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SNOMED CT Cardiology Reference Set Development, Malaysia

SNOMED CT Conference

Amsterdam, The Netherlands

30-31 October 2014

Content

- **developmental process** of the first SNOMED CT Reference Set (refset) development using the National Cardiovascular Disease (NCVD) Registry;
- establish **methodology** to be replicated in future refset;
- evaluation of **tools**;
- Implementation **strategy** & **stakeholders** involvement for early buy-in and early deliverables;
- **MyHDW as a way forward**

Malaysian Health Data Warehouse (MyHDW)

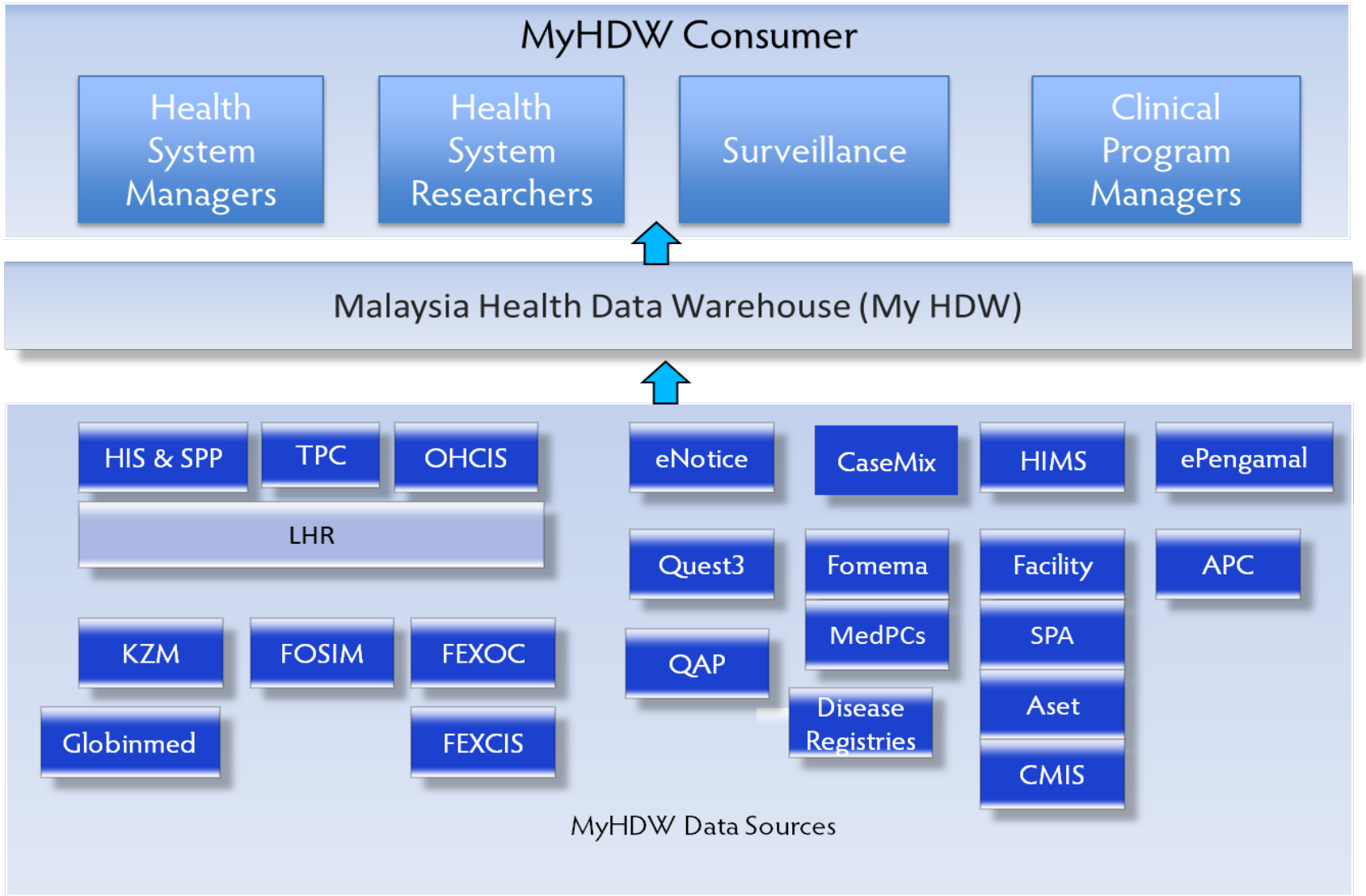
A Way Forward

MyHDW: Definition and Characteristics

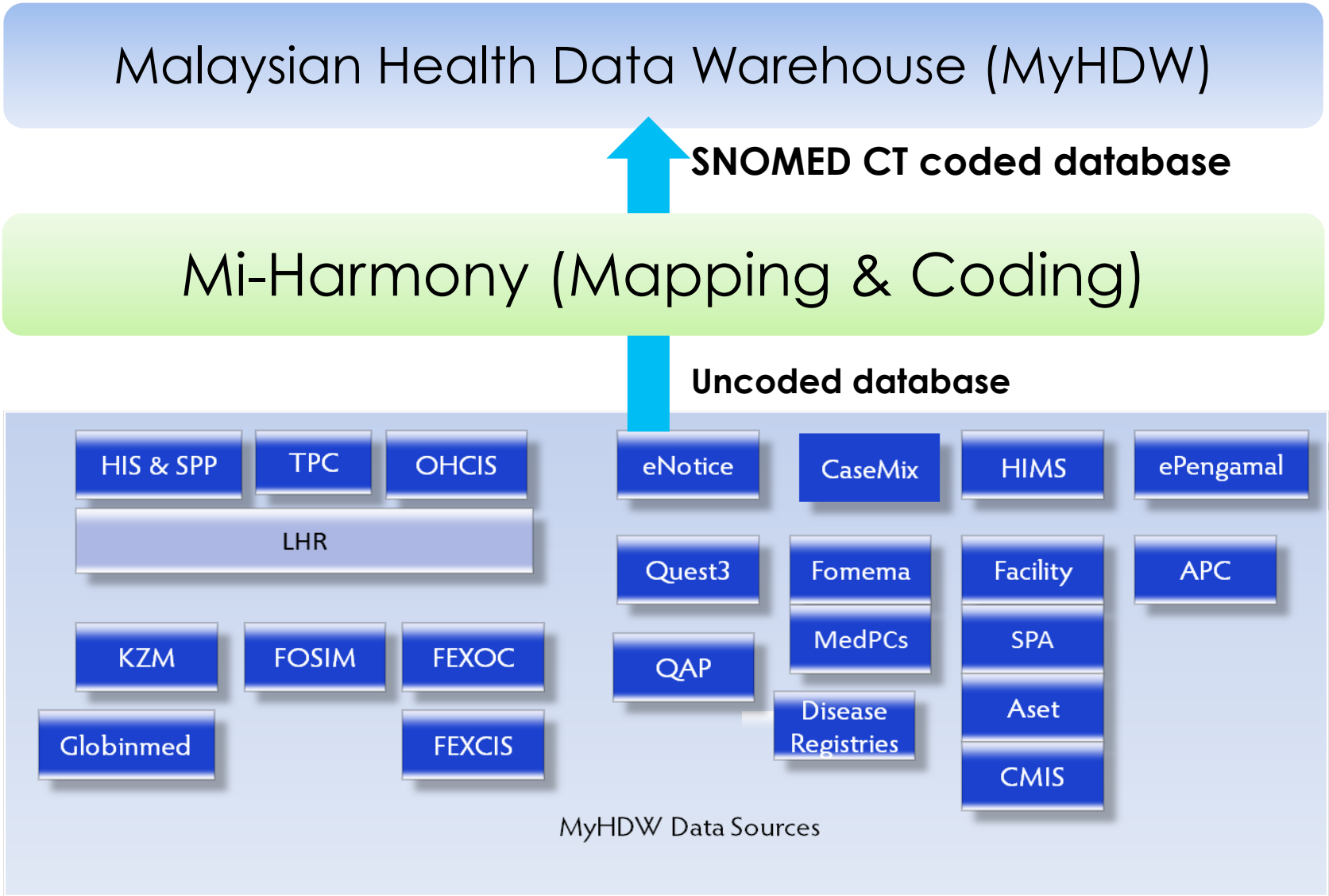
A trusted source of truth of comprehensive healthcare data structured for query and analysis

- Optimized for analysis and reporting *
- Integrated, interoperable and comprehensive health data *
- Build based on national health informatics standards
- Overarching healthcare system governance
- Information available in 'right time'
- 'Build once use many'
- Support many reporting and analysis tools and interfaces
- Highest level of data quality through appropriate methods, tools and techniques
- Implements secure and privacy sensitive access
- Focus on Secondary Usage of health data

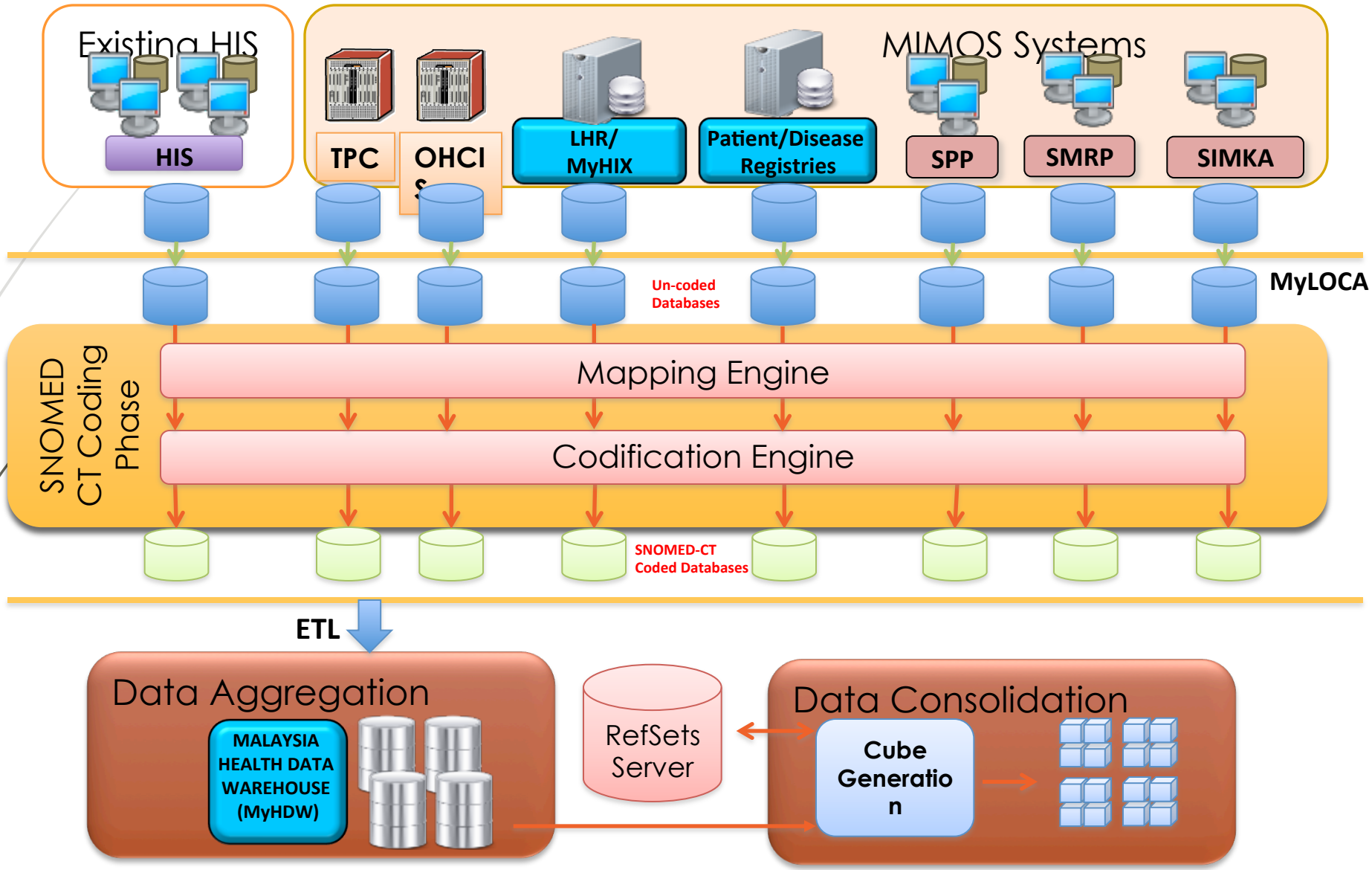
MyHDW: Category of Use & Data Sources



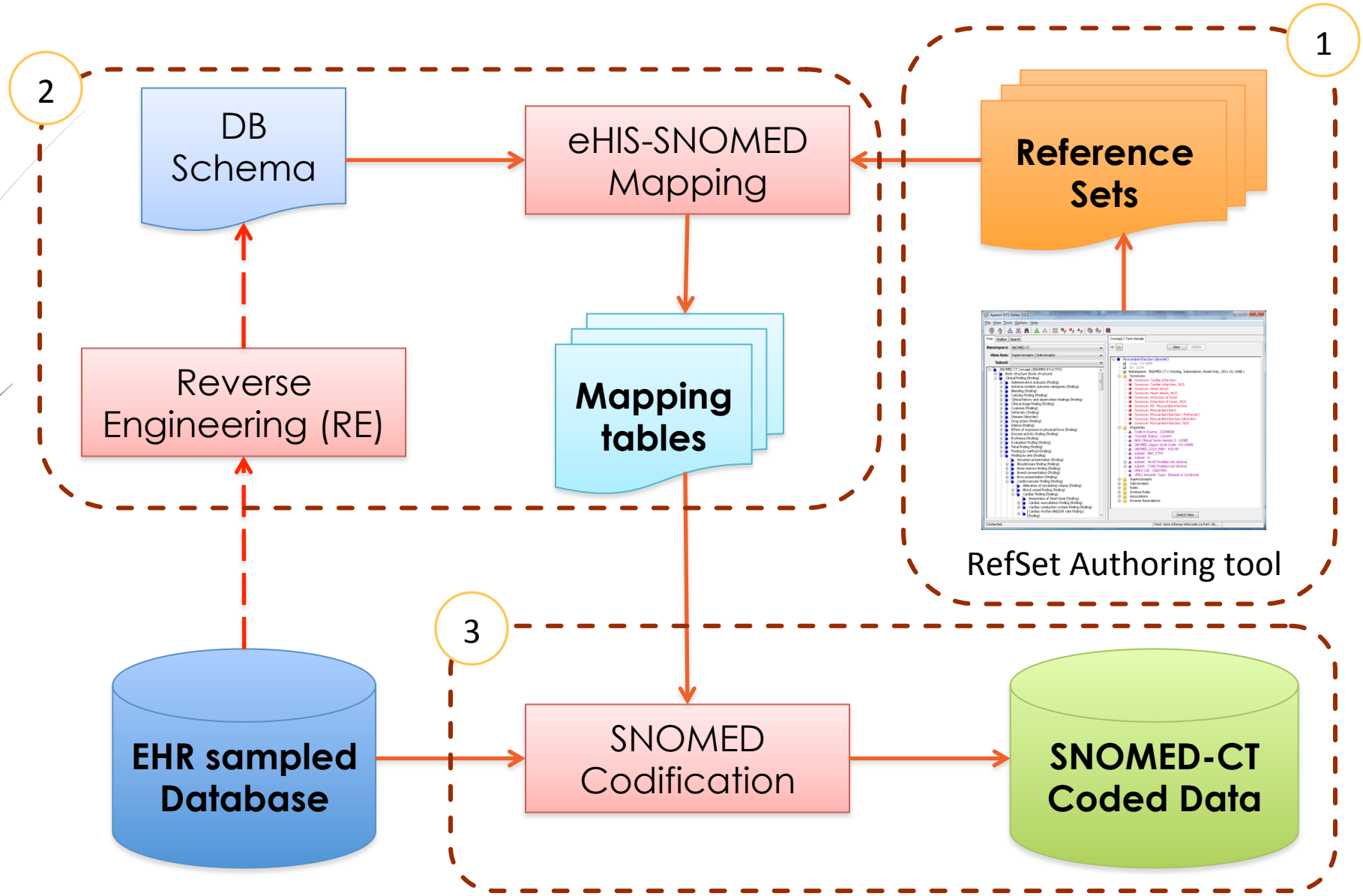
SNOMED CT in MyHDW: SNOMED



Mi-Harmony Usage Model



Mi-Harmony System Architecture



SNOMED CT Cardiology Reference Set

The Development

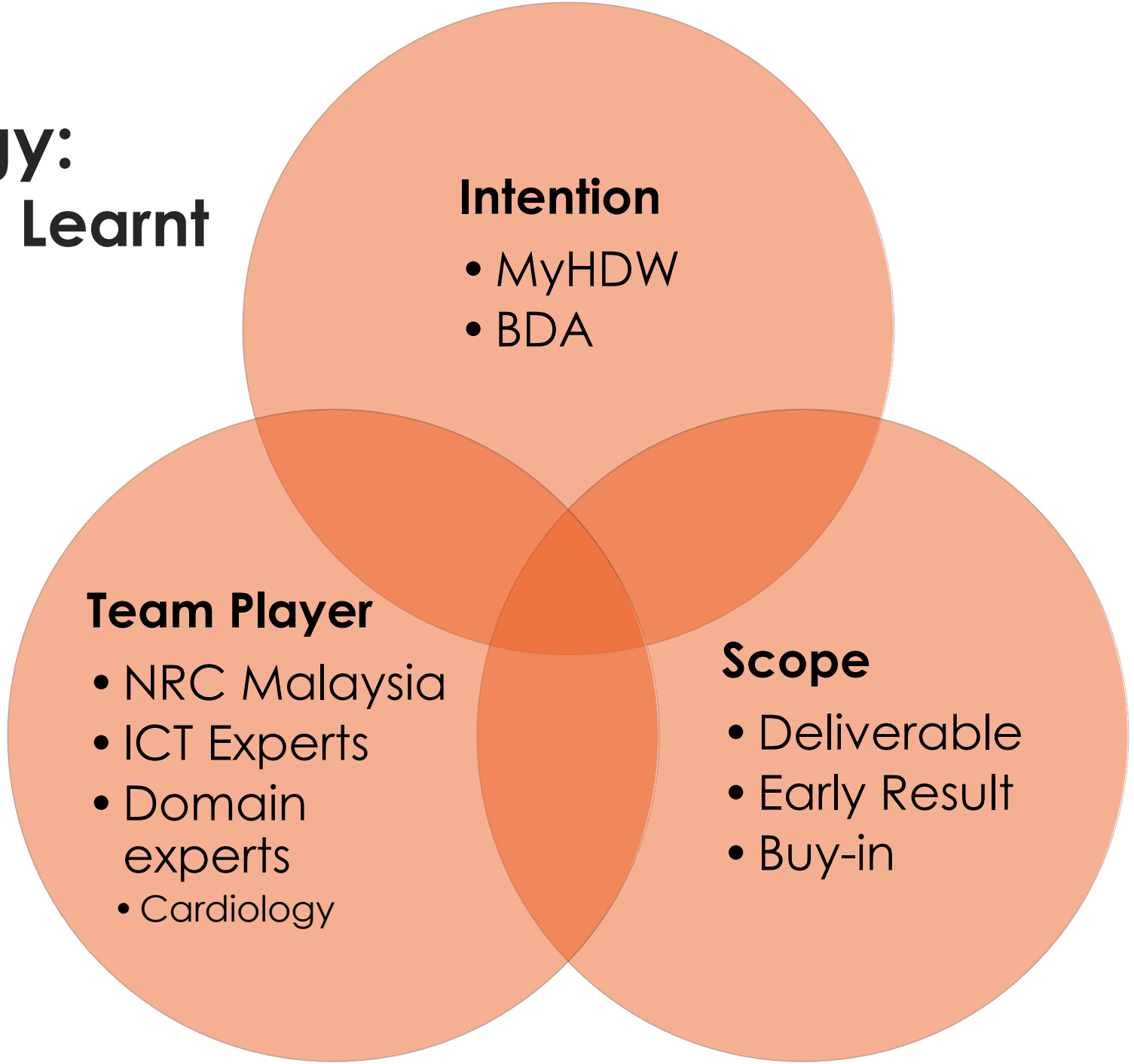
Strategy:
Lessons Learnt

SNOMED CT Conference October 2012

IHTSDO September 2013

SNOMED CT Conference 2013

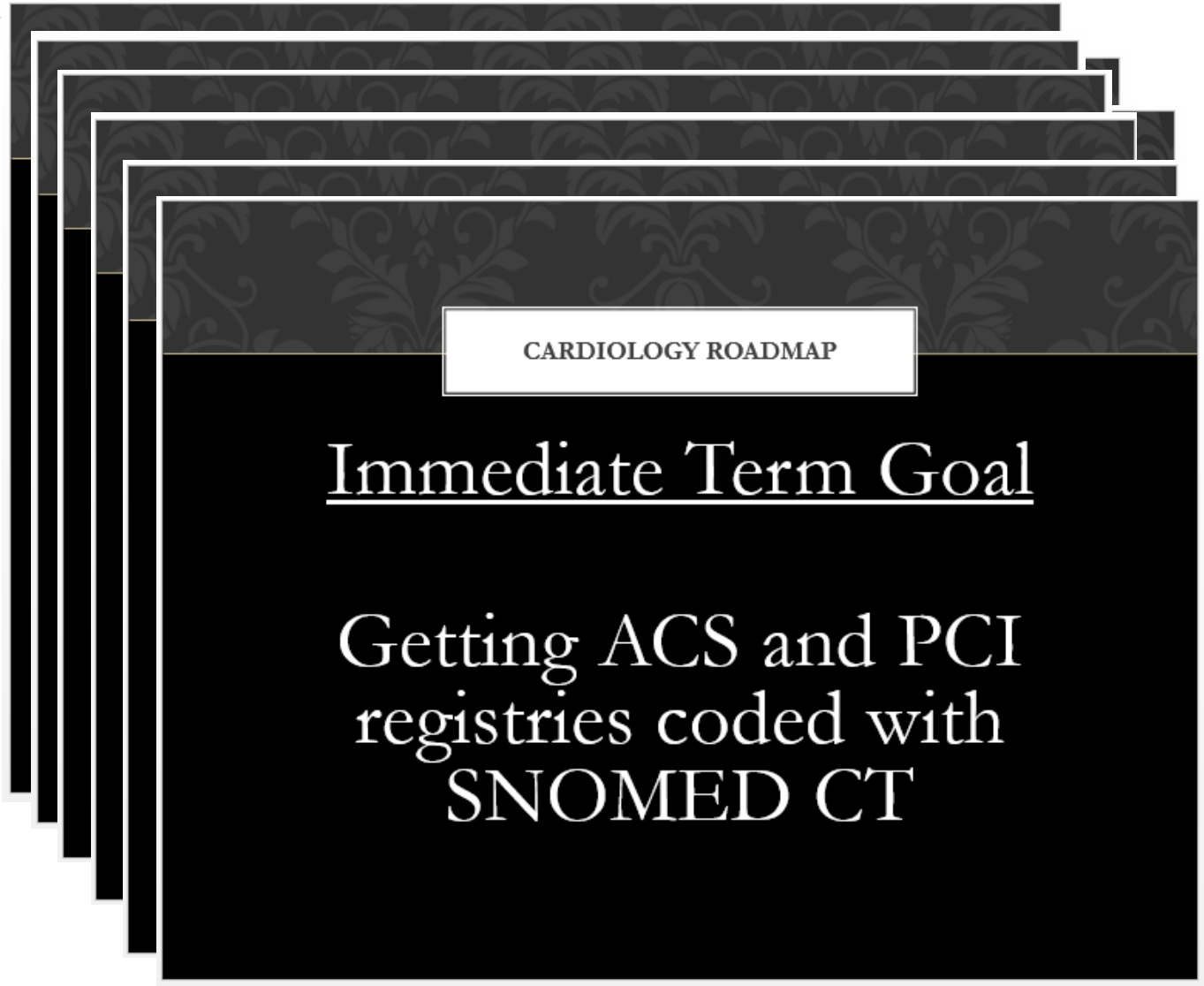
IHTSDO Business Meeting April 2014



Tool Review:

- Tool review
  - 10 Browsers & Authoring tools
  - Factors: long-term financial implication, cost for human resource development, functions
- Tool decision: IHTSDO Workbench

First Workshop:



- **Tripartite arrangement:** Clinical domain experts, MIMOS, HIC + IHTSDO
- **2 sessions** of 3-day workshops
- **First session:** Understanding SNOMED CT, potential benefits, video session and plan formulation by Domain experts
- **Second session:** Develop initial refset - online browsers

Lessons Learnt 1

- Presented Cardiology Refset's first draft to IHTSDO representatives over online discussion
- Lessons learnt:
  - Information Model: understanding it and its requirement; and
  - Too early in tripartite arrangement – not cost effective to the clinicians
- Moving forward:
  - Learned about Information Model of the registry
  - Learned more about SNOMED CT Concept Model
  - Revision of Cardiology Refset by NRC Malaysia and MIMOS
  - Approach Domain experts when clarification of clinical terms in registry/actual meaning/workflow needed

Lesson Learnt 2

- Presented Cardiology Refset's revised draft during SNOMED CT Conference 2013
- Lessons Learnt
  - Application of logical model in the refset development
  - Approaches to postcoordination
- Designed method of developing and endorsing a refset

The Methodology

1. Information Model

- Decipher NCVD registry form
- Arrange the terms in registry into proper clinical terminology

2. Present to domain expert

- Matching SNOMED CT concepts:
- Clinical meaning to the terms in registry and in SNOMED CT
- Clear any reservations
- Used IHTSDO Workbench

3. Consensus & Endorsement

- Concensus among domain experts
- Endorsed by Head of Cardiology Malaysia

1. Information Model

2. Present to domain expert

3. Consensus & Endorsement

7. Contact Number	(1):	(2):

SECTION 2 : STATUS BEFORE EVENT

1. Smoking Status:	◯ Never	◯ Former (quit >30 days)	◯ Current (any tobacco use within last 30 days)
2. Status of Aspirin Use:	◯ None	◯ Used less than 7 days previously	◯ Used more than or equal to 7 days previously

3. Premorbid or past medical history :

a) Dyslipidaemia	◯ Yes	◯ No	◯ Not known	h) New onset angina (Less than 2 weeks)	◯ Yes	◯ No	◯ Not known
b) Hypertension	◯ Yes	◯ No	◯ Not known				
c) Diabetes	◯ Yes	◯ No	◯ Not known	i) Heart failure	◯ Yes	◯ No	◯ Not known
d) Family history of premature cardiovascular disease	◯ Yes	◯ No	◯ Not known	j) Chronic lung disease	◯ Yes	◯ No	◯ Not known
				k) Renal disease	◯ Yes	◯ No	◯ Not known
e) Myocardial infarction history	◯ Yes	◯ No	◯ Not known	l) Cerebrovascular disease	◯ Yes	◯ No	◯ Not known
f) Documented CAD > 50% stenosis	◯ Yes	◯ No	◯ Not known	m) Peripheral vascular disease	◯ Yes	◯ No	◯ Not known
g) Chronic Angina (onset more than 2 weeks ago)	◯ Yes	◯ No	◯ Not known	n) None of the above	☐		

SECTION 3 : ONSET

1a. Date of onset of ACS symptoms:	d d m m y y	1b. Time of onset of ACS symptoms:	h h m m (24hr) ☐ Not available
2a. Date Patient presented :	d d m m y y	2b. Time Patient presented :	h h m m (24hr) ☐ Not available
3. Was patient transferred from another centre?	◯ Yes ◯ No		

1. Information Model

2. Present to domain expert

3. Consensus & Endorsement

NCVD PCI

Section 7: PCI Procedure Details (No 6)

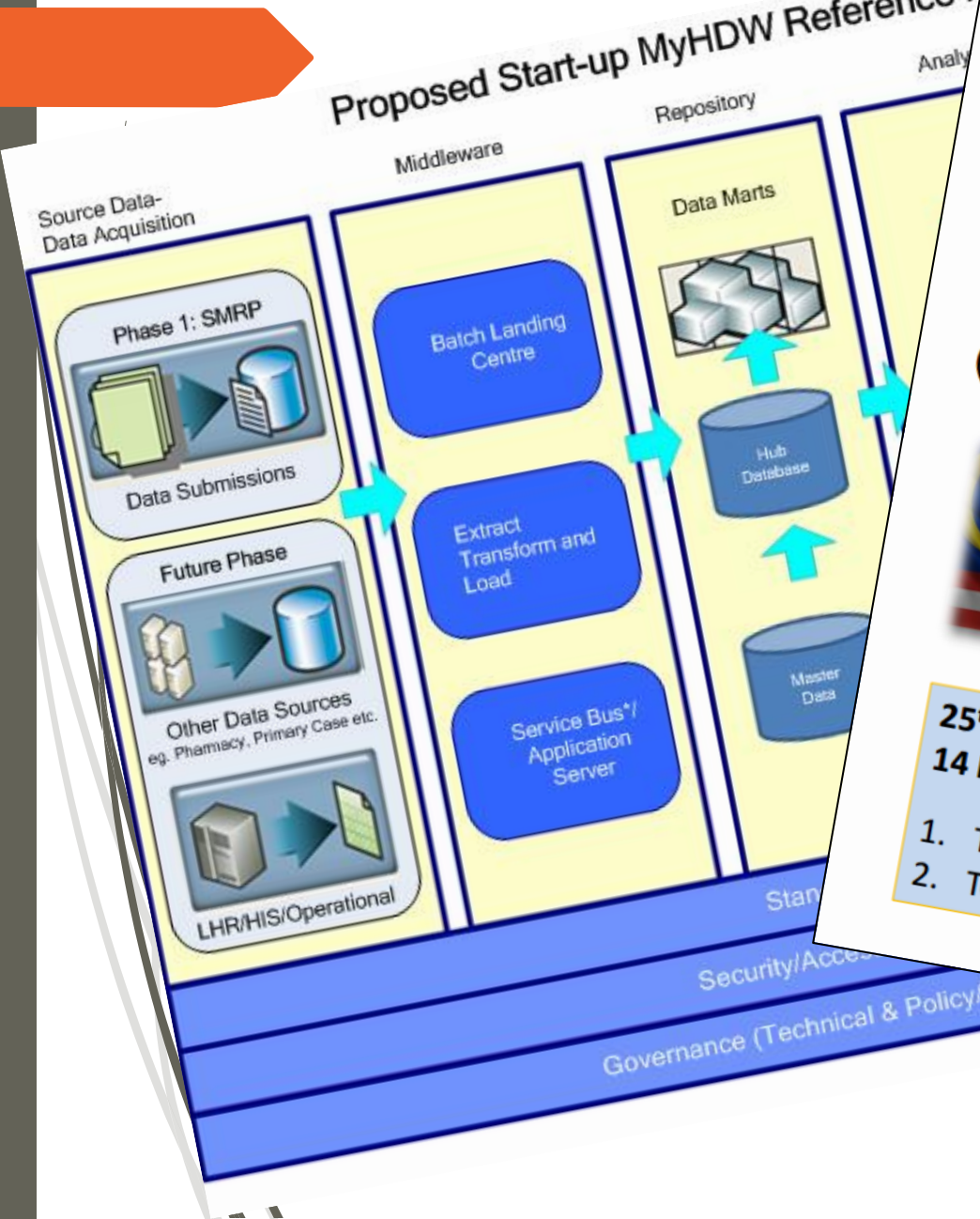
(PCI S7 no 6) Lesion description	FINDING OF LESION
(PCI S7 no 6) Lesion description: ostial CORONARY OSTIUM STENOSIS	*(PCI S7 no 6)* Medina Classification Finding *MEDINA CLASSFIFICATION FINDING
(PCI S7 no 6) Lesion description: bifurcation BIFURCATION LESION OF CORONARY ARTERY	*(PCI S7 no 6)* Medina Classification Finding: Main Branch proximal 0 *MEDINA CLASSFIFICATION FINDING: MAIN BRANCH PROXIMAL 0
(PCI S7 no 6) Lesion description: Total occlusion <3mo TOTAL; CORONARY OCCLUSION	*(PCI S7 no 6)* Medina Classification Finding: Main Branch proximal 1 *MEDINA CLASSFIFICATION FINDING: MAIN BRANCH PROXIMAL 1
(PCI S7 no 6) Lesion description: CTO > 3mo CHRONIC; TOTAL; CORONARY OCCLUSION	*(PCI S7 no 6)* Medina Classification Finding: Main Branch distal 0 *MEDINA CLASSFIFICATION FINDING: MAIN BRANCH DISTAL 0
(PCI S7 no 6) Lesion description: thrombus CORONARY ARTERY THROMBUS	*(PCI S7 no 6)* Medina Classification Finding: Main Branch distal 1 *MEDINA CLASSFIFICATION FINDING: MAIN BRANCH DISTAL 1
(PCI S7 no 6) Lesion description: calcified CALCIFICATION OF CORONARY ARTERY	*(PCI S7 no 6)* Medina Classification Finding: Side Branch 0 *MEDINA CLASSFIFICATION FINDING: SIDE BRANCH 0
(PCI S7 no 6) Lesion description: LMS LEFT MAIN CORONARY ARTERY DISEASE	*(PCI S7 no 6)* Medina Classification Finding: Side Branch 1 *MEDINA CLASSFIFICATION FINDING: SIDE BRANCH 1

Finalized Method

- Method and Refset presented to members of IHTSDO during Business Meeting April 2014
- Method was acknowledged by IHTSDO
- Next:
  - Future refsets: Oncology, SMRP (HIMS)
  - Mi-Harmony
- Concurrent work:
  - Harmonizing activity for SNOMED CT with MyHDW, LOINC, ICD, MyHDD
  - Collaboration with University Malaya - implementation at user-interface level

Take Home Message

- SNOMED CT is **aligned** with ministry or national initiative
- NRC sets **overarching strategy**: Early result, maintain buy-in;
- **Stakeholder engagement**: Who, When, How;
- Domain experts **own goal** motivates and maintain buy-in;
- Continuous **skill development** in SNOMED CT;
- **Team work**: tripartite arrangement;
- **Method:** Information model → Present & Clarify → Endorse;
- Start small, validate, replicate, expand;
- Start right the first time.



BDA IMPLEMENTATION MANDATE

"....the Communications and Multimedia Ministry with the support of the Malaysian Administrative Modernisation and Management Planning Unit (MAMPU) and MDeC will jointly implement **four government initiated Big Data Analytics** (BDA) pilot projects by 2015 to drive ICT services."

Prime Minister Datuk Seri Najib Tun Razak
The 25th MSC Malaysia Implementation Council Meeting
14 November 2013

25th MSC Malaysia Implementation Council Meeting (ICM)
14 November 2013

1. To develop the Big Data Framework for Malaysia
2. To implement 4 Government-Initiated BDA pilot projects

Thank you

from NRC Malaysia

30th October 2014

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NRC Malaysia