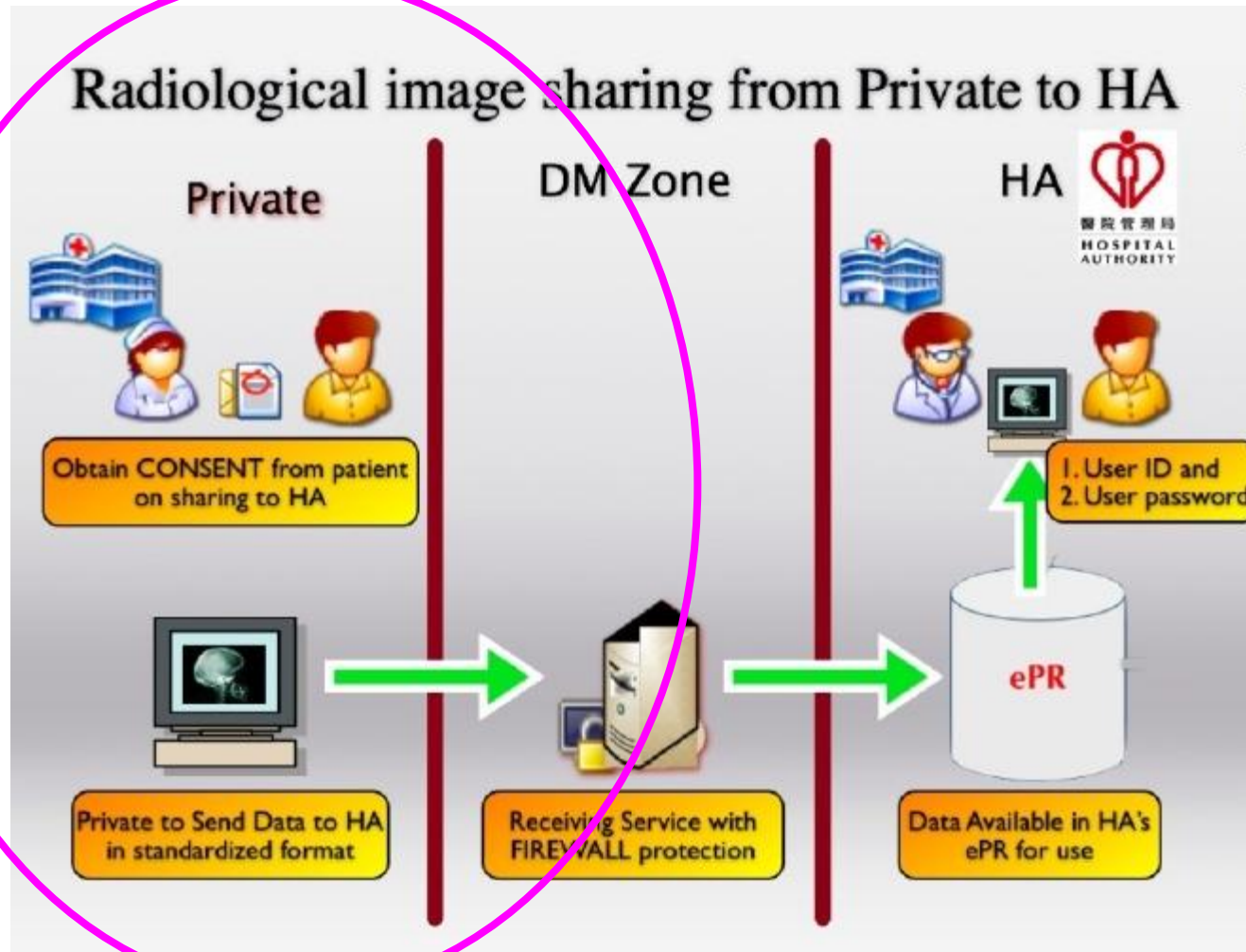


# Experience Sharing – Issues in a Private Hospital Radiology Department

Edward Wong  
Chief Radiographer (PACS)  
Fellow HKCRRT



# Some Facts



# Our System



GE PACS  
GE RIS

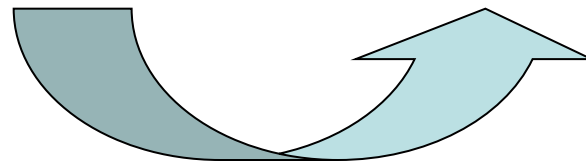


HIS Folder &  
Gateway

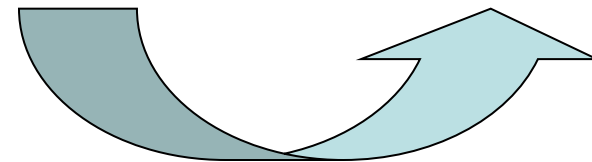


醫院管理局  
HOSPITAL  
AUTHORITY

HA EAI  
HA Gateway



DICOM images / PDF Reports



HL7 message / DICOM images



# Some Facts

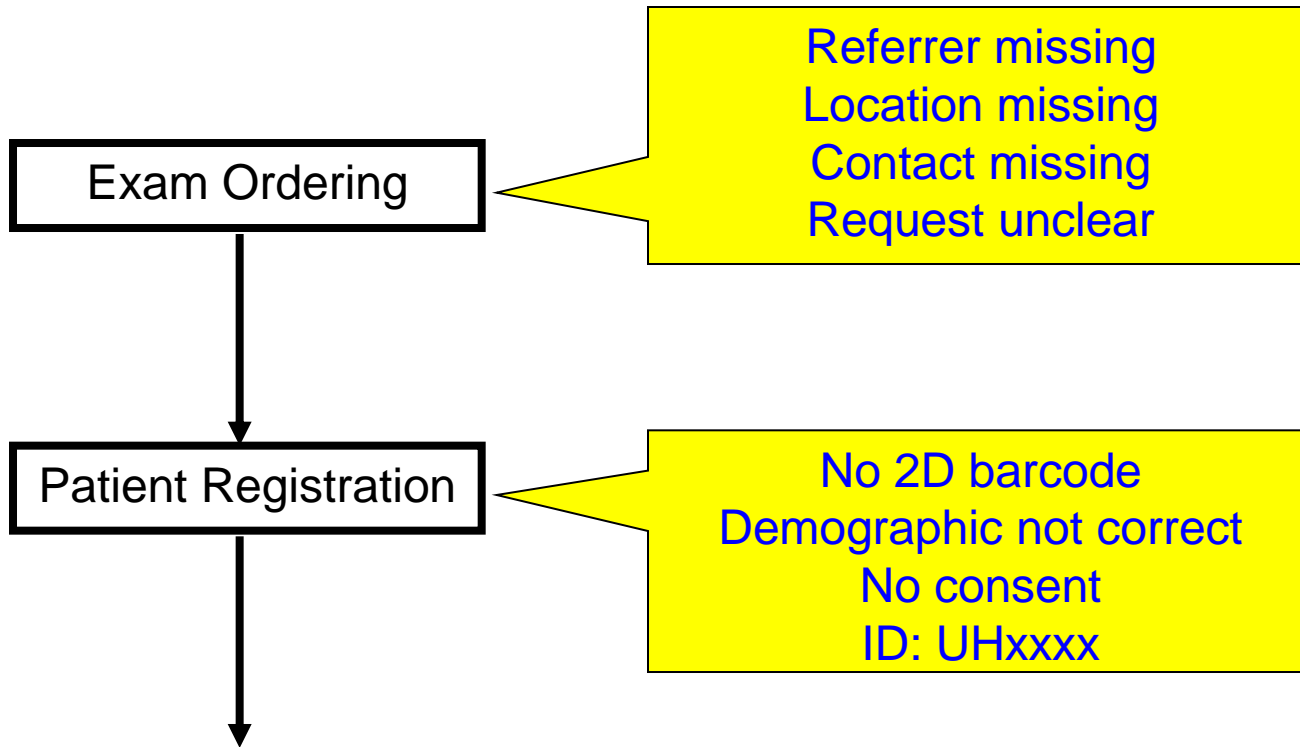
<b>Statistics</b>	
Period of 18 months from Jan 2009 to Jun 2010	
Total number of patients	3528
Total number of examinations	4280

Published in SIIM 2011, USA

Summary of errors	Number of patients	%
Image validation failure	26	3.6
Report validation failure	90	2.6
Study Description issue	72	2.0
<b>Total</b>	<b>288</b>	<b>8.2</b>
Image and report transfer related	Number of exams	%
Image validation failure	180	4.2
Report validation failure	72	1.7
Study Description issue	1	~
Image compression issue	2	~
<b>Total</b>	<b>255</b>	<b>7.2</b>



# Problems (Registration)

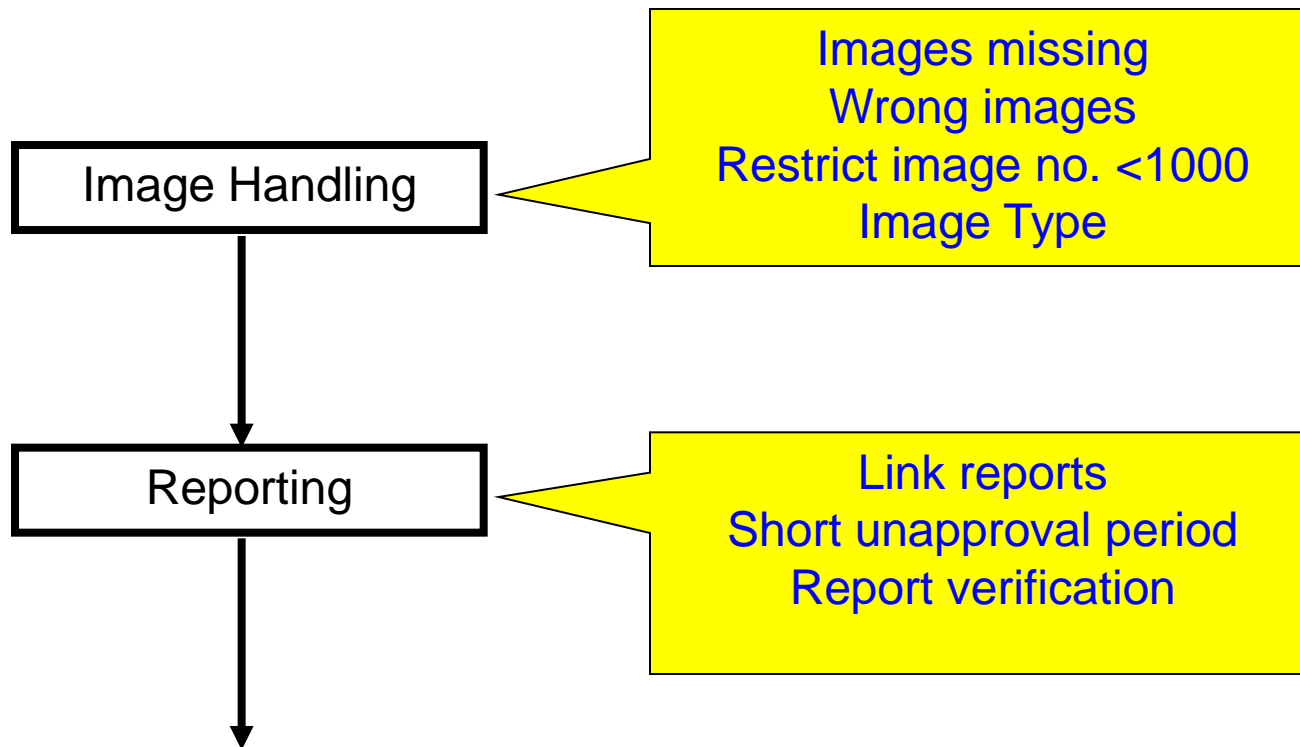


# Patient Identity

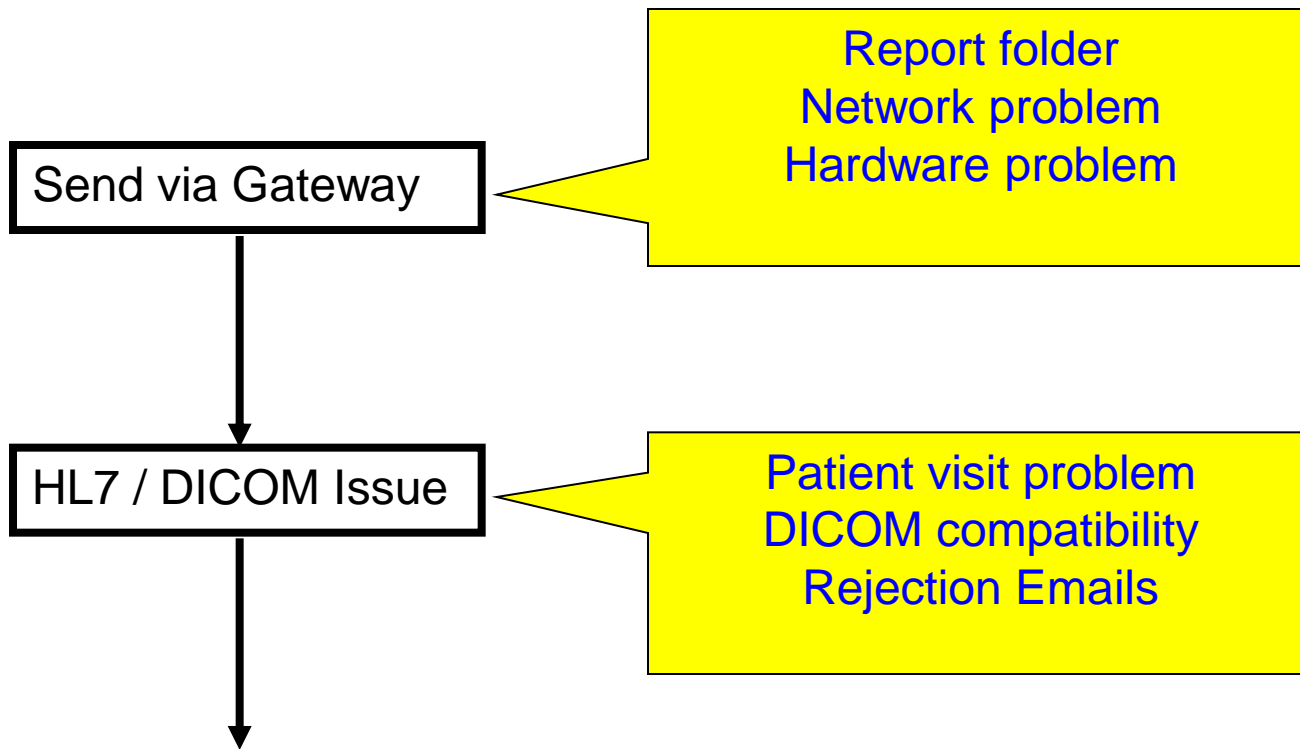
- Hospital will rely on Patient ID shown on site
  - Patient HA ID input through consent page (deliberately wrong input)
  - Hospital will revise Patient ID accordingly before sending to HA gateway
- Ask ONCE for latest information
- Ignore UHxxxxx for Non-residency



# Problems (Examination)



# Problems (Data Transfer)



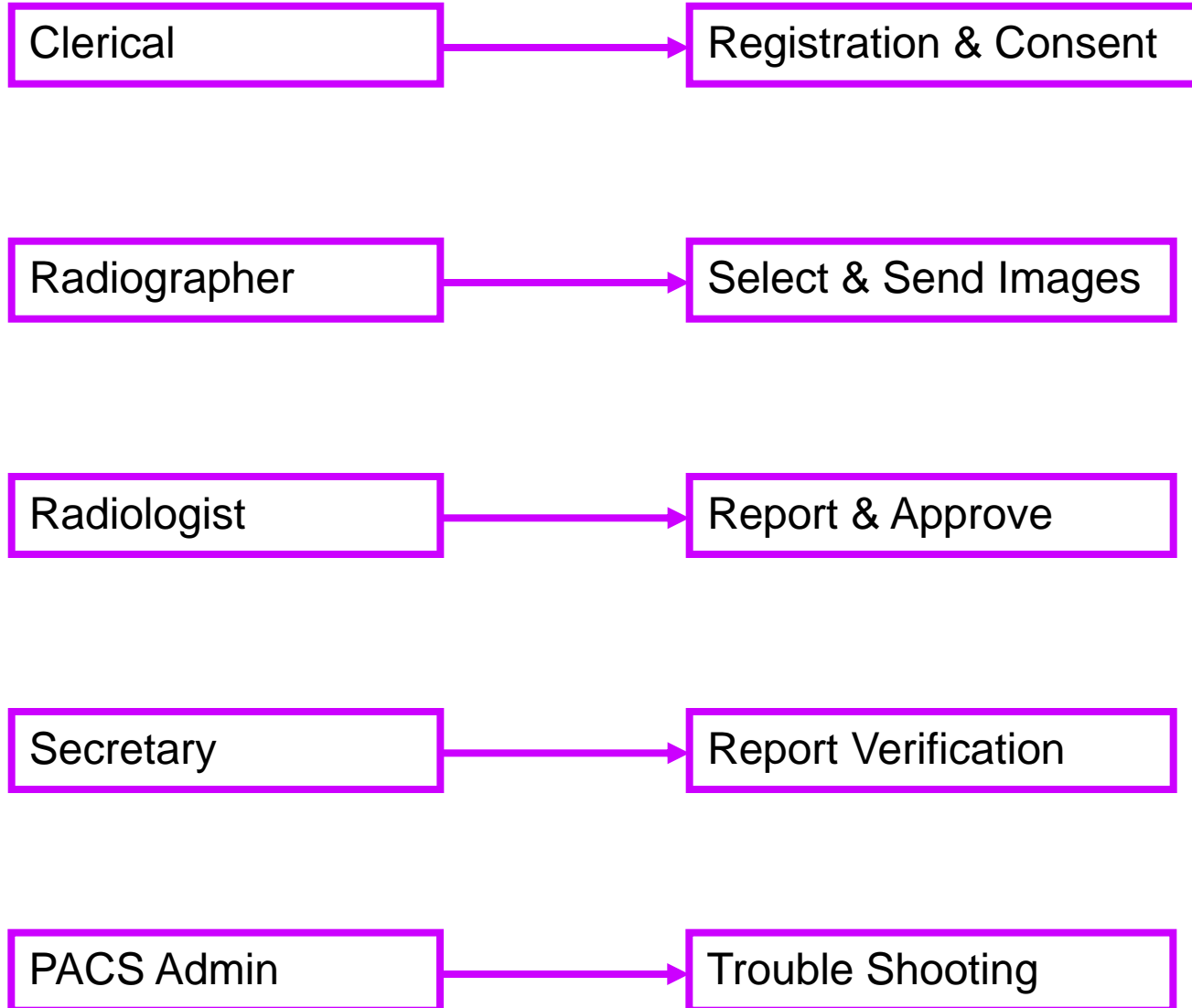


# Report & Images

- Resent image
  - Copy and rename images to generate new UID
- Resent report
  - Same file name will overwrite the old report
- **Wrong data** sent
  - Inform by email; audit trail by HA



# Different Roles



# Check-In Queue

Send Hospital Authority List

Radiology Image Sharing Project

X-Ray

S M T W T F S  
 1 2 3  
 4 5 6 7 8 9 10  
 11 12 13 14 15 16 17  
 18 19 20 21 22 23 24  
 25 26 27 28 29 30

< September 2011 T >

View Field Content

Action

Send Queue - Date      Send Queue Pending - All      **Check-in Queue - Date**

23/09/2011

	Check-in Time	Name	Sex/Age	HKID	Dept	Hospital Authority	HA Send Status
1	23/09/2011 08:44:49		F / 50 Y		CT	[HA] [Consent]	Pending
2	23/09/2011 09:07:14		F / 49 Y		US	[HA] [Consent]	Successful
3	23/09/2011 09:33:47		F / 67 Y		CT	[HA] [Consent]	Successful
4	23/09/2011 09:55:35		F / 51 Y		CT	[HA] [Consent]	Successful
5	23/09/2011 10:15:47		F / 70 Y		CT	[HA] [Consent]	Successful
6	23/09/2011 13:12:26		M / 32 Y		MRI	[HA] [Consent]	Successful
7	23/09/2011 13:18:47		F / 58 Y		CT	[HA] [Consent]	Successful
8	23/09/2011 15:25:56		M / 63 Y		CT	[HA] [Consent]	Pending
9	23/09/2011 15:31:38		M / 49 Y		US	[HA] [Consent]	Successful

QID=9036 HAAccessionNo=HKSXR1100088492N ExamID=668619  
 QID=9042 HAAccessionNo=HKSXR1100088636P ExamID=667352 XMLsent=23/09/2011 19:30:18  
 QID=9037 HAAccessionNo=HKSXR1100088523L ExamID=668501 XMLsent=23/09/2011 19:38:40  
 QID=9040 HAAccessionNo=HKSXR1100088573N ExamID=662725 XMLsent=23/09/2011 19:30:51  
 QID=9035 HAAccessionNo=HKSXR1100088522O ExamID=668495 XMLsent=23/09/2011 19:31:05  
 QID=9034 HAAccessionNo=HKSXR1100088595K ExamID=668681 XMLsent=23/09/2011 19:31:21  
 QID=9038 HAAccessionNo=HKSXR1100088603O ExamID=669064 XMLsent=23/09/2011 19:31:29  
 QID=9043 HAAccessionNo=HKSXR1100088669F ExamID=669085  
 QID=9041 HAAccessionNo=HKSXR1100088652I ExamID=668531 XMLsent=23/09/2011 19:31:37

Show Hospital Authority patient only

Search By: ExamID HKID      Reload every 60 second(s).      Load Data Time: 24/09/2011 10:26:33      Reload

QID	Send Count	HospAuth Return Successful	Update GEGW Successful	LastUpdate Time

View Sending Log


View Field Content

HIS registration



# Send Queue Check

**Send Hospital Authority List**



**Radiology Image  
Sharing Project**

X-Ray

S M T W T F S

1 2 3

4 5 6 7 8 9 10

11 12 13 14 15 16 17

18 19 20 21 22 **23** 24

25 26 27 28 29 30

September 2011 T

	QID	ExamID	Insert Rec Time	Send Status	Send HospAuth	Send GE GW
23/09/2011						
1	9030	667339	23/09/2011 09:12:56	Processed	23/09/2011 10:37:45 OK	23/09/2011 10:37:43 OK
HA Accession No: HKSXR11000881300 [Send Hospital Authority HL7 Transaction=INSERT] HKID: Name: Sex: M DOB: 2 Consent: Y						
2	9031	665600	23/09/2011 11:40:17	Processed	23/09/2011 19:29:18 OK	23/09/2011 19:29:16 OK
HA Accession No: HKSXR11000875030 [Send Hospital Authority HL7 Transaction=INSERT] HKID: Name: Sex: M DOB: 1 Consent: Y (9840)						
3	9032	668162	23/09/2011 12:01:26	Processed	23/09/2011 19:29:37 OK	23/09/2011 19:29:36 OK
HA Accession No: HKSXR1100088156K [Send Hospital Authority HL7 Transaction=INSERT] HKID: Name: Sex: M DOB: 2 Consent: Y (9864)						
4	9033	667261	23/09/2011 12:26:21	Processed	23/09/2011 19:29:55 OK	23/09/2011 19:29:54 OK
HA Accession No: HKSXR1100088225J [Send Hospital Authority HL7 Transaction=INSERT] HKID: Name: Sex: M DOB: Consent: Y (9866)						
5	9034	668681	23/09/2011 15:37:48	Processed	23/09/2011 19:31:17 OK	23/09/2011 19:31:16 OK
HA Accession No: HKSXR1100088595K [Send Hospital Authority HL7 Transaction=INSERT] HKID: Name: Sex: M DOB: 9 Consent: Y (9874)						
6	9035	668495	23/09/2011 16:45:53	Processed	23/09/2011 19:31:03 OK	23/09/2011 19:31:02 OK
HA Accession No: HKSXR1100088522O [Send Hospital Authority HL7 Transaction=INSERT] HKID: Name: Sex: F DOB: Consent: Y HAEpisodeNo: HN110373174						
7	9036	668619	23/09/2011 17:22:22	Pending		24/09/2011 10:26:08 Error
HA Accession No: HKSXR1100088492N HKID: Name: Sex: F DOB: Consent: Y HAEpisodeNo: SHBP1110910Y						

Search By:

ExamID

HKID

Reload every 60 second(s).

Load Data Time: 24/09/2011 10:26:33

**Reload**

**Export Daily List**

**Export Monthly List**

Pending "Verify Report": Use the feature "Verify Report"

**View Sending Log**

QID	Send Count	HospAuth Return Successful	Update GEGW Successful	LastUpdate Time

**View Field Content**



# Quick Check Page

**Send Hospital Authority Enquiry**

ExamID:  HAAccessionNo:

Advanced Checking - Search ExamID:

ExamID:  HA Acc No:

PDF Report Ready:  Verified:

HL7 Sent to HospAuth:

DICOM Sent to HA:

[Radiology PACS ExamID]

ExamID	HAAccessionNo	Date	Modality	Procedure	Status
--------	---------------	------	----------	-----------	--------

[Radiology PACS Send HospAuth Queue] ?

ID	HAAccessionNo	Verify PDF Report	Send HL7 Report	Send DICOM Images	Resend Record
----	---------------	-------------------	-----------------	-------------------	---------------

If no record in [Radiology PACS Send HospAuth Queue] ?

[XRay Patient] / [XRay CaselInfo]

Dept / File No	CaselID	LastUpdate Staff
----------------	---------	------------------

[Radiology Checkin Queue] ?

QueueID	PACSVisitID	Dept	Casel
---------	-------------	------	-------

[Hospital Authority CaselInfo] ?

HA CaselID	Consent	2D bar	HKID
------------	---------	--------	------

Load ExamID:667204 into Advanced Checking screen?

HA Request  
Accession No.



# Quick Check Page

**Send Hospital Authority Enquiry**

ExamID:  HAAccessionNo:  HKSXR1100087300L=667204

**Advanced Checking - Search ExamID:**

ExamID:  HA Acc No:

PDF Report Ready:  Verified:

HL7 Sent to HospAuth:

DICOM Sent to HA:

Female 62 Y DOB: 08/1  Tel:

[Radiology PACS ExamID]

	ExamID	HAAccessionNo	Date	Modality	Procedure	Status	PACSVisitID
1	667204	HKSXR1100087300L	20/09/2011 15:05:00	CT	CT-THORAX+ABDOMEN+PELVIS ...	APPROVED	CT_552541_GOV

[Radiology PACS Send HospAuth Queue] ?

	ID	HAAccessionNo	Verify PDF Report	Send HL7 Report	Send DICOM Images	Resend Record
1	9001	HKSXR1100087300L	Jeor K. S. P. 21/09/2011 ...	21/09/2011 09:16:57	21/09/2011 09:16:56	Jeor K. S. P. 21/09/2011

If no record in [Radiology PACS Send HospAuth Queue]: 1st Try [Toggle Exam Status] 2nd Try [Switch Queue]

[XRay Patient] / [XRay CaselInfo]

	Dept/ File No	CaseID	Checkin Time	HospNo	Deleted	LastUpdate Staff
1	CT/088583	552541	20/09/2011 13:01:46			Sum M.F. at 20/09/2011 13:02:00

[Radiology Checkin Queue] ?

	QueueID	PACSVisitID	Dept	CaseID
1	629723	CT_552541_GOV	CT	552541

[Hospital Authority CaselInfo] ?

Insent	2D bar	HKID	Name
Y			



# Quick Check Page

- Consent
- Name / ID / DOB
- Modality
- Report Approved / Verified
- HL7 / DICOM Sent
- Time Indicator



# Refresh Hospital Status

Send Hospital Authority List

**Radiology Image Sharing Project**

X-Ray

S M T W T F S  
 1 2 3  
 4 5 6 7 8 9 10  
 11 12 13 14 15 16 17  
 18 19 20 21 22 23 24  
 25 26 27 28 29 30

September 2011 T

View Field Content

Action

Search By:  
 ExamID HKID

View Sending Log

View Field Content

Send Queue - Date		Send Queue Pending - All		Check-in Queue - Date		
23/09/2011						
QID	ExamID	Insert Rec Time	Send Status	Send HospAuth	Send GE GW	
3	9032 668162	23/09/2011 12:01:26	Processed	23/09/2011 19:29:37 OK	23/09/2011 19:29:36 OK	
HA Accession No: HKSXR1100088156K [Send Hospital Authority HL7 Transaction=INSERT] HKID Name: Sex: M DOB: Consent: Y (9864)						
4	9033 667261	23/09/2011 12:26:21	Processed	23/09/2011 19:29:55 OK	23/09/2011 19:29:54 OK	
HA Accession No: HKSXR1100088225J [Send Hospital Authority HL7 Transaction=INSERT] HKID Name: DOB: Consent: Y (9866)						
5	QID:9037 HKID Name AccessionNo:HKSXR1100088523L ExamID:66850					
<input checked="" type="radio"/> Re-send <input type="checkbox"/> Re-send HL7 report						
<input type="checkbox"/> Re-send DICOM image						
<input type="radio"/> Cancel Avoid this record from being processed and sent. You may re-send at a later time. 阻止這個記錄被處理. 你可以遲些重新傳送這個記錄.						
<input type="radio"/> Delete <b>Warning: This will totally delete this record in Hospital Authority and we cannot resend the same record. Please use with care. Usually for mis-matched patient only.</b> <b>警告: 醫管局內這個記錄將被刪除, 並不能再重新傳送這份報告, 只可使用新ExamID再傳送. 請小心使用. 通常只適合 "照錯病人" 使用.</b>						
Remarks: 備註欄:						
For more information, please contact I.T. Department ext 8090. 如有疑問請致電資訊科技部 ext 8090.						
			OK	Cancel		





# Email Handling

Check email from Hospital Authority Reject emails

Read Mails Quit

	Email Receive Time	Dept	ExamID	HAAccessionNo	Type	Date Time	Message	
1	Wed, 7 Sep 2011 19:31:34 +0800	XRAY	662384	HKSEX1100082974P	DICOM	2011-09-07 19:31:31	StudyValidation failed	HKS
2	Wed, 7 Sep 2011 20:14:47 +0800	XRAY	661113	HKSEX1100080950O	PDF	2011-09-07 20:14:47	Name mismatched	HKS
3	Wed, 7 Sep 2011 20:48:20 +0800	XRAY	661113	HKSEX1100080950O	DICOM	2011-09-07 20:48:19	StudyValidation failed	HKS
4	Thu, 8 Sep 2011 20:02:54 +0800	XRAY	662901	HKSEX1100083288G	DICOM	2011-09-08 20:02:54	StudyValidation failed	HKS
5	Sat, 10 Sep 2011 15:25:55 +0800	XRAY	656311	HKSEX1100084015O	DICOM	2011-09-10 15:25:54	StudyValidation failed	HKS
6	Mon, 12 Sep 2011 14:56:20 +0800	XRAY	662942	HKSEX1100084354I	PDF	2011-09-12 14:56:18	Name mismatched	HKS
7	Mon, 12 Sep 2011 15:28:19 +0800	XRAY	662942	HKSEX1100084354I	DICOM	2011-09-12 15:28:17	StudyValidation failed	HKS
8	Wed, 14 Sep 2011 21:17:11 +0800	XRAY	663800	HKSEX1100084524K	PDF	2011-09-14 21:17:10	Name mismatched	HKS
9	Wed, 14 Sep 2011 21:48:35 +0800	XRAY	663800	HKSEX1100084524K	DICOM	2011-09-14 21:48:34	StudyValidation failed	HKS
10	Tue, 20 Sep 2011 18:57:06 +0800	XRAY	667204	HKSEX1100087300L	PDF	2011-09-20 18:57:04	Name mismatched	HKS
11	Tue, 20 Sep 2011 19:39:17 +0800	XRAY	667204	HKSEX1100087300L	DICOM	2011-09-20 19:39:16	StudyValidation failed	HKS



# Other problems

- Allergy History
- Insufficient Preparation
- FU before Reporting
- ePR Viewing not possible

**Not mandatory for results;  
we provide Film and CD !**



# Solutions

<b>Figure 2: Problems and Solutions</b>	
<b>Registration related</b>	<b>Solutions</b>
Invalid request or missing information	-Train up staffs from requesting hospitals -Streamline and integration of workflow
Patient unwilling to sign consent form	-Educate and explain to the patients
Invalid patient identification documents	-Educate and explain to the patients
<b>Image and report transfer related</b>	<b>Solutions</b>
Image validation failure	-Educate the staffs performing the study
Report validation failure	-Educate the secretaries drafting the report
Study Description issue	-Standardize DICOM information
Image compression issue	-Thorough testing for new modalities

**IT can Play a Strong Role**



# Summary

- Compile with HA defined workflow and requirement
- Develop your own Logistics
- Meeting with HA ITD periodically
- Communicate through email
- Training and education:- staff / patients



# Thanks

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