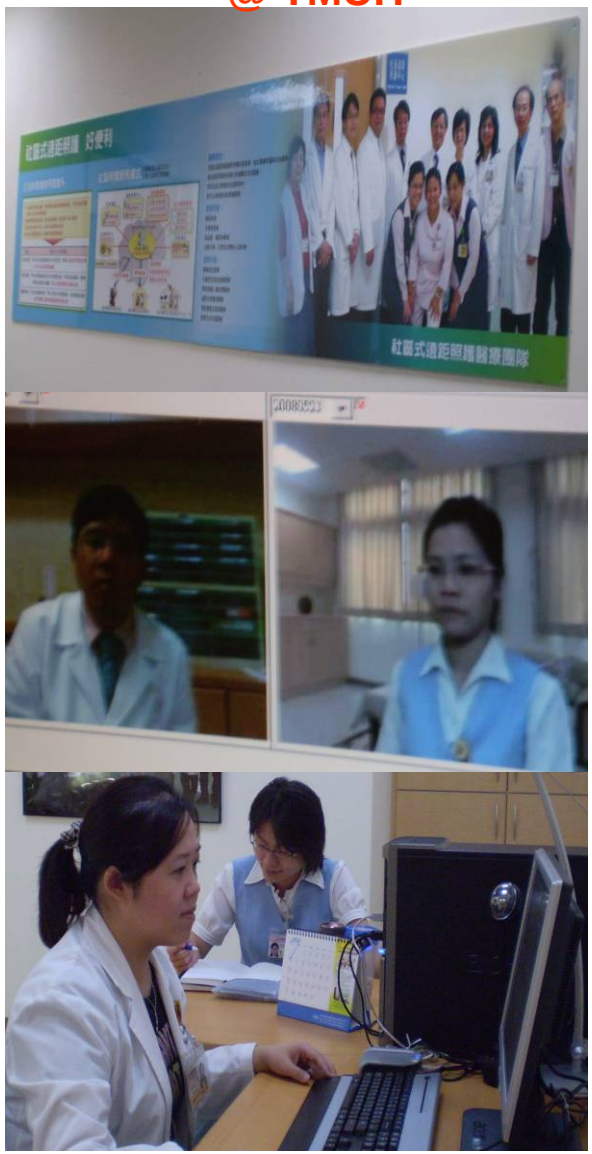
Com. living resources

Designed services

- Tele-consultation & education
- Dispensary & med safety
- Location monitoring
- Community health station
- Living resources referral

Community Health Station

Community Telecare Center @ TMUH



Visitor: Mr. Warren E. Todd, MBA

Visitor: governors from Thailand

Home Care Service Model

TSC (WFMC)

24hr hotline & referral

TIP (ITRI)

Client info

Wunshan LTC Center

Home Care e-counter (WFMC)

(Prof. resources)

WF Medical Center

Discharge preparation

Medical examination

ER, out/inpatient adm.

Designed services

Tele-physiological monitoring

Emergency management

Tele-health education

Case visiting

Living resources referral

Services Delivery in the Community

Physiological monitoring data transmission

Community promotion

Physiological monitoring

Video support group

Institution Care Service Model

TSC (WFMC)

24hr hotline & referral

TIP (ITRI)

Client info

Community med resources

Inst. Care e-counter (HCC Hospital)

(prof. resources)

HCC Hospital

RN | Nutritionist

Infection con. | Pharmacist

nephrology | chest | orthopedics

Multidisciplinary Team

Cross geo area services

AT Nr Home Keelong City

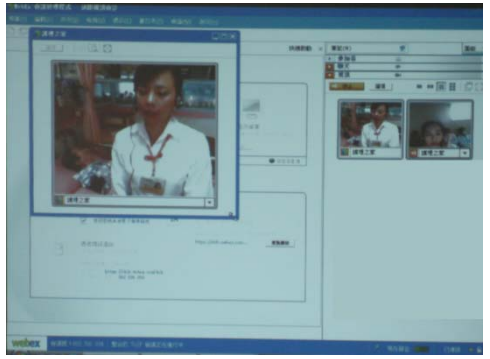
GA Nr Home Banchioa City

CF Nr Home Taoyuan County

Designed services

Tele-consultation | Tele-physiological monitoring | e-learning | Meds safety services | Tele-visiting for family members

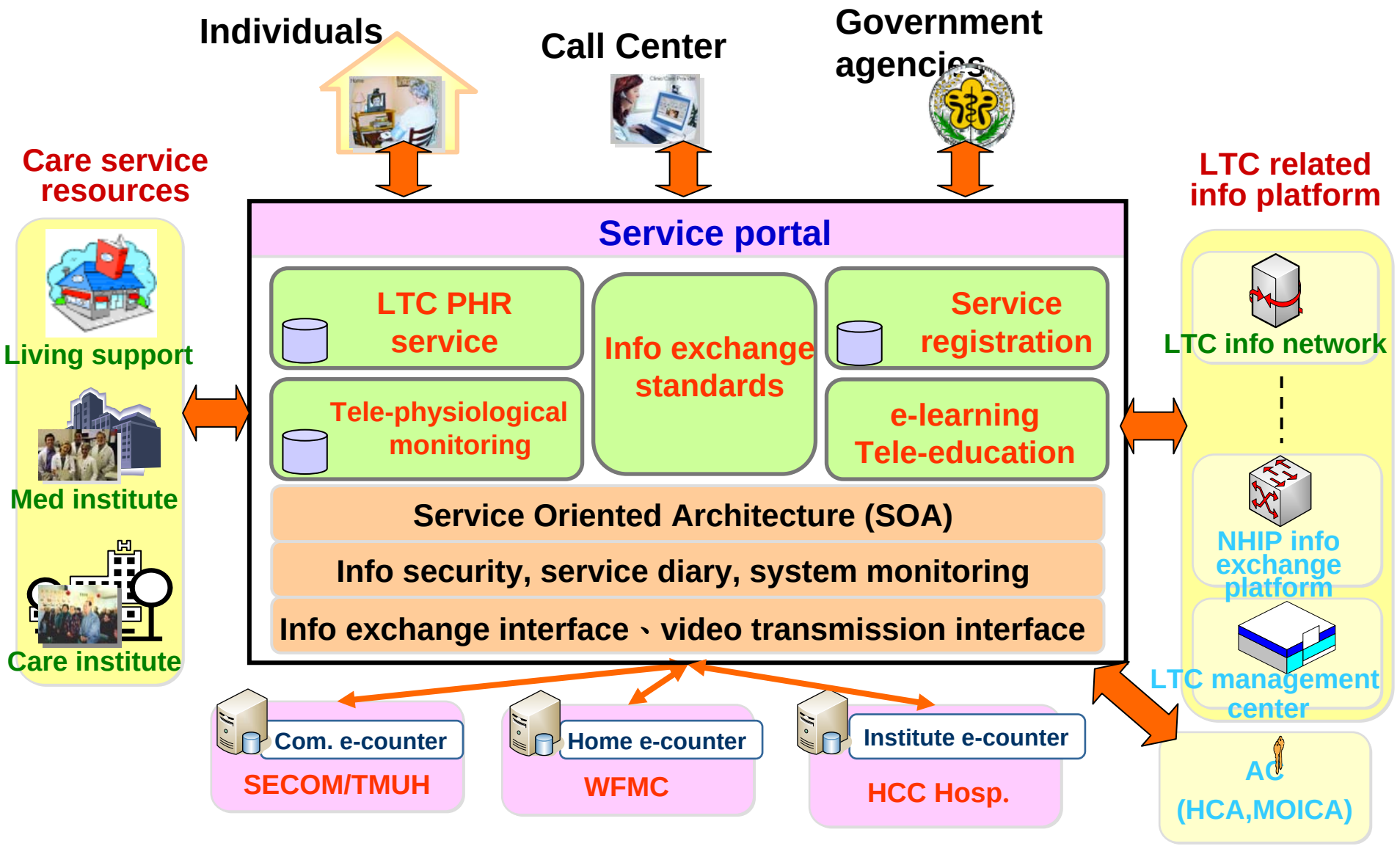
Services Delivery in the Institution and Nursing Homes



Inclusion Criteria & Core Services

	Community care	Home care	Institution Care
Case	▪ Dx DM, HT ▪ Mild disabled ▪ Mild dementia ▪ Living alone	▪ Dx DM, HT ▪ Mild, moderate disabled ▪ Mild dementia ▪ Home caregiver w/ chronic illnesses	▪ Nr. Home residents ▪ Nr. Home clinicians
Core serv.	■ Community health station ■ Tele-education & Tele-consultation ■ Dispensary & med safety ■ Location monitoring ■ Living resources referral	■ Case visiting ■ Tele-physiological monitoring ■ Living resources referral ■ Tele-health education ■ Emergency management	■ Tele-consultation ■ Tele-visiting for family members ■ Tele-physiological monitoring ■ e-learning ■ Med safety

Telecare Information Platform (TIP)



Telecare Impact: Care Services

	Index	before	after	Interpretation
INST	Institution infection rate	1.60 ‰	1.08‰	33% decreased
	Re-hospitalization rate	0.49%	0.31%	36% decreased
HOME	Hospitalization rate	8.19%	2.57%	Compared w/ pt at the home care center of Wanfang MC
	ER admission rate	2.95%	2.90%	
COM	Knowledge/behavior of med safety	38.2%	9.3%	Test score <=17
	Self-care monitoring	48.1%	88.7%	Weekly monitoring of BP and glucose

Duration: 2008/01/01~2008/06/30

Values of Pilot Telecare Projects

1. **Develop the first integrated tele-healthcare service network**
2. **Develop the universal information platform that serves as the foundation of continuum care services (Telecare Information Platform)**
3. **Develop the first LTC EHR standard**
4. **Collaborate professionals from healthcare, ICT, and medical devices to enhance the multidisciplinary development**
5. **Develop the tele-healthcare service evaluation mechanisms**
6. **Develop the community, home, and institution health care service model to provide wide variety of services**
7. **Propel the concerns of the general population and investment from industries through the international conference, seminars and community activities**

Service Modification of the Pilot Telecare Project

Flaw	Action in progress
Insufficient community resources connection	Strengthen living resources referral services in the community
Enhance quality of video conference to support the interactive consulting at home	Utilize proper wired or wireless services system
Legal concerns related to tele-consultation and cross-area medical services need to be clarified	Invite professionals of medicine and law to make the consensus
LTC EHR has not yet fully adopted the international standards	Follow the international information exchange format
Lack of well-organized training program, education curriculum, and evaluation mechanism	Call professional meetings to develop training program, education curriculum, and evaluation mechanism
Insufficient time for pilot project that some services process are not well rganized	Continue the services and modify the process to promote quality of services

Blueprint for Development

105年

101年

98年

Growth of Telecare service network & industry

- Build the national Telecare service network to connect medical care resources and support the comprehensive care services
- Develop technological healthcare industrial value chain and promote industry development

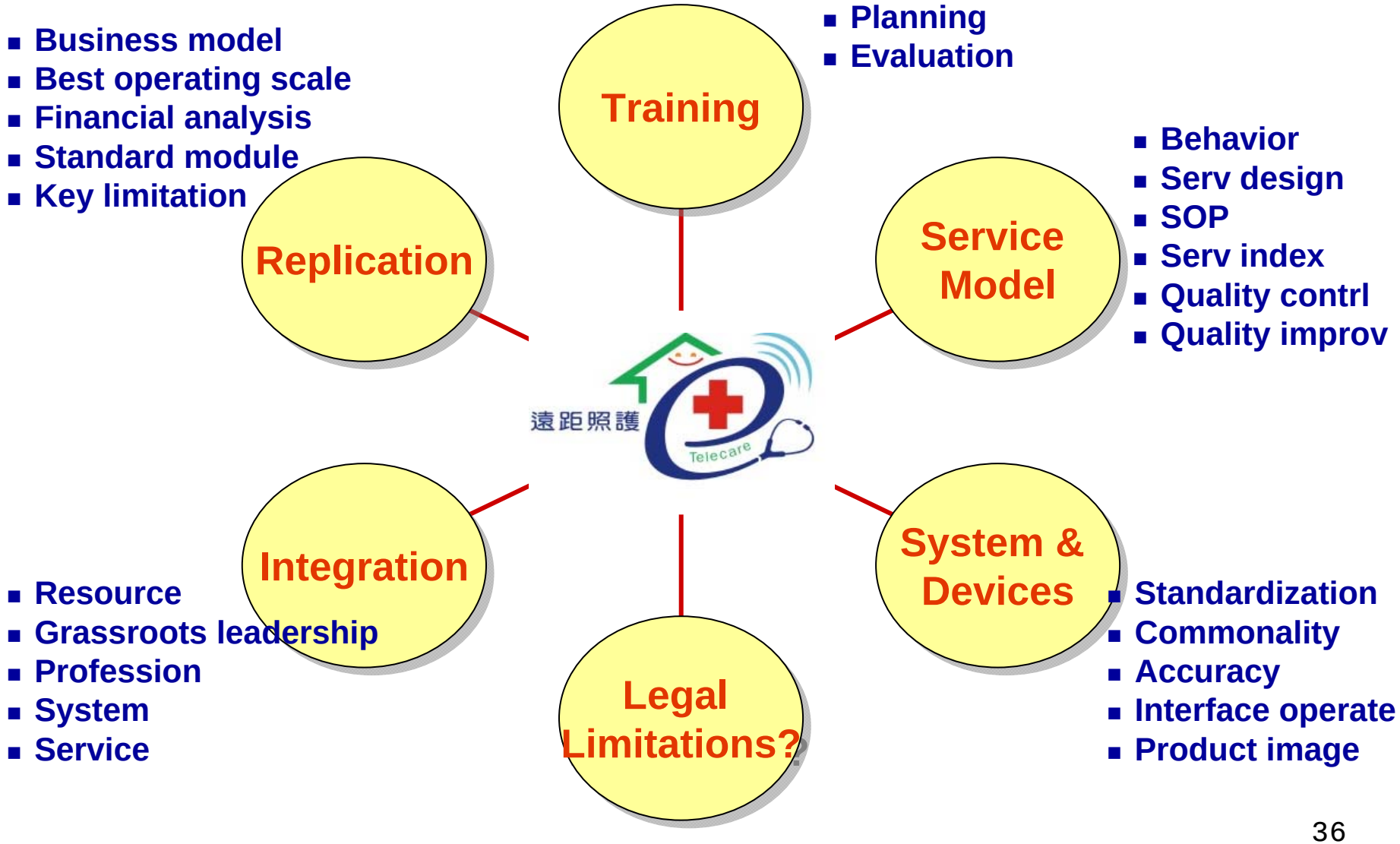
Preparation for Telecare service model and IT infrastructure replication

- Continue the devices integration, to refine the service model and to promote the Telecare services
- Organize the resources among government departments to build the comprehensive matching interventions and incentives, and to enhance the development and promotion of Telecare services
- Promote the open source Telecare info exchange standards and encourage the connections between local systems and the platform
- Develop the trainings and mechanisms for digital healthcare services manpower cultivation

Development of Telecare Model and pilot study

- Develop innovative community, home, and institution services model and pilot organization team
- Build the universal info platform and promote the info infrastructure for continuum care
- Encourage cross-professional collaboration to advocate for integrated services

Challenges for Telecare Promotion



Intermediate-term Development strategy for Telecare

- Organize the cross-department promotion committee to jointly promote the digital healthcare innovation and application
- Encourage the integration and application of innovative services and products base on the community care, home care, and institution care service model
- Establish the matching guides and funding principles to encourage the investment from industry
- Develop the multidisciplinary curriculum for manpower cultivation in Telecare

Strategies for Action

Strategies for Action	Organizer/ Co-organizer
1. Promote info exchange standards and continue to develop an info transmission environment for the integrated continuum care	DOH/MOI
2. Organize the cross-department promotion committee to gear up the innovation and application of digital healthcare services	MOEA/ DOH, MOTC , MOI
3. Develop supporting measures and incentives to facilitate the industry development	DOH/ MOI
4. Develop the business model that matches the various local needs and coordinate the services implementation	DOH/ MOI, VAC
5. Promote multidisciplinary professional training and strengthen the manpower of technological care services	DOH/ MOE

Project 1

- **Promote info exchange standards and continue to develop an information transmission environment for the integrated continuum care**
  - **Build up the open source info exchange standards that follow the international standards**
  - **Provide platform services to test, and verify the information system and med devices of the Telecare services**
  - **Connect local LTC center management systems to integrate healthcare and social care resources (MOI, DOH)**
  - **Enhance information security and confidentiality mechanisms**

Project 2

- **Organize the cross-department promotion committee to gear up the innovation and application of digital healthcare services**
  - **Encourage healthcare related information systems, such as the U-care system or those from local hospitals, to connect with the Telecare information platform (DOH)**
  - **Develop the incubation channel for the commercialization and servitization of innovative care technology to promote the development of digital healthcare industry (MOEA)**
  - **Provide allowance and subsidy for wired and wireless broadband network utilization (MOTC)**
  - **Develop the integration specifications for smart house system, build the model intelligent communities that demonstrate the security, energy saving, and healthy designed telecare service system (MOI, DOH)**

Project 3

- **Develop supporting measures and incentives to facilitate the industry development**
  - **Enhance the international experience exchange channels and collaboration mechanisms**
  - **Develop Telecare service guidelines and standards**
  - **Develop Telecare service evaluation mechanisms to ensure the quality of services**
  - **Collect outcome evidences for Telecare services that advocate the amendment of related policies and legislation and generate the proposal for proper payment mechanism through thorough discussion among related professionals (MOI, DOH)**

Project 4

- **Develop the business model that reflects the various local needs and coordinate the services implementation**
  - **Promote urban/rural home care and community care services that reflects the difference healthcare needs of each geographic area (DOH, VAC, MOI)**
  - **Enhance the linkage of living resources in the community, to provide an integrated healthcare and living care services for citizens (MOI, DOH)**
  - **Design strategies for allowance to encourage healthcare institutions to devoted into Telecare services**
  - **Encourage nursing homes and LTC institutes to join the pilot telecare project**

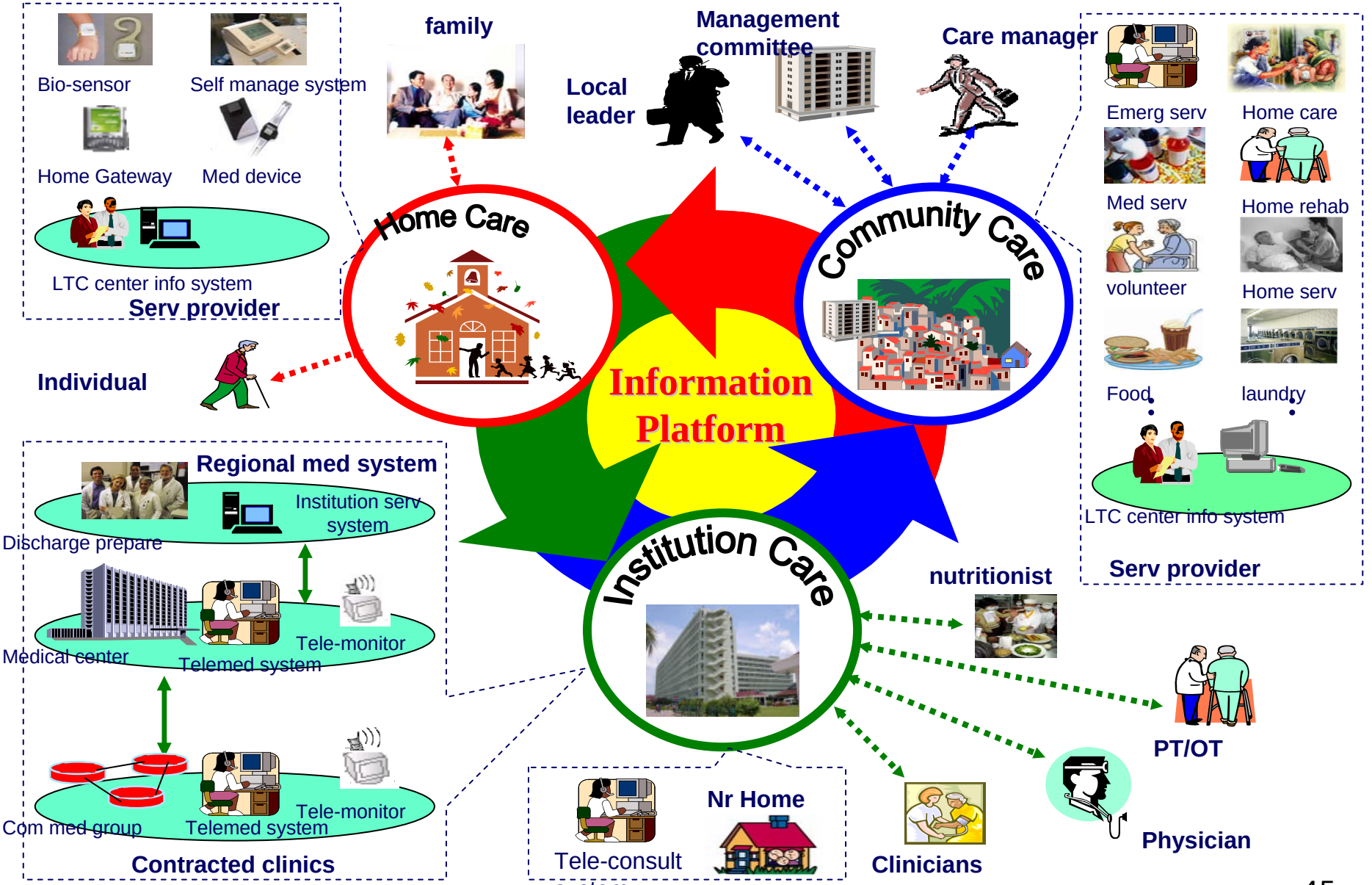
Project 5

- **Promote multidisciplinary professional training and strengthen the manpower of technological care services**
  - **Design the Telecare curriculum integrating multidisciplinary study that has covered medical care, information technology, business administration, and law (DOH, MOE)**
  - **Promote the digital healthcare study in the higher education system and provide training programs for potential lecturers (MOE)**
  - **Build up Telecare services information bank to enhance the learning and sharing of experiences**

Conclusion

1. Organize the cross-department promotion committee to enhance the resources integration
2. Promote telecare care standards and guidelines that support the integrated and continuum care
3. Utilize the strength of IT industry in Taiwan and continue to develop and modify the digital healthcare model that serve as the foundation of service replication and distribution
4. Encourage the public investment with the government supports to lead the development of digital healthcare industry
5. Encourage the proposal of integrated training curriculum and Develop the service evaluation and management mechanism

Forecast the Future Tele-healthcare



Great potential for Telecare development

Welcome professionals from academic, industry, public and government to join the party

Telecare, Unlimited Care

Q & A

Discussion Agenda

1. How to organize resources from healthcare, living care, social welfare and IT industry efficiently to serve the rapid growing elderly population through a universal channel?
2. Whether a responsible agency should be established to be in charge of the practice guideline and standards development that could promote the quality enhancement and multidisciplinary development?
3. Whether the efficacy of Telecare services should be supported by the collected outcome evidences to support the amendment of legislation?
4. Whether Telecare should be covered by the LTC insurance, in consider of both the social warfare purposes and the needs of industrial development?