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Singapore's National Electronic Health Record

The Roadmap to 2010

Dr Sarah Christine Muttitt
Chief Information Officer
Information Systems Division

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Taking the Next Step (MSM April 2008)

1. Singapore requires a national integrated electronic health information system based on a common enterprise architecture, data standards and privacy and security guidelines.
2. A shared electronic health record (EHR) can be delivered by 2010.
3. Broad stakeholder engagement is needed. The EHR is not an IT project but a business and clinical transformation project.
4. Governance and accountability is necessary to align strategic intent with implementation.
 - National strategy and implementation plan
 - Funding mechanisms to encourage consistent, coordinated and continuous investment in health IT
 - Skilled resource capacity
5. Measuring of success of the national EHR with regards to health care quality, safety, and productivity.

Electronic Records - EMR vs. EHR

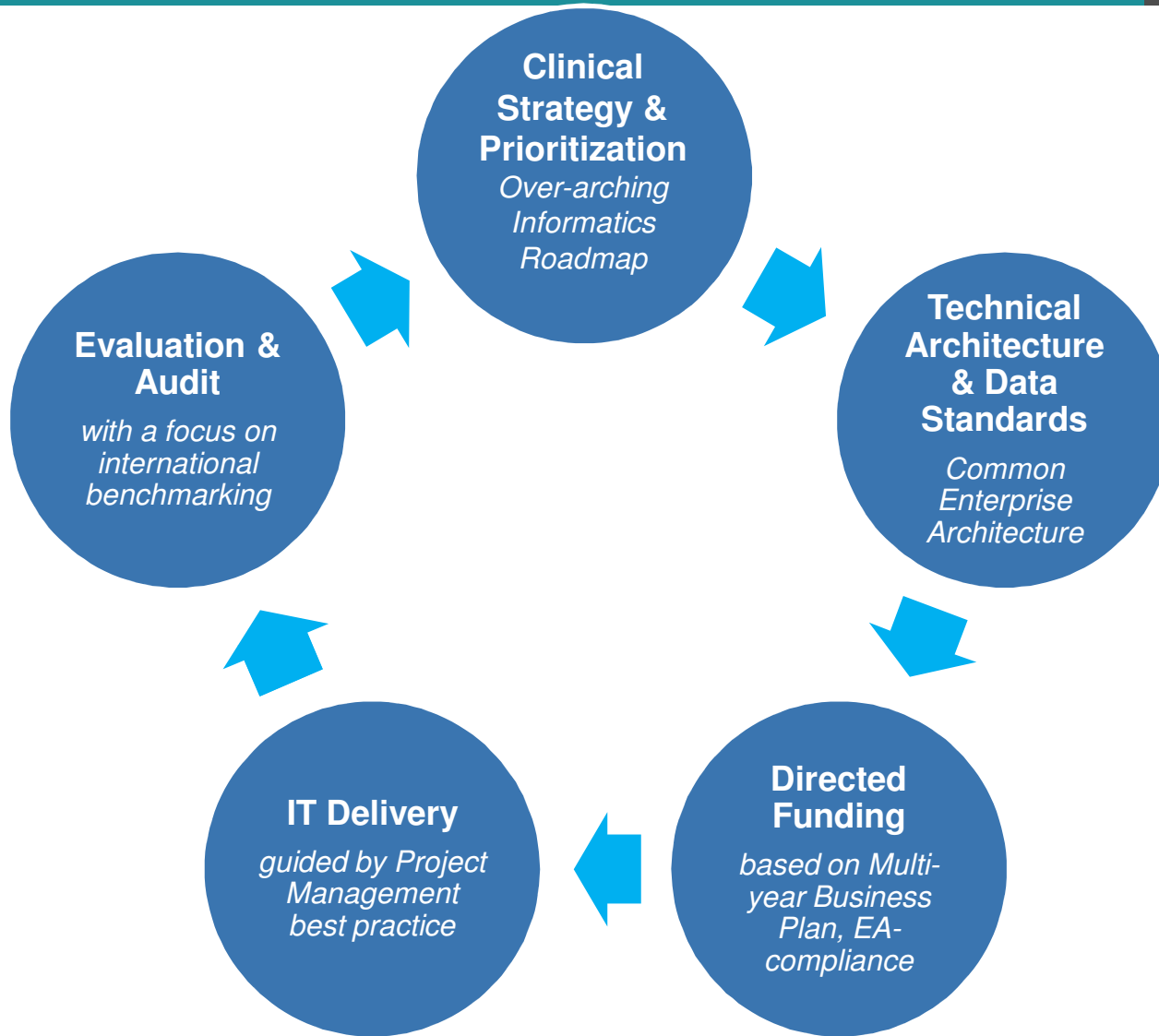
EMR

Specific to an facility (institution, private office); the equivalent of its paper predecessor and includes everything that is recorded by that organization about a given patient. It has “depth” but lacks “breadth”.

EHR

Specific to an individual; captures a key subset of health information from multiple point of service systems. It is available electronically to authorized healthcare providers and the individual anywhere, anytime in support of high quality care. This record is designed to facilitate the sharing of data across the continuum of care, across healthcare delivery organizations and across geographies.

Our Approach



National Health IT Summit 2008

July 18 – 19th

Grand Hyatt Singapore

Our Goal

...to bring together clinicians,
emerging leaders & process-owners

... to discuss Health IT strategic
priorities & jointly identify clinical focus
areas where IT-enabled transformation can
have the highest impact.

Clinical Engagement

Clinical Informatics Roadmap

The Roadmap articulates Clinical Focus Areas, Objectives
... and corresponding Health IT capabilities (*illustrative*)

Continuity of Care

- Summary care record
- E-referrals & referral triage
- Case management tools

Medication Management

- Active medication list
- Harmonized drug nomenclature & codes
- Drug dispensing data

Diagnostics

- Shared image repositories
- Harmonized lab nomenclature & codes

Secondary Data Use

- Interoperability framework for clinical data repositories & disease registries

EHR & Extensions

What you told us you wanted.....

- Longitudinal summary health care profiles
- Consolidated view of patient's current problems
- Consolidated view of patient's current medications
- Ability to share critical patient information across all providers involved in patients clinical care journey
- Patient information accessible at the point of care – to support clinical decision making.

EHR - Summary Care Record (Dashboard) – Illustrative Sample Only

Merlion EHR v0.03a - Dashboard - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost/merlion/merlion.cgi?DView=UnSort&View=Lab&UserID=mark

Most Visited Getting Started Latest Headlines Customize Links Free Hotmail Windows Marketplace http://192.168.2.134... http://localhost/cgi-bi... Windows Media Windows

Mark Looi, 64 yrs, Male, Chinese

NRIC: S1234567A **Care Provider:** Dr. Alvin Tan(SGH) Dr. Daniel Wong(Merlion Clinic)

Allergies: Panadol Aspirin

Good Afternoon! Welcome To EHR v0.01a [Logout](#)

Recent Events

| Date | Institution | Specialty | Event Type |
|------------|------------------|-------------|------------|
| 01/05/2009 | Merlion Hospital | Haematology | Discharge |

Investigations >X-Ray

| Date | Investigation | Institution |
|----------|------------------|-------------|
| 13/06/09 | Full Blood Count | SGH |
| 15/06/09 | Lipid Panel | Tan Clinic |

Diagnosis >SORT

| Last Entry | Description | Alert |
|------------|------------------------|-------|
| 11/06/2009 | Diabetes Mellitus (x5) | ● |
| 12/06/2009 | Hypertension (x1) | |
| 20/06/2009 | Colon Cancer (x1) | ● |

Current Medications

| Date | Name | Dose | Frequency | Route |
|----------|-------------|-----------|-----------|-------|
| 18/06/09 | Metformin | 850 mg bd | x3 | Oral |
| 18/06/09 | Losartan | 50 mg om | x1 | Oral |
| 18/06/09 | Simvastatin | 20 mg on | x1 | Oral |

Procedures

| Date | Procedure | Summary of Procedure |
|----------|--|---------------------------|
| 12/05/09 | Revision of central/other intravascular line | Revision of Hickmann Line |

Care Plan

| Category | Service | Details | Appt Date/Time/Time Interval |
|-------------------|-----------------------|-------------------------------|------------------------------|
| Specialist Clinic | Malignant haematology | Clinic D, FBC, CXR on arrival | 22/07/09 2pm |

Recent Referrals/Discharges

| Date | From | To | Purpose | Diagnosis |
|----------|---------------|---------------|-----------|--------------------------|
| 11/06/09 | SGH FMCC | SGH Endocrine | Referral | Hypertension |
| 13/06/09 | SGH Endocrine | SGH Endocrine | Discharge | Diabetes mellitus |
| 15/06/09 | SGH FMCC | GP | Referral | Congestive heart failure |
| 18/06/09 | SGH Endocrine | SGH FMCC | Referral | Diabetes mellitus |

Done

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Plus our Architectural Principles....

- Portal based – with additional toolsets to support targeted clinical capabilities
- Iterative and phased implementation – targeting key clinical capabilities
- Role based – to support clinical access requirements in a secure and authorized way
- Loosely coupled – to support flexibility and extensibility over time
- ‘Hybrid’ – central repository summary health care information, access to detailed reports / images via record locator service
- Service orientated based approach – integration layer to support interoperability and provision of registry and identification services
- Leverage existing systems and investments where possible

Access

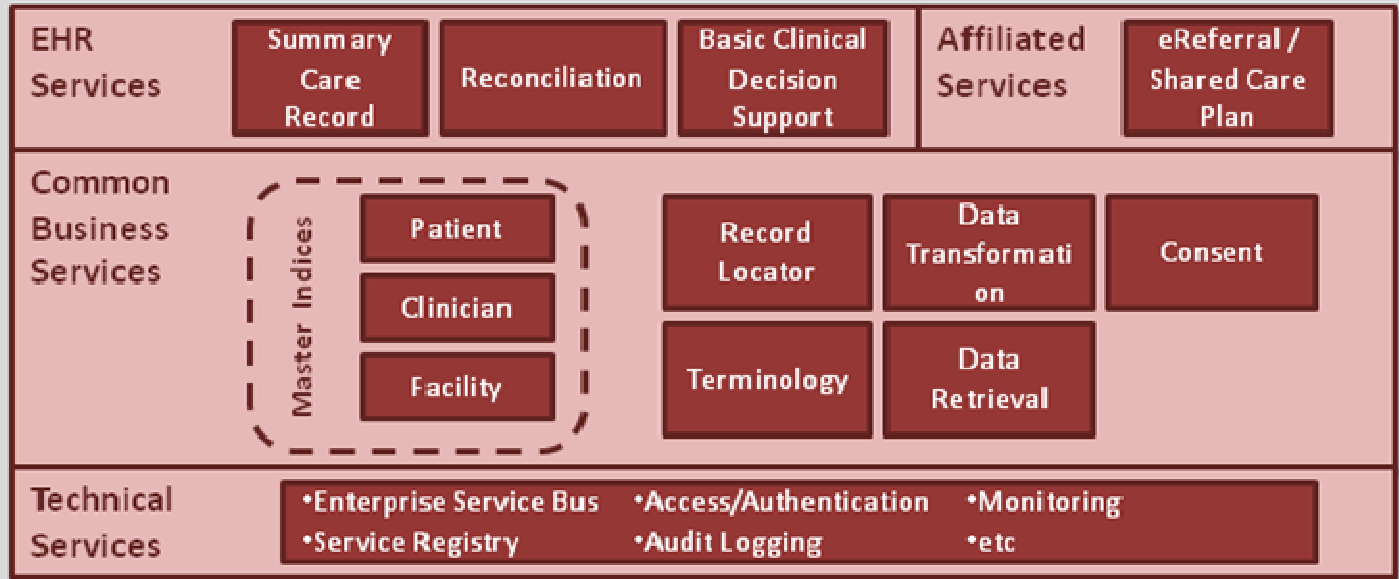


Data Access Interface

New end-user screens/functionalities

- Summary Care Record
- Reconciliation
- Shared Care Plan
- Detailed Documents
- Referral
- Basic CDS
- etc

EHR Info Exchange



Data Provision Interface

Provider Gateway

Data



EMRs



Repositories (CMIS, NIR, etc)



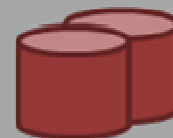
Virtual EHR Database (RLS)



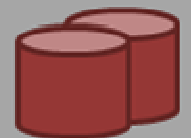
Summary Care Record



Master Indices



Reconciliations (Med, Diagnosis, etc)



Documents (Event Summaries, Referral, etc)

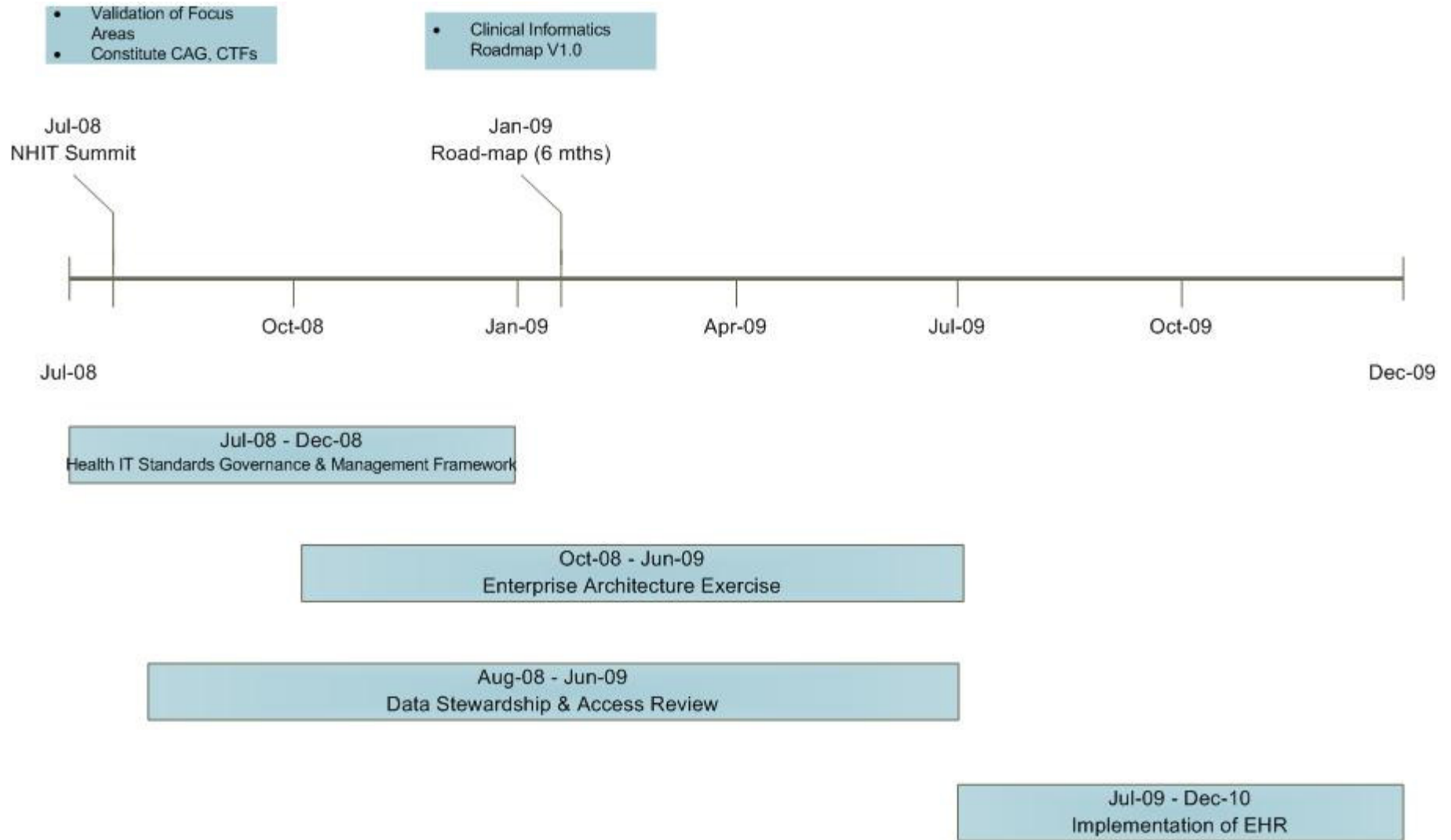
The EHR raises new challenges...

Beyond the EMRX, EHR is envisaged to...

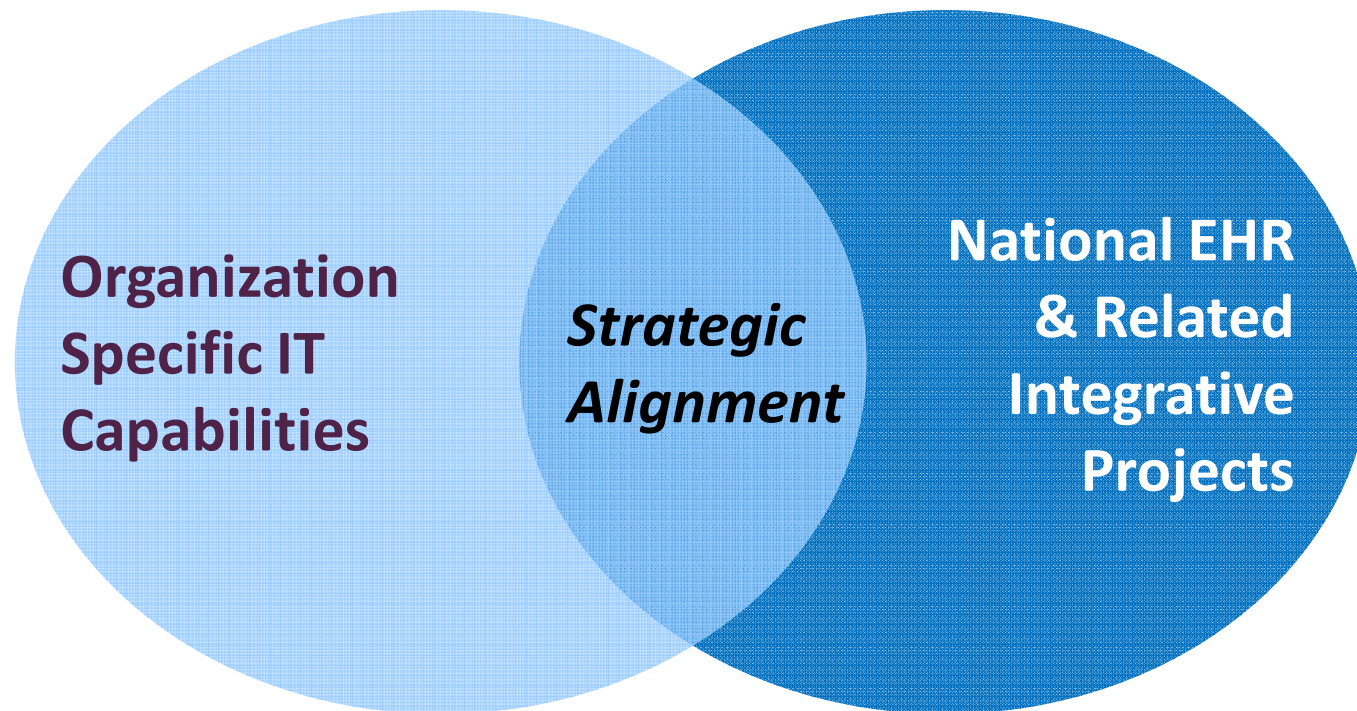
- Cover the entire healthcare continuum
 - Ministry of Health has fewer controls over private sector & Voluntary Welfare Organisations
- Cover the entire populace including non-resident foreigners
- Capture the full data complement
 - Including sensitive health information e.g. STD, mental health indications
- Support secondary uses
 - National health planning & resource allocation
 - Quality assurance
 - Public health regulation
 - Health research etc

Timeline Overview 2008

Integration of Workstreams

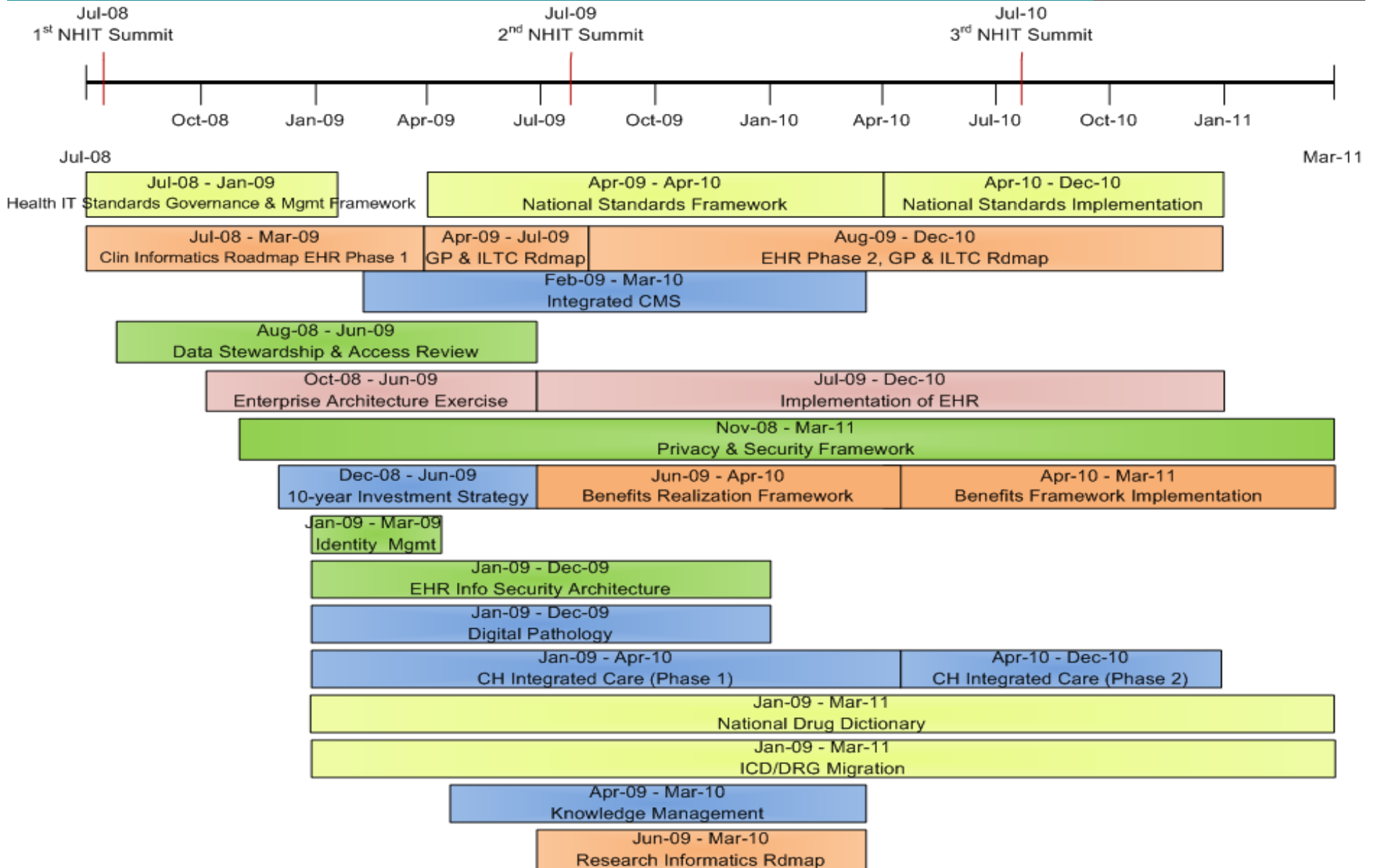


Clinical Informatics Roadmap

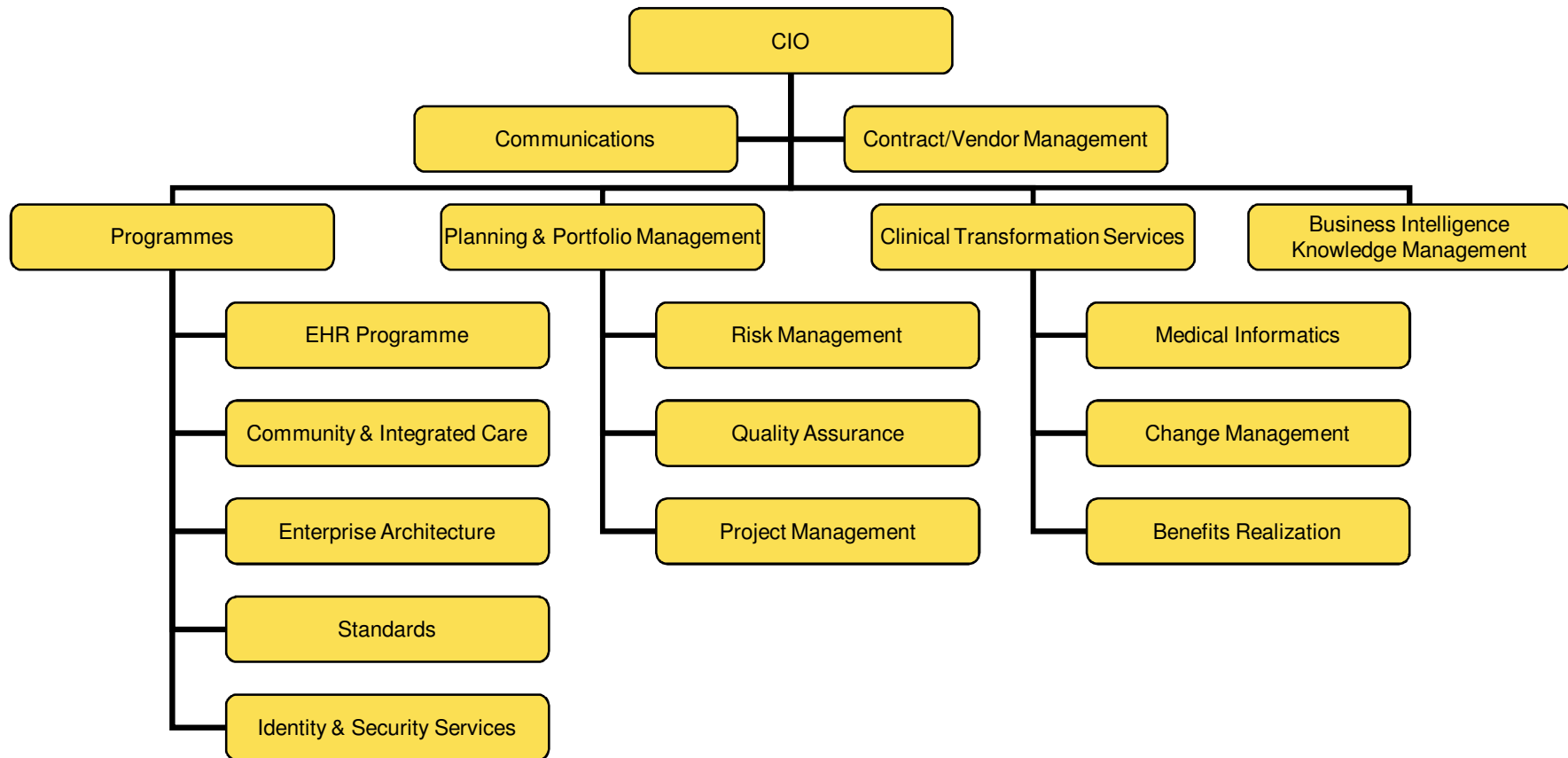


The Clinical Informatics Roadmap will support the national agenda for an Electronic Health Record by 2010 by facilitating strategic alignment at various Levels of the Healthcare System

Timeline Overview 2009



MOHH ISD



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MOH Holdings Pte Ltd

Thank You

MOH Holdings
www.mohh.com.sg

T: 6622-0980
F: 6720-0980

