



EMC ratkaisuja terveydenhuollossa

Avoimet rajapinnat – kuvantaminen –
yhteinen tietovarasto ja sitä
hyödyntävät sovellukset

Ari Mattila
Staff Systems Engineer
EMC



5,000 healthcare customers worldwide

92% of hospitals with 500+ beds

#1 healthcare storage vendor

52% of all healthcare customers
are EMC customers

INTEGRATES

with existing
clinical
applications

MEETS

the varying
information
need of clinicians

REDUCES

the TCO in
information
technology

OUR APPROACH

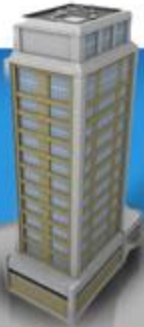
AGGREGATE

SHARE

OPTIMIZE

DIGITIZE INFORMATION

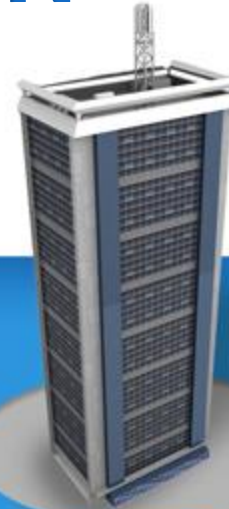
**REGIONAL
ARCHIVES**



PAYER



AMBULATORY



LABS



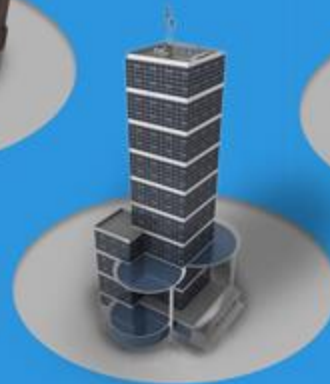
**NATIONAL
ARCHIVES**



CITIZENS



INSURERS



HOSPITAL



**RESEARCH
ORGANIZATION**



CONNECT INFORMATION



ENTITIES SHARE PATIENT RECORDS

TRANSFORM INFORMATION



**INFORMATION, PROCESS, COLLABORATION, AND
ANALYTICS**

EPR'S STILL FALL SHORT OF A PATIENT CENTRIC VIEW



Too many
formats and
applications

Information
lives in siloed
locations

Electronic
records are
incomplete

Information is
trapped in paper
medical records



DOCUMENT
IMAGING FOR
MEDICAL
RECORDS



MEDICAL IMAGE
SHARING AND
MANAGEMENT



VIRTUAL PATIENT
INFORMATION
REPOSITORY

INTEGRATED PATIENT RECORD SOLUTIONS

DOCUMENT IMAGING FOR MEDICAL RECORDS



Intelligently
capture document



Automatically
classify and index



Extract and
validate key data



Link files
to the EPR

Capture Strategy



DOCUMENT
IMAGING FOR
MEDICAL
RECORDS

- **Back Scanning**
Full scanning of all medical records
- **Scan on Demand**
Scan records when requested, either for inpatients or outpatient appointments.
- **Scan on Return**
Scan the patient records once they have been returned prior to referral
- **Facilities Management**
EMC Supplied licenses with bureau staff provided on-site to fast-track the scanning process and transfer knowledge to records staff



DOCUMENT
IMAGING FOR
MEDICAL
RECORDS



MEDICAL IMAGE
SHARING AND
MANAGEMENT



VIRTUAL PATIENT
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MEDICAL IMAGE SHARING AND MANAGEMENT

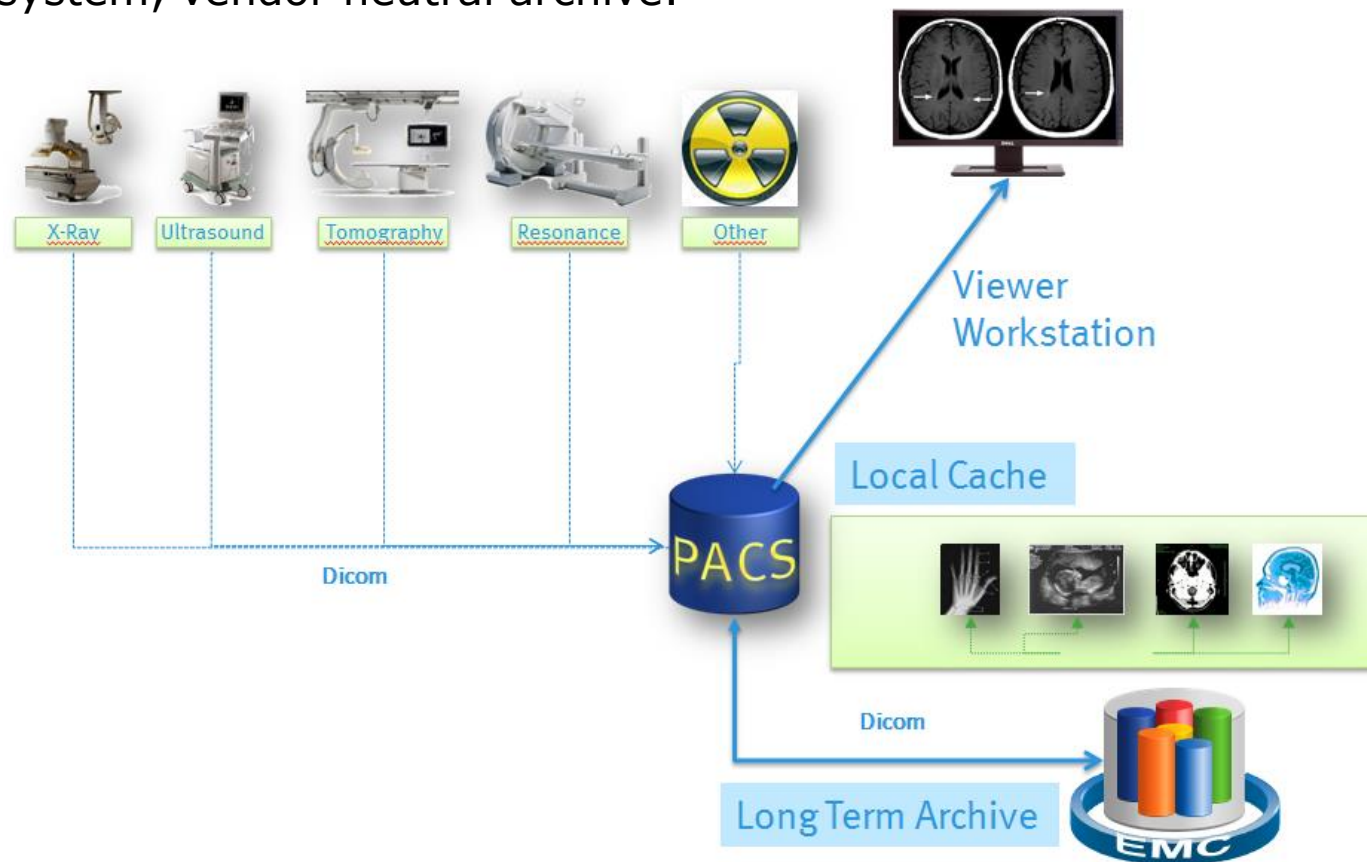


Medical Image Sharing & Management



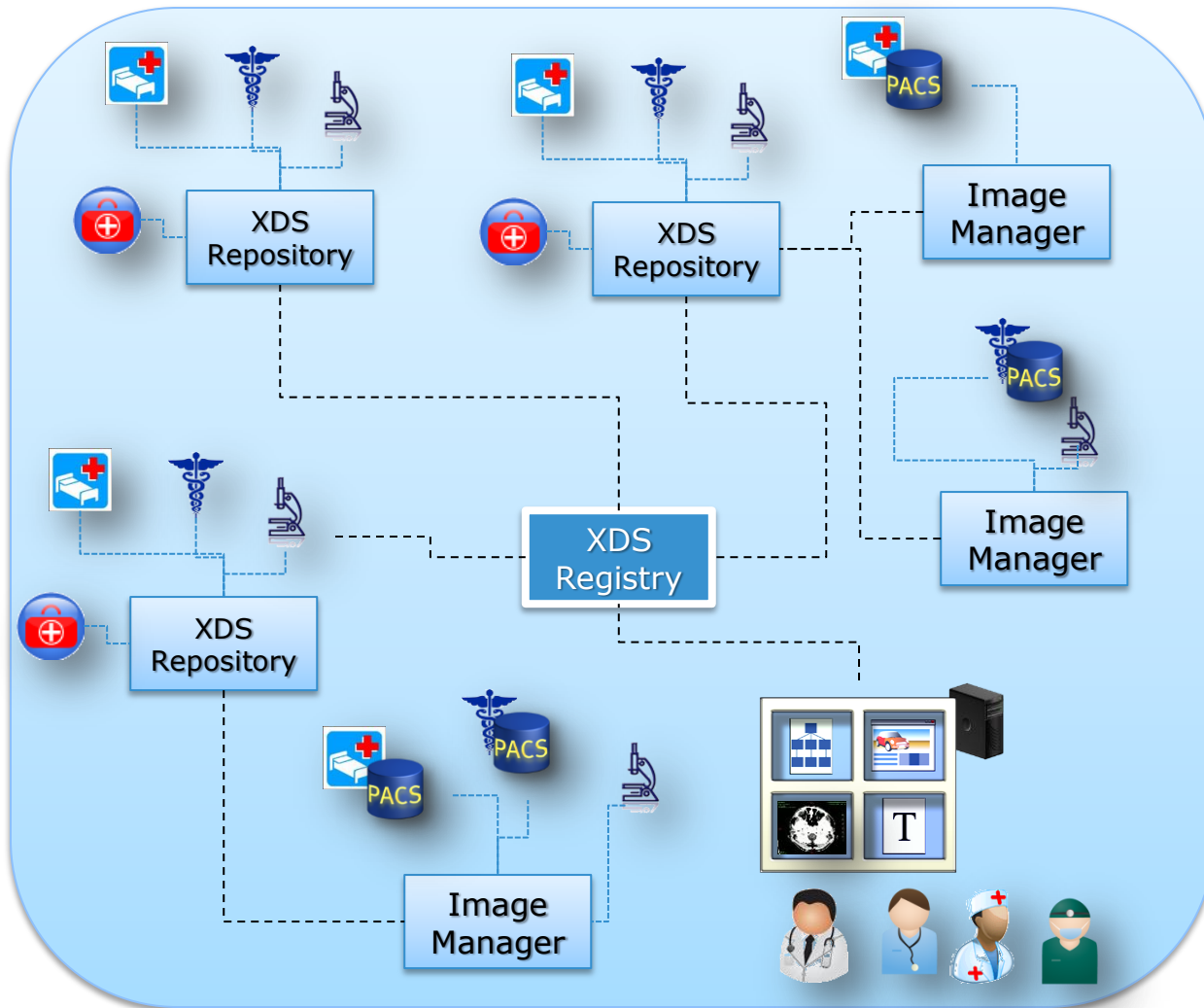
MEDICAL IMAGE
SHARING AND
MANAGEMENT
(EMEA only)

- This solution helps healthcare organizations access, share and manage medical images, such as x-rays, MRIs, CTs, PET, etc. in an interoperable, open-system, vendor neutral archive.



HIP in Multi site Configuration Across Single Affinity Domain

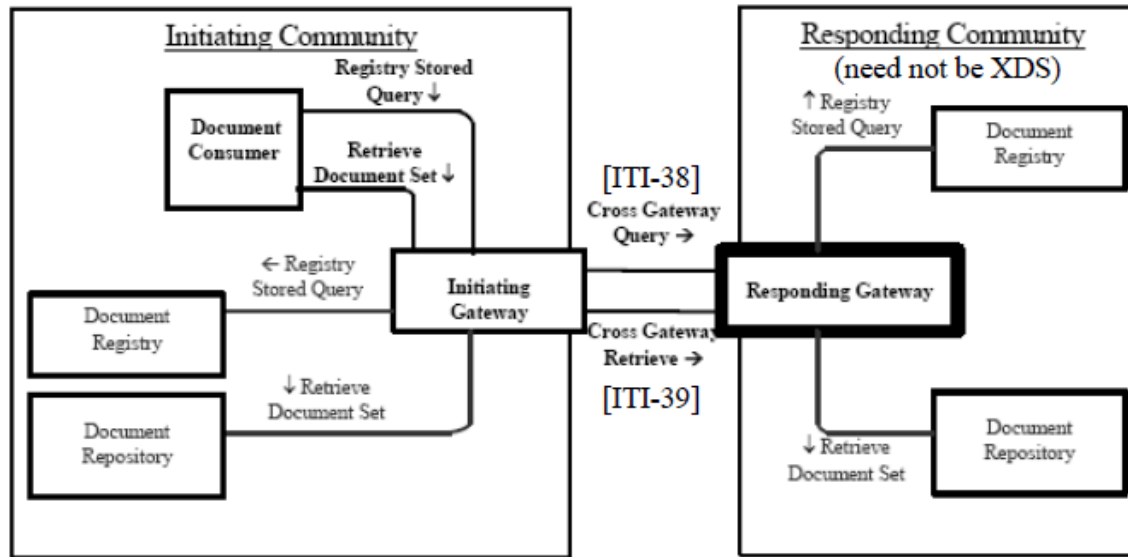
(Single Registry, Multiple Repositories, Image Managers)



IHE XDS Profiles

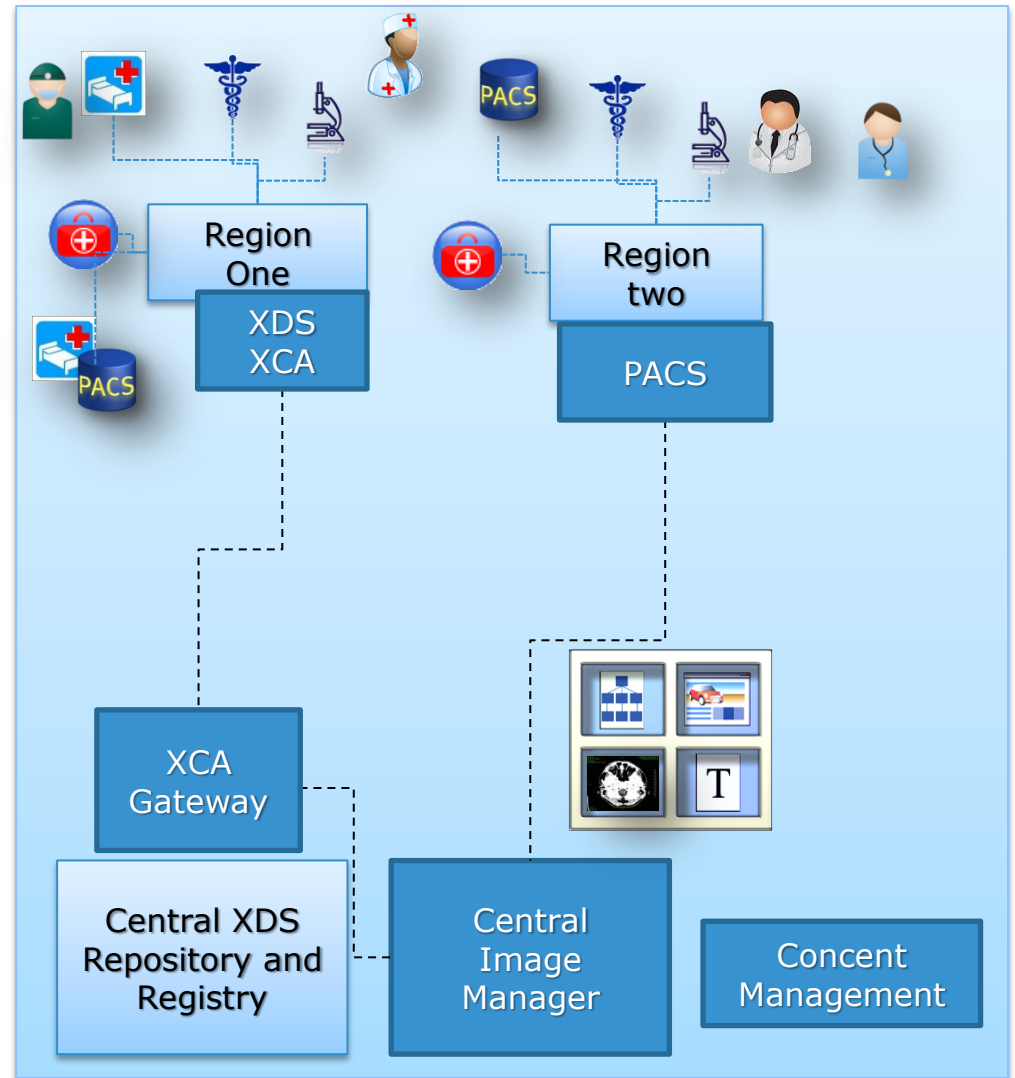
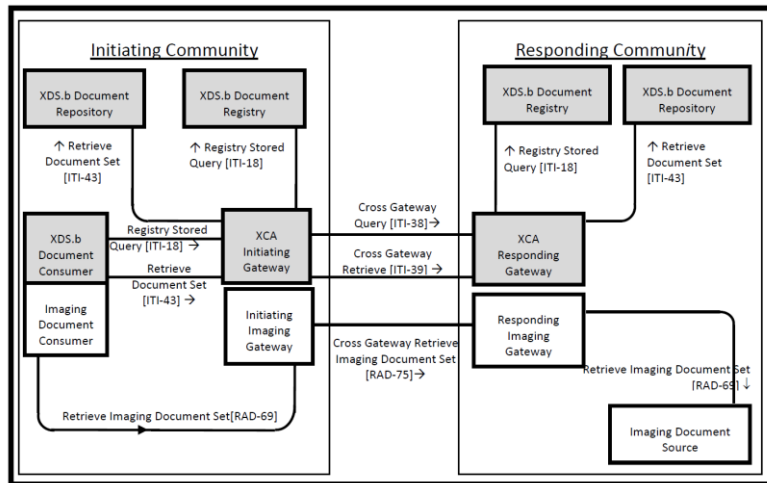
- **XDS.b with single central Registry**
A single central registry that holds an index of all of the documents stored in each of the different XDS.b repositories . XDS documents are retrieved from the repositories using XDS webservice.
- **XDS-I.b**
Retrieval of the relevant objects for a study are stored in the XDS Repository which contains the links images stored in the Image managers. The images are retrieved directly from the image managers through DICOM or WADO

The XCA IHE Profile



- XCA = Cross Enterprise Community Access
- It is an IHE profile which provides the framework for different Affinity Domains to share documents
- The "other" Community may or may not be XDS compliant
- XCA is possible by the Initiating and Responding Gateway being configured to interpret and normalise the varying standards

Image sharing between regions



EMC Healthcare Integration Portfolio



1. Registry

2. Patient Identity Mapping

3. XCA Gateway

4. Repository

5. XDS-SD

6. XDS-I

7. HL7

Connectors



RIS

PACS

EHR

HIS

HIS

1. **Registry** is the critical foundation component
2. **Patient identity** mapping support (PIX/PDQ) to eMPI
3. **XCA Gateway** for secure distributed access (regional / national / cross border)
4. **Repository Connector** to DCTM
5. **XDS-SD Connector** for scanned documents from Captiva or others
6. **XDS-I Connector** for medical images from PACS
7. **HL7** message creation & consumption

HIP PatientViewer Workflow Screenshot

EMC² where information lives

admin, UserRoles [Logout] [Settings]

Patient - DEMO CT, MULTI 2, X0006, *01.01.1945

Image Pixel Annotations Draw/Measure Display Screen

Hanging

Study CT2005091307005
Study CT2006060611440

Current Set

Default CT Overview (1 - 4)
Display Set (1/4) - 2 Objects
Series 1 05.09.2005 10:05:31 CT HEAD To
2 of 2 Images - Columns: Rows: Show

Display Set (2/4) - 12 Objects
Series 2 05.09.2005 10:08:30 CT HEAD Ba
5 of 12 Images - Columns: Rows: Show

Display Set (3/4) - 10 Objects
Series 3 05.09.2005 10:08:30 CT HEAD C
5 of 10 Images - Columns: Rows: Show

Display Set (4/4) - 80 Objects
Series 4 05.09.2005 10:09:53 CT HEAD Pe
5 of 80 Images - Columns: Rows: Show

REPORTING

IMAGE

SEQUENCE

HISTORY

WORKFLOW OVERVIEW

RID

HELP

DEMO CT, MULTI, (F)
01.01.1945
PatID: J4DEMO, X0006
20100512144233_9

H

J4Care Test Hospital
16.07.2008 10:02:00
Head Perfusion (Adult)
Topogram 1.0 T20%
KM:

SerNr: 1
ImgNr: 1
SL: 1.0
TP: 313.0
GT: 0.0
KV: 130.0
mAs: 67
VOI: C/W 20.0/190.0 - WINDOW1 [Image]

100 mm

Room 1
SIEMENS
Emotion 6

DEMO CT, MULTI, (F)
01.01.1945
PatID: J4DEMO, X0006
20100512144233_9

A

J4Care Test Hospital
16.07.2008 10:02:00
Head Perfusion (Adult)
CerebrumSeq 9.0 H31%
KM:

SerNr: 3
ImgNr: 1
SL: 9.0
TP: 177.5
GT: 0.0
KV: 130.0
mAs: 240
VOI: C/W 50.0/80.0 - WINDOW1 [Image]

50 mm

Room 1
SIEMENS
Emotion 6

DEMO CT, MULTI, (F)
01.01.1945
PatID: J4DEMO, X0006
20100512144233_9

A

J4Care Test Hospital
16.07.2008 10:02:00
Head Perfusion (Adult)
CerebrumSeq 9.0 H31%
KM:

SerNr: 3
ImgNr: 1
SL: 9.0
TP: 177.5
GT: 0.0
KV: 130.0
mAs: 240
VOI: C/W 50.0/80.0 - WINDOW1 [Image]

50 mm

Room 1
SIEMENS
Emotion 6

DEMO CT, MULTI, (F)
01.01.1945
PatID: J4DEMO, X0006
20100512144233_9

A

J4Care Test Hospital
16.07.2008 10:02:00
Head Perfusion (Adult)
Perfusion 9.0 H31%
KM:

SerNr: 4
ImgNr: 1
SL: 9.0
TP: 182.5
GT: 0.0
KV: 80.0
mAs: 220
VOI: C/W 60.0/250.0 - WINDOW1 [Image]

50 mm

Room 1
SIEMENS
Emotion 6

Tuesday, November 9, 2010 11:52 AM CEST

[Tasks] [Contact]



DOCUMENT
IMAGING FOR
MEDICAL
RECORDS



MEDICAL IMAGE
SHARING AND
MANAGEMENT



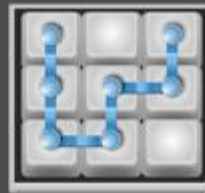
VIRTUAL PATIENT
INFORMATION
REPOSITORY

INTEGRATED PATIENT RECORD SOLUTIONS

VIRTUAL PATIENT INFORMATION REPOSITORY



Aggregate and
consolidate information



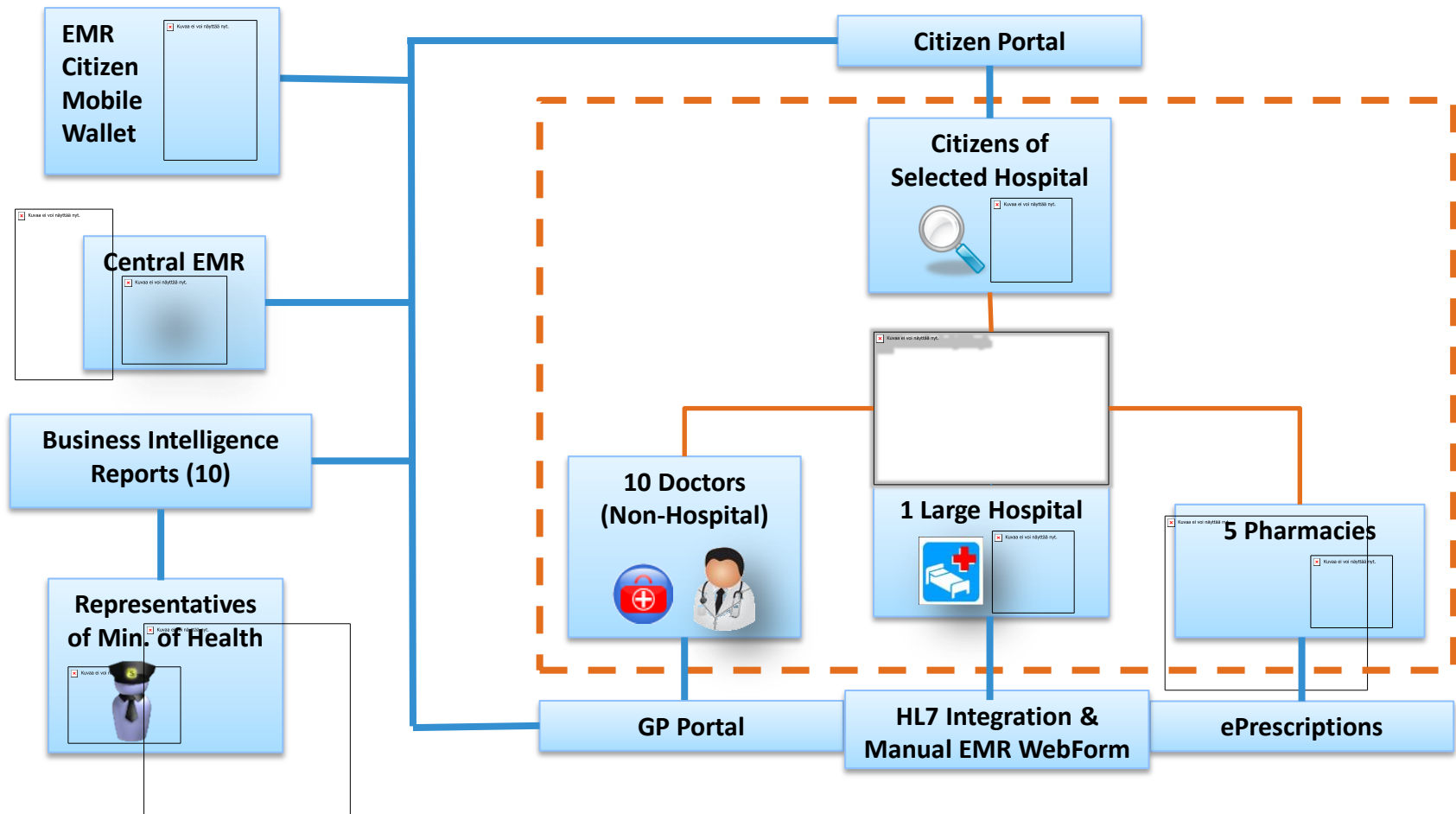
Automate processes
and workflows



Collaborate across
the enterprise

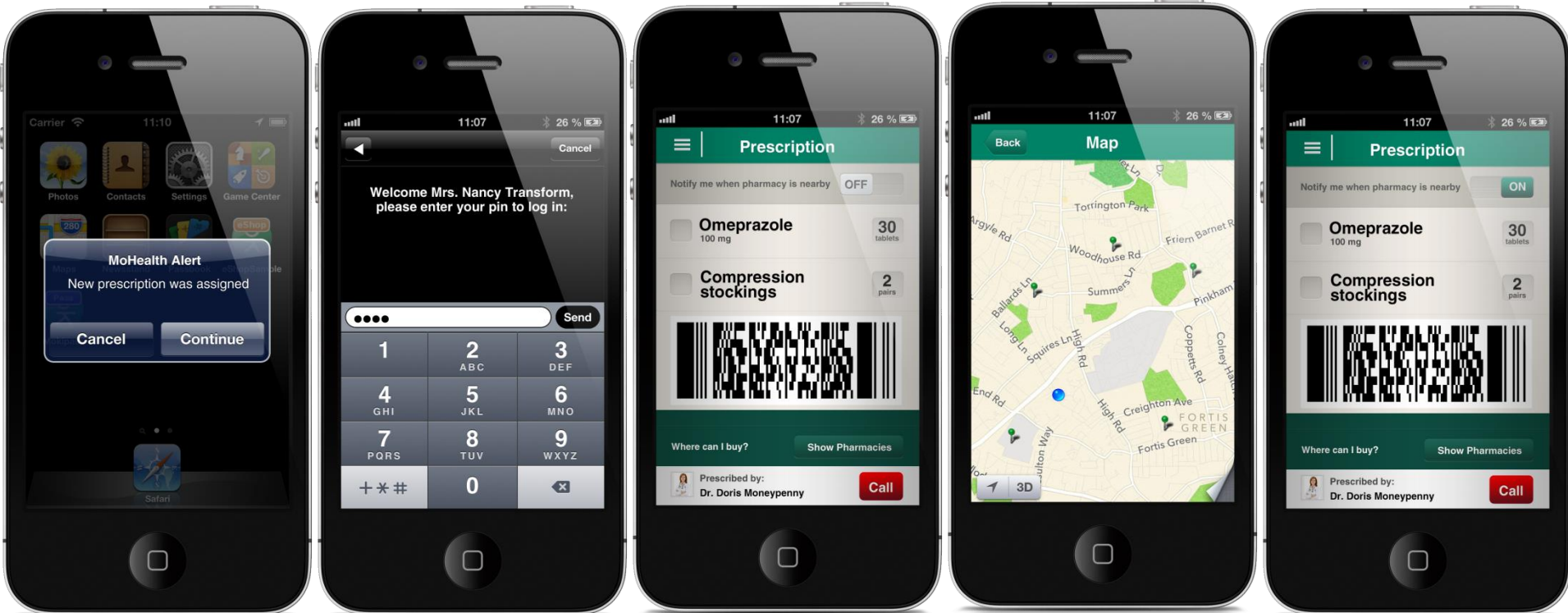


National Healthcare Ecosystem (Initial Phase)



Introduce eHealth to a limited community of actors to prove the architecture, workflows and user experiences (UI). Ensures higher success for the wider rollout to a region/nation

Mobile Experience (HIP & Mokipay)



HIP

EMC²

wHospital (HIP & HIS)

Barnet Hospital - Obstetrics and Gynecology M.D. AMB.

DocumentsPatient ListChange Operational UnitExit

29/10/2012 16:15 wHospital® OutPatient

Money Penny Doris

Select An Access

TRANSFORM NANCY

DRS PDF ?

Doctor

CLINICAL ASSESSMENT

EXAMS

THERAPIES

PRESCRIPTIONS

PHYSICAL EXAMINATION

Inserted by: Money Penny Doris at: 29/10/2012 16:05

Physical Examination

| | | | |
|-------------------|-------------------|------------------|------------|
| Height (cm) | Weight (Kg) | BMI | BSA (mq) |
| 168 | 54 | 19.13 | 1.18 |
| Sys Press. (mmHg) | Dia Press. (mmHg) | Heart rate (bpm) | Sat. (%O2) |
| 126 | 76 | 77 | 98 |

General Appearance and Mental Status

Patient is a 35 year old female who appears pleasant, in no apparent distress, her given age, well developed, well nourished and with good attention to hygiene and body habitus. Oriented to person, place and time. Mood and affect normal and appropriate to situation. FAMILY HISTORY: Patient admits a family history of cancer of breast associated with mother. PAST SURGICAL HISTORY: Patient admits past surgical history of tonsillectomy in 1980.

CareSolutions CLIMATE HIV Overview

Find Patient
 Administrator 1 (Administrator) - North Middlesex University Hospital
 Logout

Overview Diary Medication Event Test Inpatient Patient To Do List Reports Administration Help

N1133317 6367220739 Carbonaro Charmain 04/08/1972 Female Dr Consultant 3

Tests, Viral Load and CD4 Count

Viral Load

Highest 04/09/2006: 54000/mL

Lowest 05/11/2012: <20/mL

Most recent 05/11/2012: <20/mL

CD4 count

Highest 05/11/2012: 560/mL

Lowest 14/08/2006: 220/mL

Most recent 05/11/2012: 560/mL

Antiretroviral Treatment

| Start | Stop | Combination | Stop Reason |
|------------|------------|-------------|----------------------|
| 16/01/2013 | current | ABA/DRV | |
| 17/10/2006 | 15/01/2013 | EFV/KIV | Clinician's decision |

Alerts / Diary

| Date | Alert Level | Heading |
|------------|------------------|--------------------------------------|
| 18/02/2013 | Immediate Act... | Father not tested |
| 21/07/2008 | Action Requir... | message left on phone |
| 25/01/2013 | Database inco... | Total Item Missing: 1 /16 |
| 31/05/2011 | Follow Up! | SPR review |
| 14/06/2010 | Follow Up! | completed 3 doses of hep b vax! |
| 28/05/2008 | Research | Please do LIPIDS, then assess re ... |

Events

| Date | Diagnosis |
|------------|---|
| 21/03/2013 | Child [HIV positive (antibody >3mo)] |
| 05/02/2013 | Allergic sensitization by patch test (disorder) |
| 05/02/2013 | Tuberculosis of genitourinary system (disorder) |
| 05/02/2013 | Chronic viral hepatitis B with hepatitis D (disorder) |
| 16/01/2013 | Tuberculosis of cervical lymph nodes (disorder) |
| 16/01/2013 | Tuberculosis of cervical lymph nodes (disorder) |
| 01/07/2008 | Mastodynia |

Allergies

Allergy to penicillin, H/O: aspirin allergy

Antiviral Drug Resistance

Resistance to LAM/FTC [M184V]

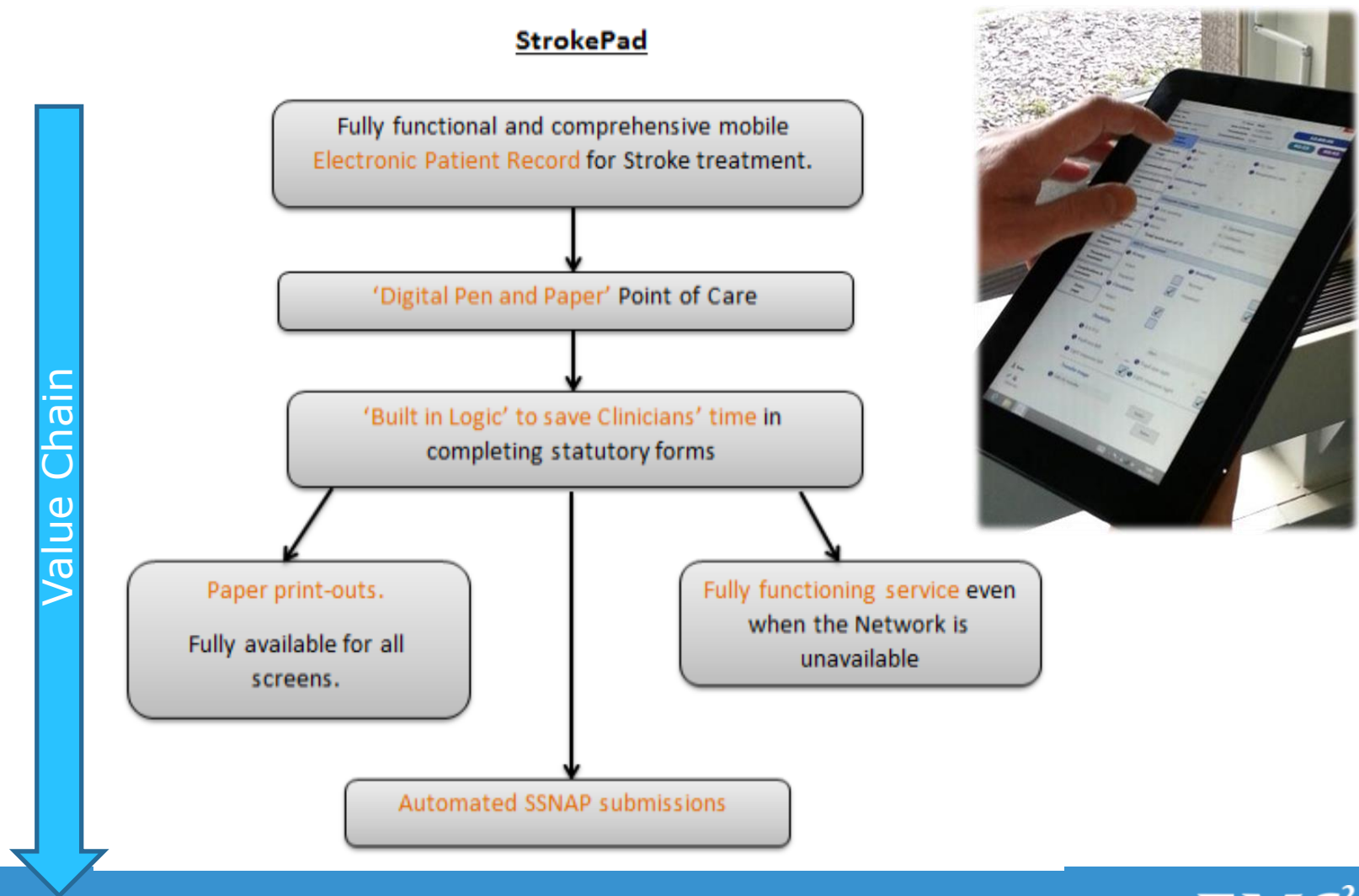
EMC²

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CareSolutions STROKEPAD Overview

Solution Overview





DOCUMENT
IMAGING FOR
MEDICAL
RECORDS



MEDICAL IMAGE
SHARING AND
MANAGEMENT



VIRTUAL PATIENT
INFORMATION
REPOSITORY

INTEGRATED PATIENT RECORD SOLUTIONS

Tervetuloa EMC:n avoimelle ständille!

Paikalla koko EMC tarjoama sekä asiantuntijat

- Edellisten lisäksi
- Tietotuva – RSA
- Virtualisointi – VMWare
- Varmistus ja tallennusratkaisut



EMC²®