

# National Health Information Infrastructure in Korea

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# Current Status of HIT in Korea

# Facts about Korea (2004)

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◆ Population: 48 million

Over 65 yr rate: 9.1%('05), 14%('18)

◆ Area : 98,480Km<sup>2</sup>

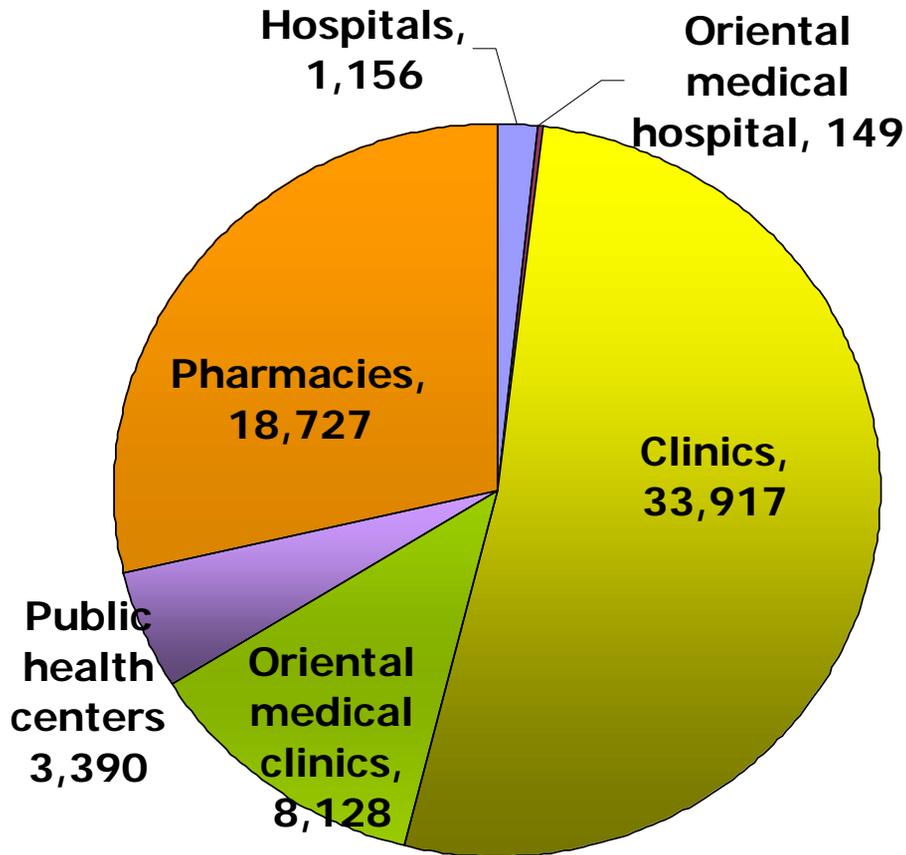
◆ GDP per capita: \$19,200

◆ Life Expectancy: 75.8 yr

◆ Health Expenditure: 5.9% of GDP

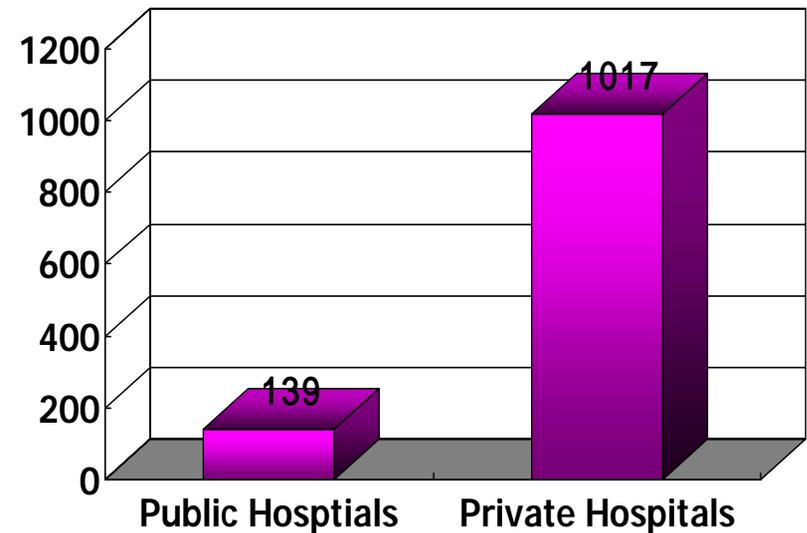
# Healthcare Institutions

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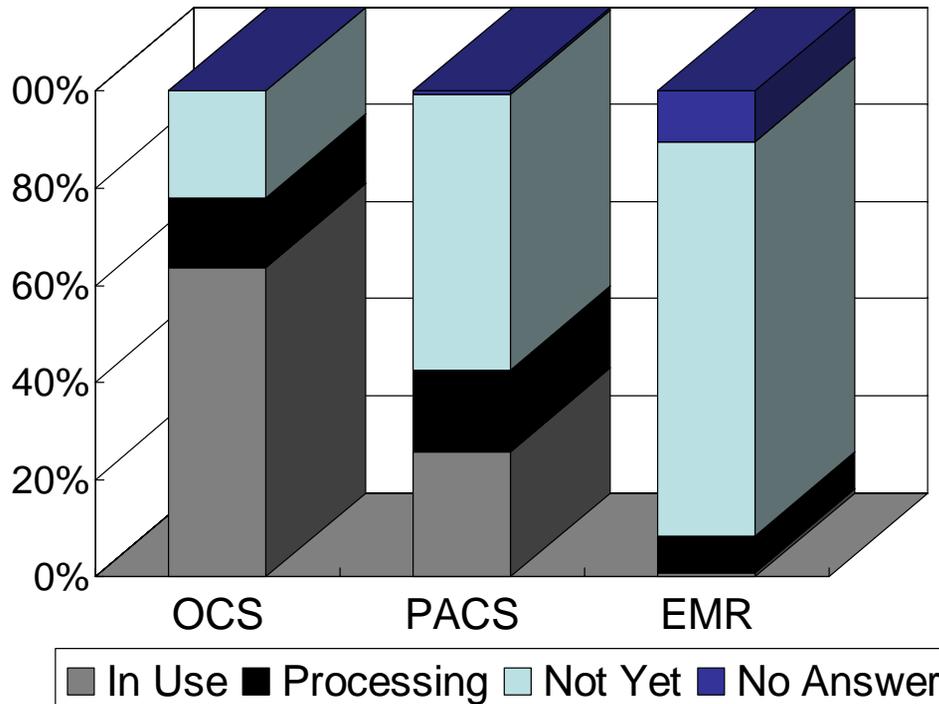
- ◆ Public Hospitals: 12%
- ◆ Private Hospitals: 88%

No. of Public & Private Hospitals

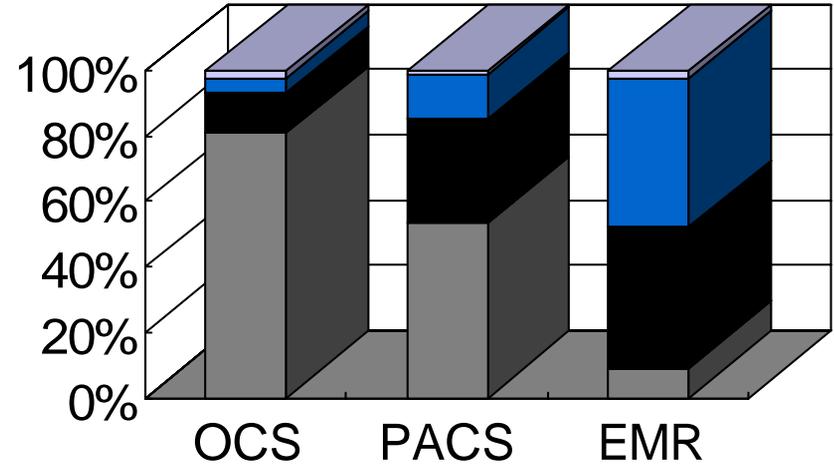


# Hospital Information System in Korea

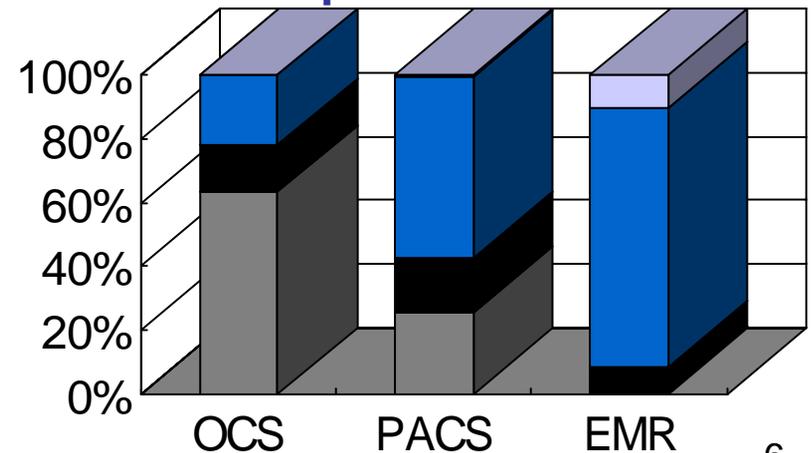
## Hospitals, Total



## Hospitals 500 beds



## Hospitals <500 beds



# NHII in Korea

# Driving Forces for KNHII

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## ◆ Quality of Care

- ◆ Medical error rates: 90,000 persons/Yr.(USA)
- ◆ Inconsistency of quality of care

## ◆ Healthcare Expenditure

- ◆ Escalating costs
- ◆ Aging population and new technologies

## ◆ Technology

- ◆ Fusion technologies: IT, BT, NT
- ◆ C&C, Modalities

## ◆ Consumerism

- ◆ Transparency, self-assessment

# Requirements - Consumer

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- ◆ Integrated and seamless healthcare services
- ◆ Access to consumer's own records
- ◆ Appropriate information for consumer's health status
- ◆ Monitoring and education for chronic disease patients
- ◆ Privacy and Confidentiality

# Requirements - Provider

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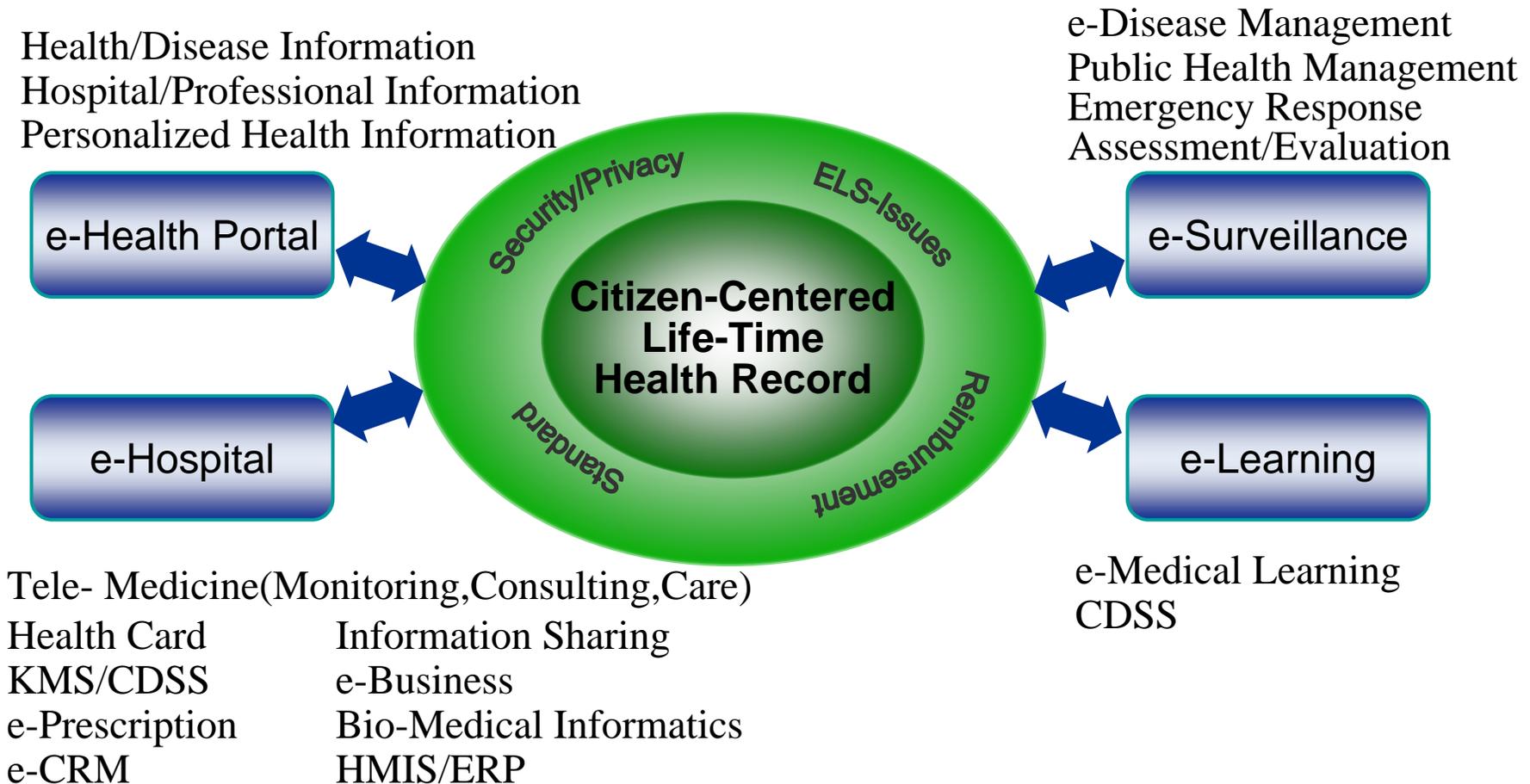
- ◆ More complete and accurate patient data on the spot
- ◆ Up-to-date information of medical technologies
- ◆ Clinical decision support systems
- ◆ Efficient medical devices using IT, BT & NT

# Requirements – Public/National

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- ◆ Population-based health data to improve public health practice
- ◆ Wide range of information essential to monitor and protect the public's health
- ◆ Interoperability of information system
- ◆ Settlement of ethical, legal and social issues
- ◆ Reduction of national health expenditure

# e-Health Services



# History of NHII in Korea

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- ◆ Dec. '04: National Health Information Standard Committee (NHISC) was launched under Ministry of Health & Welfare (MOHW)
- ◆ Sep. '05: MOHW declared to implement interoperable EHRs for public sectors by 2010
- ◆ Dec. '05: National e-Health Committee was launched

# KNHII Vision

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“Anywhere, anytime access to healthcare information and decision support in secure way to improve the quality, safety and efficiency of health care”

“Ministry of Health & Welfare will implement interoperable EHRs for public hospitals and public health institutions by 2010”

*- Ministry of Health & Welfare, Sep. 2005*

**Ubiquitous Access**

**Secure Access**

**Quality & Safety**

**Efficiency**

# KNHII Building Blocks

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Ubiquitous & Secure Access  
Quality & Safety  
Efficiency

*e-Prescription*

*Telemedicine*

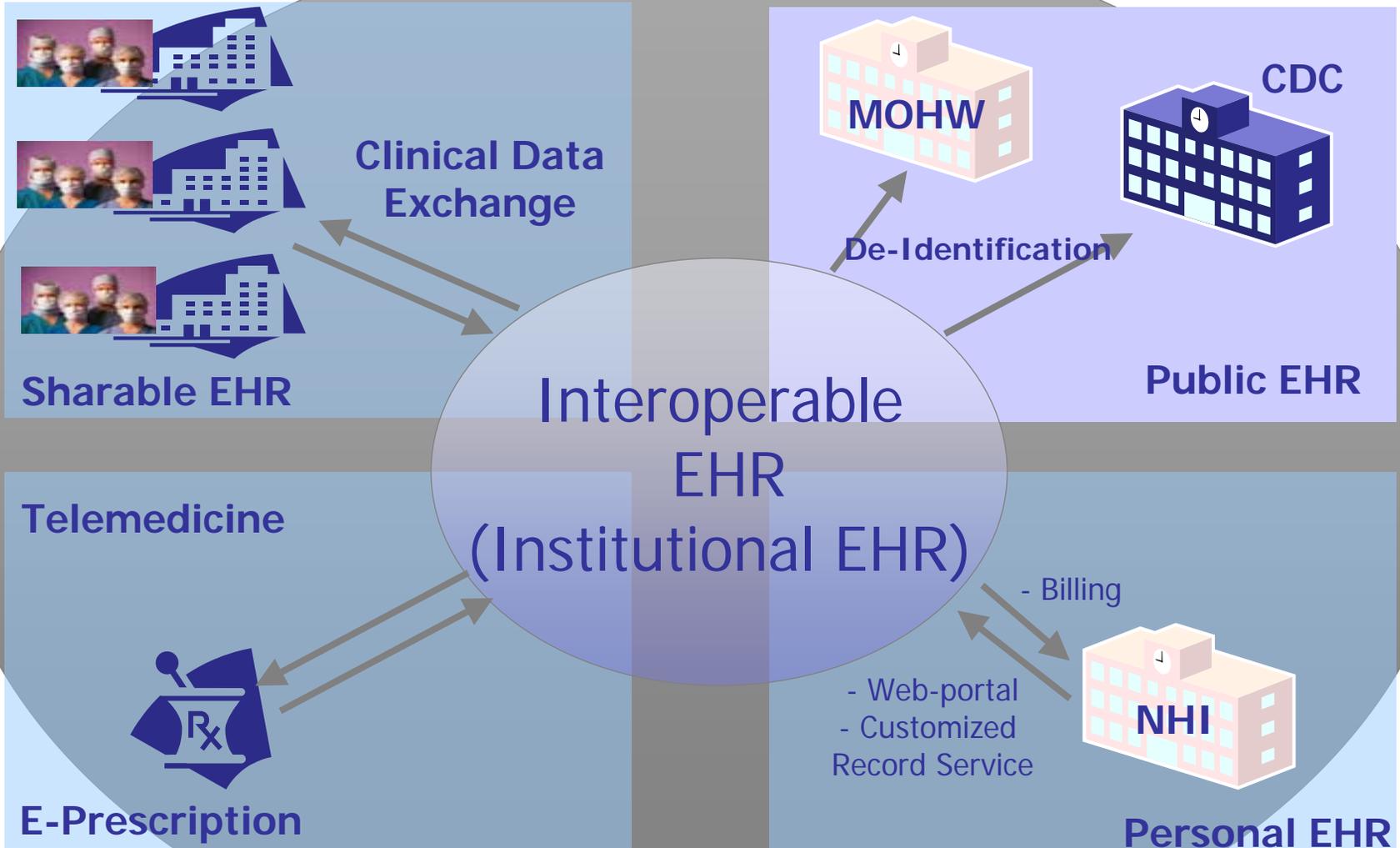
*Electronic  
Health Record*

*Consumer  
Health*

*Public Health*

Standards

Privacy & Security

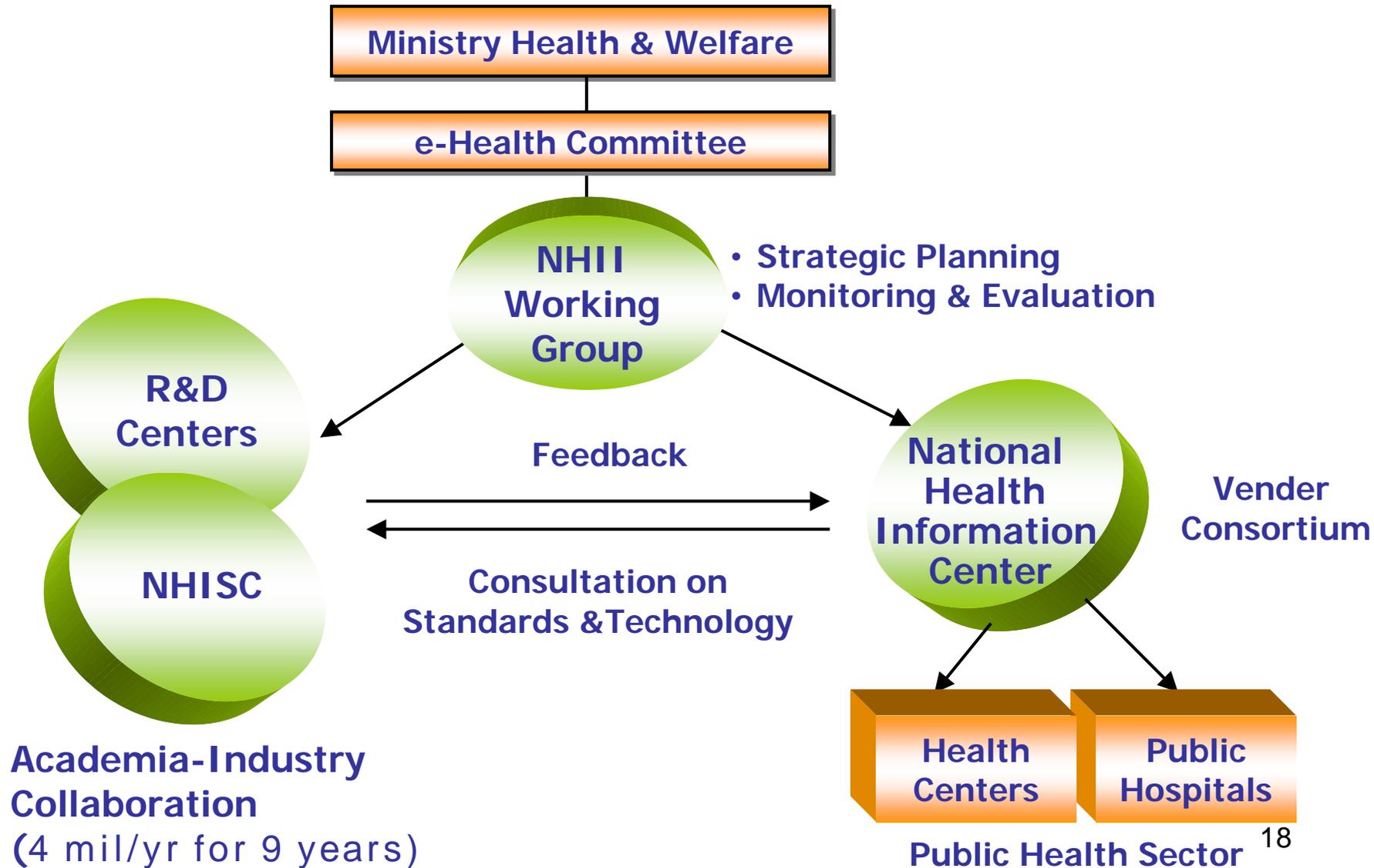


# KNHII Strategies

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- ◆ Patients' control of information
  - Based consent of patients
  - Concern over privacy and security
- ◆ Incremental approach
  - Develop and validate interoperable EHR from public sectors
  - Facilitate EHR adoption in private sectors
    - Through provision of low interest loan or differential fee schedule
- ◆ Ensure participation of stakeholders
  - Consumers, health care, industry, experts
- ◆ Harmonization & collaboration with international health standards

# KNHII Implementation Structure



# KNHII Implementation Structure :

## Supporting Functions

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### ◆ E-Health Committee

- Established in Oct. 2005
- Composed of 6 working groups
  - EHR dissemination, Standardization, Tele-medicine, Public health, Consumer health, ELSI
- Strategic planning for KNHII
- Monitoring and evaluation

### ◆ NHISC (National Health Information Standard Committee)

- Established in Dec. 2004
- Composed of 13 subcommittees and one steering committee
  - Focused on development of vocabulary standards for EHR

# KNHII Implementation Structure :

## Supporting Functions

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### ◆ National Health Information Center

- Support implementation of EHR for public sectors
  - NHII working group
  - NHII implementation T/F: users, experts, vendors
- Manage clinical data repository for public health centers/subcenters & public hospitals
- Support development of health information standards
- Maintain & disseminate standards

# KNHII Projects Currently under Progress: Strategic Planning

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## ◆ Planning

- Led by e-Health committee and 6 working groups
- EHR dissemination, Standardization, Tele-medicine, Public health, Consumer health, ELSI
- 5 year plan
- -'05.12 Comprehensive plan
- -'06.06 Detail plan

## ◆ Act for Healthcare Informatization Promotion and Privacy

- -'05.12 Prepare a draft of the act
- -'06.06 Make consensus of stakeholders and legalize

# KNHII Projects Currently under Progress: Standardization

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- ◆ Focused on vocabulary standards

## Vocabulary Standards

Clinical Vocabulary (UMLS, SNOMED)	Diagnosis (ICD-10KM)	Procedure (ICD-9CM)	Laboratory (LOINC)	Public Health
Nursing (ICNP)	Medical Materials	Oriental Medicine	Pharmacy	Health Statistics

Messaging Standards:  
HL7 v2.x  
HL7 v.3 CDA

Privacy & Security

# KNHII Projects Currently under Progress: Standardization

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## ◆ Phase 1: (04-05)

- Development of data dictionary to support development of ambulatory EHR (Comprehensive public health center information system)
- Simple collection of concepts
- Integration of standards through mapping into reference terminology (UMLS)

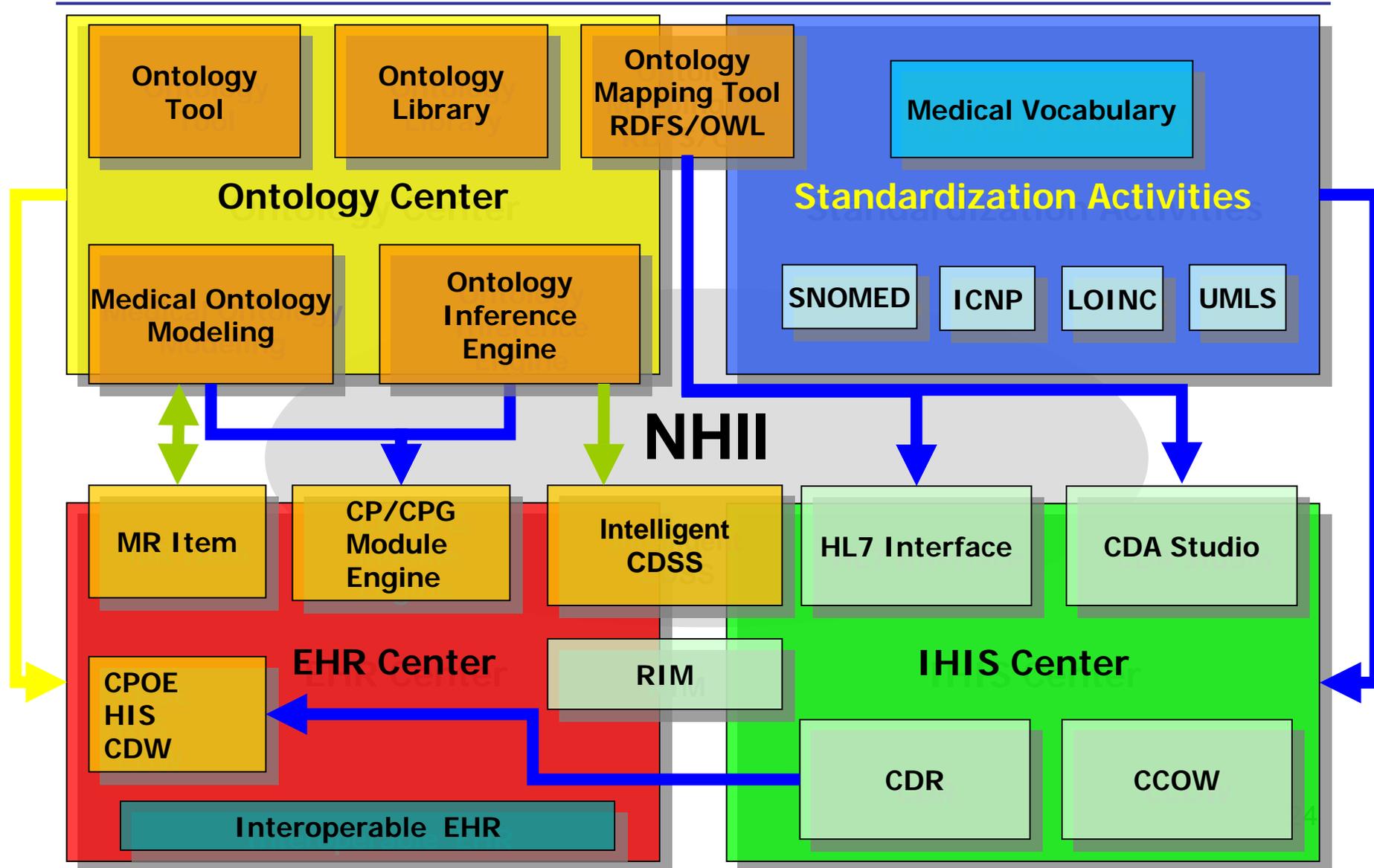
## ◆ Phase 2: (05-06)

- Expansion of collection of concepts in data dictionary to support development of hospital EHR (public hospital EHR)

## ◆ Phase 3: (06-)

- Maintenance and facilitation of standard adoption
- Elaboration of data dictionary through adoption of ontological approaches to support advanced functionalities of EHR
  - E.g> Decision support for medication safety, intelligent structured data entry

# KNHII Projects Currently under Progress: R&D Centers



# KNHII Projects Currently under Progress: Implementing EHR for Public Sectors

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## ◆ Public Health Institution EHR project

- Goal: to implement comprehensive information system for clinical care, public health programs, and administration
- Target: Health centers (246), health subcenters (1,271), nurse practitioner post (1,899)
- Time frame: '05~'08
- Budget: about US\$ 65mil

## ◆ Public Hospitals EHR project

- Goal: to implement interoperable EHRs for public hospitals including academic medical centers
- Target: academic medical centers (14), general hospitals (41)
- Time frame: '07~'10
- Budget: about US\$ 300mil

# KNHII Projects Currently under Progress: Dissemination EHR for Private Sectors

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## ◆ Dilemma

- Investment : Private hospitals
- Benefit : Public/Society
- Massive investment and long-pending and indirect benefit
- Low investment priority for information system

## ◆ Strategy

- Cost-benefit analysis through demo project
- Support private hospital informatization through provision of low interest loan or differential fee schedule

# Several Issues

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- ◆ Concern on privacy and confidentiality
- ◆ Complexity and magnitude
  - Difficult to manage in well coordinated way
- ◆ Lack of consensus among stakeholders
  - e-prescriptions: conflict between physicians and pharmacist
  - KNHII architecture
- ◆ Lack of experts
  - Need for international collaboration
- ◆ Lack of strong political leadership

# Conclusion

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- ◆ Well designed implementation of interoperable EHR in public sectors
- ◆ Development and validation standards
  - Facilitate adoption of interoperable EHR in private sectors
- ◆ Need for international collaboration
  - Lessons from countries which started to implement NHII

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Thank you