Japanese State of the Art and Perspective on ADI

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Background

- High rate of aged society
- Delay of economical growth
- Topics of Important Research Sciences
  - Information technology
  - Life Science
  - Nanotechnology and material
  - Environment
Aged Society
Aichi Health Village

National Institute for Longevity Sciences
National Institute for Longevity Sciences

Department of Basic Gerontology
Department of Molecular Genetic Research
Department of Epidemiology
Department of Dementia Research
Department of Geriatric Research
Department for the Care of the Aged
Department of Gerontechnology
Department of Biofunctional Research
Laboratory of Facilities of Common Use
New Era of Institution

- National center of geriatrics and gerontology will be reorganized on March 1st, 2004
- 13 departments and 5 facilities
National Center of Geriatrics & Gerontology

- Experimental Gerontology
- Molecular genetics and aging
- Brain science and functional imaging
- Alzheimer's Disease Research
- Vascular Dementia
- Bone and Joint
- Regeneration and Reconstruction Biology
- Epidemiology

- Geriatric Medicine
- Oral Disease
- Function for Activation
- Gerontotechnology
- Policy Science
- Laboratory Aging Animal Research
- Experimental Animal Research
- Radiation Safety
- Molecular Genomics and Protenomics
- Research Resource
Information technology
e-Japan strategy

- Through the strategic utilization of IT, the aim is to realize an energetic, worry-free, exciting and more convenient society.
1. Medical Services

Medical institutions work together to offer patient-centered service.
Health care is improved by inexpensive, safe and worry-free medical services.
Project in 2004 (METI, MHLW)

- ITS barrierfree
- Health promoting system
- Nano-medicine
Intelligent transportation system and barrierfree environment for elderly and disabled persons
Network system we proposed

- Home electric appliances
- Monitor device
- Camera
- LAN at home
- PC for data analysis
- PC for communication + Human-friendly Interface
- Home in the elderly
- Hospital (physician)
- Family
- Internet
The plan of government

- Acceleration of research and development projects
- Subsidies for new business development
- Procurement of additional equipment for the International Trade and Industry Inspection Institute
Smart House Project

- Home Health Care
  - Heart rate, Body movement, Body weight, Urinary volume

- Real-time sensing using physical sensors
  - Movement inside the house
  - Frequency of Open/Close the refrigerator
The plan of government

- Acceleration of research and development projects
- Subsidies for new business development
- Procurement of additional equipment for the International Trade and Industry Inspection Institute
Aim of this project

The aim of this project was to develop a health monitoring system for elderly and disabled people using **fully automated signal processing** from within the home. This monitoring system was designed to not interfere with sleeping, bathing or elimination.
Design

The health monitoring system consisted of monitoring devices and a computer terminal for data collection. The data were automatically collected from monitoring devices placed in the bed, bath, and toilet, transferred to a data terminal in the bedroom, and stored for further analysis. Thus, the subject and caregiver did not operate any system. The system monitored electrocardiogram (ECG) signals from the bed and bath, and body weight measurements taken from the toilet.
Welfare Techno-Houses in Japan

1993-2003
Overview of Welfare techno house Mizusawa
Living room - barrier-free design
Bedroom (electro-conductive sheets are attached on the bed)
Bathroom

The ECG is measured through tap water.
Kitchen
Power and water consumptions are monitored by sensors.
Sanitary room
The Body weight and excretion volume can be monitored by toilet.
Application
Health promoting system for longevity society

- Digital electric appliance
- ECHONET
  - a standard, general-purpose system
- Automated data collection
- Data mining
ホームヘルスケアモデル事業

○携帯端末等を利用して、家庭や個人で健康をモニタリングし、地域・職域

○食事のコントロールが必要な人には栄養を考えた食事をデリバリーし

○新規事業

○病院に行く人を減らし、医療費を削減。

○労働力人口を拡大。

○健康情報管理サービス、モニター端末ソフト開

発等に係る新規産業の創造。

④モデル検証事業

ネットワーク構築、セキュリティ技術、EBHの確立

1000人規模の被験者（血圧、血糖、心拍の

疾病別／健常者、在宅患者、高齢者の対象

者別）を対象に健康モニター機器を使用して

健康情報を収集・解析し、EBH（標準に基づく

健康管理）の確立を図るとともに、健康サービス産業のビジネスモデルを構築する。
To be solved

- Cost
  - Who pay?
- Human interface
- Maintenance free
  - Automatic device
  - No PC for telemedicine
- Regulation and health insurance