

An aerial night view of a city skyline, likely New York City, with a river in the foreground. The city lights are reflected on the water, and the sky is dark. The title text is overlaid on the image.

THE HOSPITAL AUTHORITY'S CLINICAL MANAGEMENT SYSTEM

Dr NT Cheung
Head (IT & Health Informatics) & CMIO, Hospital Authority
Consultant(eHealth), Food & Health Bureau

Hospital Authority

♥ 43 Public Hospitals
♥ 49 Specialist Clinics
♥ 73 General Clinics

♥ 29,435 Beds

♥ 84,501 Staff

♥ 28,957 Nurses

♥ 6,681 Doctors

♥ HK\$70B Annual Operating Budget
(~US\$9B)

♥ 6.2m GOPC Attendances

♥ 7.7m SOPD Attendances

♥ 2.1m A&E Attendances

♥ 1.8m Inpatient and Day Patient Discharges



eHealth in the HA

The Road Less Travelled

1990 “Green fields”

Patient administration + Departmental systems

1995 Clinical Management System (CMS)

2000 CMS Phase II

- Electronic Patient Record (ePR)

2003 eSARS

2008 CMS Phase III

2010 Filmless HA

2016 Inpatient MOE

HK-wide eHRSS

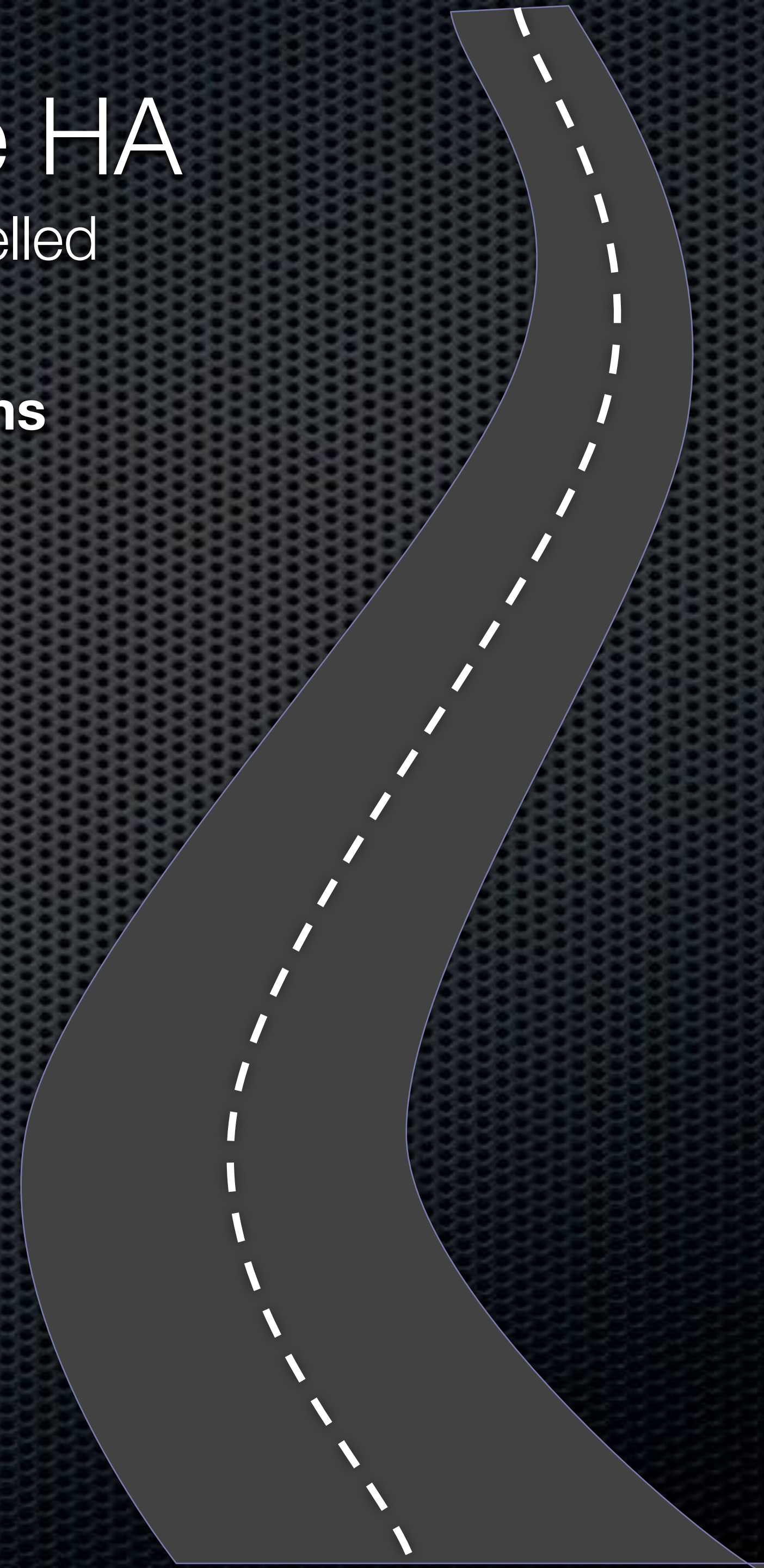
Mobile CMS

CMS IV

2019+ Smart Hospital

HA Go

eHRSS Stage 2



ENTERPRISE-WIDE ELECTRONIC PATIENT RECORD (EPR) FOR ALL HA PATIENTS

The screenshot displays a medical application interface. At the top, a navigation bar includes 'Home', 'View', 'Prototype', 'Build', 'QA/1000', and 'Microsoft Internet Explorer'. Below this is a search bar with 'Search Web' and 'Options' buttons. The main header area shows patient information: 'ID: [redacted]', 'Name: [redacted]', 'DOB: 02/03/1956 (Exact? Y)', 'Age: 48y', 'Sex: F', and buttons for 'Details', 'Add patient', and 'Logout'.

The left sidebar contains a tree view with categories like 'Diagnosis', 'Procedure', 'Clinical Note', 'Medication', 'Radiology', 'SARS Report', 'Procedure Record', 'Functional Outcome', and 'Laboratory Result'. The 'Diagnosis' category is selected, showing a list of conditions: 'End Stage Renal Failure', 'Chronic renal failure', 'vomiting alone', and 'Peritonitis related to continuous ambulatory peritoneal dialysis'.

The main content area is divided into two panels. The top panel shows 'Drug Allergy' and 'Current Medication' sections. The bottom panel displays a search results table with columns for 'Request Date Period', 'Request Date Range', and 'Request Date'. The table lists several records, including 'No case no' and 'No case no'.

Below the search results, there is a section for 'Clinical History' and 'Technique'. The 'Clinical History' section contains text about a head injury with LOC and vomiting. The 'Technique' section lists two items: 'See non-contrast axial CT scans of the posterior cranial fossa' and 'See non-contrast axial CT scans of the rest of the brain'.

The screenshot displays the 'Electronic Patient Record (ePR)' interface. At the top, the 'Patient Information' section shows details for Patient 000226, including Case: HN98004663(A), HKID: LJ000226(E), Name: PATIENT, 000226, Sex: M, and Age: 72y. Below this, a 'Summary' tab is active, showing a list of medical events for the patient, including Consultation Note, Diagnosis, Procedure, Radiology Result, Medication, and Laboratory Result. A 'Search by Request Date' section allows filtering by Request Date Period (6 Months), From Date, To Date, and Hospital Code. A table below this shows the most recent results from the left, with columns for Reference Date, Reference Time, and Hospital Code. The table lists six entries with dates ranging from 15/12/2002 to 13/10/2002. The bottom section of the interface shows a grid of medical images, likely CT scans, with a warning that 'Images on ePR are for reference only and NOT for diagnostic purpose!'. The images are arranged in a 2x3 grid, showing axial views of the head and neck. The interface is running on a Windows XP desktop with Internet Explorer 7.0.

Electronic Patient Record (ePR)

Patient Information

Case: HN98004663(A) HKID: LJ000226(E) Name: PATIENT, 000226 Sex: M Age: 72y

Summary Event

PATIENT, 000226

- Consultation Note
- Diagnosis
- Procedure
- Radiology Result
- Medication
 - Dispensed - By Episode
 - Dispensed - Summary
- Laboratory Result
 - Cumulative
 - Cumulative
 - Medical
 - CM
 - Innate
 - Live
 - Fena
 - Thyro d
 - Common
 - Boc remis
 - Haematol
 - Immu tolo
 - Microbiolo
 - Anatomic
 - Abnormal
 - Numer
 - Non-nu

Search by Request Date

☒ Request Date Period ☐ Request Date Range

Period: 6 Months OR From Date: To Date:

Hospital Code: --- A..J --- go reset

Most recent from the left Page 1 of 5

Reference Date	Reference Time	Hospital Code
15/12/2002	15/12/2002	TMH
14/12/2002	14/12/2002	NDH
13/11/2002	13/11/2002	PWH
12/11/2002	12/11/2002	A-IN
19/10/2002	19/10/2002	PYN
13/10/2002	13/10/2002	TMH

Images on ePR are for reference only and NOT for diagnostic purpose!

Grid of medical images (CT scans) showing axial views of the head and neck.

HEALTH INFORMATICS IN HK

3 BASIC STEPS

Support the processes of care

- Enter once, use many
- Enhance clinical workflow

Improve quality & safety

- Measure & monitor
- Continuous improvement



Build the electronic patient record

- Standardized & structured
- Comprehensive
- Accessible

HEALTH INFORMATICS IN HK

THE 4TH STEP

Enable new models of service delivery

Make data actionable

Engage patients in their care

Support the processes of care

Improve quality & safety

Build the electronic patient record

OVER 15 MILLION SOLD

THE 7 HABITS OF HIGHLY EFFECTIVE INFORMATICIANS

Powerful Lessons
in Personal Change

With a New
Foreword and
Afterword
by the Author

N.T. Cheung

THE 7 PRINCIPLES

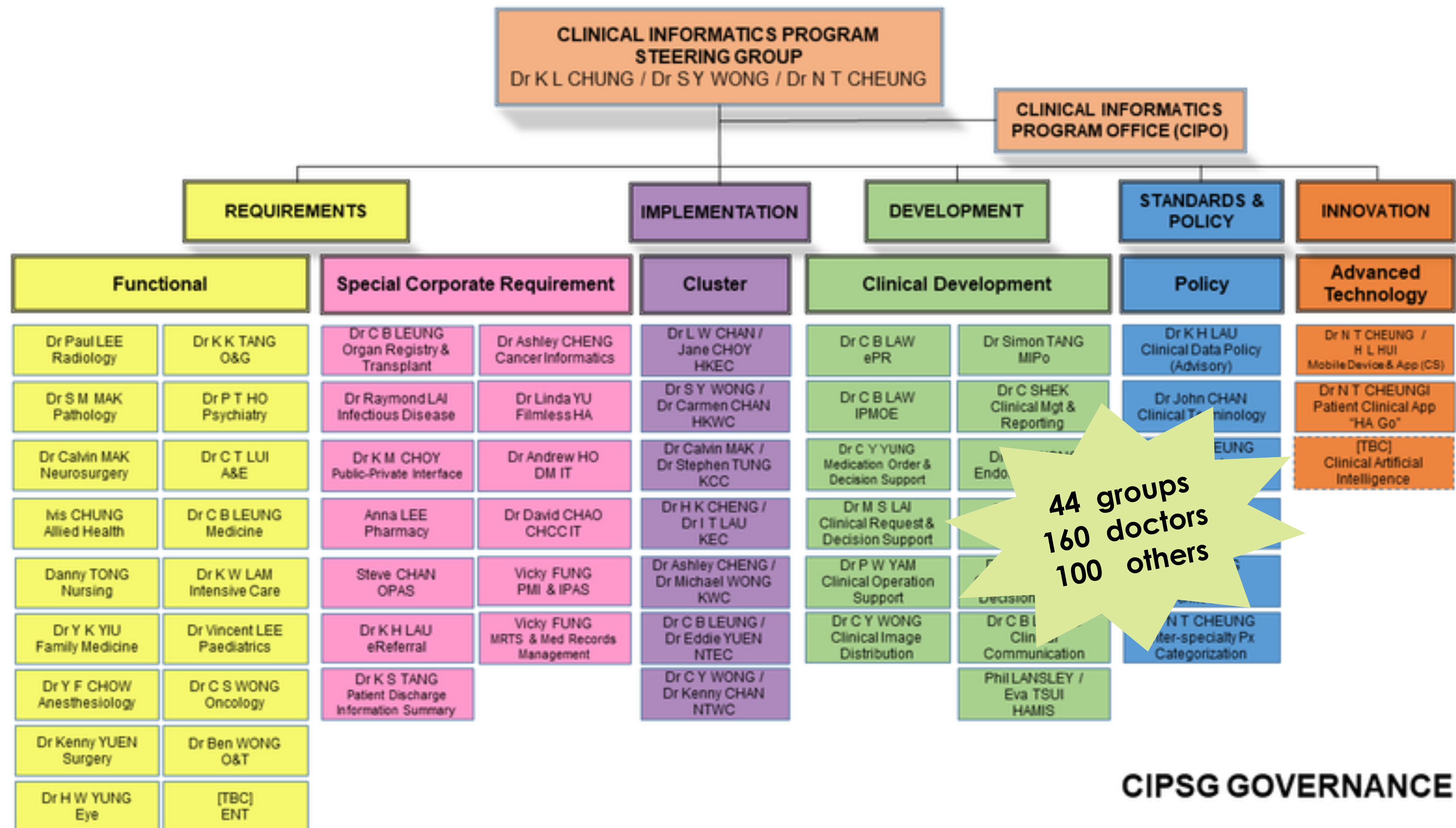
1. The Customer is Always Right
2. Win-Win-Win-Win
3. Medicine is both Art and Science
4. One Step at a Time
5. Use it or Lose it
6. Focus and Prioritize
7. Feed your Informaticians

Principle 1: The Customer is Always Right

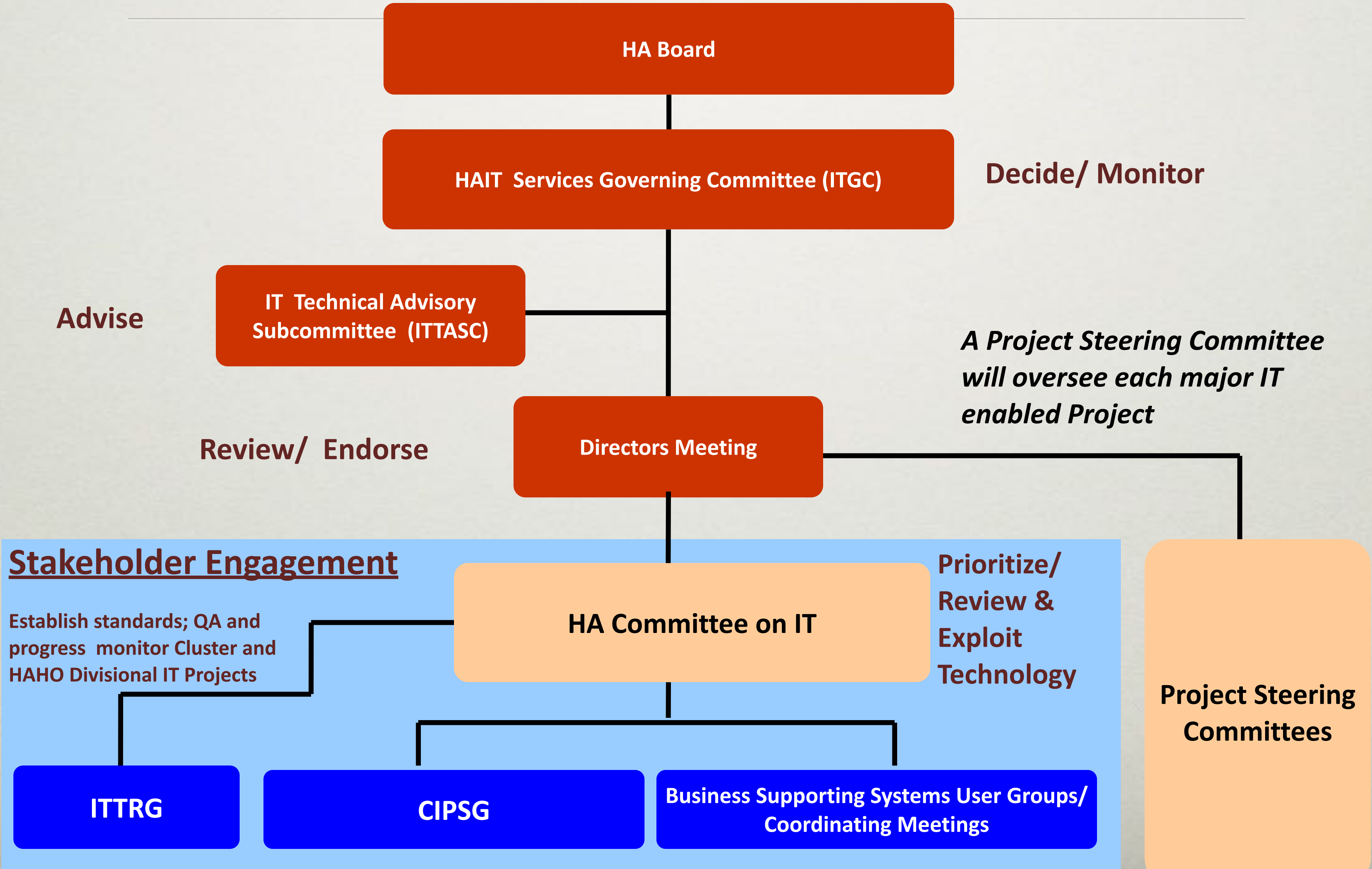


Communicate, Engage, Align

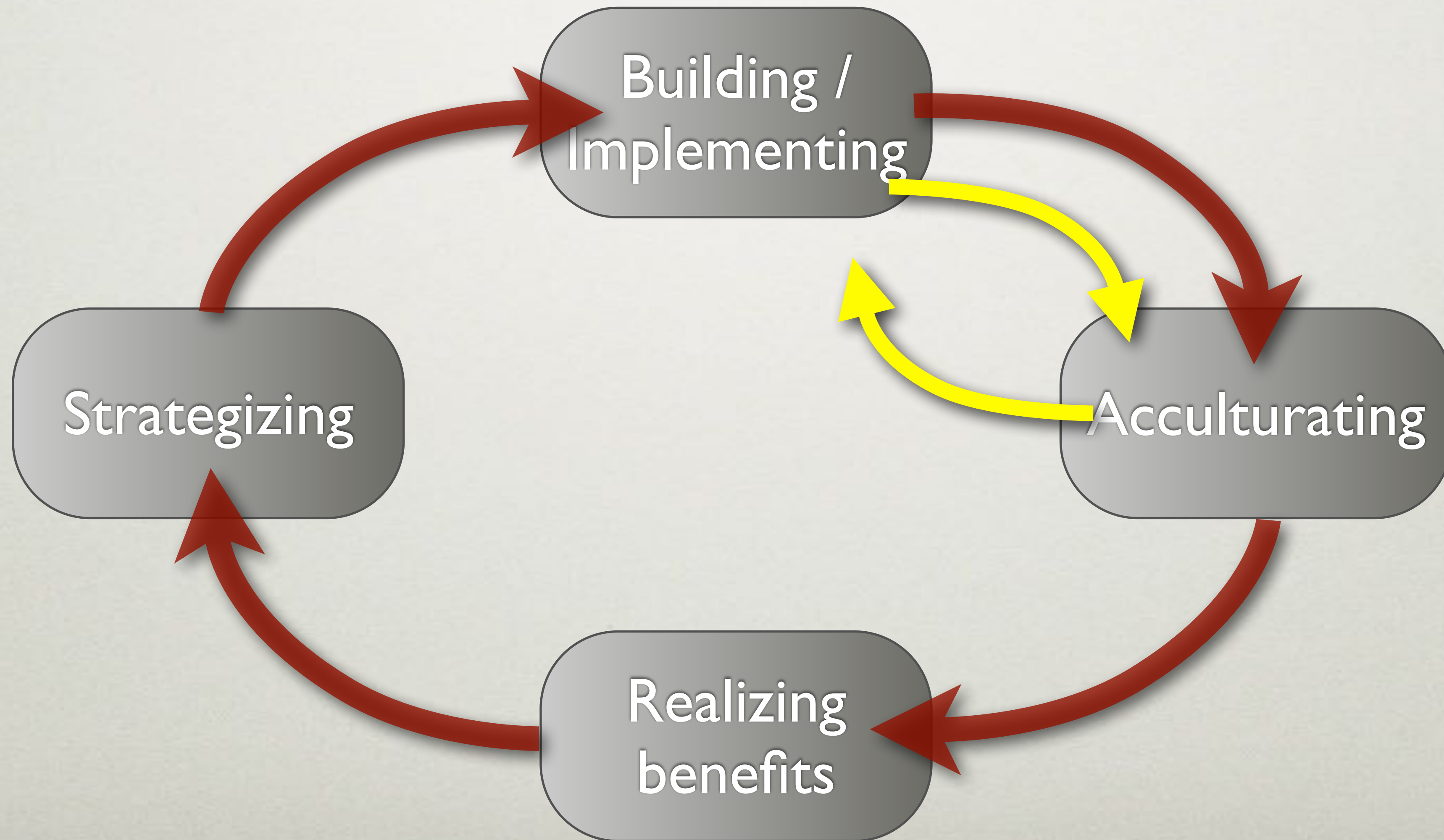
ENGAGEMENT IS KEY



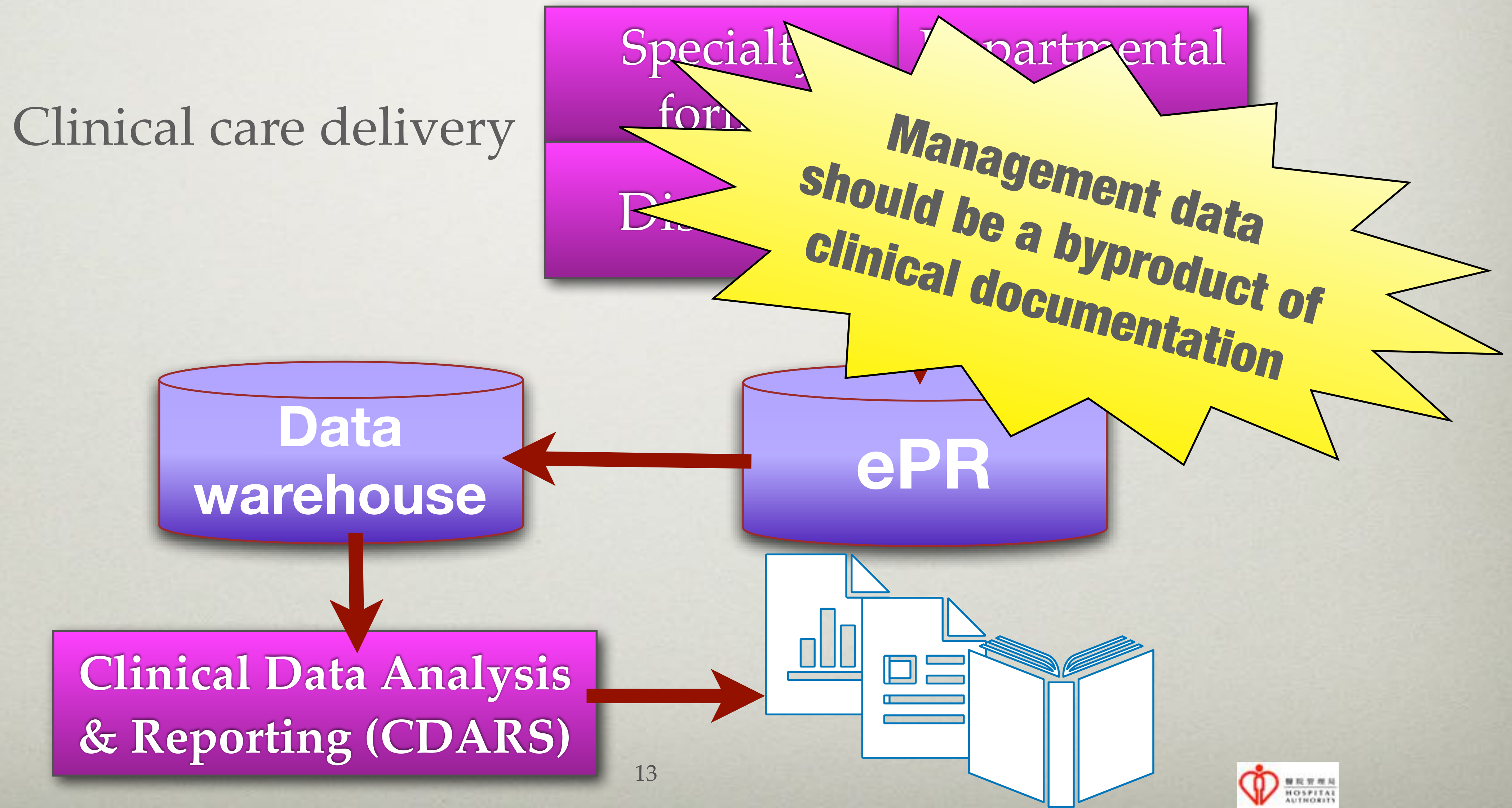
HOSPITAL AUTHORITY IT GOVERNANCE STRUCTURE



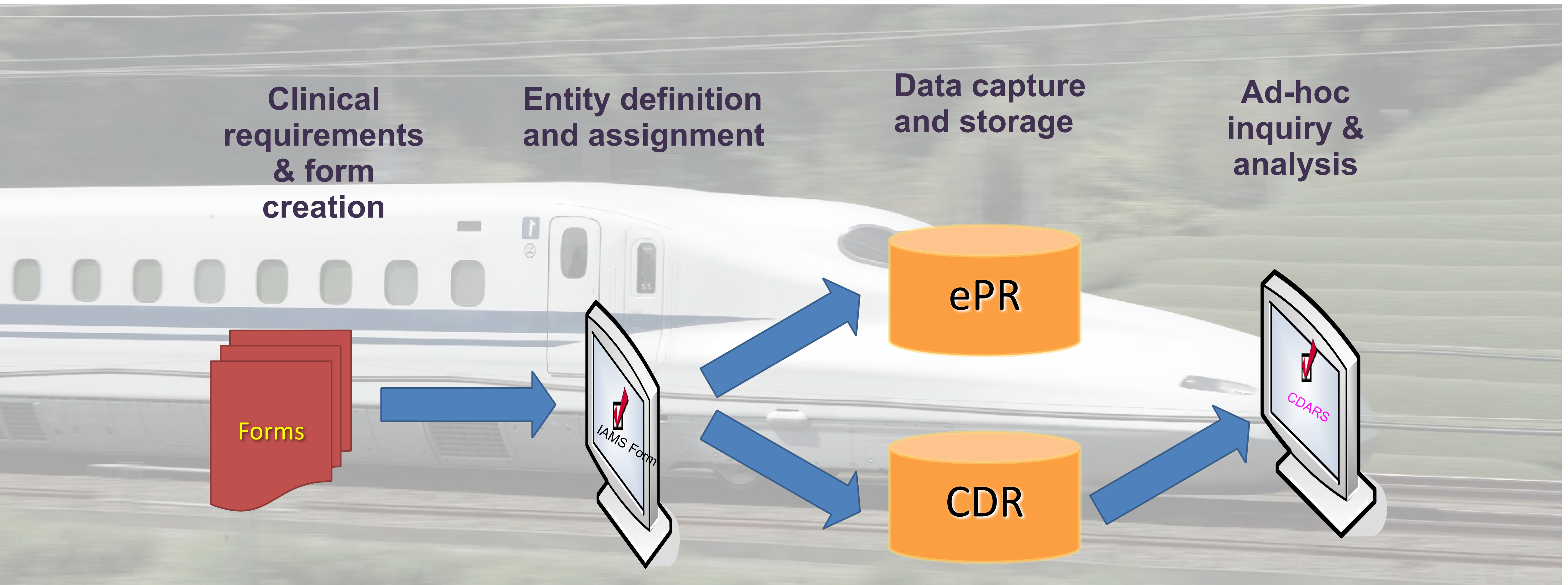
Principle 4: One Step at a Time



PRINCIPLE 5: USE IT OR LOSE IT



Generic Clinical Documentation (GCD) Thru' Train



Example: Nursing Patient Assessment

The screenshot shows a 'Patient Assessment Form' with several tabs: 'Physical Exam', 'Social History', 'Risk Assessment', and 'Functional Assessment (FAS) 1'. The 'Risk Assessment' tab is active, displaying 'Five Risk Areas'.

- Infection:** Radio buttons for 'At risk', 'Not at risk', and 'Unknown'. Checkboxes for 'Isolation Precaution' (Airborne, Contact, Droplet, Reverse Isolation).
- FTOCC:** Radio buttons for 'At risk' and 'Not at risk'. Checkboxes for 'Fever', 'Contact', 'Travel', 'Clustering', and 'Occupational Exposure'.
- Fall:** Radio buttons for 'At risk' and 'Not at risk'.
- Pressure Ulcer:** Radio buttons for 'At risk' and 'Not at risk'. This section is highlighted with a red box.
- Missing:** Radio buttons for 'At risk' and 'Not at risk'.
- Suicide:** Radio buttons for 'At risk' and 'Not at risk'. Below are checkboxes for 'Patient was admitted because of suicidal attempt or idea' and 'Patient expresses suicidal idea or self-harm behaviour'.

Remarks: [Text field]

Buttons: Print, Undo

Patient Assessment Form

- Physical Examination
 - Vital signs
 - Body measurement
 - Urinalysis
 - Level of consciousness
 - MEWS
- Social History
 - Education
 - Religion
 - Household members, etc
- Risk Assessment
 - Infection
 - FTOCC
 - Fall
 - **Pressure Ulcer**
 - Missing
 - Suicide
- Functional Assessment

Is patient is at risk of pressure ulcer upon admission assessment?

Pressure Ulcer: ☐ At risk ☐ Not at risk

Criteria List

- ☒
Patient Assessment Form - nursing
 - ☐
 Signed (Y/N)
 - ☐
 Physical Exam
 - ☐
 Social History
 - ☒
Risk Assessment
 - ☒
Risk Assessment
 - ☐
 Risk of infection
 - ☐
 Isolation Precaution
 - ☐
 Risk of infection according to FTOCC indicator
 - ☐
 Risk of fall
 - ☒
Risk of pressure ulcer
 - ☒
 At risk
 - ☒
 Not at risk
 - ☐
 Risk of missing
 - ☐
 Patient was admitted because of suicidal attempt or idea
 - ☐
 Patient expresses suicidal idea or self-harm behaviour
 - ☐
 Disclosure by relatives / friends that patient has suicidal inclination
 - ☐
 Functional Assessment (FAS) 1

Select the criteria in 'Criteria List'

- ☒
Risk of pressure ulcer
 - ☒
 At risk
 - ☒
 Not at risk

Selected Criteria

Risk of pressure ulcer in (

- At risk
- Not at risk

)
 [\[Edit\]](#)

Selected Criteria

Risk of pressure ulcer in (

- At risk
- Not at risk

)
 [\[Edit\]](#)

>> Add

<< Remove

Key:
 ☐ Column Group / Folder
 ☐ Column
 ☒ Value / Query
 ☐ allow multiple values
 ☐ do not allow multiple values

X Close

U Reset

↶ Add Criteria

*Press 'Ctrl' for multiple selection.

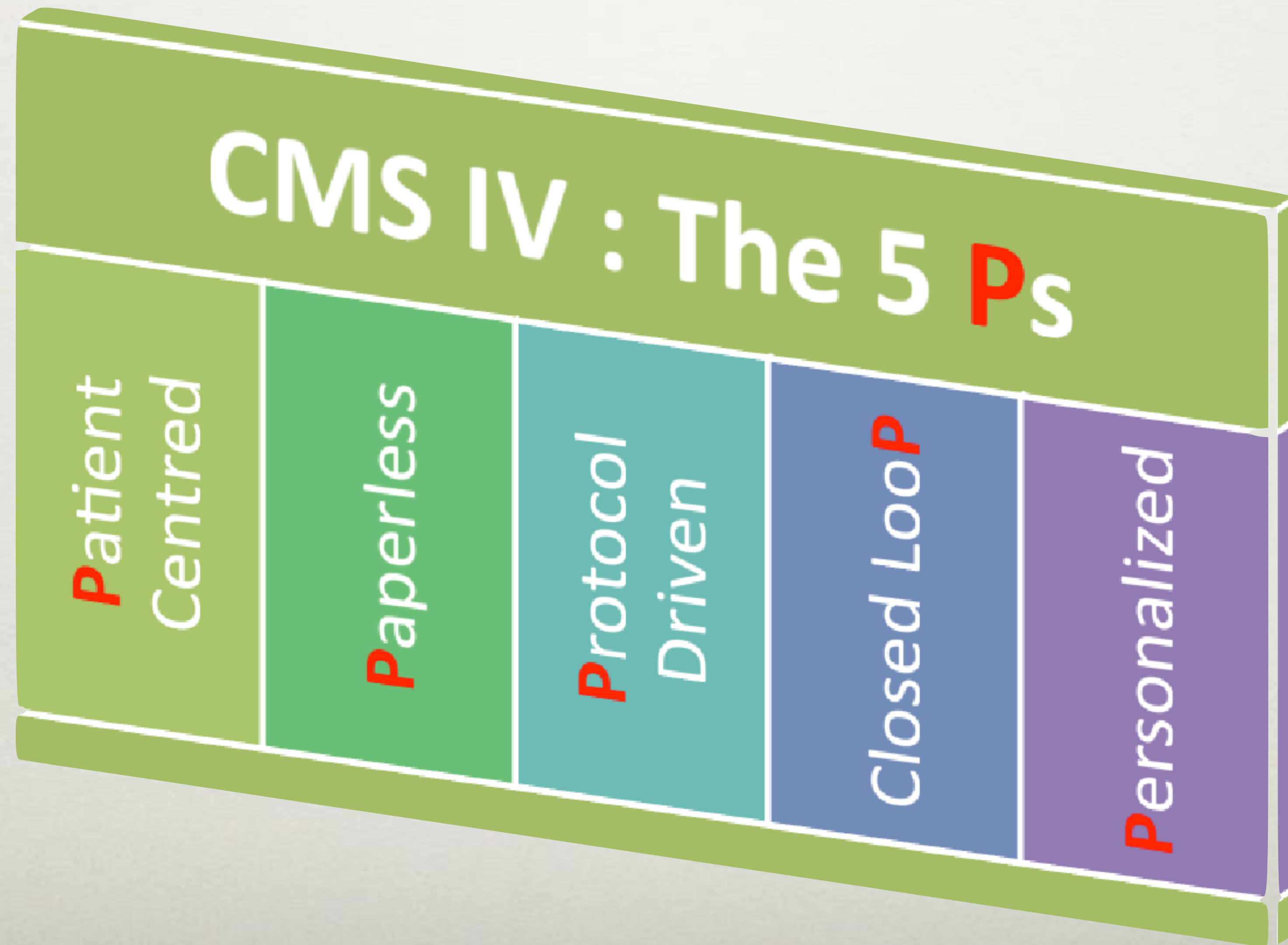
CDARS Report

PAS: Risk of pressure ulcer (Patient Assessment Form - nursing (PAS) (By Date of assessment))	At risk	Not at risk	Row Total
Institution (EIS)	No. of Forms - Patient Assessment Form - nursing (Patient Assessment Form - nursing (PAS) (By Date of assessment))	No. of Forms - Patient Assessment Form - nursing (Patient Assessment Form - nursing (PAS) (By Date of assessment))	No. of Forms - Patient Assessment Form - nursing (Patient Assessment Form - nursing (PAS) (By Date of assessment))
	4944	41737	46681
Grand Total :	4944	41737	46681

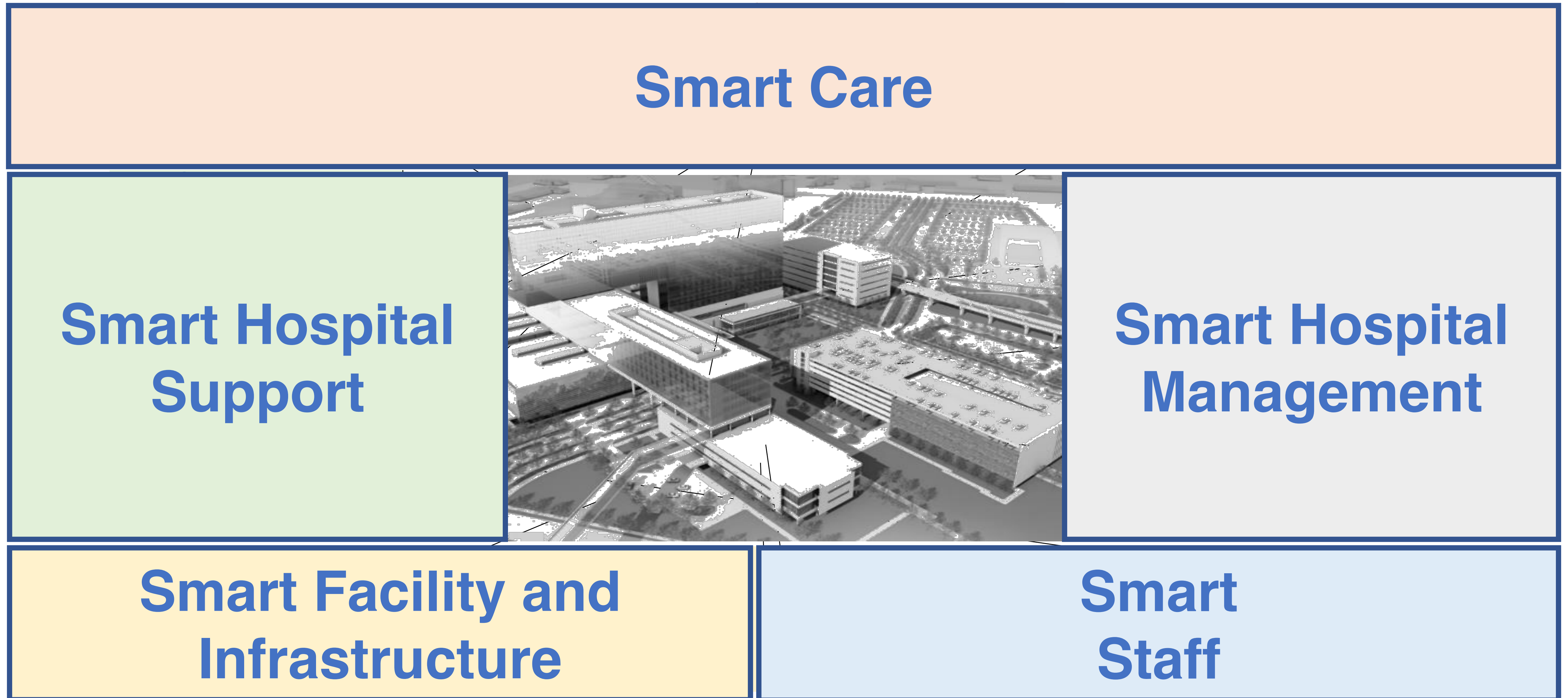
with Pressure ulcer risk

with no Pressure ulcer risk

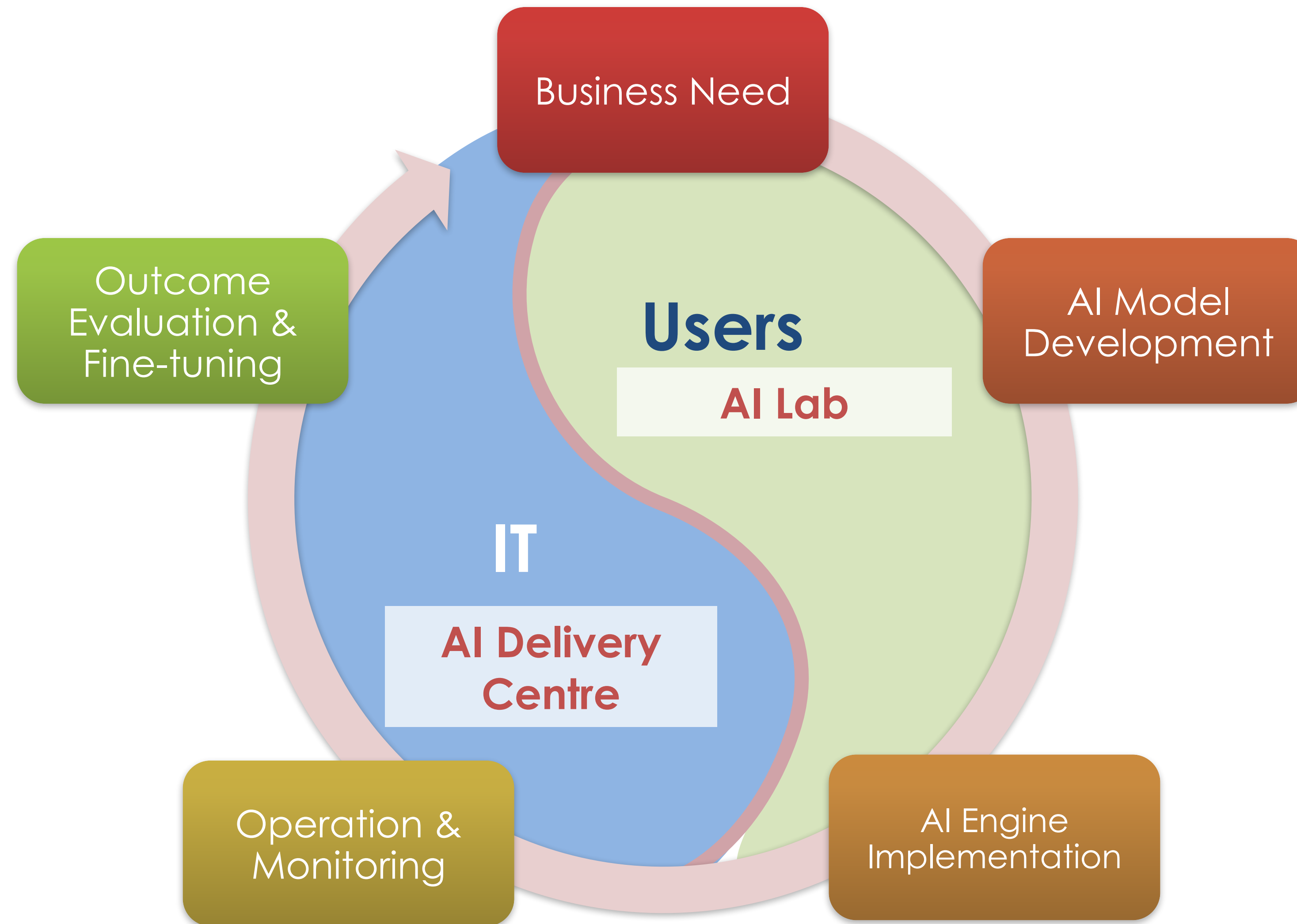
THE 5 PILLARS OF THE NEXT-GENERATION CMS



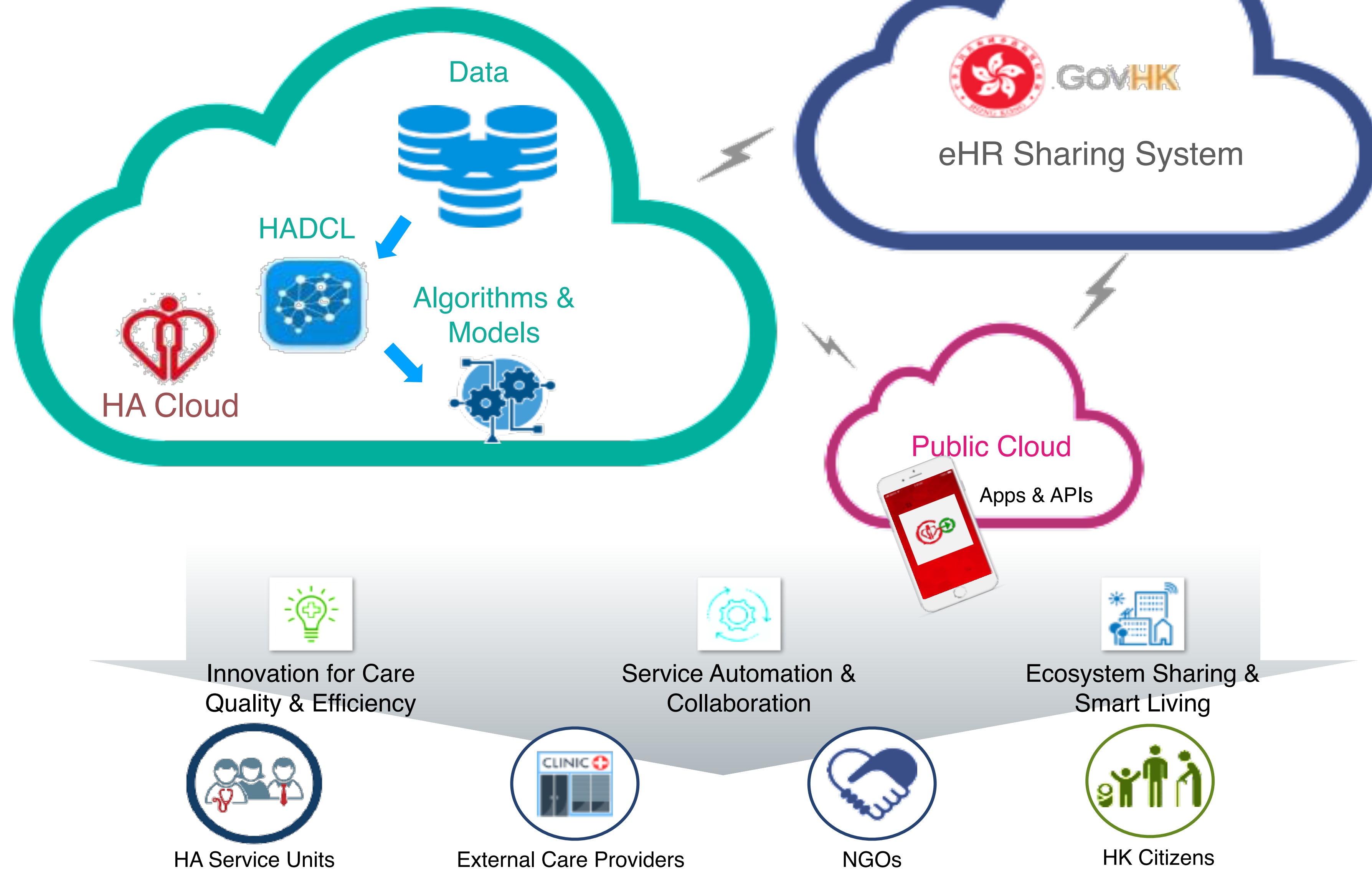
Smart Hospital Blueprint



AI Lab & AI Delivery Centre to Convert Ideas into Service Benefits



Build HK Healthcare Cloud Ecosystem



CLOSING COMMENTS



- EMR and digital health technologies are powerful tools
- To make them a positive force, focus intensely on the clinician and the patient