



Overview of KU MEDINFO team

Tomohiro Kuorda
Vice CIO / Assoc. Prof.
Kyoto University Hospital



Kyoto University



- Since 1897
 - Second Univ. of JP
 - 5 novel prizes
 - 2 fields prizes
- Sketch at 2010
 - 6900 staffs
 - 1082 Profs
 - 22819 students
 - 13537 under grad
 - 9282 post grads
 - 139.2 billion JPY
 - 18% from outer source
 - 21% from hospital



京都大学
KYOTO UNIVERSITY



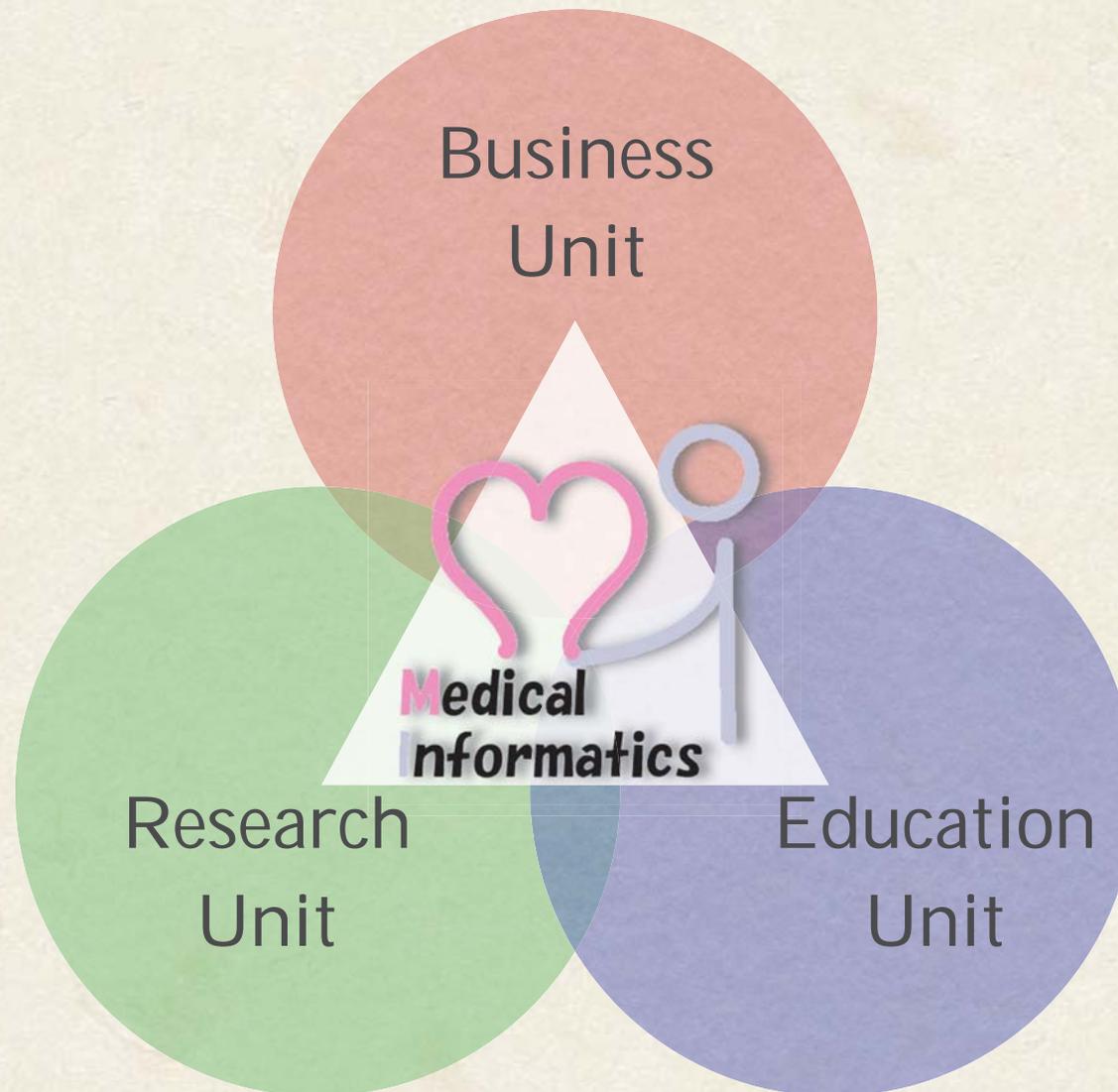
Kyoto University Hospital



- * Founded in 1899
 - * 1121 beds
 - * 33 main clinics and departments
- * 2727 staffs @2011.4
 - * 773MD 1017Ns
- * 3660 patients/day @2010
 - * 992 patients admitted/day
 - * 2668 out-patients/day



MEDINFO UNIT



The Team



Google+ Hangouts

Chat Invite Screenshare Google Effects YouTube Google Docs + Add app

On On

Exit

Prof Hiroyuki Yoshihara MD Ph.D.(Surg)

Assist Prof
Kazuya Okamoto
Ph.D.(Inf)

Assist Prof
Naoto Kume
Ph.D.(Inf)

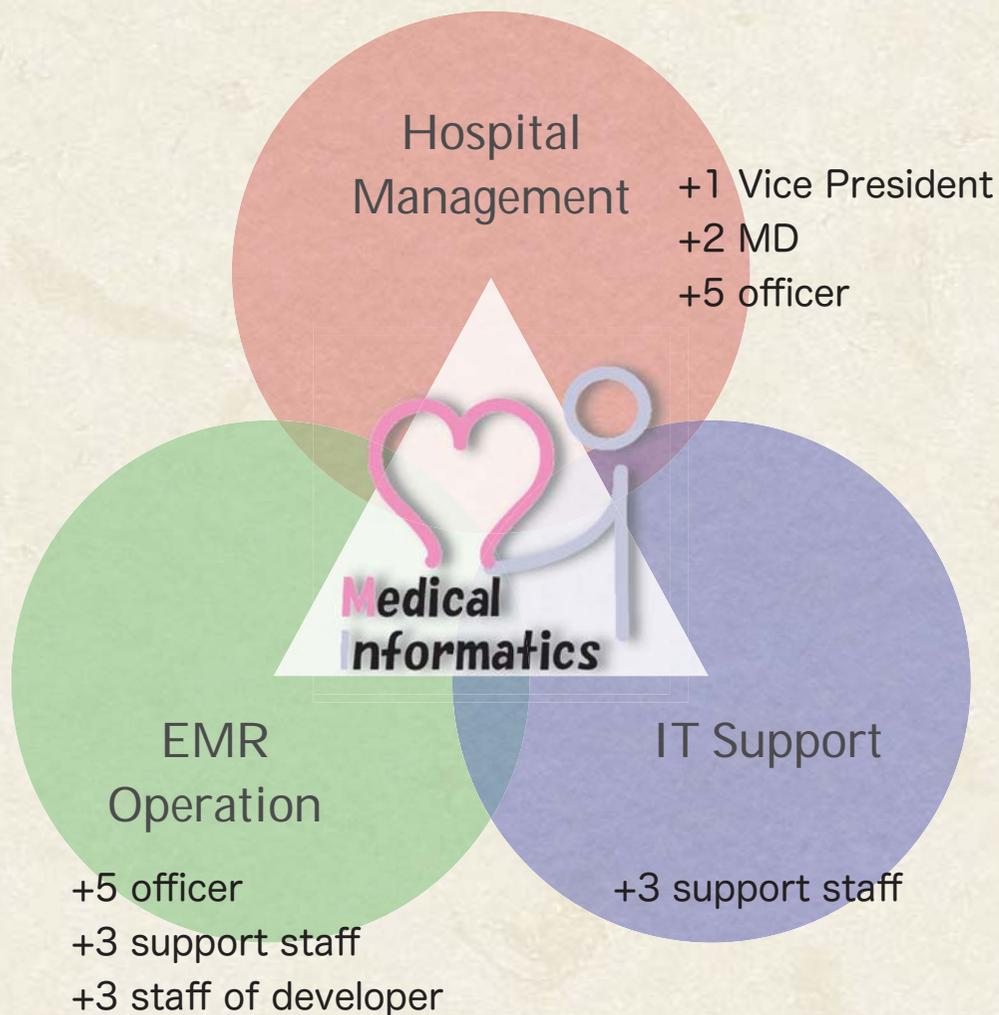
Lecturer
Tadamasa Takemura
Ph.D.(Health Sci)

Assoc Prof
Tomohiro Kuroda
Ph.D. (Comp Eng)

People

Apps

MEDINFO : as business unit



◆ Hospital Management

- ◆ Analysis/advice
- ◆ Economy/quality

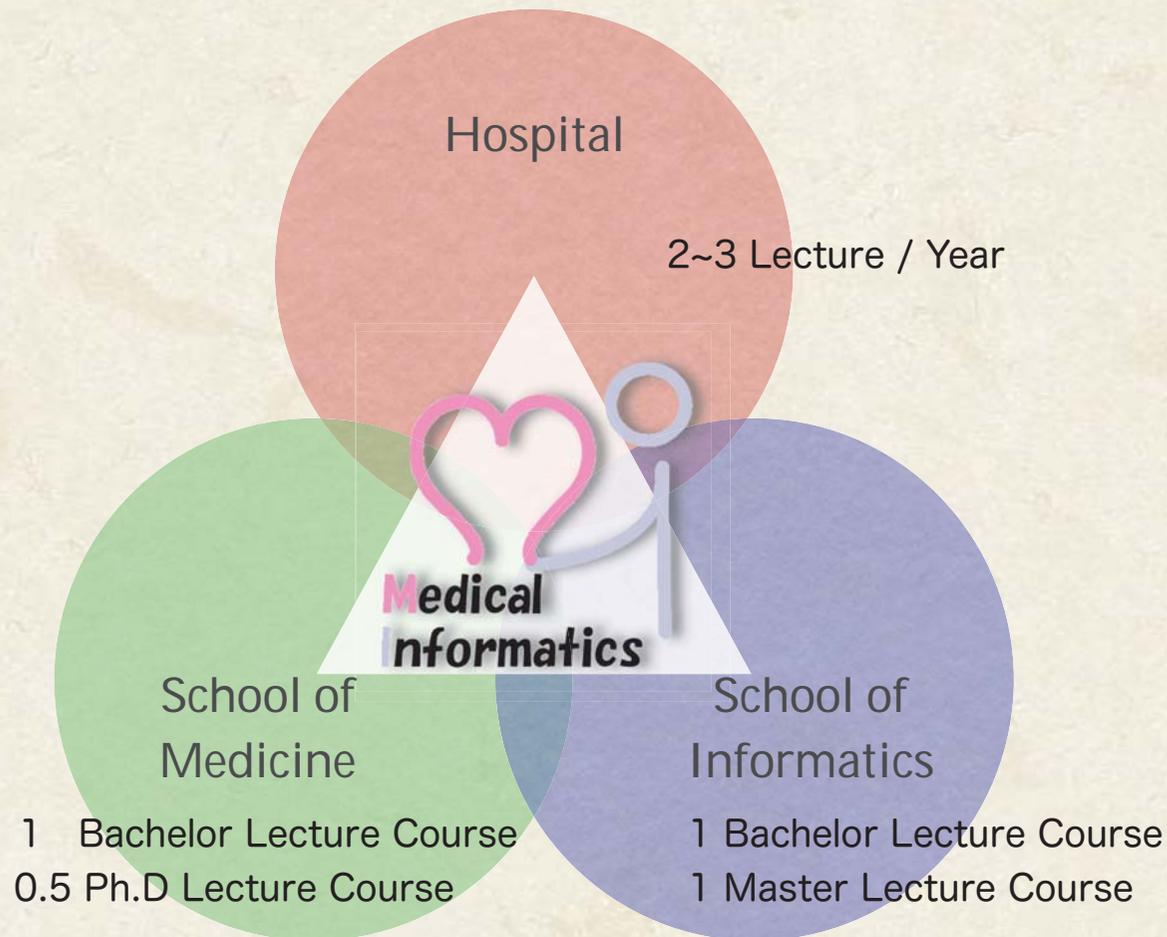
◆ EMR Operation

- ◆ Design/intro./operation
- ◆ Anal. 4 R&D/Management

◆ IT support

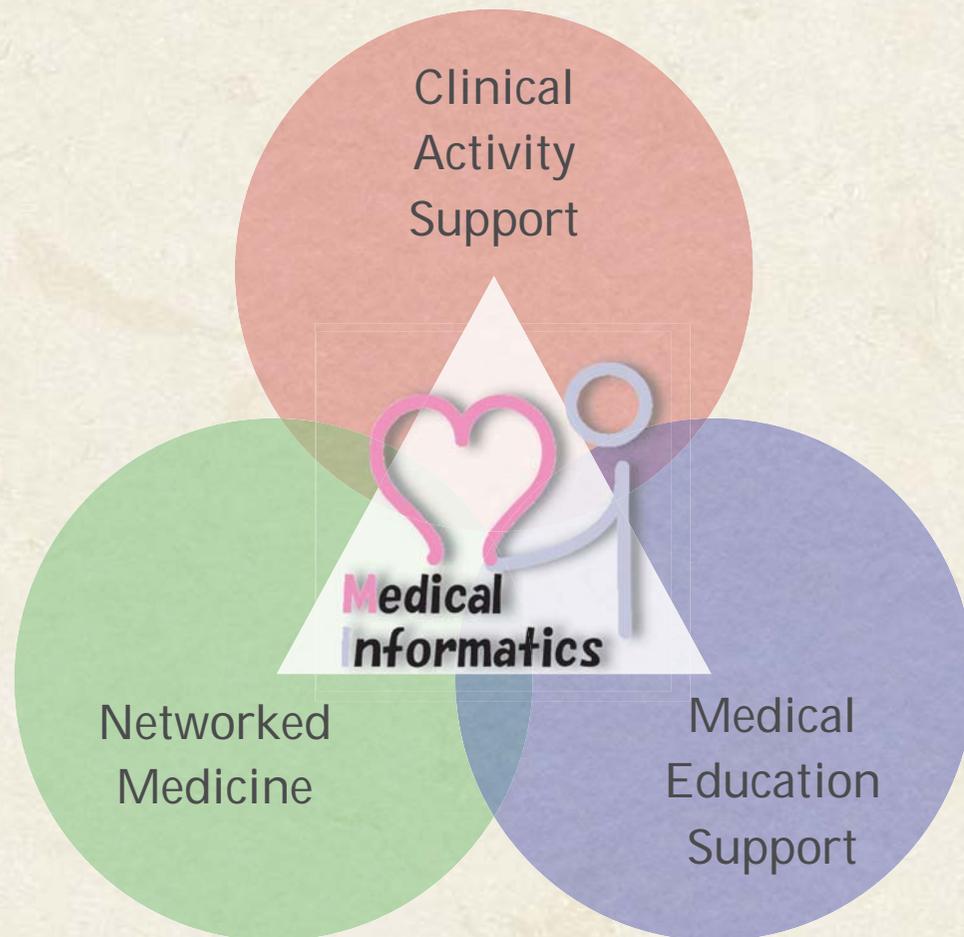
- ◆ Net/Web/Mail/Teleconf.
- ◆ Care/surgery/educate

MEDINFO : as education unit



- ◆ For medical student
 - IT literacy
 - Advanced medical IT
- ◆ For informatics student
 - Basics of clinics
 - Applied informatics
- ◆ For hospital staff
 - IT literacy
 - IT literacy

MEDINFO : as research unit



- Activity Support
 - Clinical DSS
 - Management DSS
- Networked Medicine
 - Telemedicine
 - HIS : ubicomp
- Education Support
 - VR Surgical Education
 - Hosp. Manag. Game

EHR Development

1970~1989



Prof. Akina Hirakawa

Handmade accounting
systems by M lang.

1990~2001



Prof. Takashi Takahashi

Custom made CPOE

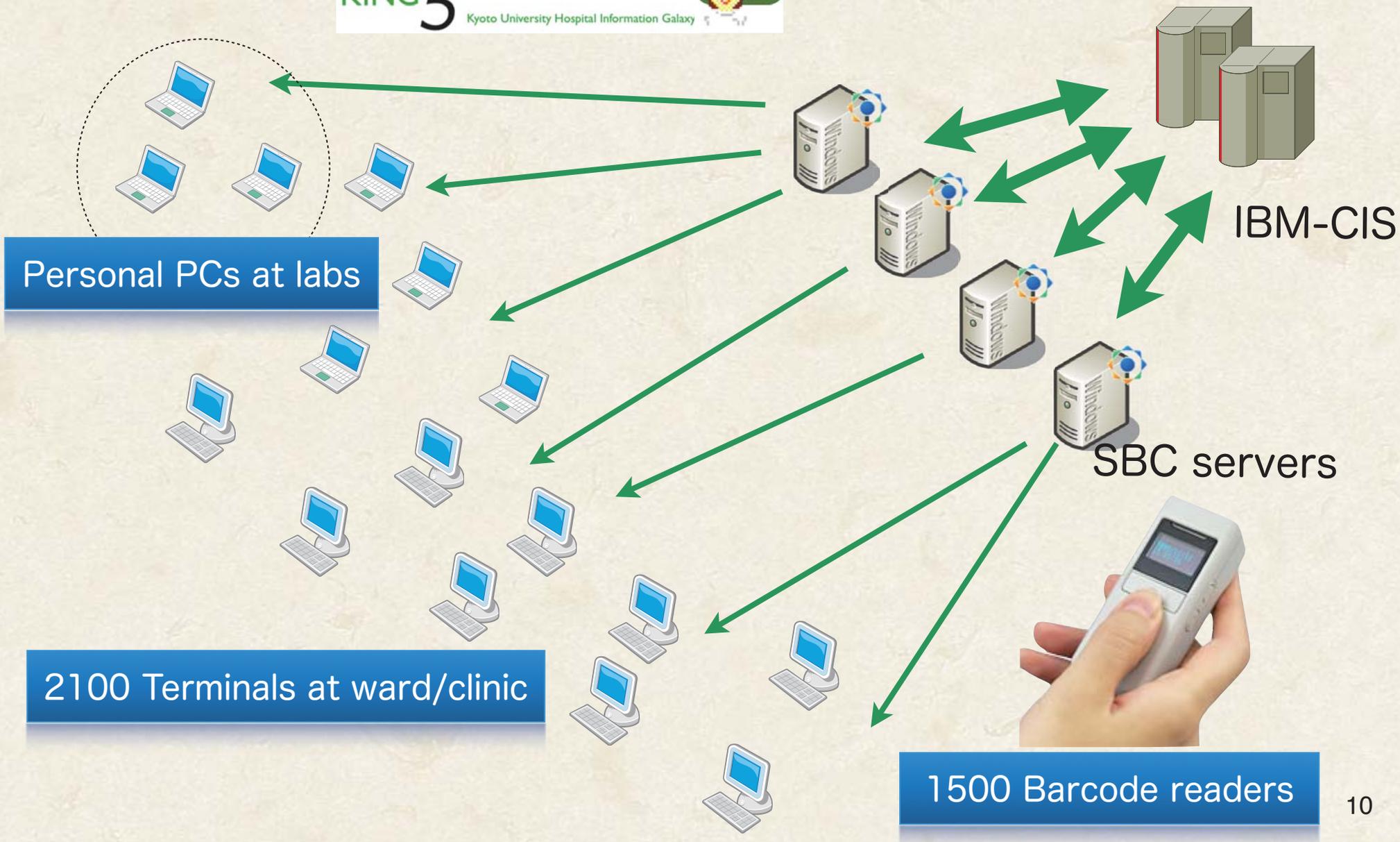
2003~



Prof. Hiroyuki Yoshihara

Full EMR and EHR

KING5 SBC-based EMR



Snapshots: KING5 Portal



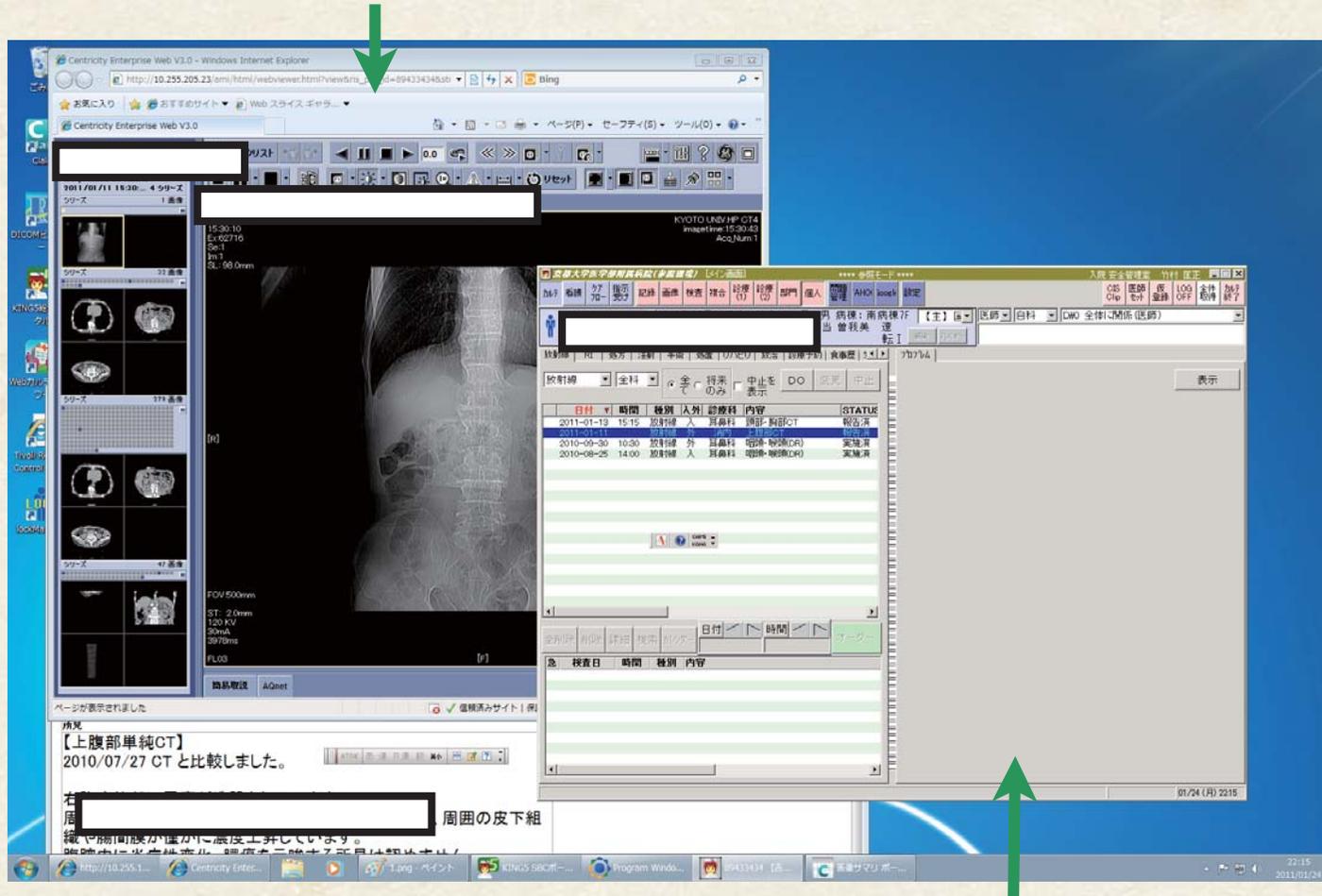
The screenshot displays the KING5 Portal interface within a Windows Internet Explorer browser window. The browser address bar shows the URL <http://k5webdev02.kyportal.local/>. The page header includes the text "KING5 Kyoto University Hospital Information Gateway" and the user's name "竹村 匡正さんのデスクトップです".

Four callout boxes highlight specific features:

- Login:** A callout box points to the "KING5" login form on the left side of the page, which includes fields for "ユーザーID" (User ID) and "パスワード" (Password), and a "login" button.
- News:** A callout box points to the "KING5 表示版" (KING5 Display Version) news section, which contains several news items with dates and titles, such as "2011-06-17 <バーコードリーダー機能追加について>" and "2011-06-16 <CP機能の変更について>".
- Application Launcher:** A callout box points to the "全般アプリケーション" (General Application) section, which displays a grid of application icons for various functions like "KINGS", "KINGS(外部)", "Webカメラ", "診断EDV", and "PatientView".
- D&D frequently used application:** A callout box points to a specific application icon in the "全般アプリケーション" section, which is highlighted with a red arrow.

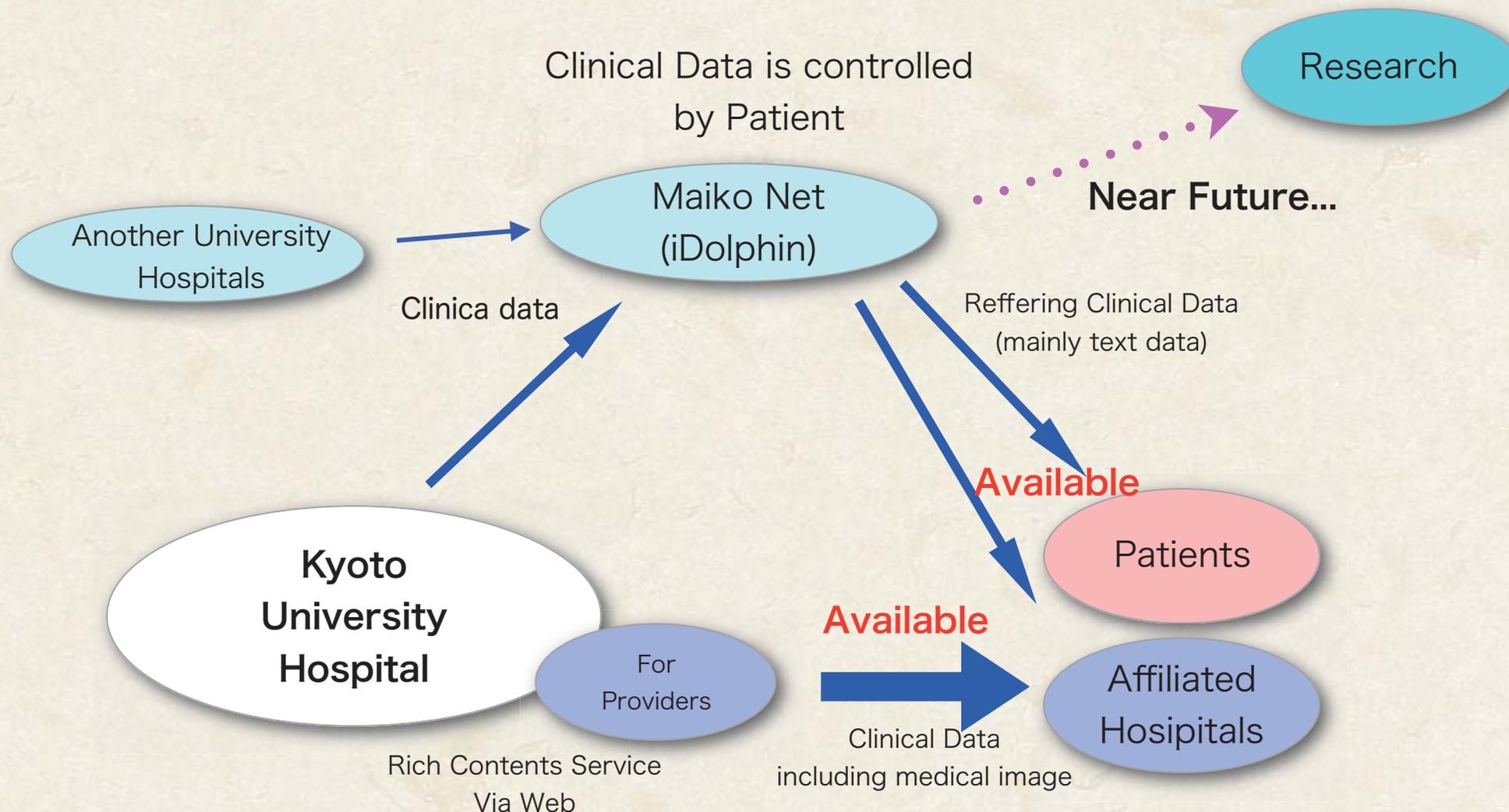
Snapshot : using KING5

PACS viewer : on a local PC (FAT Client)



EMR Application: on a SBC server

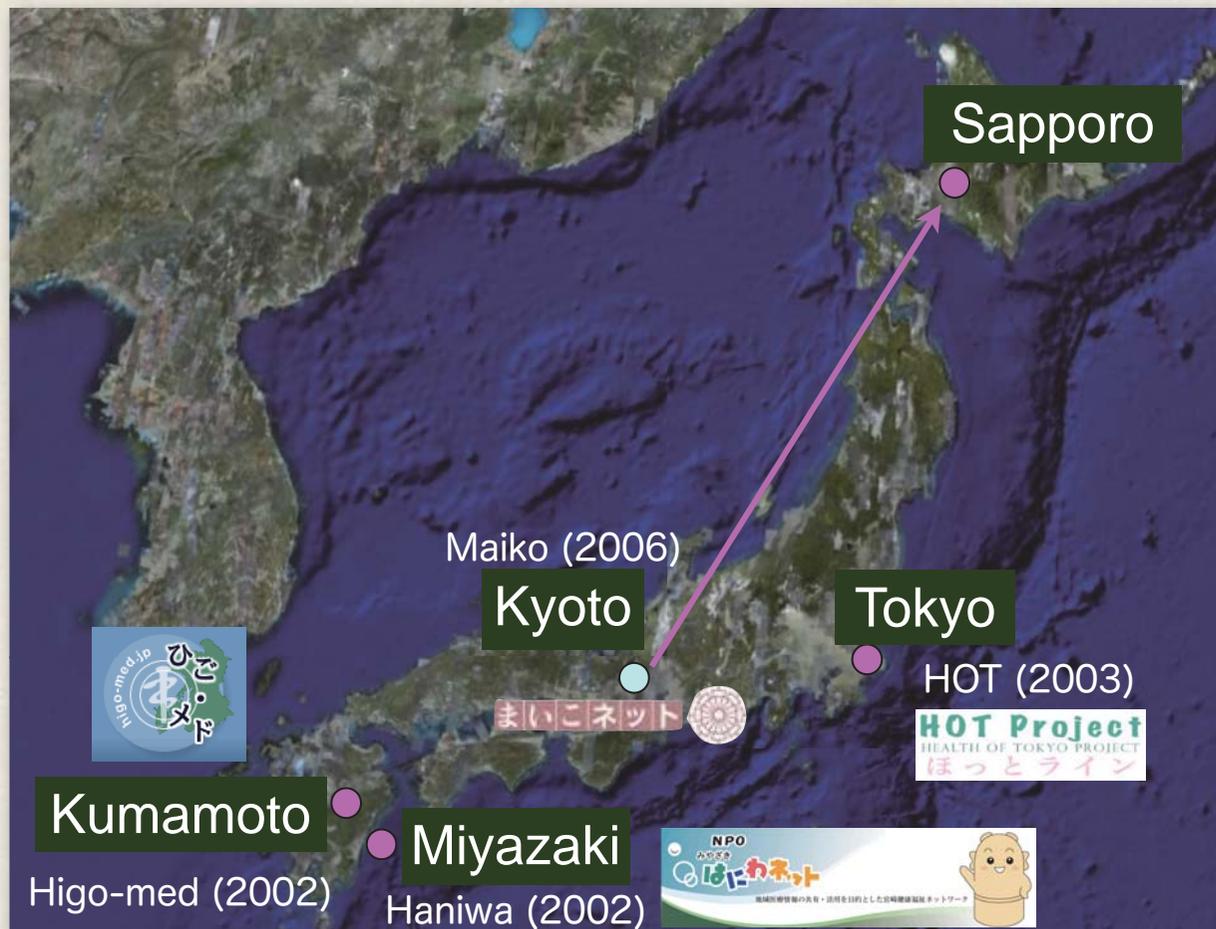
EHR of KUHP



Dolphin Project

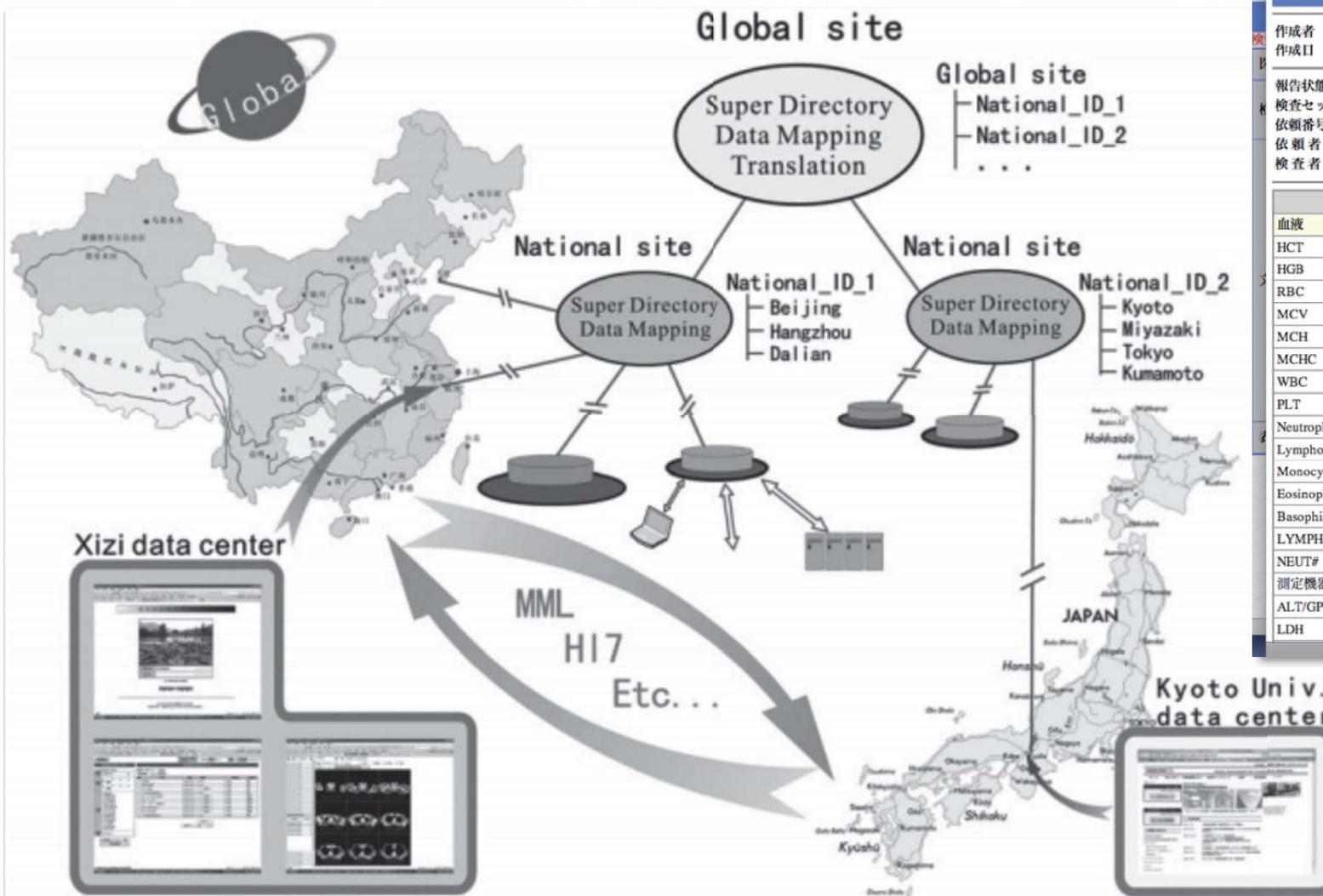


- ◆ Attempt to develop EHR/PHR since 2001
 - ◆ Based-on MML (Medical Markup Language) since 1994



Prof. H Yoshihara
CIO
Kyoto Univ Hospital

EHR: Dolphin Project



DMS(Dolphin MML Ka
DMS(Dolphin MML Kart
https://ssgw.e-maiko.net:5311/cgi-bin/d
Home まいこネット Gmail gCal吉原 画像DB Googleチャンネル

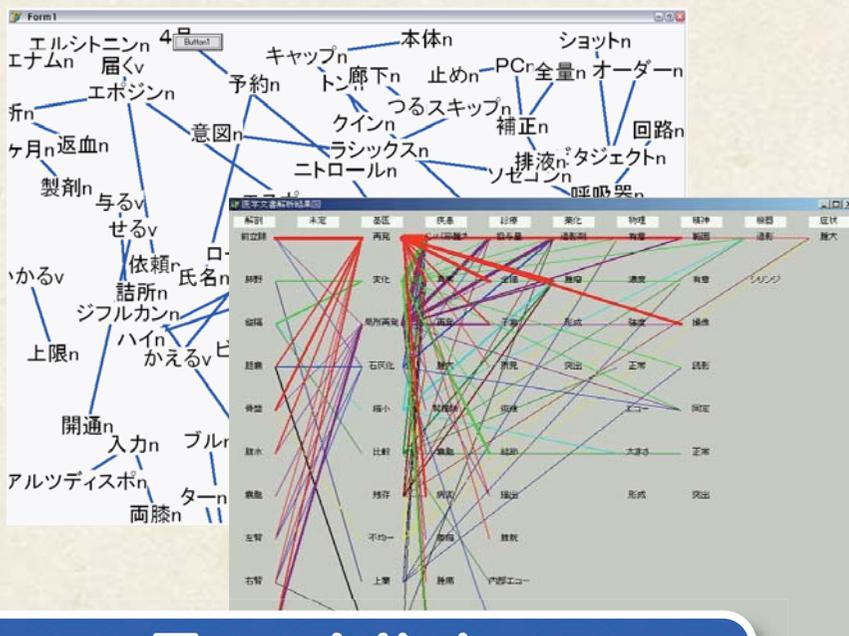
検歴情報

作成者 京都大学 医学部附属病院 【0000】 作成施設 京都大学
作成日 2008年 10月 07日 診療科

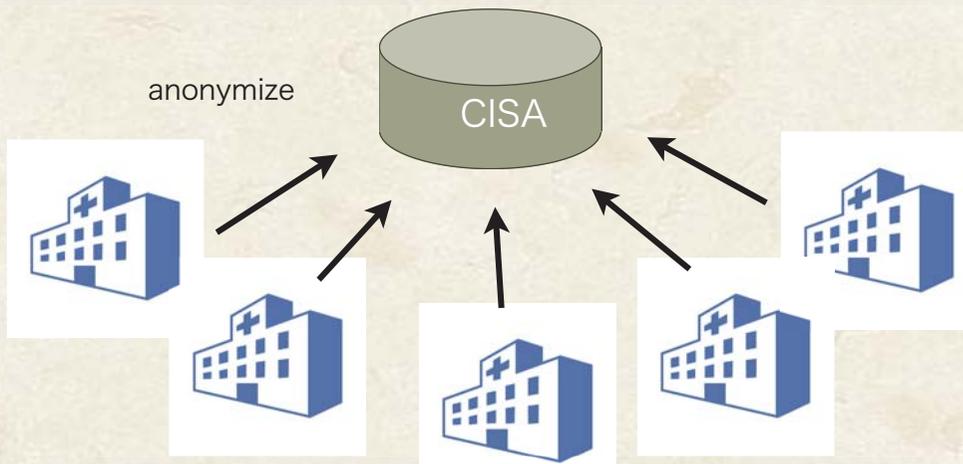
報告状態 採取日時 2008
検査セット スクリーニング 受付日時 1000
依頼番号 063634482008-10-0711:27:33G0013110001 報告日時 2008
依頼者 検査者 依頼施設 京都大
検査者 検査施設 京都大

検査項目	結果値	単位
血液		
HCT	43.7	%
HGB	15.0	g/d l
RBC	4.64	10 ¹² /L
MCV	94.2	fl
MCH	32.3	pg
MCHC	34.3	%
WBC	5.0	10 ⁹ /L
PLT	160	10 ⁹ /L
Neutrophil	41.0	%
Lymphocyte	51.8	%
Monocyte	6.0	%
Eosinophil	0.8	%
Basophil	0.4	%
LYMPH#	2.6	10 ⁹ /L
NEUT#	2.1	10 ⁹ /L
測定機器		
ALT/GPT	45	IU/L
LDH	179	IU/L

NLP: knowledge from text

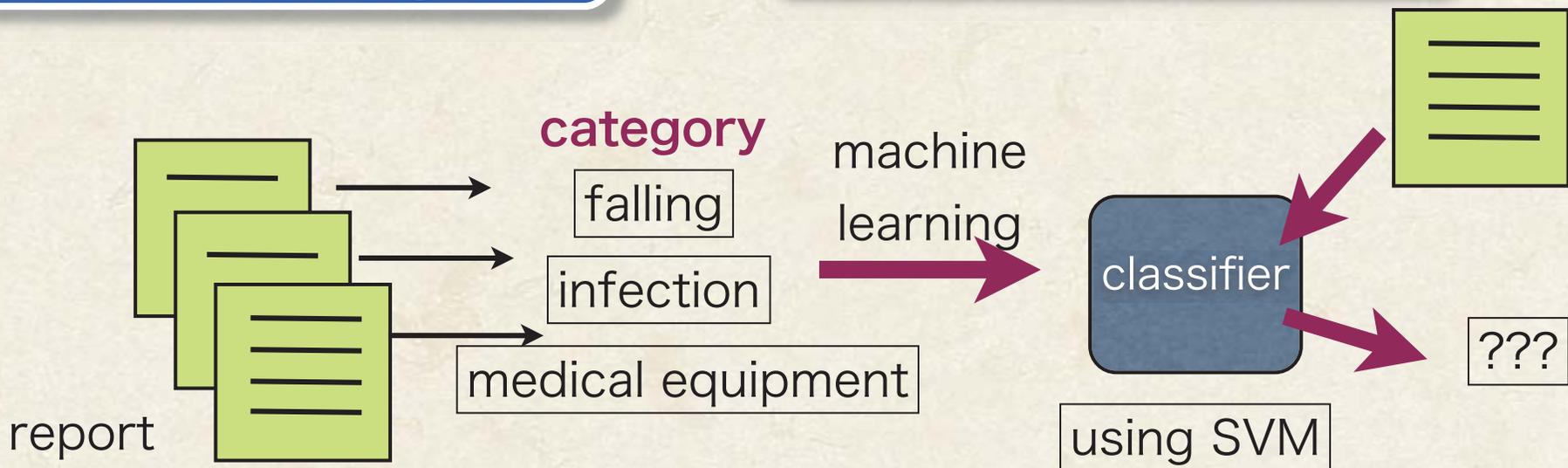


Text Mining



Multi-hosp Analysis

Document Retrieval report



Hospital Management



Performance analysis

Simulation & Gamification

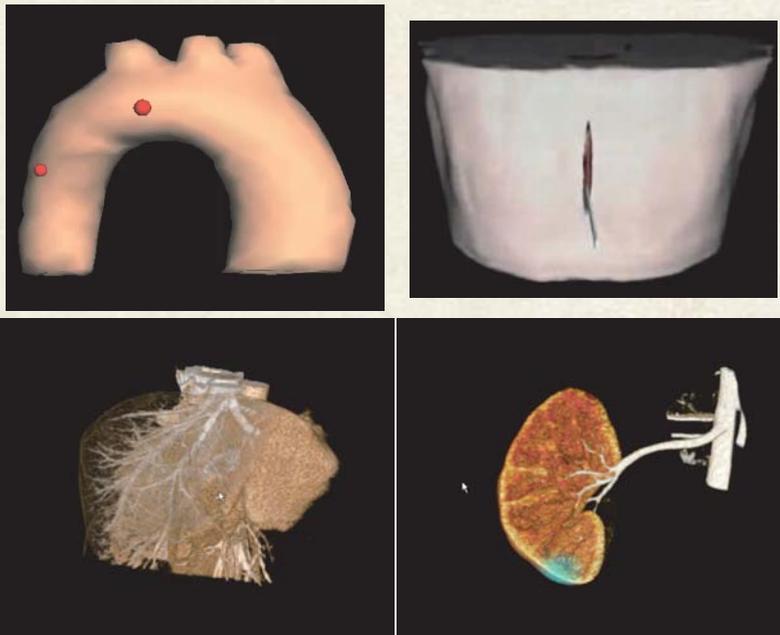


診療科		人数		満足度		診療科		人数		満足度		診療科		人数		満足度	
内科	5	87	7/11	5	82	内科	5	79	内科	5	79	内科	5	82	内科	5	79
外科	5	85	7/11	5	82	外科	5	78	外科	5	85	外科	5	82	外科	5	79
整形外科	5	72	整形外科	5	82	整形外科	5	85	整形外科	5	79	整形外科	5	82	整形外科	5	79
眼科	5	88	眼科	5	82	眼科	5	85	眼科	5	79	眼科	5	82	眼科	5	79
小児科	20	85	小児科	20	82	小児科	20	85	小児科	20	82	小児科	20	85	小児科	20	82

診療科	ペーパー	ペーパー	ペーパー
内科	30	130	
外科	30	130	
整形外科	30	130	
眼科	30	33	
小児科	130	81	

診療科	内訳	内訳	診療科	内訳	内訳
内科	10000円	10000円	内科	10000円	10000円
外科	20000円	20000円	外科	20000円	20000円
整形外科	30000円	30000円	整形外科	30000円	30000円
眼科	40000円	40000円	眼科	40000円	40000円
小児科	50000円	50000円	小児科	50000円	50000円

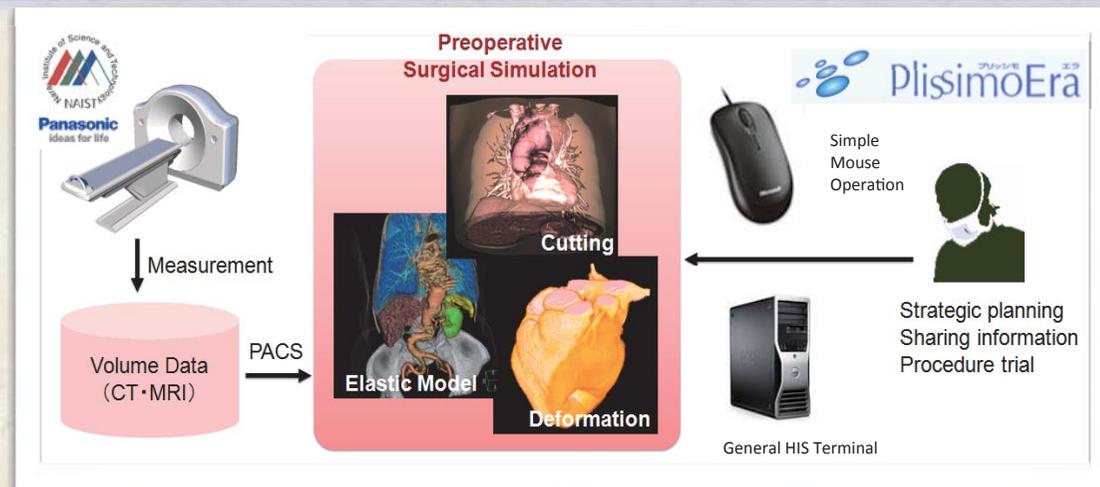
Medical Virtual Reality



Virtual Anatomy

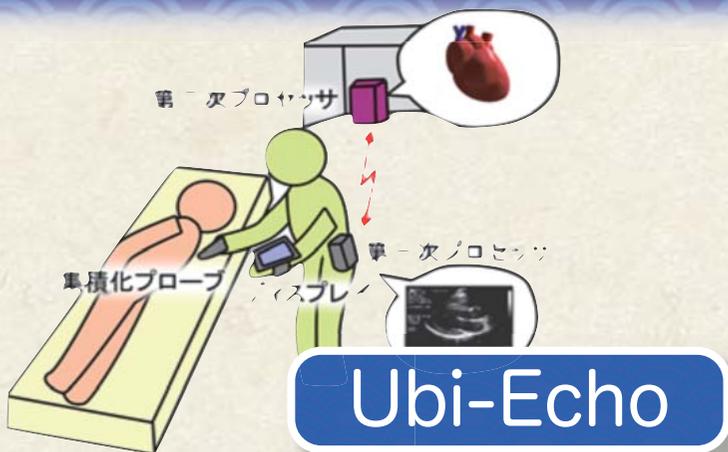


MR Display

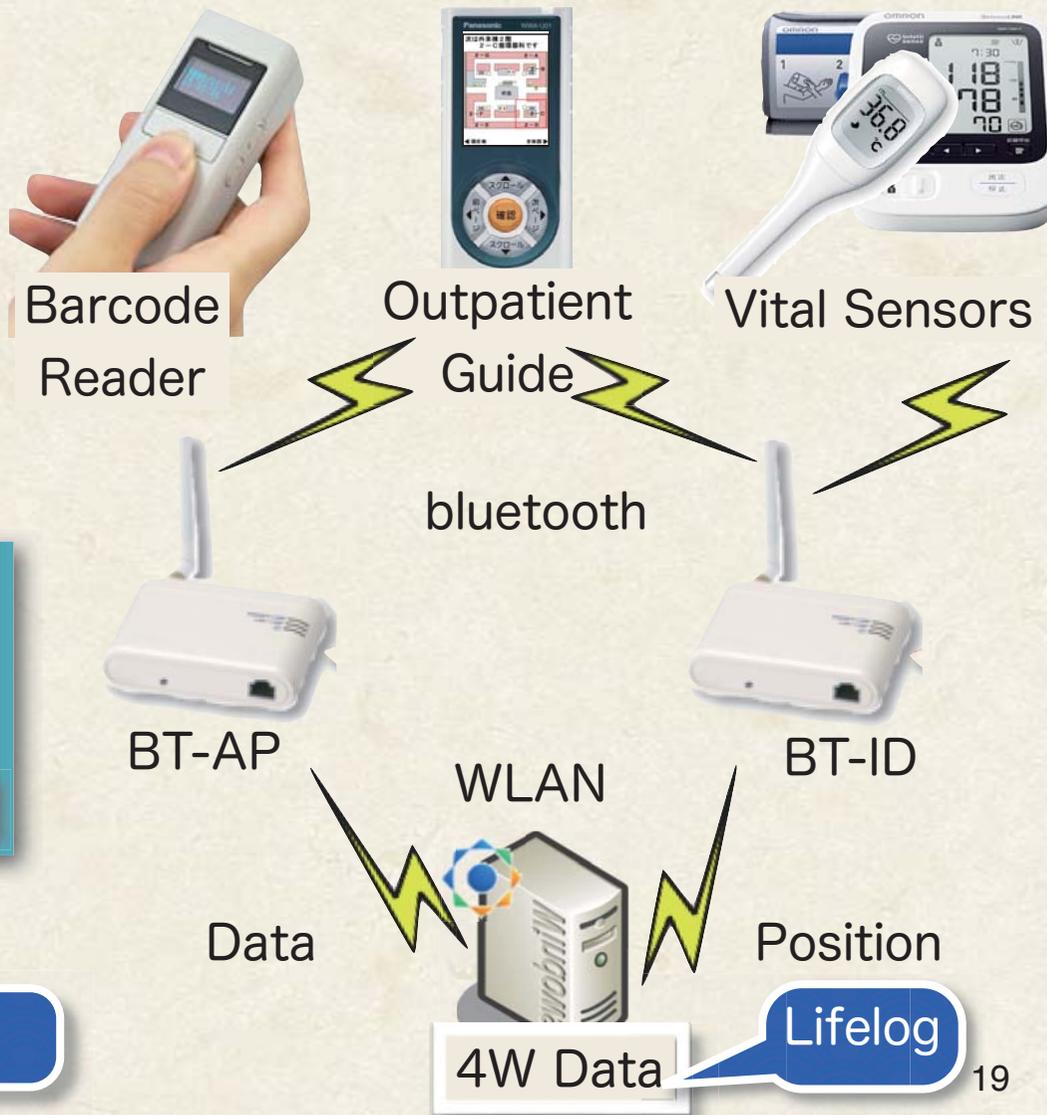


VR Surgical Planner

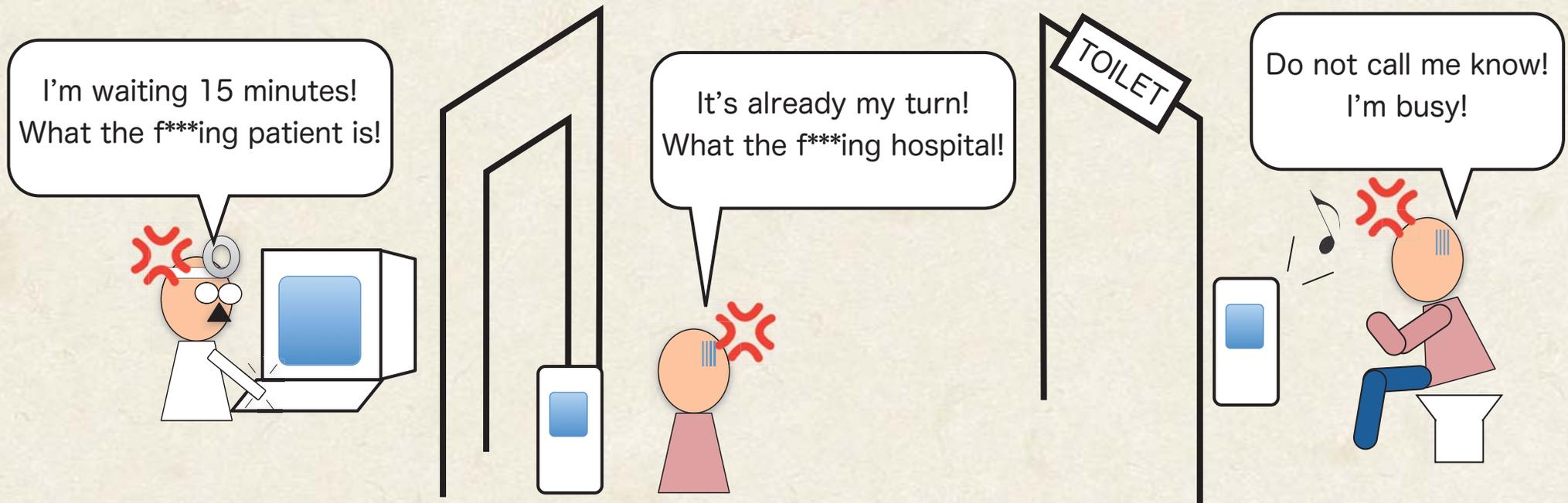
UBICOMP



BT-AP / BT-ID

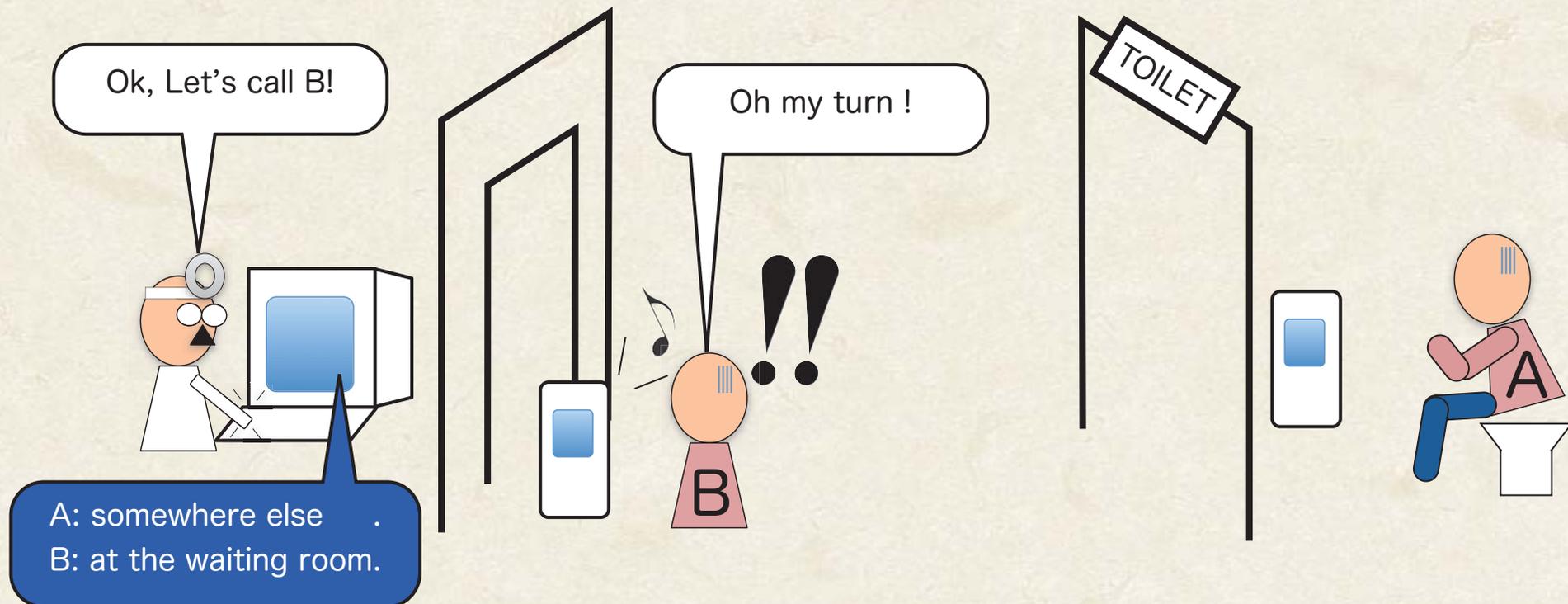


- Conventional beeper solution causes...



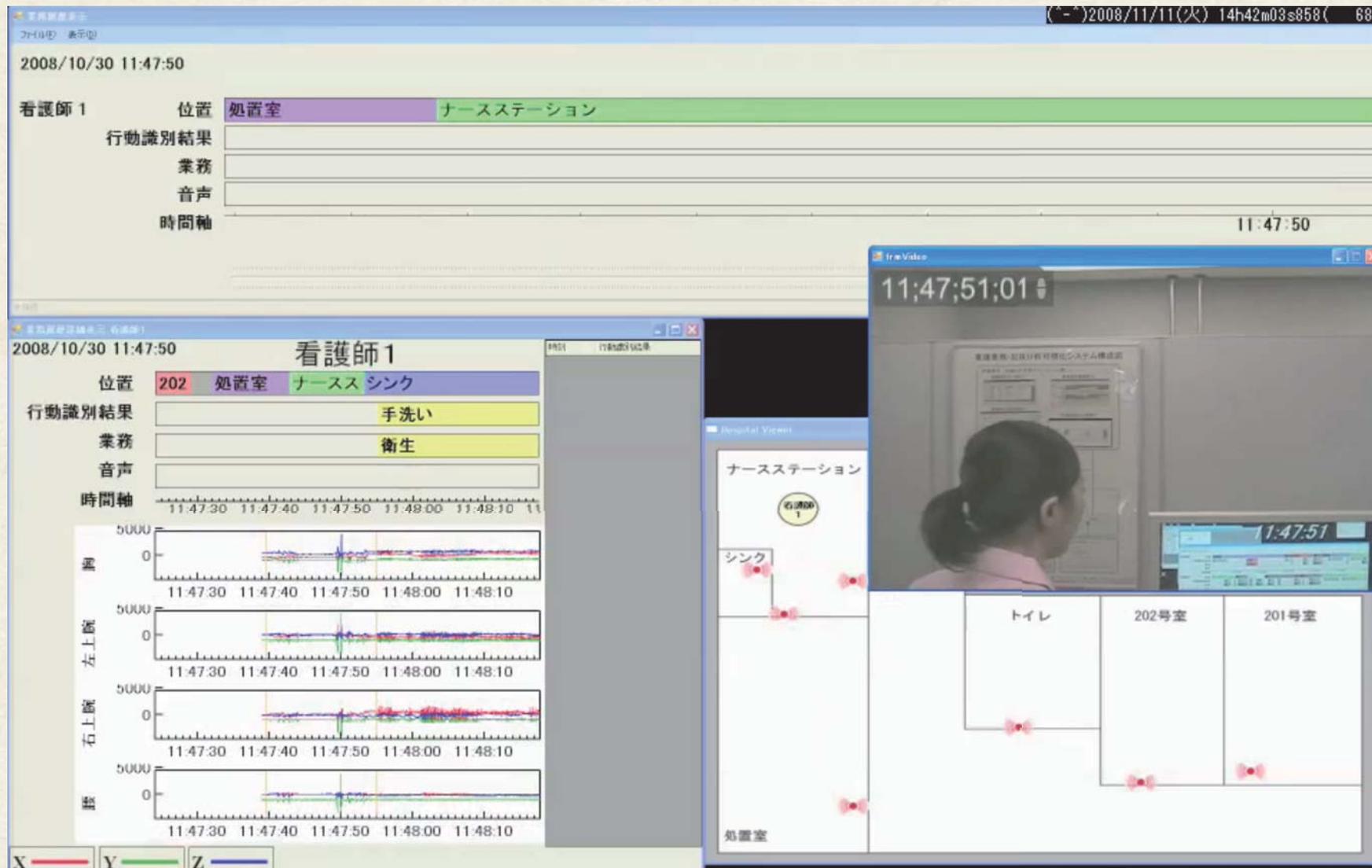
Nobody becomes happy

- ◆ Position tells a lot

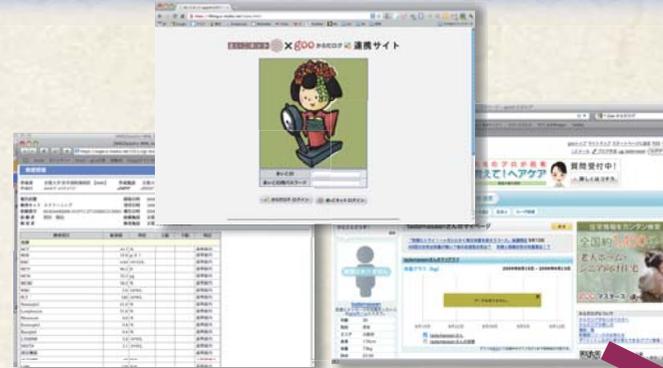
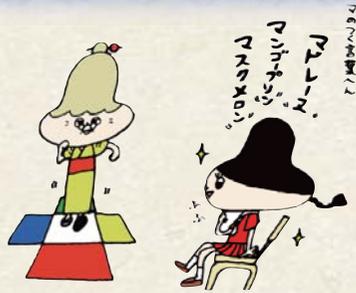


Shorter waiting time. No anger.

Automatic task segmentation



Lifelog Application



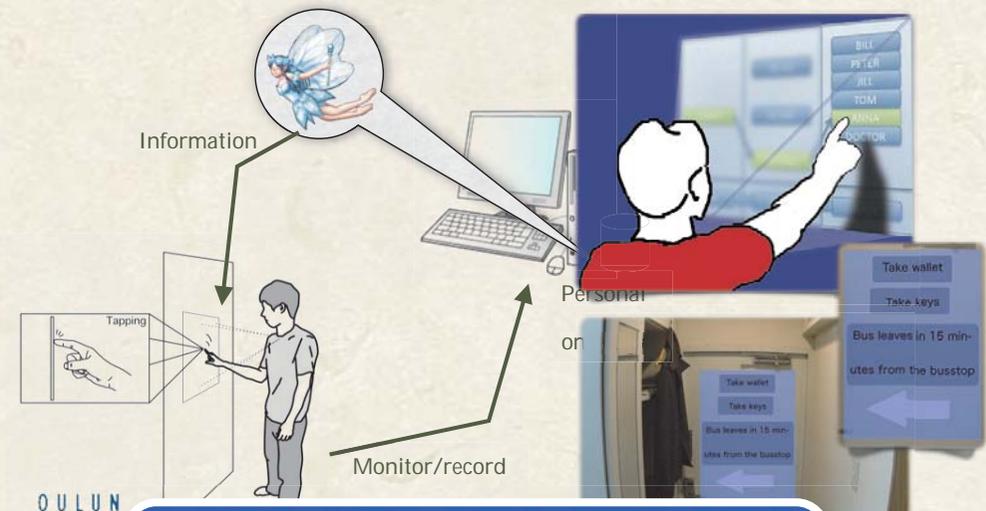
Chronic disease management



Gait training



Gait / GPS assessment

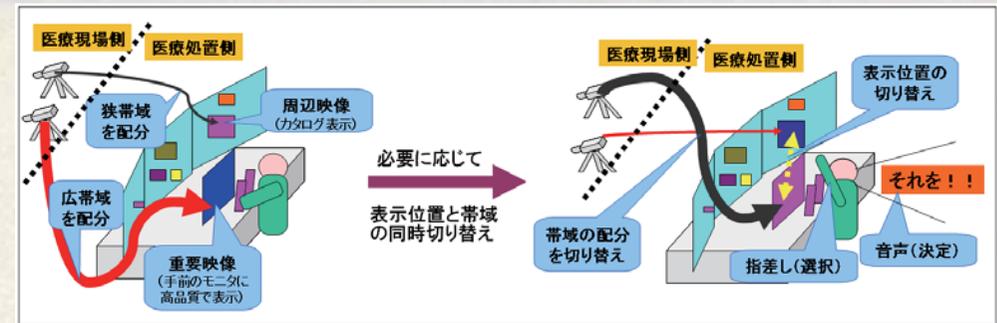


Elderly Support

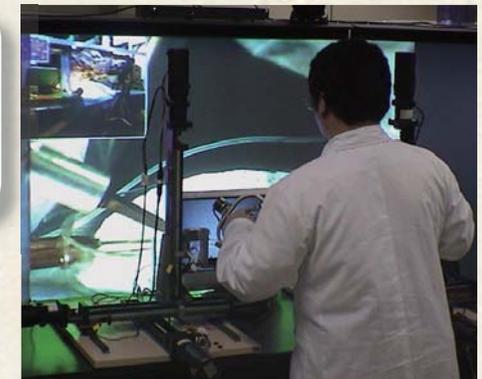
Telemedicine



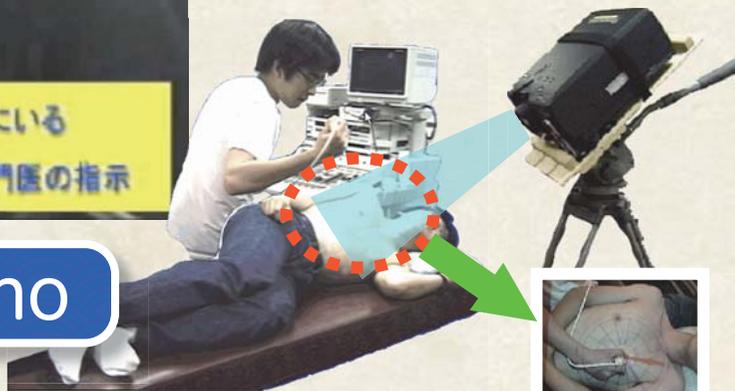
Tele auscultation



Tele robotic surgery



Tele-Echo



Non-constraint Monitoring

Summary



- ◆ Research Topics
 - ◆ Sys. Implement. > Analysis > Modeling > App.
 - ◆ Text / Account / Image / Position etc

- ◆ Budget and Task
 - ◆ Main Appointment: HOSPITAL
 - ◆ Administration Management First
 - ◆ Second Appointment: Schools (Medicine / Informatics)
 - ◆ Lecture Duties and Students Intake
 - ◆ Small outsource research fund
 - ◆ No time for research