# IHE 발전방향

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## 김 희 중

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## Healthcare Enterprise
### Integration by Standard (DICOM, HL7)



[1] Hospital Information System 병원정보시스템[2]Picture Archiving Communication System 의료영상전달저장시스템
[2] Electronic Medical Record 전자의무기록  [4] Order Communication System 처방전달시스템

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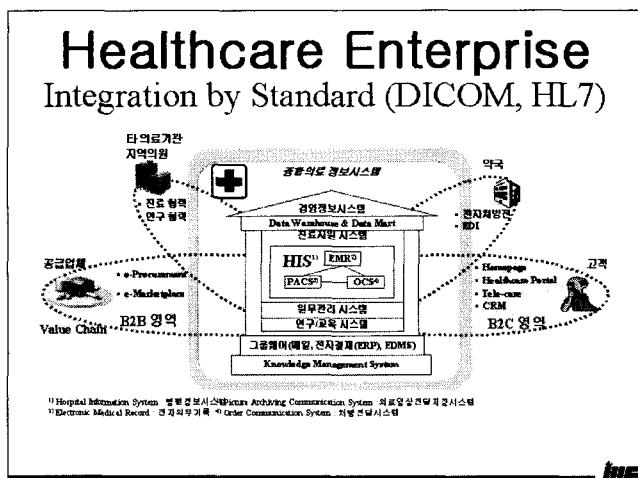
## IHE
### (Integrating the Healthcare Enterprise)

- Data integration in healthcare
- Sharing information for healthcare information and imaging systems
- DICOM, HL7
- Initiative and movement, not a product
- Sponsored by RSNA and HIMSS

RSNA: Radiological Society of North America
HIMSS: Healthcare Information and Management Systems Society

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## IHE Background

❖ Nov. 1998 HIMSS & RSNA Launch a New Initiative: "Integrating the Healthcare Enterprise (IHE)"

❖ An Incremental Multi-Year Project
  - Speed Up the Integration in Healthcare Environments
  - Foster Communication Between Vendors of Medical IT
  - Prove that Integration is Attainable Based on Standards
  - Participants:
    - Representatives of Healthcare Providers
    - Information Systems Vendors
    - Imaging Systems Vendors
    - Standardization Groups

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## IHE Participation
### Who Is IHE ?

❖ Societies / Associations:
  - Healthcare IT: ......................... HIMSS
  - Radiology: ............................. RSNA
  - Other Clinical Specialties: ... The Appropriate Societies

❖ Vendors:
  - Healthcare IT: ......................... IS Vendors
  - Radiology: ............................. RIS Vendors, Imaging: Modalities, PACS. ...
  - Other Clinical Specialties: ... Suppliers of Departmental Systems/Products

❖ Users:
  - Healthcare IT: ......................... CIOs, Administrators
  - Radiology: ............................. Radiologists
  - Other Clinical Specialties: ... Clinicians, Medical Staff

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## IHE Year 1,2,3,4

| Year 1 (1999) | PACS/RIS 통합,      방사선과에 국한<br>24업체, 47시스템 참여,    Imaging vendor 중심<br>DICOM, HL7 기반 통합 제시 (RSNA, HIMSS 주관) |
|---|---|
| Year 2 (2000) | PACS/ RIS/HIS 통합     HIS 영역으로 확장<br>34업체, 74 시스템 참여    SI / IT vendor 참여 확대<br>7 profile 상세 제시 ( 7 profile 준수 제품 등장) |
| Year 3 (2001) | 31업체, 74제품 참여      Profile 준수 제품 대거 등장<br>지역적인 확대 (France, Germany,IHE-E, Japan) |
| Year 4 (2002) | 35업체, 68 시스템 참여    IHE Theater 운영<br>3 profile 추가<br>( HIPAA 대응 Security, 수납처리, 영상후 처리)<br>                      IHE-AO 제안 |

## IHE Vendors (Year 2002)

Agfa HealthCare
Algotec Systems, Ltd.
Canon Medical Systems
Cedara Software Corporation
Cerner Corporation
CSIST
Eastman Kodak Company
Emageon
Fujifilm Medical Systems USA
GE Medical Systems
Hitachi Medical Corporation
Hologic, Inc
IDX Systems Corporation
IMCO Technologies
Instrumentarium Imaging
Konica Medical Imaging, Inc
Marotech, Inc.

McKesson Information Solutions
Medcon
Medical Manager Health Systems
Mediface Co., Ltd.
Merge eFilm
Mitra Imaging, Inc.
Philips Medical Systems
RASNA Imaging Systems
Siemens Medical Solutions
Softmedical
Stentor, Inc
StorCOMM, Inc
Swissray International, Inc
Tiani Medgraph AG
Toshiba America Medical Systems
UltraVisual Medical Systems
Vital Images, Inc.
Voxar Limited

## IHE Concepts

**IHE Framework** → Technical Framework

Integration Profile 1 ·········· Integration Profile n

*Integration Profile : Problem/Solution Scenarios*

Transaction 4 — Actor 1 — Transaction 1
Transaction 2
Actor 3 ← → Actor 2
Transaction 5   Transaction 3
Actor 4

*Actor : Generalized System*

*Transaction : Interactions between Actors*

**Connectathon: Real Demonstration**

## IHE Integration Profiles



Patient Information Reconciliation — Unknown patients and unscheduled orders

Key Image Notes — Flag significant images

Simple Image and Numeric Reports

*Integration Profile: IHE 4*

Access to Radiology Information — Consistent access to images and reports

Basic Security — Audit Trail Consolidation & Node Authentication

## IHE Success – Closing Loop
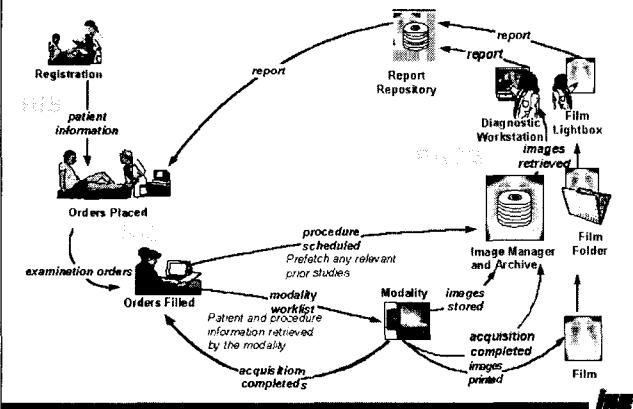


## Consistent Presentation of Image Profile

**What the Radiologist Displays:**

**What the Reviewing Physician Sees:**



Original Image & Presentation State — The Radiologist's Transformations Are Saved — Prepared Image

Original Image — The Radiologist's Transformations Are Lost — Original Image
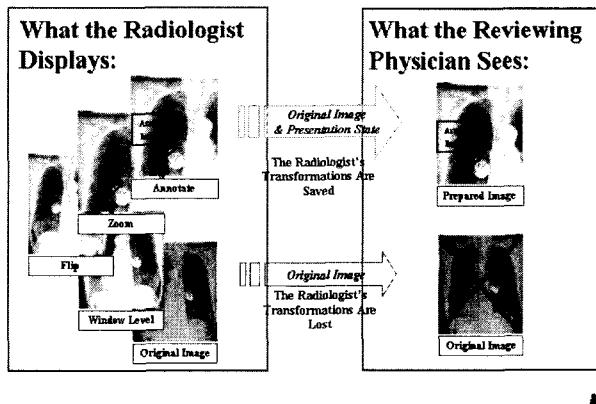
# Key Image Notes Profile
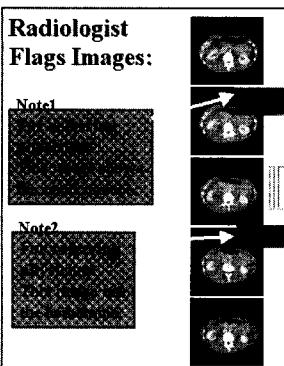
| Radiologist Flags Images: | Referring Physician Sees Key Images First: |
|---|---|
| Note1 | |
| Note2 | *Study & Key Image Notes* |

# IHE Vision for Growth (1)

## A Multidimensional Expansion of Integration

ADT
Order Mgt
Dept Sched
Image Mgr
Modality
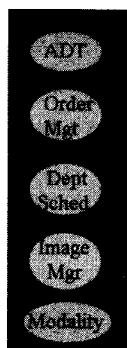
1st Dimension:
Vertical Integration for Radiology
IHE Years 1, 2, 3, 4, ...

# IHE Vision for Growth (3)

## A Multidimensional Expansion of Integration

Patient Registration
Ordering Process

Radiology
Cardiology
Laboratory
Add'l Clinical Fields
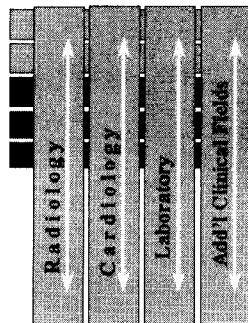
3rd Dimension:
Increasing the Number of
Vertically Integrated
Departments

# IHE International

❖ IHE Goes International
❖ IHE International Steering Committee

- IHE North America

- IHE Europe:
  - IHE France: demonstration October 2001
  - IHE Germany: demonstration May 2002
  - IHE Italy: demonstration 2002

- IHE Japan: demonstration April 2002

# IHE Europe

Why IHE in Europe ?

❖ To address European-based healthcare information system vendors ( RIS, HIS )

❖ To provide information to, and get feedback from European healthcare providers

❖ To facilitate European influence in the IHE and avoid local European solutions if global solutions are adequate

# IHE Europe

European Coordination
Comprehensive Technical Framework
European-level exhibitions, marketing and education Connect-a-thon
Vendor Participation
National extension
Demonstrations
Education

IHE in the USA
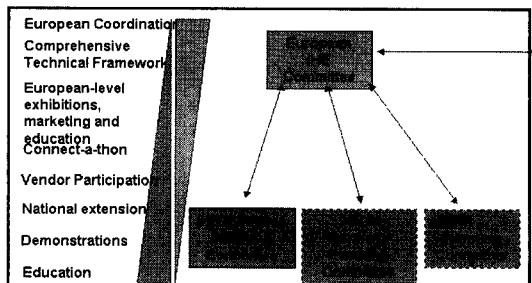
## IHE – Japan
### (Supported by the METI)

■ Participating organizations: *since 2001*

- ■ JRS: Japan Radiological Society
- ■ JSRT: Japanese Society of Radiological Technology
- ■ JAMI: Japan Association of Medical Informatics
- ■ JIRA: Japan Industries Association of Radiological Systems
- ■ JAHIS: Japanese Association of Healthcare Information Systems Industry
- ■ MEDIS-DC: Medical Information System Development Center

**METI**: the Ministry of Economy, Trade and Industry

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## IHE-J Demo Guided tour
### Cyber  d 2002



**11Venders**

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## 1st IHE-AO

- ◆ Date: Dec 3, 2002
- ◆ Place:Sheraton Hotel & Towers, Chicago
- ◆ Participant: Korea, Taiwan, China, Singapore, Japan
- ◆ Subjects:
  - · Exchange IHE activities
  - · JRC 2003: April 2003 Yokohama
  - · AOCR 2003: July 2003 Singapore-Drs. Pan and Kimura
  - · Dr. Inamura contacts IHE in Australia and New Zealand

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## Benefits of IHE

- • **Clinical Users**
  - • Greater access to more consistent information
  - • Fewer errors, fewer tedious tasks
- • **Buyers**
  - • Specify/purchase integration capabilities easily
  - • Freedom to acquire IT systems and applications
- • **IT Professionals**
  - • Faster, more predictable integration projects
- • **Administrators**
  - • Increased throughput
  - • Better scheduling and tracking

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## Proposal for IHE Korea

- ❖ IT, PACS, and Modality Vendors
- ❖ Healthcare Providers
- ❖ PACS 학회
- ❖ 의료정보학회
- ❖ 의학물리학회
- ❖ DICOM & HL7 표준화위원회
- ❖ 기타 관련 단체