

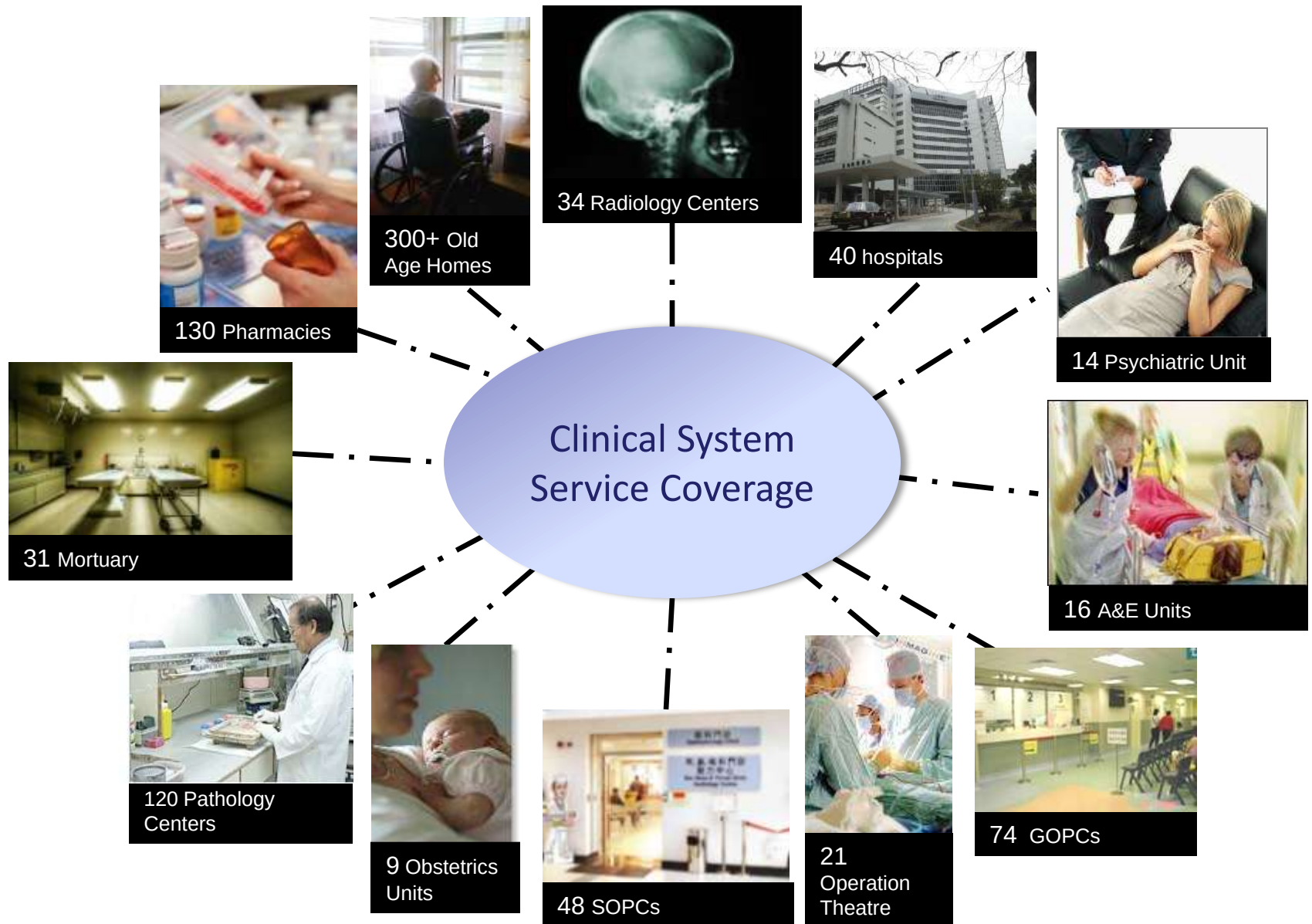
The CMS development history for 20 years (1991 – 2010)



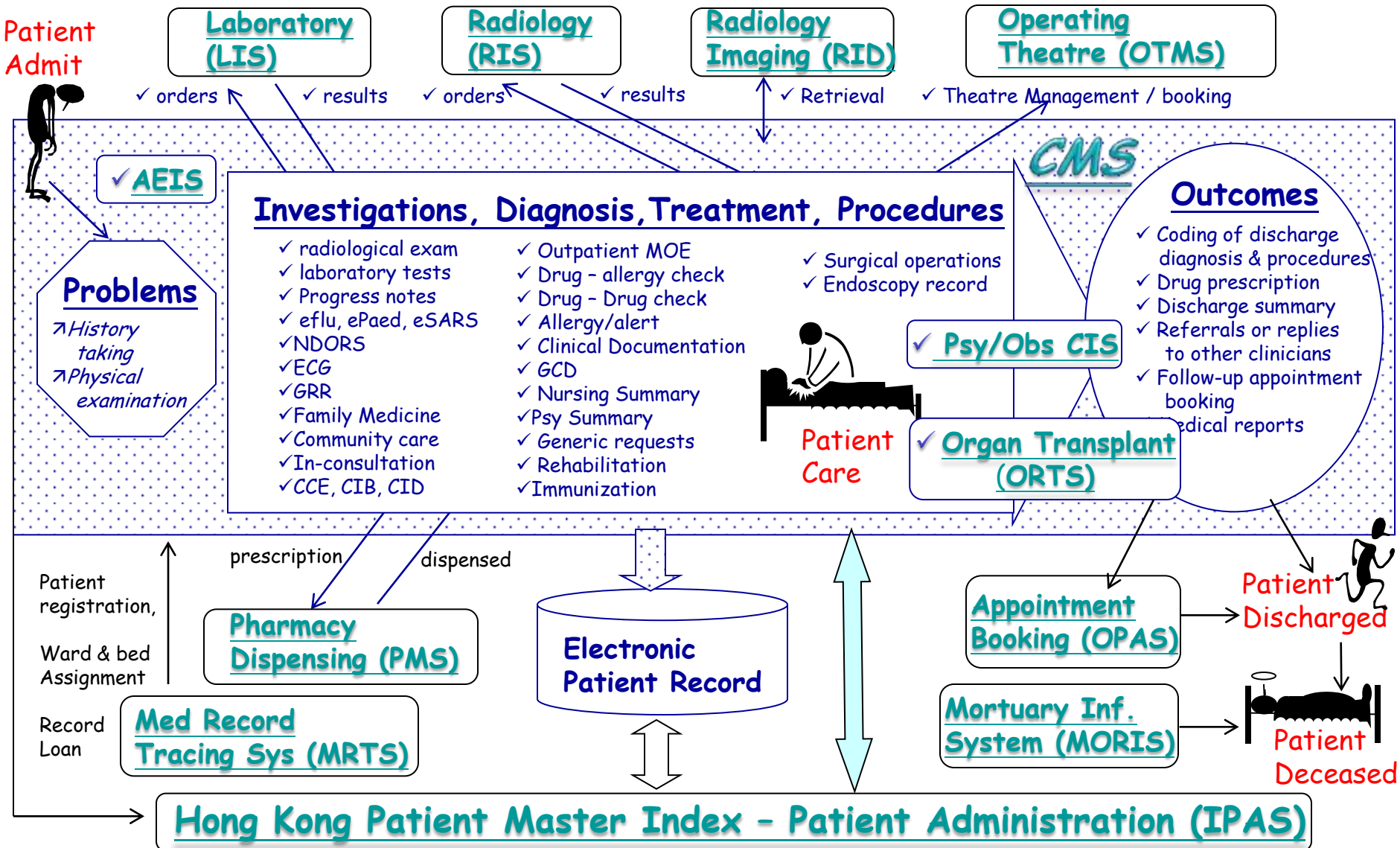
Anthony CHEUNG
CSM(CS)

November 2010

Clinical Systems - Service Coverage



Clinical Systems – Patient Care Delivery Journey

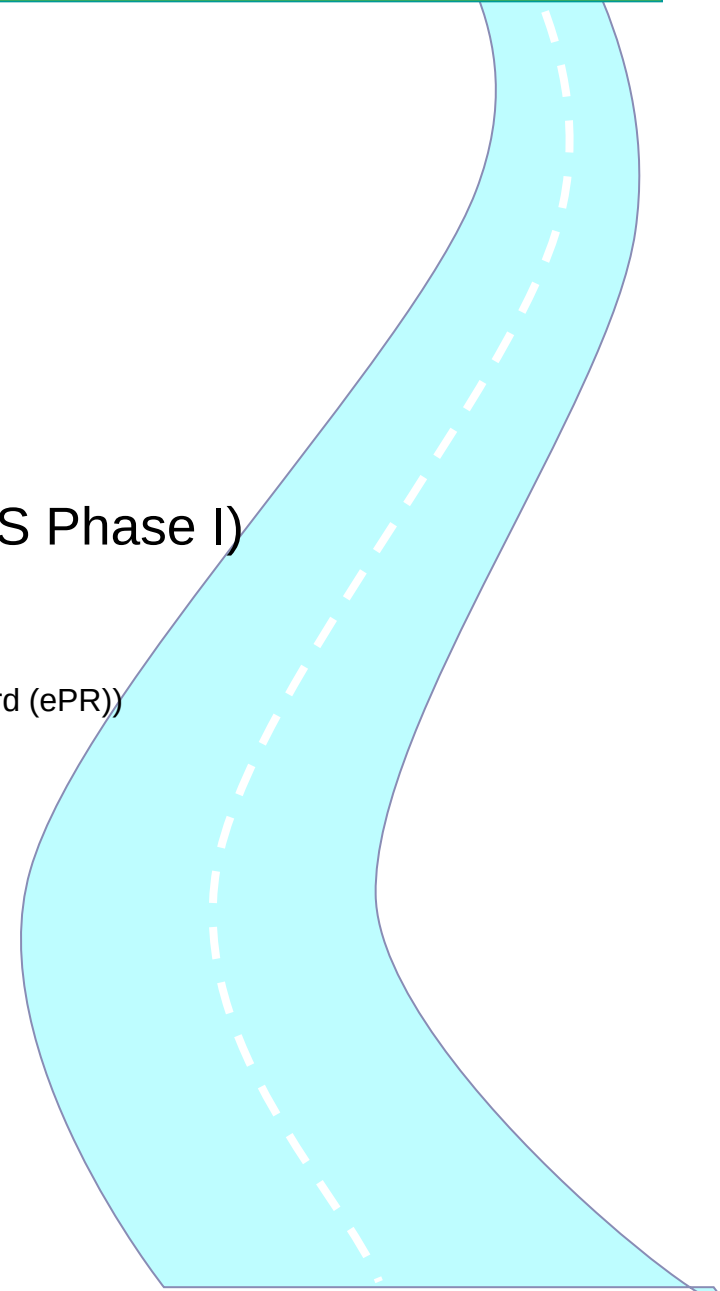


Clinical Systems Development In HA

- **1990** – “Green fields”
- **1991** – Patient Administration
- **1992** – Pharmacy system
- **1993** – Lab results online
- **1994** – Radiology information system
- **1995** – Clinical Management System (CMS Phase I)

Clinician documentation and order entry

- **2000** – CMS Phase II (incl. Electronic Patient Record (ePR))
- **2003** – eSARS
- **2004** – ePR Image Distribution
- **2006** – ePR sharing with private sector
- **2008+** – CMS Phase III
- **2009+** – Filmless Hospital
- **2010+** - IPMOE project



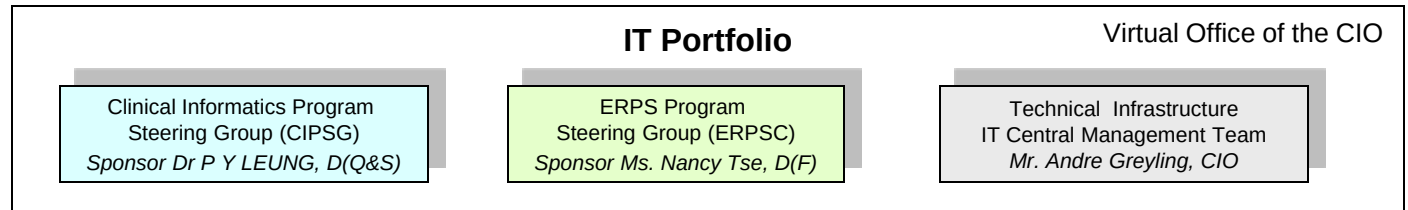
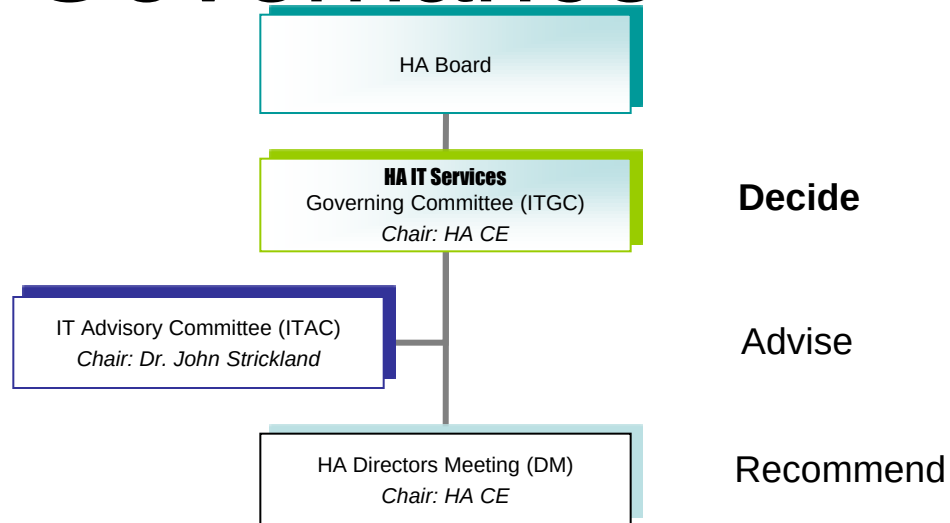
Critical Success Factors

- Proper Governance Structure
- Strategic Planning
- Clinician Engagement
 - Driven by clinician
 - Designed by clinician
 - Used by clinician
- Dedicated IT development team with mature technology
- Develop and Roll approach

IT Governance

Governance Domains

IT Principles
IT Infrastructure Strategies
IT Architecture
IT Investment Priorities
Business Application Needs



Performance Reporting/KPI's

Financial Management Performance
Meeting Agreed Service Levels
Delivering Projects on Time and Within Budget
Residual Risk Matrix
Progress on Strategic Change Initiatives
Benefit Realisation

**Clinical Informatics Program
Steering Group (CIPSG)**
Chair: Dr P Y LEUNG, D(Q&S)

**CLINICAL INFORMATICS
PROGRAM OFFICE
(CIPO)**

REQUIREMENTS

IMPLEMENTATION

DEVELOPMENT

**STANDARDS &
POLICY**

TECHNOLOGY

FUNCTIONAL GROUPS

**SPECIAL
CORPORATE
REQUIREMENT
GROUPS**

**CLUSTER
CLINICAL
INFORMATICS
COORDINATORS**

**NEW CLINICAL
SYSTEMS
DEVELOPMENT
WORKING
GROUPS**

POLICY GROUPS

**TECHNICAL
GROUPS**

DR LILIAN LEONG
HKWC / QMH
IT IN RADIOLOGY

DR PM YUEN
NTEC / PWH
IT IN O&G

DR SF LUI
NTEC / PWH
IT IN RISK
MANAGEMENT

DR BETTY YOUNG
HKEC / PYNEH
HKEC

DR CB LAW
KWC / PMH
EPR WORKING GROUP

DR FUNG HONG
CLINICAL DATA ACCESS
REVIEW PANEL

**MR ANDRE
GREYLING**
HAHO
IT TECHNICAL
REFERENCE GROUP

DR KC LEE
HKWC / PMH
IT IN PATHOLOGY

DR WF CHAN
HKE / PYNEH
IT IN PSYCHIATRY

**DR RAYMOND
YUNG**
CCID
IT IN INFECTIOUS
DISEASE

DR C YEUNG
HKWC / QMH
HKWC

DR KC WONG
NTEC / PWH
MEDICATION ORDER &
DECISION SUPPORT WG

DR LC CHONG
KEC / TKOH
CLINICAL DATA POLICY
GROUP

DR CB LAW
KWC / PMH
IPMOE TASK FORCE

DR JOHN KWOK
KWC / KWH
IT IN NEUROSURGERY

DR JIMMY CHAN
NTEC / ANNH
IT IN EMERGENCY
MEDICINE

DR KM CHOY
HAHO
IT IN PUBLIC-PRIVATE
INTERFACE

DR WY SHEN
KCC / QEH
KCC

DR MS LAI
NTEC / NDH
CLINICAL ORDER &
DECISION SUPPORT

DR NT CHEUNG
HAHO
DISEASE
CLASSIFICATION GROUP

**DR LAWRENCE
FUNG**
KWC / KWH
IT IN ALLIED HEALTH

DR MATTHEW NG
HKWC / TWH
IT IN MEDICINE

DR CC LUK
KEC
PAS USER GROUP

DR CC YAU
KWC / PMH
KWC

DR CY TAM
NTWC / TMH
CLINICAL ORDER &
DECISION SUPPORT

DR NT CHEUNG
HAHO
DISEASE
CLASSIFICATION GROUP

DR ERCI CHAN
HAHO
IT IN NURSING

DR TC WONG
HKWC / QMH
IT IN INTENSIVE CARE

DR PW LEE
HAHO
IT IN PHARMACY

DR CB LEUNG
NTEC / PWH
NTEC

DR CB LEUNG
NTEC / PWH
CLINICAL MANAGEMENT
& REPORTING

DR NT CHEUNG
HAHO
DISEASE
CLASSIFICATION GROUP

DR DANIEL CHU
HKEC / RHTSK
IT IN FAMILY MEDICINE

DR CB CHOW
KWC / PMH
IT IN PEDIATRICS

DR YY CHOW
NTWC / TMH
NTWC

DR JOSEPH LUI
KWC / CMC
IT IN
ANAESTHESIOLOGY

DR SK AU
KCC / QEH
IT IN ONCOLOGY

DR WC YUEN
KEC / TKOH
IT IN SURGERY

DR YY CHOW
NTWC / TMH
IT IN O&T

DR DAISY DAI
HAHO
IT IN COMMUNITY CARE

**160 doctors
100 others**

Clinical IT Systems Governance

The HK Patient Master Index

- Using Hong Kong Identity Number (HKID #)
- HKPMI, Admissions/Discharges and Appointments Booking implemented across all HA hospitals and clinics
- HA HKPMI contains 8 million records

Uniquely identify all patients and can facilitate linking together episodes of care

Evolution of CMS

Phase I - Functions

- Discharge summary
- Clinician coding of diagnosis & procedure codes
- Ordering of medications and laboratory tests
- Retrieving laboratory and radiology results
- Medication history
- Electronic booking of appointments
- Generate referral or reply letters and reports
- Cross hospital information enquiry

Phase II - Modules

- Generic Clinical Requests (Order Entry)
- Generic Results Reporting (Forms)
- Clinical Data Framework
- Outcome Documentation
- Medication Decision Support
- Clinical Data Analysis and Reporting
- Electronic Patient Record (ePR)

Electronic Patient Record - ePR

- Web-based lifelong longitudinal record of all healthcare transactions for all Hong Kong citizens
- Many data formats (textual, numerical and digital images)
- Patient privacy protected with access controls and full audit logs
- Available at all 162 facilities in the HA
 - Now extending to external providers

Clinical Systems are essential in HA

Each Day...

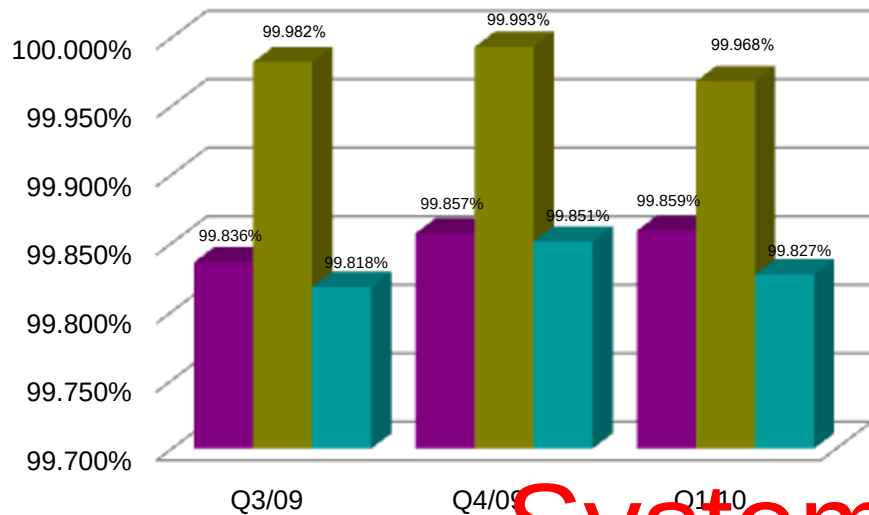
- 35,000+ clinician users
(Doctors, Nurses, Pathology, Pharmacists, Radiology,...)
- 100,000 patients
- 10,000,000 on line transactions (clinical)
 - Peak usage: 30,000 tran / min
or 500 tran / sec
- 700,000 ePR transactions
- 18,000 clinical workstations

To Date...

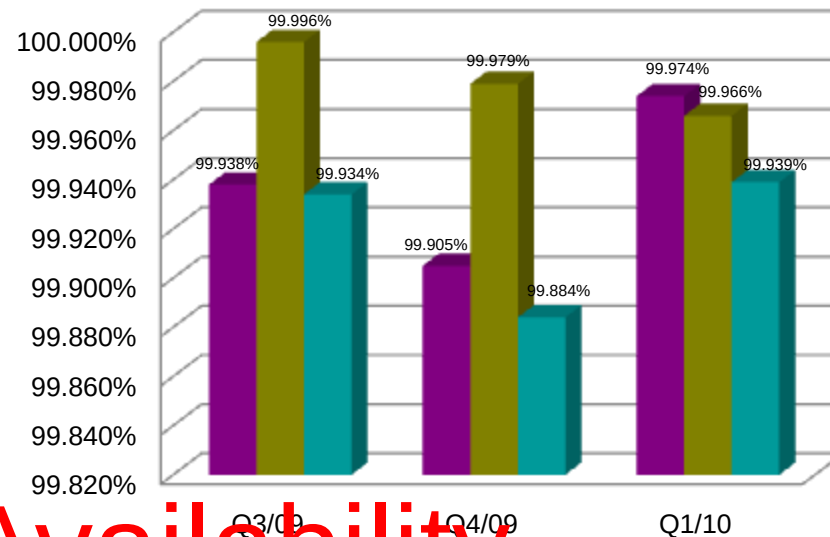
- 8,800,000 patient records
- 500,000,000 ePR Lab records
- 1.5 Terra Bytes ePR data volume
- 3 Terra Bytes ePR Images



CMS

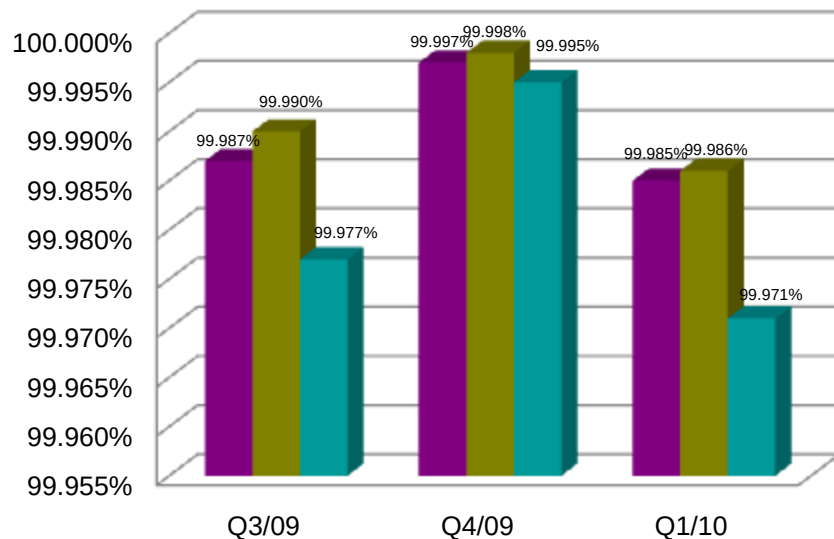


PAS

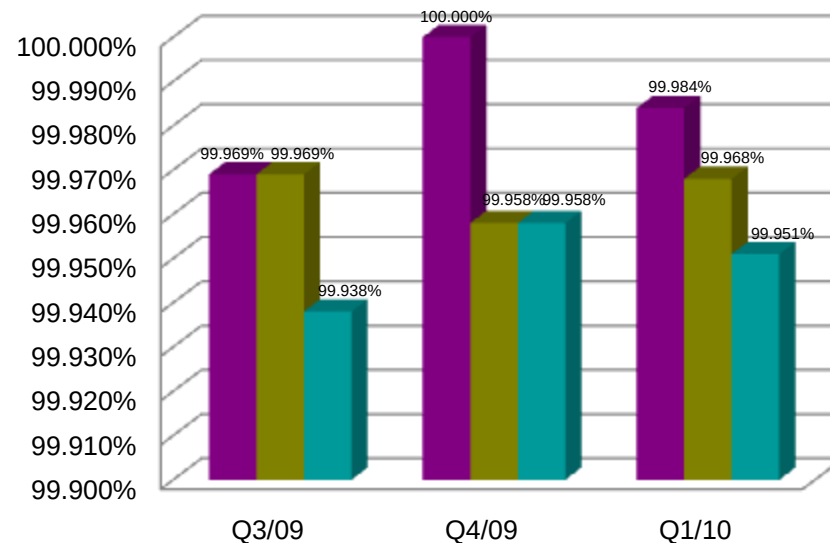


System Availability

MRTS

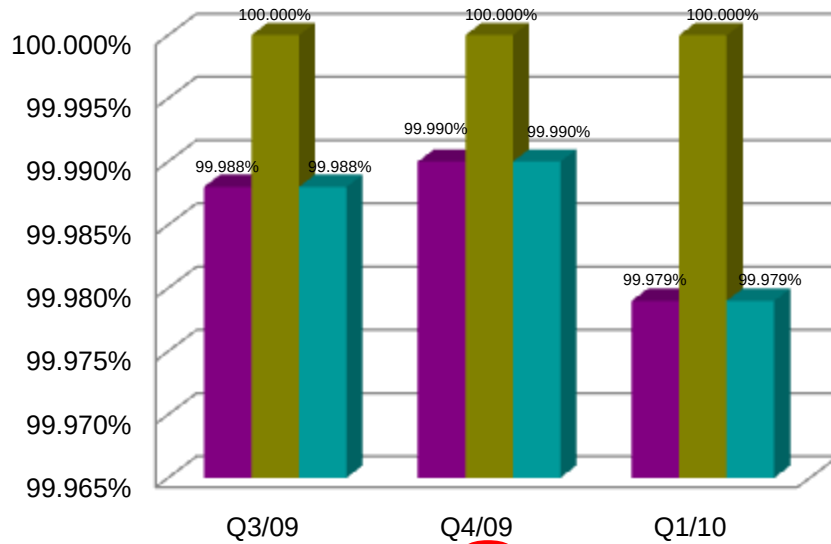


OTMS

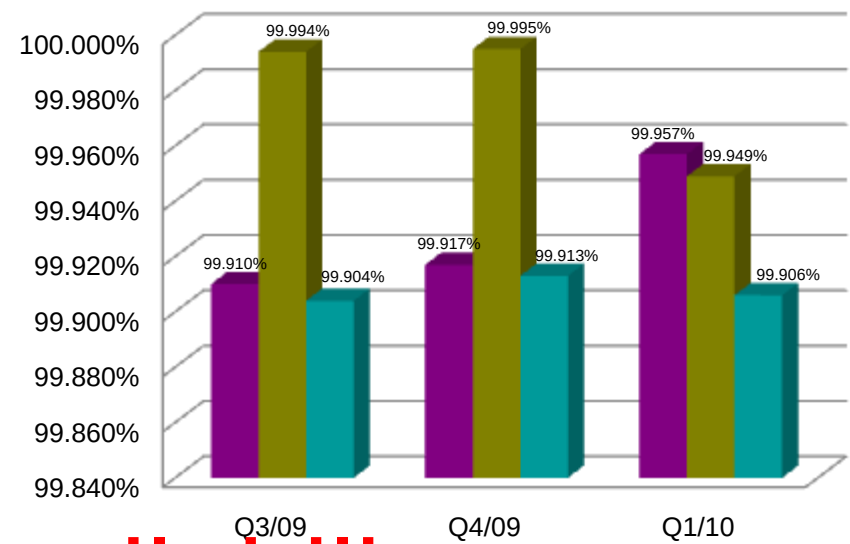


Scheduled Downtime
 Unscheduled Downtime
 Total

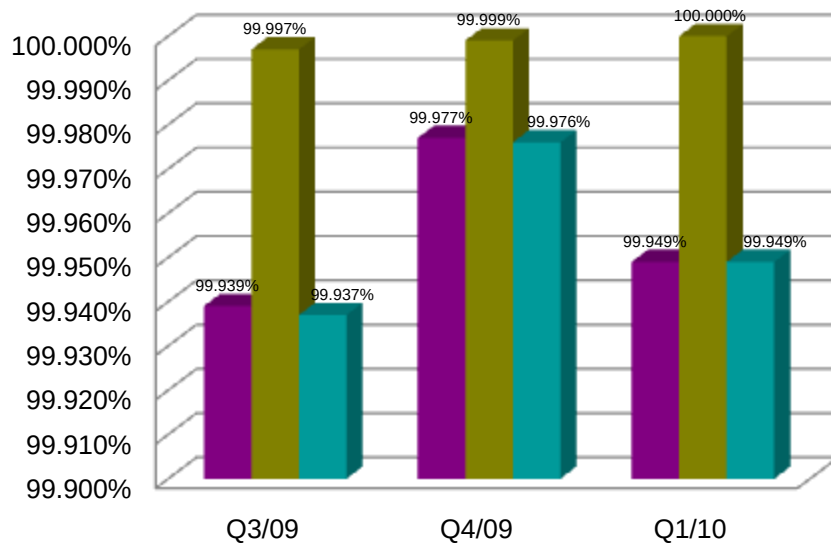
AEIS



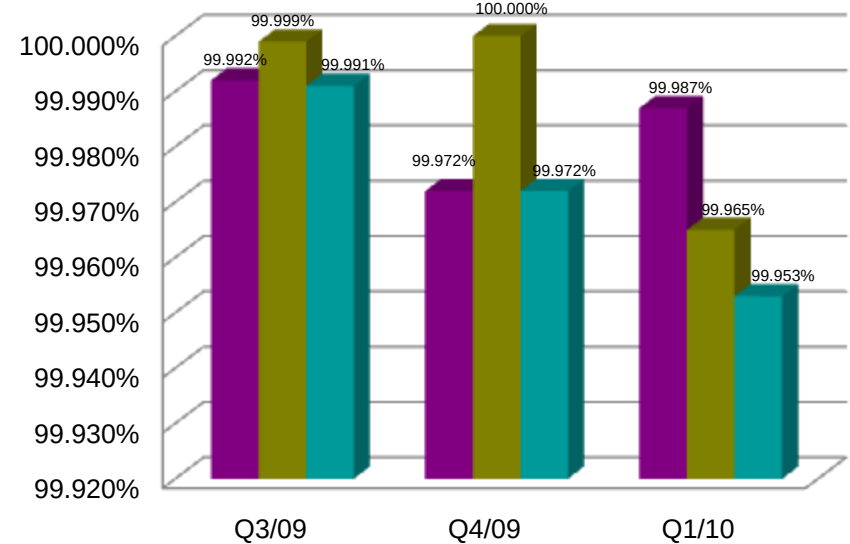
LIS



RIS



FMS



System Availability

Scheduled Downtime
 Unscheduled Downtime
 Total

Patient Administration Systems

- Patient Master Index (PMI)
- Inpatient Admission
- Outpatient Appointment Booking



Patient Administration Data Interfaced to Equipment

- **Facilitate patient administration process :**



ePR - Patient Summary

Home Patient Name: [redacted] DOB: 02/03/1956 (Exact) Age: 46y Sex: F details patient Logout

Summary Schedule

Patient

- Diagnosis
- Procedure
- Clinical Note
 - All
 - Discharge Note
 - OP Note
 - AE Note
- Radiology Record
 - Radiology Result
 - Radiology Appointment
- Medication
 - Dispensed - By Episode
 - Dispensed - Summary
- Procedure Record
 - ERS
 - OTRS
- Laboratory Result
 - Blood Group Result
 - Cumulative Common
- Specialty Profile
 - Medical
 - DM
 - Immunology
 - Liver
 - Renal
 - Thyroid
 - Anaesthetic
 - SARS
- Common Profile
- Biochemistry Result
- Haematology Result

Diagnosis

Last Entry	Description
03/12/2004 (x14)	End Stage Renal Failure
31/12/2003 (x4)	Chronic renal failure
13/08/2003	Vomiting alone
21/07/2003	Peritonitis related to continuous ambulatory peritoneal dialysis
23/06/2003	Kidney dialysis as the cause of abnormal reaction of patient, or of later complication
14/03/2002	Hypotension
31/10/2001	Other specified surgical operations and procedures causing abnormal patient reaction, or later complication
31/10/2001	Wound bleeding, postoperative

Procedure

Last Entry	Description
03/12/2004 (x12)	Haemodialysis
16/12/2003 (x2)	Tenckhoff catheter removal
14/11/2003	Creation of arteriovenous fistula
16/09/2003 (x2)	Insertion of Tenckhoff catheter
13/07/2003	Bone marrow examination
13/07/2003	Echocardiography
13/07/2003	Ultrasonogram of abdomen
13/07/2003	Whole body scan, gallium
13/07/2003	CT abdomen with contrast
13/07/2003	Removal of haemodialysis catheter
13/07/2003	Insertion of haemodialysis catheter

Drug Allergy

Description

Nil

Current Medication Legend

Last Dispensed	Drug name (Route)
11/10/2004	AMITRIPTYLINE HCL (Oral)
11/10/2004 (x 2)	ERYTHROPOIETIN BETA (Injection)
11/10/2004 (x 2)	SUSTANON 250 (Injection)
11/10/2004	SODIUM BICARBONATE (Oral)
11/10/2004	FAMOTIDINE (Oral)
11/10/2004	ALUMINIUM HYDROXIDE (Oral)

Recent Schedule Legend HKPMI View

Date	Hospital / Clinic	Service Type	Description
24/01/2005 08:45	YMT/YMTSCE	SOPD	Medicine / Ne
✓ 06/12/2004 13:30	QEH	IP	Medicine / Int

Laboratory Results

Electronic Patient Record (ePR)					
Patient Information				Details	+Alert
Case:	HN98004663(A)	HKID:	UU000226(3)	Name:	PATIENT, 000226
				Sex:	M
				Age:	72y

Summary		Event		Search by Request Date				
PATIENT, 000226				Request Date Period				
Consultation Note				Period				
Diagnosis				Hospital				
Procedure				Most recent				
Radiology Result				Reference				
Medication				Reference				
Dispensed - By Episode				Hospital				
Dispensed - Summary				Haemoglobin				
Laboratory Result				RBC				
Cumulative Common				HCT				
Cumulative Specific				MCV				
Medical				MCH				
DM				MCHC				
Immunology				Platelet				
Liver				WBC				
Renal				APTT				
Thyroid				Prothrombin Time				
Common Profiles				Sodium				
Biochemistry Result				Potassium				
Haematology Result				Urea				
Immunology Result				Creatinine				
Microbiology Result				Protein, Total				
Anatomical Path Result				Albumin				
Abnormal Result				Bilirubin, Total				
Numerical Result				Alkaline Phosphatase, Total				
Non-numerical Result								

Image Distribution via ePR

HKID: K1001000 Name: PATIENT, 305997(病人) DOB: 01/12/1965 (Exact? Y) Age: 39 Sex: F Death: N

Patient Name
PATIENT, 305997(病人)

Summary Schedule Latest results

print

- PATIENT, 305997
 - Diagnosis
 - Procedure
 - Clinical Note
 - All
 - Discharge Note
 - AE Note
 - Radiology Record
 - Radiology Result
 - Radiology Appointment
 - SARS Report
 - SARS Mini Data Set
 - Post SARS Clinic
 - SARS Specific Lab. Result
 - Procedure Record
 - ERS
 - OTRS
 - Functional Outcome
 - Rehabilitation Outcome Rep
 - Laboratory Result
 - Blood Group Result
 - Cumulative Common
 - Specialty Profile
 - Medical
 - DM
 - Immunology
 - Liver
 - Renal
 - Thyroid

Search by Request Date legend

☒ Request Date Period ☐ Request Date Range

Period: --- All --- OR From Date: To Date: go reset

HN050000002	10/01/2005	14:02	XRAY	Clavicle	AHN
HN050000001	10/01/2005	12:39	XRAY	AC joint	AHN
No case no	07/01/2005	14:55	CT	Shoulder plain	AHN
No case no	07/01/2005	14:55	CT	Shoulder + con.	AHN
No case no	07/01/2005	14:53	XRAY	AC joint	PVWH
No case no	07/01/2005	14:52	XRAY	Chest	NDH
No case no	07/01/2005	14:52	XRAY	Chest + Ba	NDH

Report copy find

Last Updated Date: 10/01/2005 17:19 Last Endorsed Date: 10/01/2005 17:19

Content:

URGENT PLAIN CT BRAIN.

Clinical History:
Head injury with LOC and vomiting. (history from ePR: patient has history of NPC and Ca lung).

Technique:
- 5mm non-contrast axial CT scans of the posterior cranial fossa.
- 10mm non-contrast axial CT scans of the rest of the brain.

Findings:
There is a hyperdense subdural haematoma in the left frontoparietotemporal region. It measures 9mm in thickness.
There is mild mass effect with ipsilateral sulcal, ventricular effacement and mild midline

1st Endorsed By:	RIS User for DEMO	2nd Endorsed By:	
1st Endorsed Date:	10/01/2005 17:19	2nd Endorsed Date:	

Image Distribution via ePR

Centricity Enterprise Web V2.1 - Microsoft Internet Explorer

PATIENT, 305997
ID: K1001000

3260 MRI TMJ wit...
18/1/2005 19:37:03 7 series
TMJ NEW survey/... 5 images

Pictorial Index

TMJ NEW T2W/TRA 15 images

TMJ NEW STIR/S... 16 images

Tool Bar

[Images on ePR are for reference only and NOT for diagnostic purpose]

Image Viewer

Im:1 Study Date:1... Study Time:... MRN:K1001...
[R] [L] TMJ NEW ... C1063 W2126 [P]

Im:2 Study Date:1... Study Time:... MRN:K1001...
[R] [L] TMJ NEW ... C1011 W2021 [P]

Im:3 Study Date:1... Study Time:... MRN:K1001...
[R] [L] TMJ NEW ... C999 W1998 [P]

Se:301 Im:4 [A] PATIENT, 30... Study Date:1... Study Time:... MRN:K1001...
[R] [L] TMJ NEW ... C1040 W2080 [P]

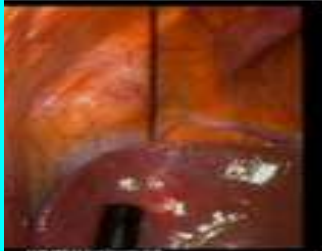
Se:301 Im:5 [A] PATIENT, 30... Study Date:1... Study Time:... MRN:K1001...
[R] [L] TMJ NEW ... C995 W1989 [P]

Se:301 Im:6 [A] PATIENT, 30... Study Date:1... Study Time:... MRN:K1001...
[R] [L] TMJ NEW ... C1008 W2017 [P]

開始 I... M... P... 收 M... H... R... C... 9:47

ERS / OTRS Record

Hospital Authority Virtual Hospital Duplicate Copy Endoscopy	Case No: HNC0000130X Name: PATINET, FEI FEI W/L/B/M: MRN: DOB: 12/12/1970 Sex: F Age at Procedure: 37y Want SD Specialty: (Case No)	HQID: UV900067(4)
	Duodenoscopy	

Selected images are attached to ERS record

Page 2 of 3

Printed by CMIS IT VHT User on 11-Nov-2006 9:57 am

+Alert

病人

Sex: M Age: 40y

Help

Save

Ventilated

☐ Yes ☐ No

Request Hospital	Specimen	Collection Date	Laboratory	Result Ready Date	Test	Result
NDH	NASOPHARYNGEAL ASPIRATE	01-Nov-2005	PWH	01-Nov-2005	Influenza A Antigen	NEGATIVE
PWH	NASOPHARYNGEAL ASPIRATE	12-Oct-2005	PWH	12-Oct-2005	Influenza A Antigen	NEGATIVE
PWH	NASOPHARYNGEAL ASPIRATE	10-Oct-2005	PWH	10-Oct-2005	Influenza A Antigen	NEGATIVE

Treatment

☐ Fever $\geq 38^{\circ}$ C Onset Date:

☐ Cough Onset Date:
☐ Sputum Onset Date:
☐ Rhinorrhea Onset Date:

☐ **Diarrhea** Onset Date: ☐ **Abdominal Pain** Onset Date: ☐ **Vomiting** Onset Date:

☐ Headache Onset Date: ☐ Myalgia Onset Date:

Onset Date:  

NDORS

俞龍眼

YU, LONGAN

MKC

Details

Alert

M

45y

DOB: 20-Apr-1961

M766408(2)

MED

5A-10

Adm: 12-Apr-2006

HN06000013(2)

Report Date	Edit	Disease	Reported by	Last Updated	Pat.Spec	Hosp
30/06/2006 13:54		Viral Hepatitis	CMS, IT	30/06/2006 13:54	MED	VH Log
30/06/2006 13:53		Tuberculosis	CMS, IT	30/06/2006 13:53	MED	VH Log

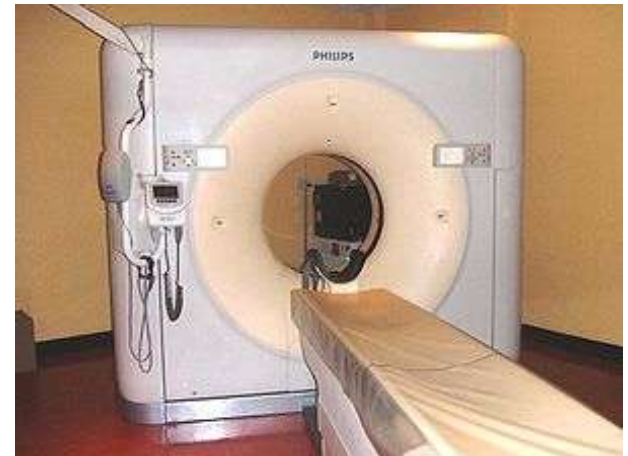
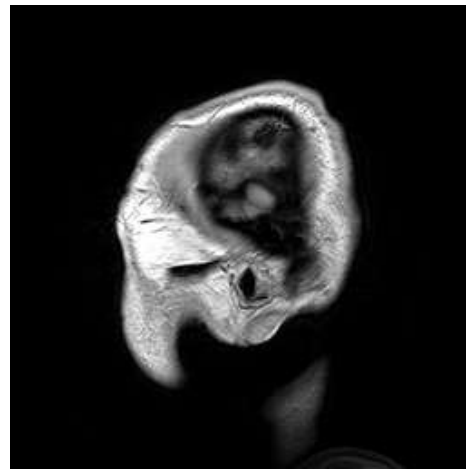
Notifiable Disease

Communicable Disease

Acute Poliomyelitis	Leprosy	Scarlet Fever
Amoebic Dysentery	Malaria	Severe Acute Respiratory Syndrome (SARS)
Bacillary Dysentery	Measles	Streptococcus suis infection
Chickenpox	Meningococcal Infections	Tetanus
Cholera	Mumps	Tuberculosis
Dengue Fever	Paratyphoid Fever	Typhoid Fever
Diphtheria	Plague	Typhus
Food Poisoning	Rabies	Viral Hepatitis
Influenza A(H5) / Influenza A(H7) / Influenza A(H9)	Relapsing Fever	Whooping Cough
Japanese Encephalitis	Rubella	Yellow Fever
Legionnaires' Disease		

Radiology & Imaging

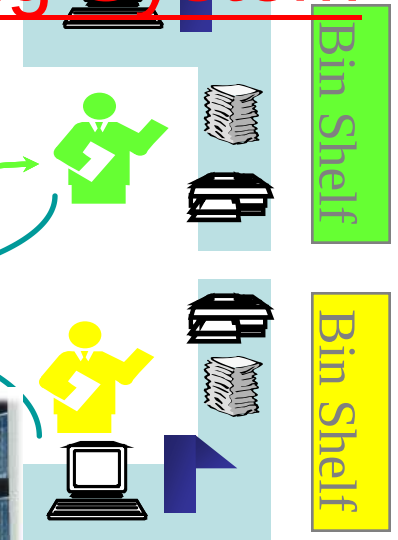
- Radiology Information System (RIS)
- Picture Archiving & Communications Systems (PACS)
- Imaging distribution and filmless operation
- Others
 - Radiology sharing
 - Support of Olympics



Express Dispensing System

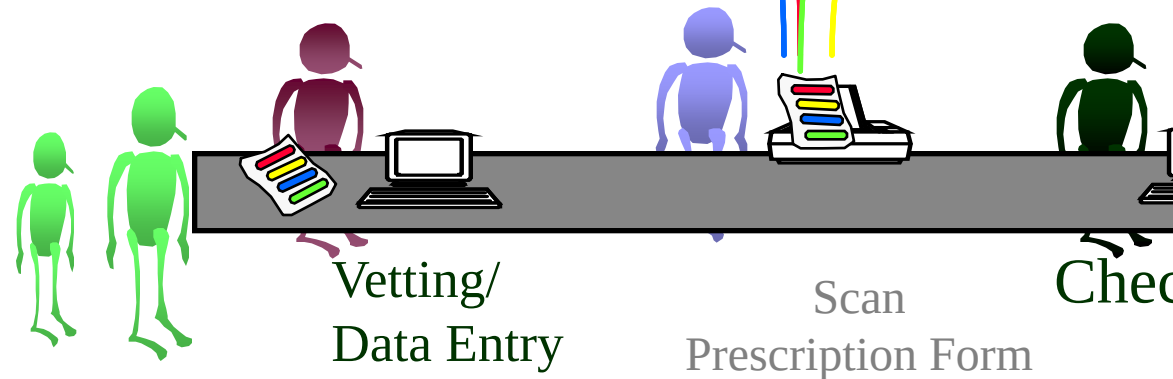
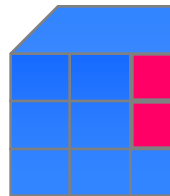


Conveyor Belt

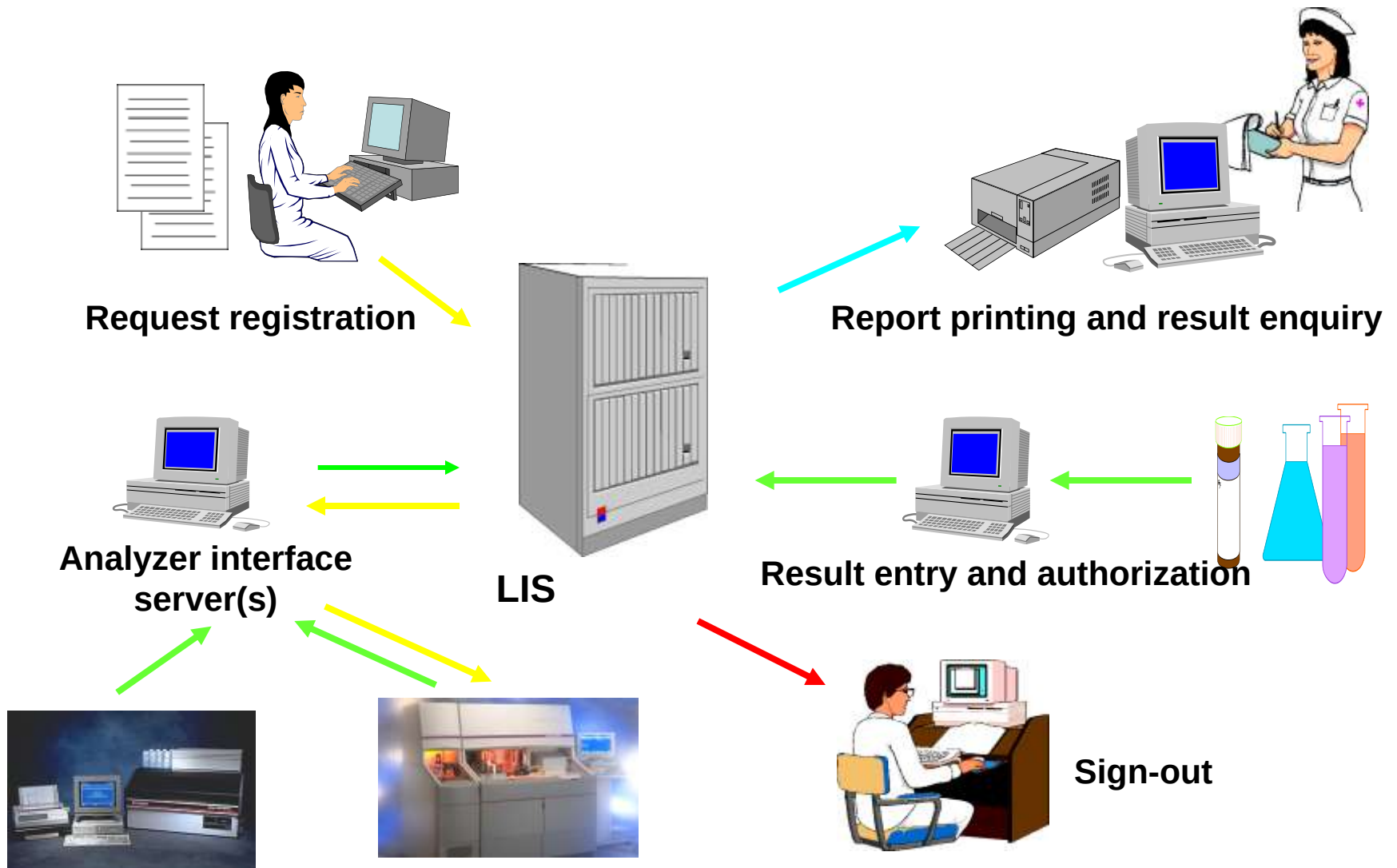


Assembly Line

Pigeon Hole



The workflow in Laboratories



Automation by Interfacing LIS with Analyzers

ATM Production Chemical Pathology 48303 - LIS

File Edit Report Setup Workflow Special Tools ADA Database Panel Help

Upload Results Worksheet

Analysis Rates

Buttons Outstanding Buttons By Criteria Select All Rows Deselect All Rows

Save Results Save Worksheet No Run Select All Columns Deselect All Columns

Update Delete Scale Print Exit

Request No.	DOB	Date	Upload	Cr	PH	PCO2	PO2	SIGA
803999993		17/02/98 10:48:01	4145	1	7.379	3.05	18.94	20.9
803999992		17/02/98 10:45:04	4142	1	7.422	5.19	12.98	25.4
803999991		17/02/98 10:42:38	4134	1	7.157	9.27	7.93	24.1
803999990		17/02/98 10:33:51	4119	1	7.365	8.18	7.51	34.5
803999989		17/02/98 10:31:39	4116	1	7.405	5.20	8.65	24.1
803999987		17/02/98 10:09:40	4108	1	7.382	4.96	4.91	15.8
803999985		17/02/98 08:46:00	4098	1	7.473	5.09	10.62	21.6
803999983		17/02/98 04:22:15	4090	1	7.175	4.57	4.57	15.5

9 of 11

Print
Exit
Select all rows
Deselect all rows
Print all rows
Deselect all rows

Much work
automated by
analyzer interface

Pre-analytical stage

ADA



Test requests automatically
download from LIS to
analyzers, then results
automatically uploaded to
LIS

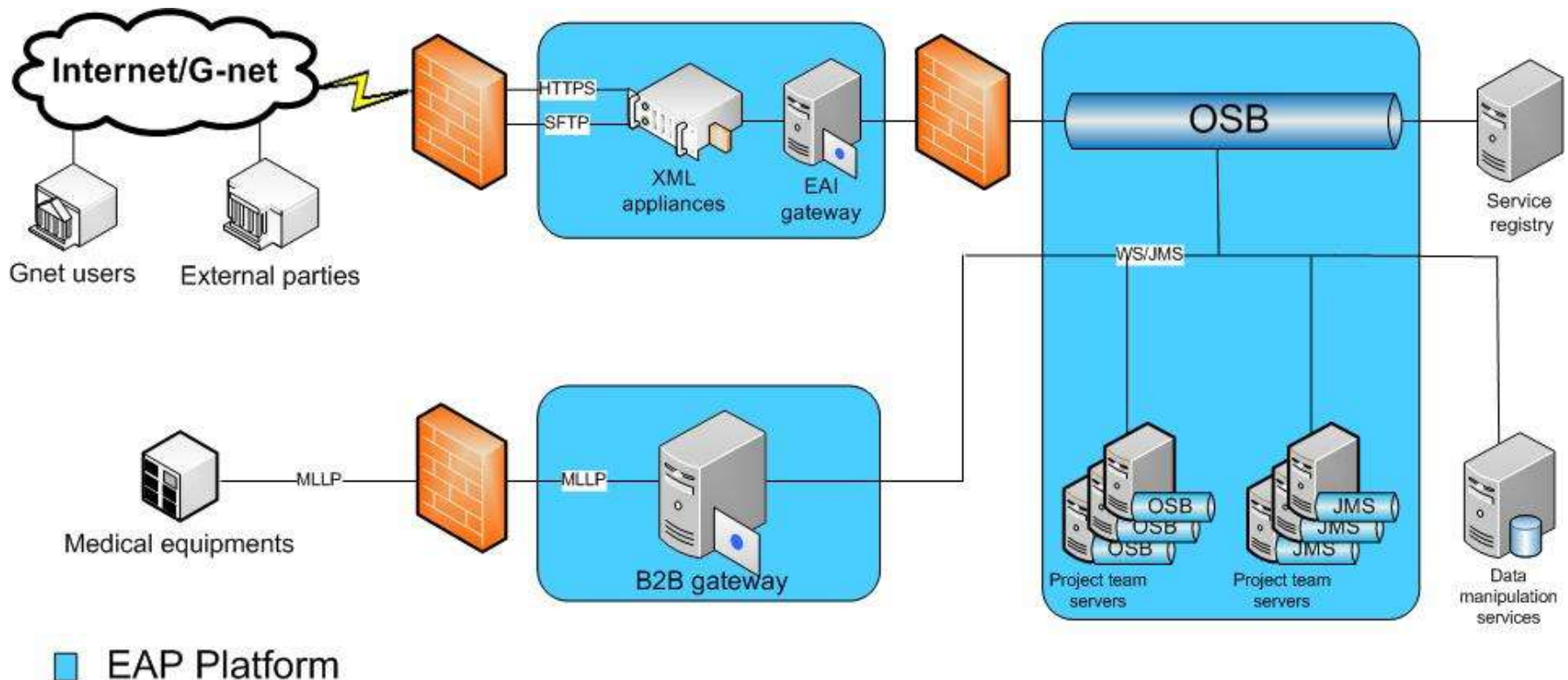
Unidirectional
Interface

Bi-directional
Interface



EAI Gateway with Vendor CIS

- EAI gateway interfaced with Vendor CIS via HL7 message
- Integration service is **SOA compliant**
- Sophisticate security provider and powerful data manipulation tools are used for integration services



Extensive Use of Barcoding



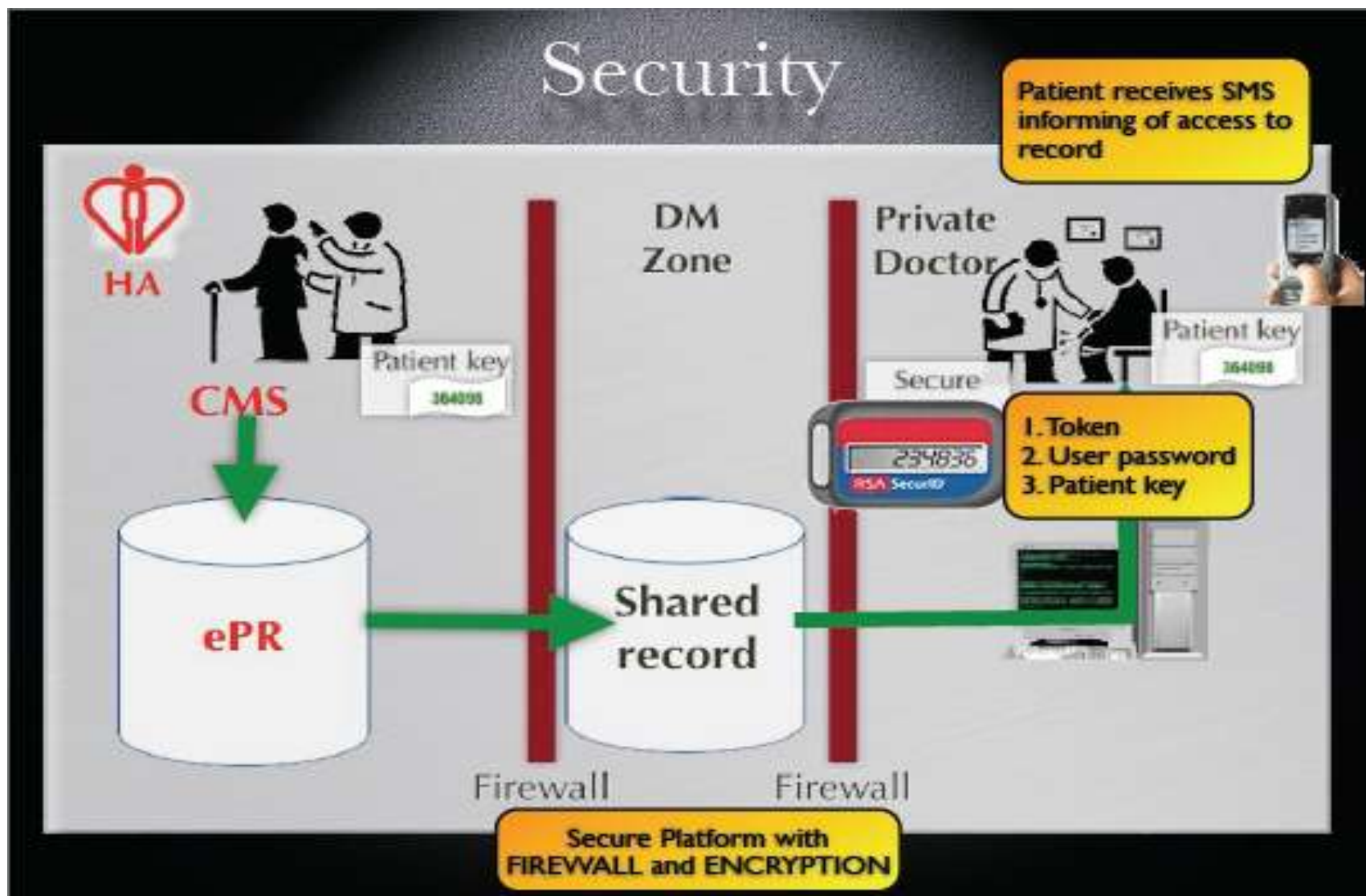
Adult



Paediatric



Sharing HA's ePR with Private Sector Clinicians



**1st
Benefit:**

System Efficiency from Speeding up the Process



**2nd
Benefit:**

Contribution to Patient Safety



Drug Allergy Checking

Drug Allergy Alerts Raised **69,000**

Alert Accepted **32,000 (47%)**

Alert Overridden **37,000 (53%)**

Drug Drug Interaction Checking

DDI Alerts Raised **11,000**

Alert Accepted **4,000 (35%)**

Alert Overridden **7,000 (65%)**

Incidents of Misidentifications in Laboratory Tests

	Hospital A	Hospital B	Hospital C	Hospital D	All hospitals
Before introduction of 2D barcode system					
No. of cases	132	4	59	42	697
After introduction of 2D barcode system					
No. of cases	2	1	2	0	

3rd Benefit:

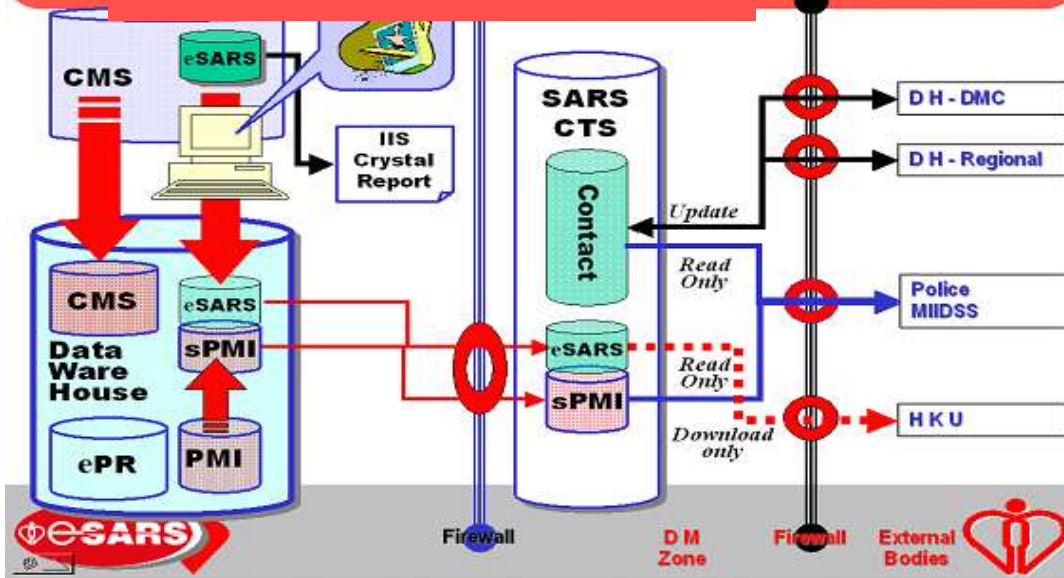
Manage Emergencies (e.g. eSARS >> eFLU)



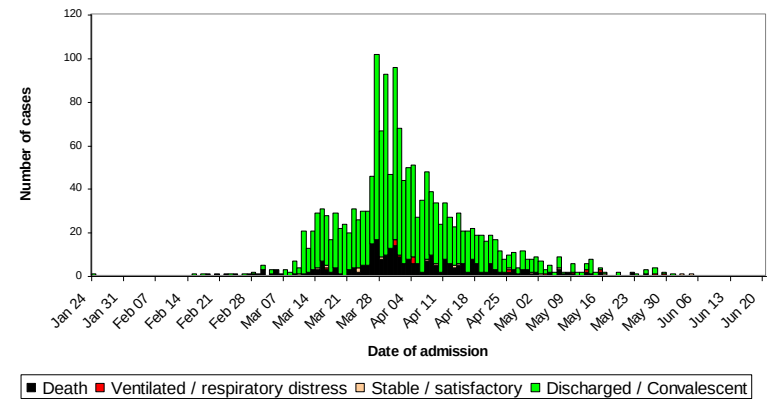
Fatality Rate by Age

Age	25-29	30-34	35-44	45-59	60-74	75+
%	7.0	11.6	14.7	28.0	44.1	73.3

eSARS Architecture 建築



The Hong Kong epidemic



Video Conferencing

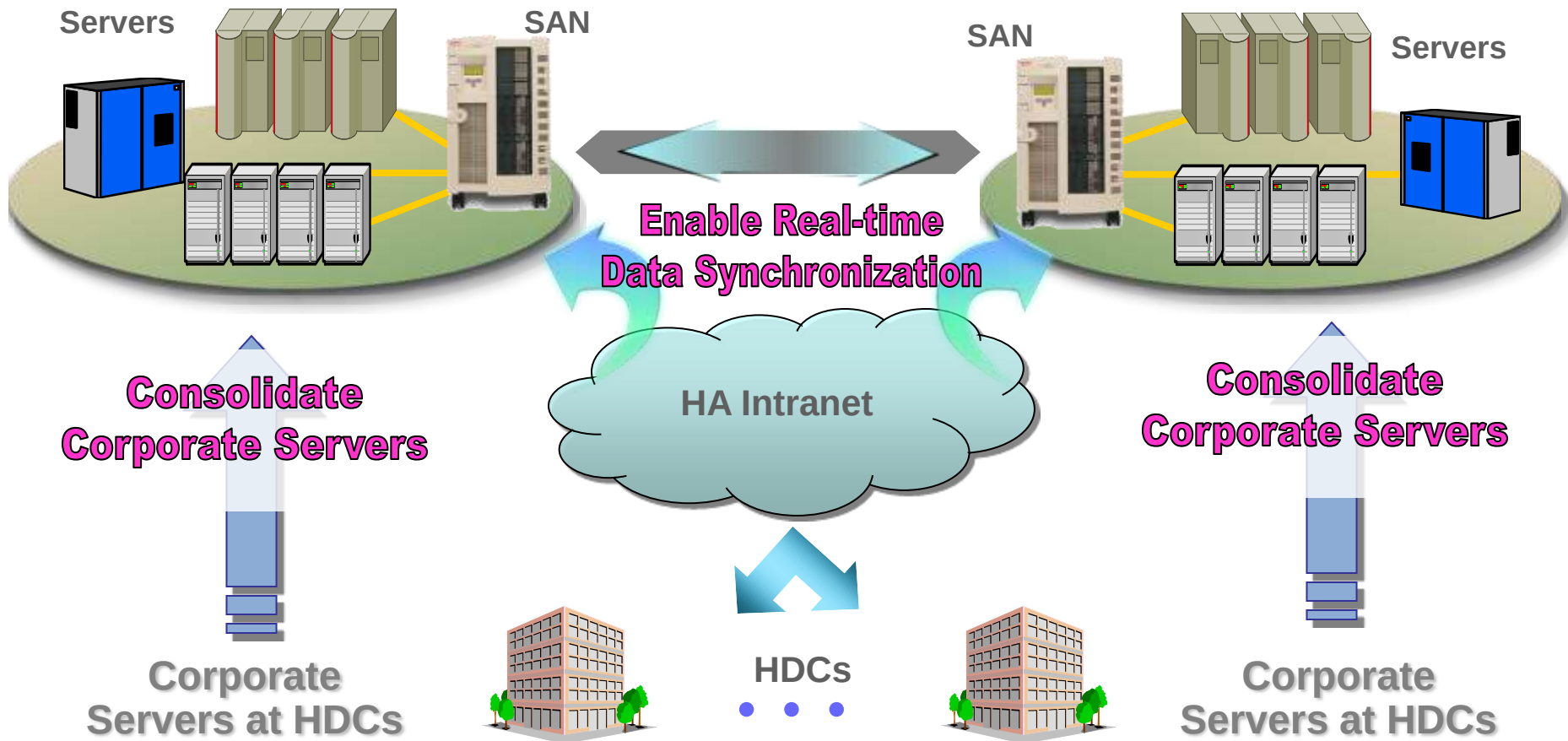


Technical Platform Enhancement

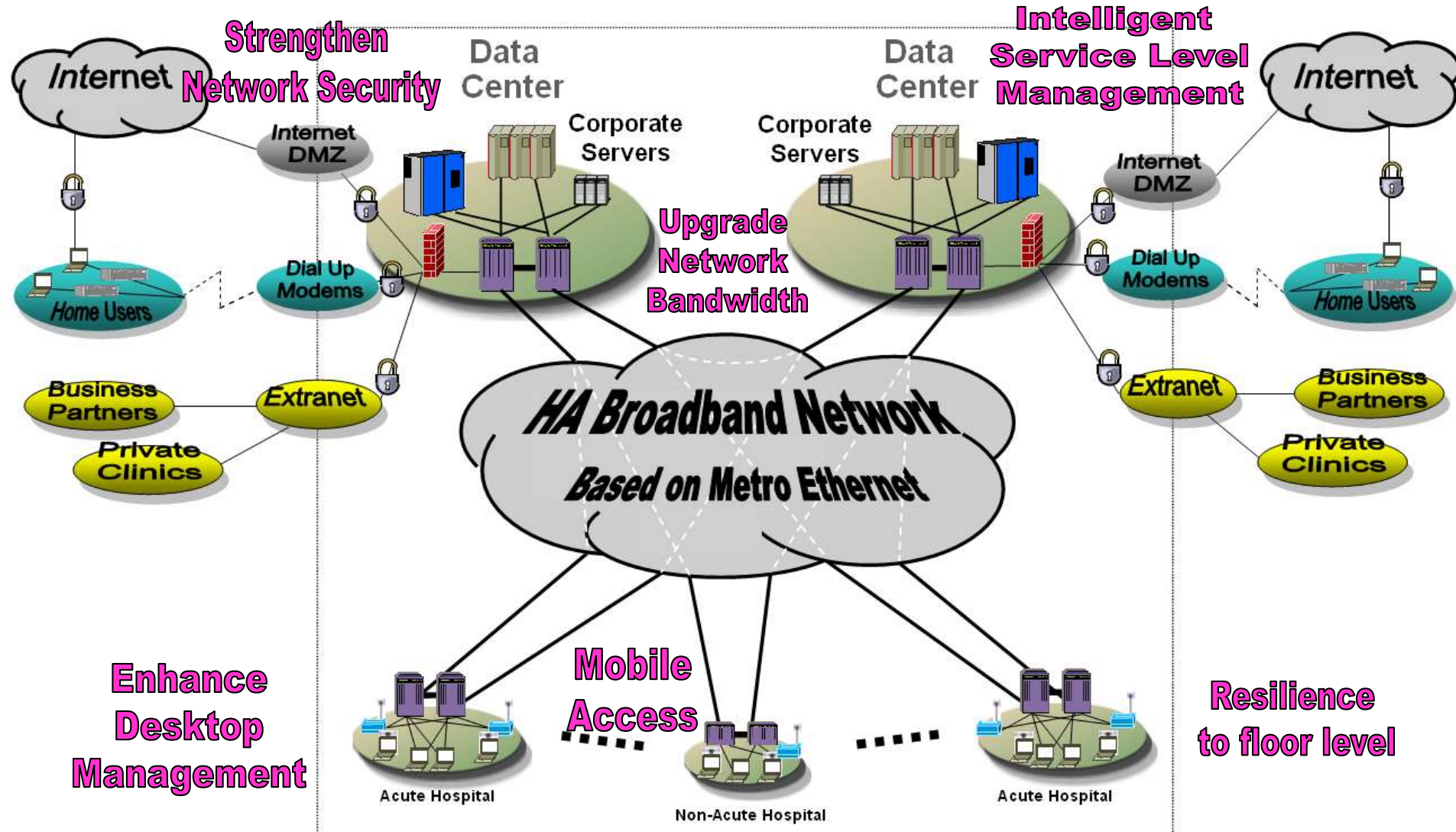
Corporate Production
Data Centre A

**Enhance System &
Storage Management**

Corporate Production
Data Centre B



Network Enhancement



Patient Benefits

- Scheduled appointments for convenience
- Having their whole record available at point of care for more accurate and timely clinical decisions
- No need for repeated tests
- Better quality care through clinical decision support at point of care
- Less repeated studies decreasing radiation exposure



Clinician Benefits

- More efficient clinical practice
- No need to search for information and forms
- Better decision-making with comprehensive information
- Avoid errors associated with paper records



Organization Benefits

- Better use of resources
- Enforcement of policies & best practice at the point of care
- Data for planning, research and management



Forthcoming CMS III...
(2009 – 2013)

Clinical Management System

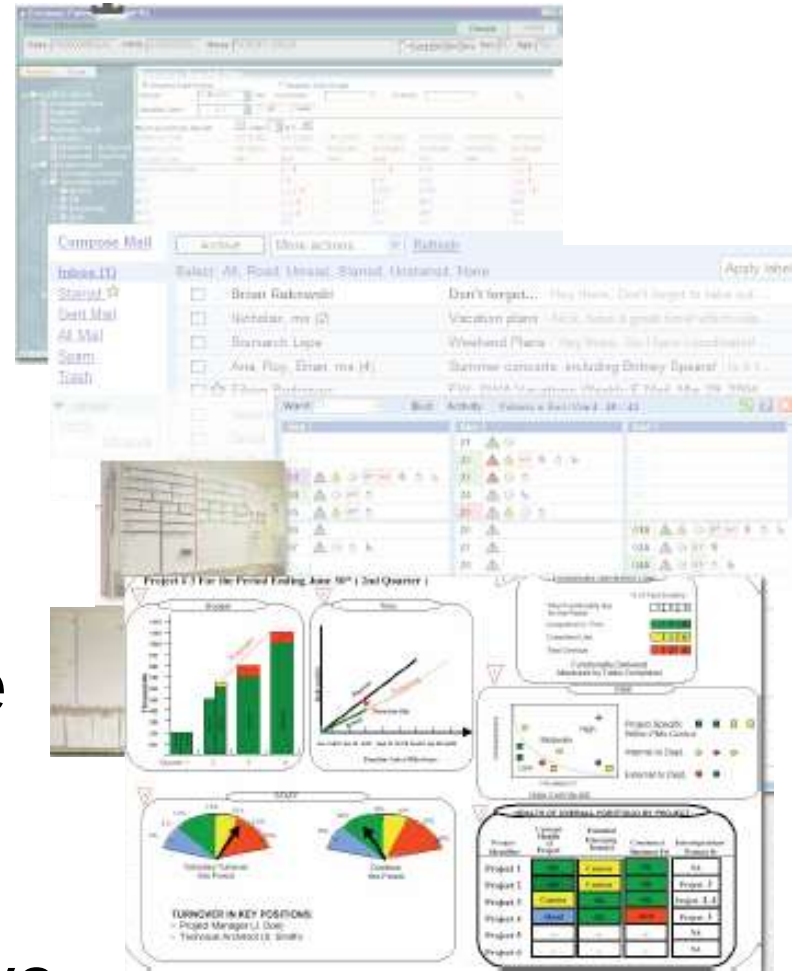
CMS: Integrated clinical workstation for direct use by all 30,000 clinicians in HA

- Phase I (1992-2001) – The Collector
- Phase II (2002-2007) – The Documenter
- *Phase III (2008+)* – *The Helper*
- Phase IV – The Colleague
- Phase V – The Mentor

	Collector	Documentor	Helper	Colleague	Mentor
Clinical documentation & data capture	Scanned documents Transcribed text Scanned results	Simple documentation tools Minimal integration with workflow and decision support	Structured documentation	Complex summaries to	Automatically extract medical concepts
Clinical display	Static graphic or tabular displays Little user configurability	Simple graphic & tabular Clinician-specific views Clinical dashboard	Customizable views Longitudinal views Clinician-dependent views Multiple form factors	Complex graphical presentation	Population-specific cohort data
Clinical workflow	CMS Phase III	Physician-order entry (POE) Traditional workflow	Automatic notification Workflow tied to CDS & rule-based logic	Workflow management	Diagnostic workup
Clinical decision support		Drug-drug interaction Drug allergies	Pathways, CDS	Complex CDSS	
Store	Simple database design No structured data	Uniform file system Flexible data structure	Complex data structure Complex data structure	Complexity of information-communication or delete, only annotated or amended	Archiving capabilities
Knowledge management		Minimal access to medical references	Internal & external knowledge bases Case management protocols & outcome analysis	Internal & external knowledge bases Case management protocols & outcome analysis	Internal & external knowledge bases Case management protocols & outcome analysis
Security	Password	Role-based access	Two factor security Notification of unauthorized viewing	Segmented view Rule-based audit trails Digital signatures	Change
Process & communication	One-way interface, only download from departmental system	Bidirectional communication with other systems	Within & outside organization Link to e-HR, XML	Bidirectional communication with e-HR & facilities	Full communication with outside & e-HR with communications to

4 Perspectives

1. Patient Perspective
2. Clinician Perspective
3. Operational Perspective
4. Management Perspective



4 Strategic Objectives

1. Develop the content
 - Standards-based, comprehensive, multimedia patient-based ePR
2. Facilitate the process
 - Support for operational care processes
 - Workflow management and communication tools
3. Improve the outcome
 - Clinical decision support at point of care
 - Support for QA activities
4. ***Extend to the Community***

9 Major Priorities

- ✓ The Intelligent Record
- ✓ Risk Reduction and Patient Safety
- ✓ IPMOE
- ✓ Filmless Hospital
- ✓ Advanced Systems Architecture and Information Architecture
- ✓ Informational Systems
- ✓ eHealth and Integrating Healthcare Sectors
- ✓ Departmental Systems
- ✓ Health Informatics as a Specialty

Principles of Development

- ✓ “Engage and align”
 - Broad-based clinical systems governance process
- ✓ “Develop and roll”
 - Phase approach, constant user benefits
- ✓ “Generic and standardised”
 - Configurable and sustainable
- ✓ “Manage the information value chain”
 - Data definition, collection, reuse, aggregation, presentation
- ✓ “Keep the good”
 - Migrate gradually and preserve the value

End

传染病通报系统

**Notifiable Disease and Outbreak
Reporting System (NDORS)**