4th Malaysia Statistics Conference – MYSTATS 2016
Sasana Kijang, Kuala Lumpur (15 Nov. 2016)
"Strengthening Statistical Usage for Decisions and Innovation"

Session 1b(i): Usage of St1atistics and Application of Statistical Science by Official Authorities

THE WAY FORWARD FOR HEALTH STATISTICS IN MOH MALAYSIA

Outline

1. Statistics in MoH Malaysia
2. Malaysian Health Data Warehouse (MyHDW)
3. Geographic Information System (GIS)
4. Way Forward

(1)
STATISTICS
IN MOH MALAYSIA

1. Statistics in MoH Malaysia

**"A nation working together for better health"**

Enable evidence-based decision making and planning

Role of MoH:

- as leading agency of health in Malaysia;

- provides leadership on matters relating to health;

- set direction for health care development in the country;

- lay the policy and the direction of health services in the country;

- enforce regulations and be the regulator.

Role of Health Informatics Centre (HIC):

planning and managing integrated health information system in MoH.

HEALTH FACTS 2016

MINISTRY OF HEALTH MALAYSIA
Planning Division
Health Informatics Centre
MOH/S/RAN/7.16(AR)
(AUGUST 2016)
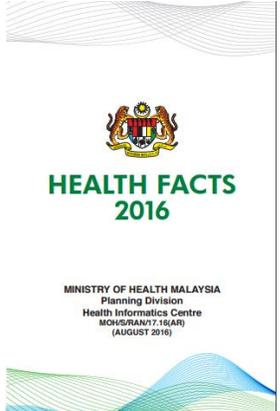
Healthcare Facilities, 2015 (as of 31 December)

Government
• Ministry of Health

	NO.	OFFICIAL BEDS
Hospitals	143	41,389
- Hospitals	134	36,447
- Special Medical Institutions[1]	9	4,942

	NO.	TEAMS
Health Clinics		
- Health Clinics[2]	1,061	-
- Community Clinics (Klinik Desa)	1,808	-
- Mobile Health Clinics (Teams)	-	203
- Flying Doctor Services (Teams)	6 (Helicopters)	12

[1] Refers to one Rehabilitation Hospital, one Women & Children Hospital, one Leprosy, one Respiratory, one Cancer and four Psychiatrics Institutions
[2] Health Clinics include Maternal & Child Health Clinics

Managing electronic Health Information Management Systems (HIMS)

A cycle

Analysis & dissemination of information
- MyHDW
- GIS

Stakeholder engagement
- MOH Managers
- Interministerial
- International
- National agencies

System monitoring
- Timeliness of submission
- Data validation
- Harmonisation
- Data cleansing

System implementation
- Identify variables, extraction & collection point, data flow
- Formulate reports to be generated
- Launch by location &
Roadshow

Data sources in generating MoH Statistics

Engagement

Collaboration

Harmonisation
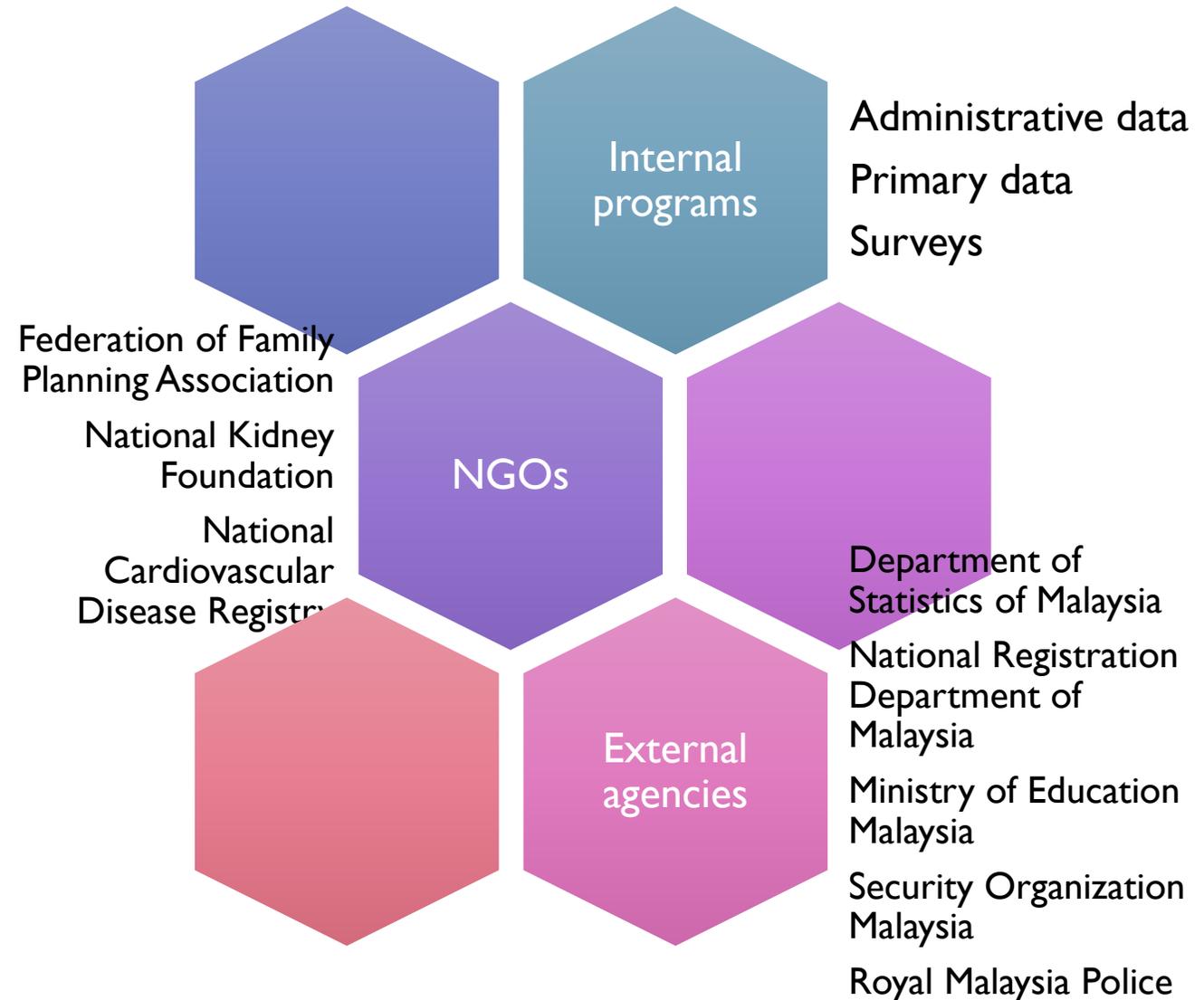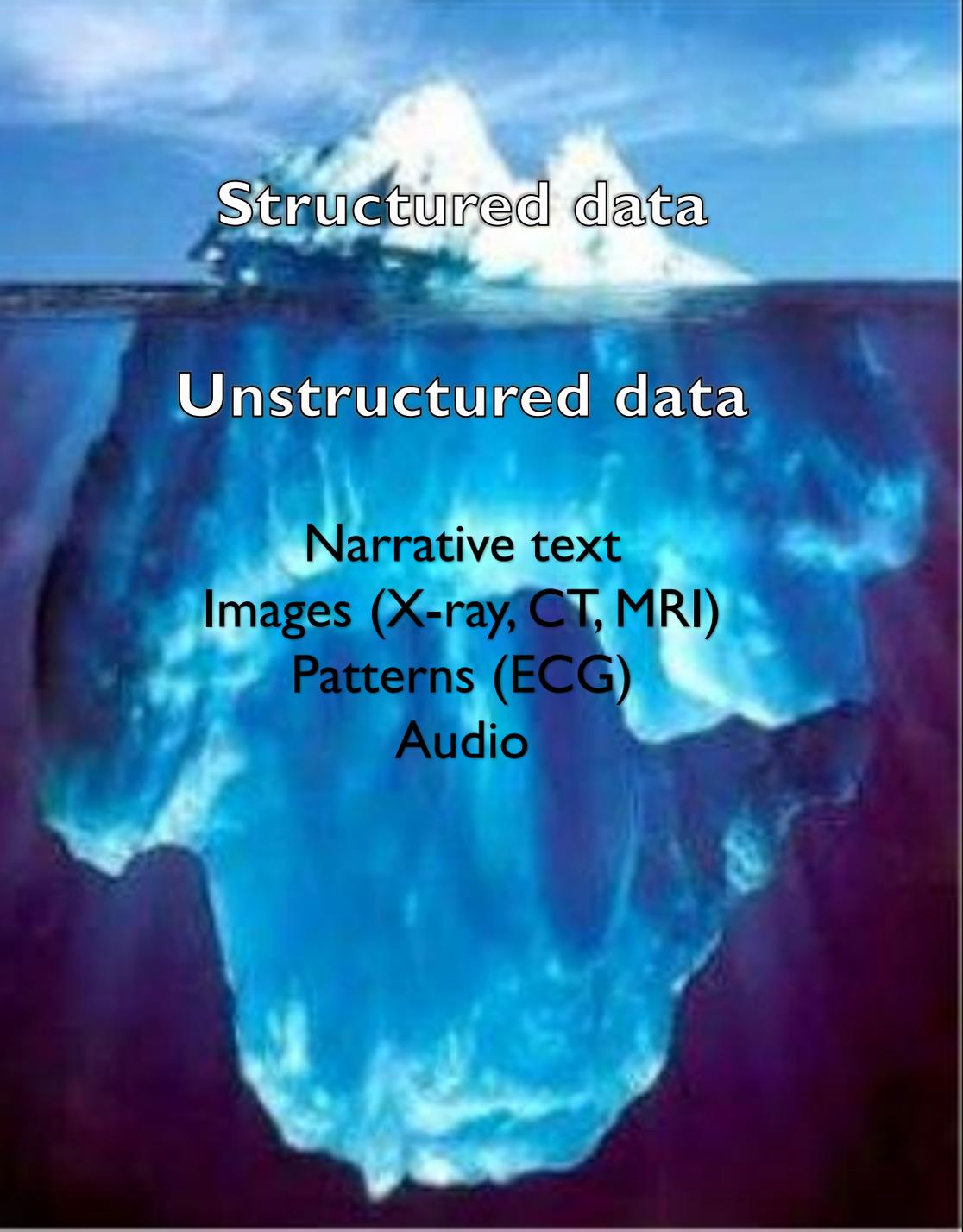
Internal programs

Administrative data
Primary data
Surveys

Federation of Family Planning Association

National Kidney Foundation

National Cardiovascular Disease Registry

NGOs

Department of Statistics of Malaysia
National Registration Department of Malaysia
Ministry of Education Malaysia
Security Organization Malaysia
Royal Malaysia Police

External agencies

Structured data

Unstructured data

Narrative text
Images (X-ray, CT, MRI)
Patterns (ECG)
Audio

|		
Health Information Management Systems (HIMS)	Patient registries	Oral Health
Pharmaceutical	Rural Environmental and Sanitation	Food Safety Information System
Family Health and Family Planning	Communicable Disease Control Information System (e-Notis),	Blood Transfusion
Private Hospital	International Entry point	Health Facility
Non-MoH Hospital Information System	Health Human Resource	MORE

# Data and Information usage

Data

Information

Knowledge

Wisdom

(2)
# MALAYSIAN HEALTH DATA WAREHOUSE (MyHDW)
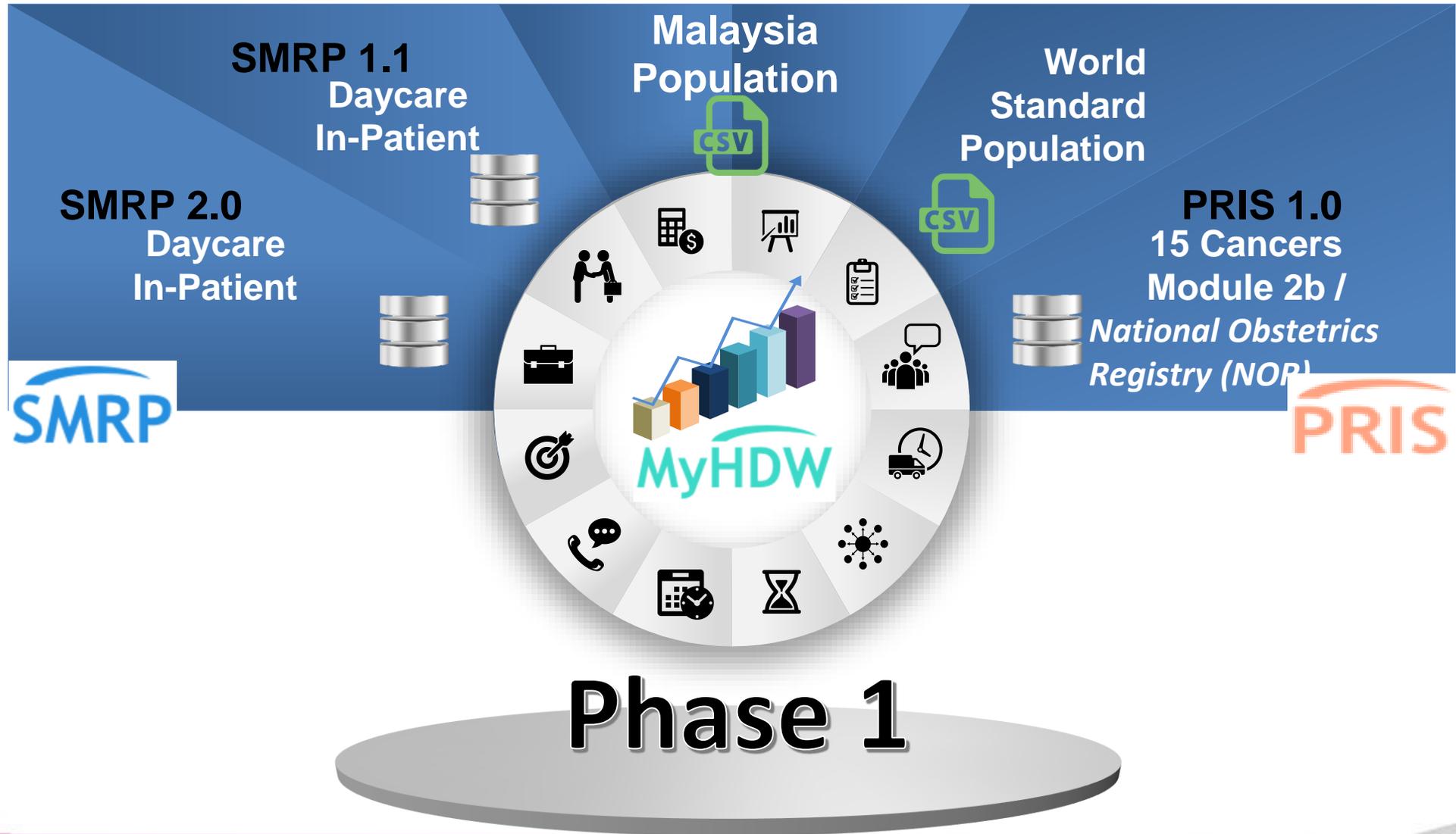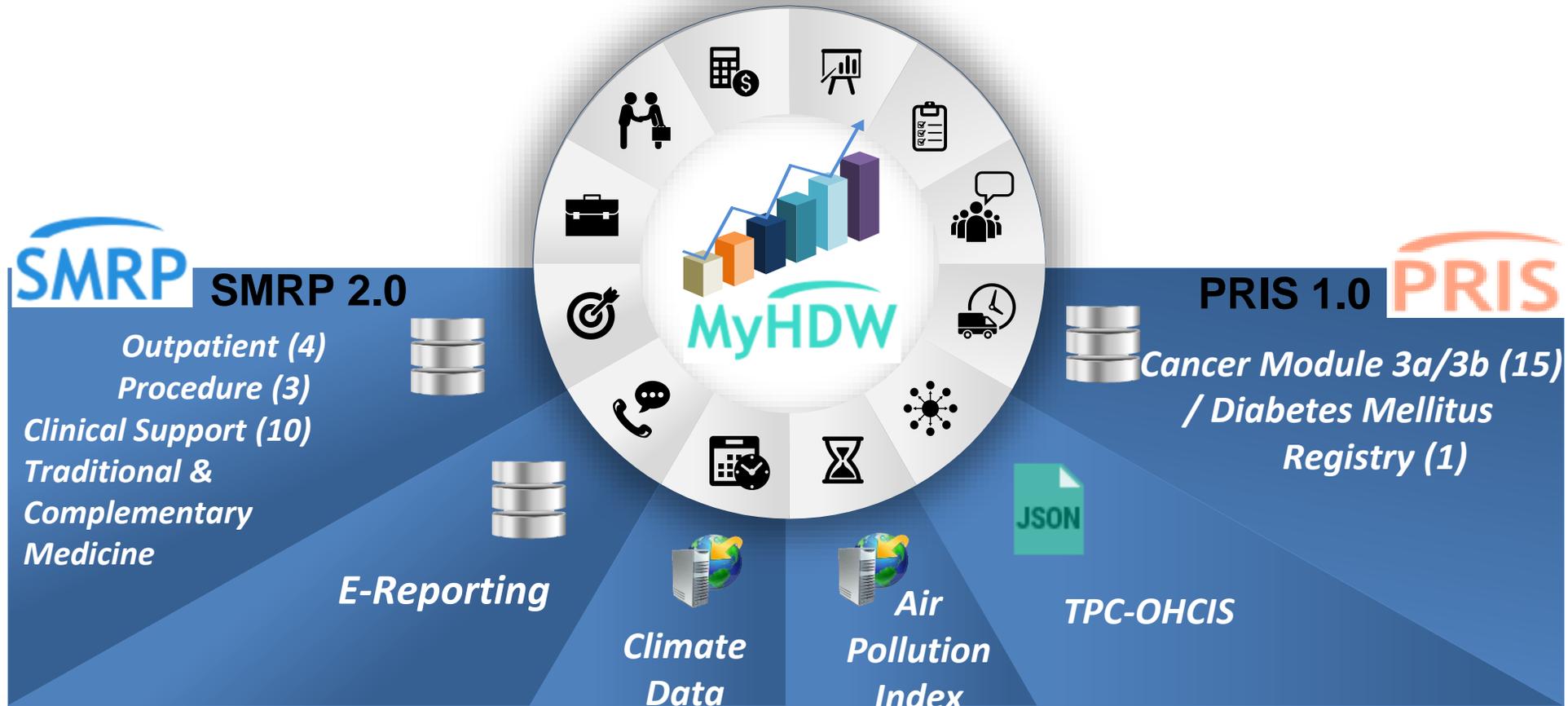
MyHDW Methodology

MyHDW Data Integration

SMRP

1.1   2.0

Malaysian Population

World Standard Population

PAS

Personal Data

Pseudonymisation

De-Identified Data

CSV CSV CSV JSON

DATA LAKE

Big Data & Hadoop

Hadoop Data Lake

ETL

Staging Area

ETL

Step 04   Data Integration

Data Marts

Business Intelligent

GIS

Malaysian Health Data Warehouse
Ministry of Health Malaysia

MyHDW   SMRP   PRIS
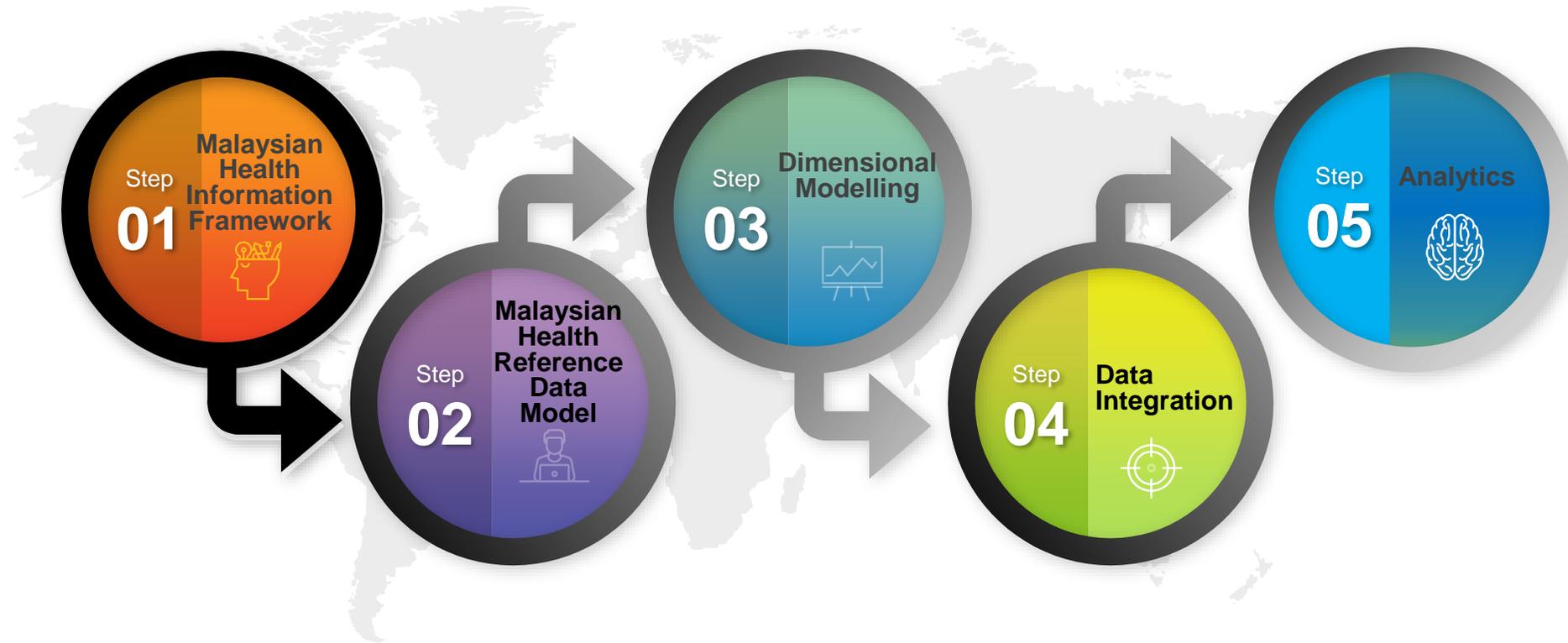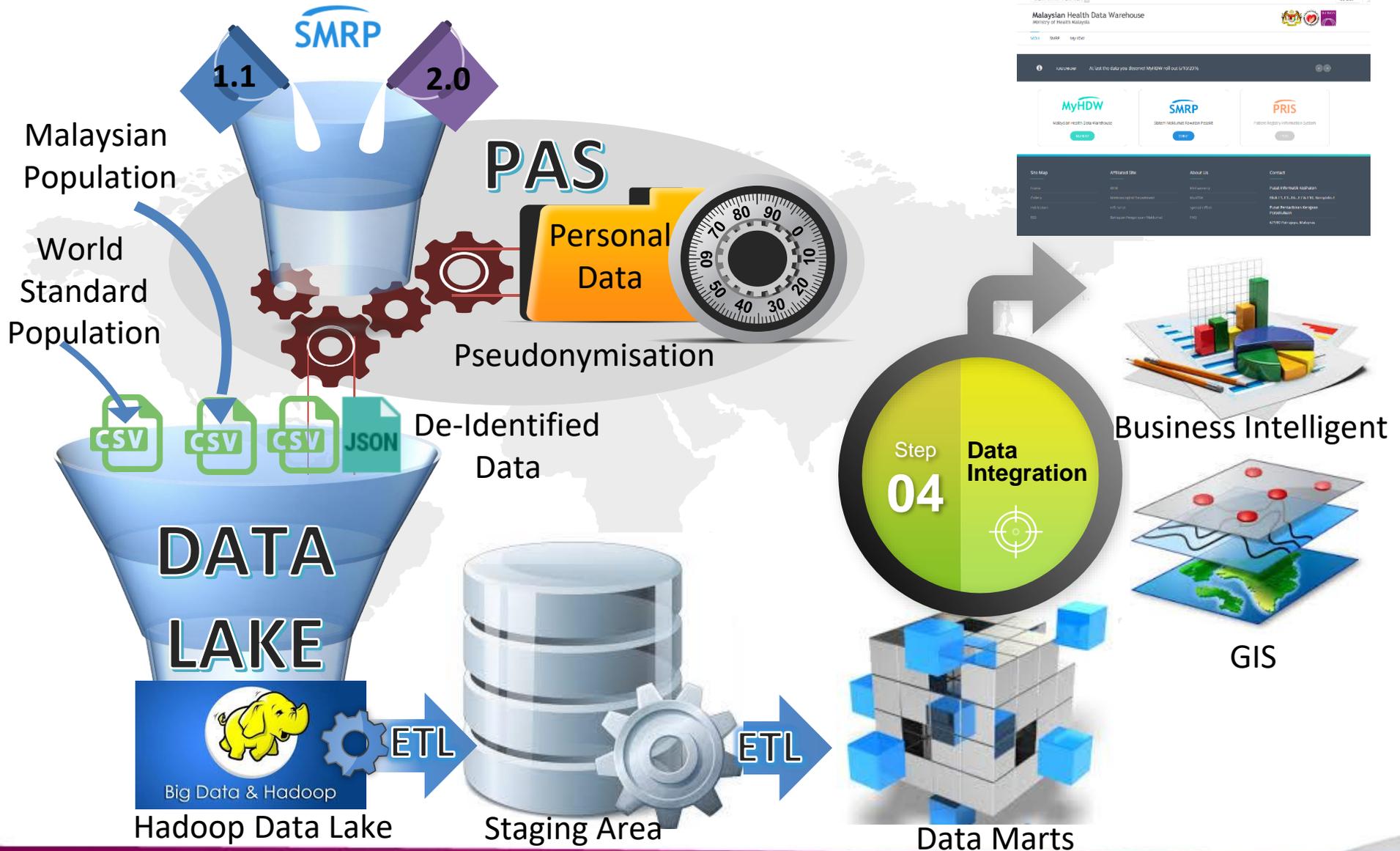
MyHDW Analytics
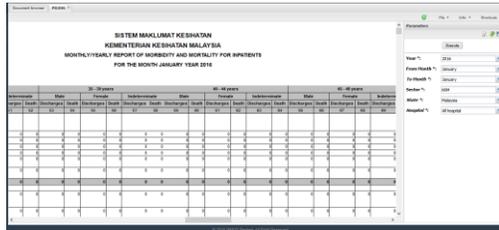
Fixed Format Report
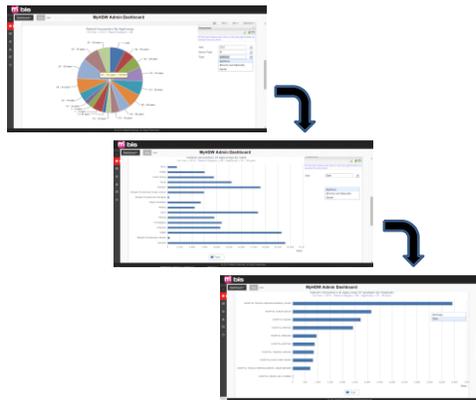
Ad-hoc Query

Codification and Harmonisation

Dashboard
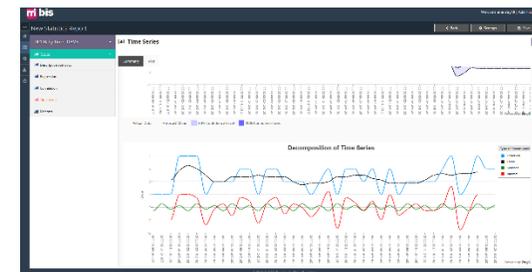
Statistical and Predictive Analytics

Step
05

Analytics

The Value

|			
01	Quality of the Data	- Source of truth - Auto validation rules
02	Security	- 2 Factor Authentication, Access Control Matrix - Data Anonymisation and De-Identification
03	Governance	- Data and Information Governance Committee
04	Independent KPI Generation	- Monitoring & Evaluation - Evidence-based decision making and planning
05	Big Data Analytics	- Predictive Analysis - Preserve the granularity of data sources
06	Comprehensive National Health Data	- Ready to provide information to external systems (without losing confidentiality) e.g. IARC - Electronic reporting for Open Data
07	Timely	- Right Time – 24 Hours / Every Month - Web Base
08	Cost Saving	- Centralised system - Data co-related - 1/3 savings on development cost

(3)
GEOGRAPHIC INFORMATION SYSTEM (GIS)

Within Malaysian Health Data Warehouse (MyHDW)

Capture, manage, analyse, store, manipulate, display all forms of spatial/geographically referenced data

Summarizes data into meaningful information when combined with spatial data

Encompass Cell, Focal, Point, Line and Zonal statistics that can be used to analyse raster data in different layers

View specific entity (facility) or an area

Responsive to change

GIS

GIS and statistical analysis is crucial in examining the distribution of values for a particular attribute or to spot outliers (extreme high or low values of data)

Improved decision making and communication

Includes pattern analysis, shape analysis, surface modelling, and surface prediction.

Inferential statistics can be implemented using probability model (predict likely occurrence of values using a set of known values OR assess likelihood of any pattern/trend)

As a monitoring and evaluation tool

Detect patterns, trends, models and allow prediction

(4)
WAY FORWARD

MoH Way Forward

Near future:

Prepare/develop Environmental Data for medical research for Malaysian Meteorological Department (MetMalaysia) and Department of Environment Malaysia.

More data sources

MyHDW Phase 2: Family Health & Oral Health

Enhance information visualisation: Dashboard, Portal, Reports, GIS

Visualisation

Analytics

Data mining

Structured & Semi-structured data

Disaster management
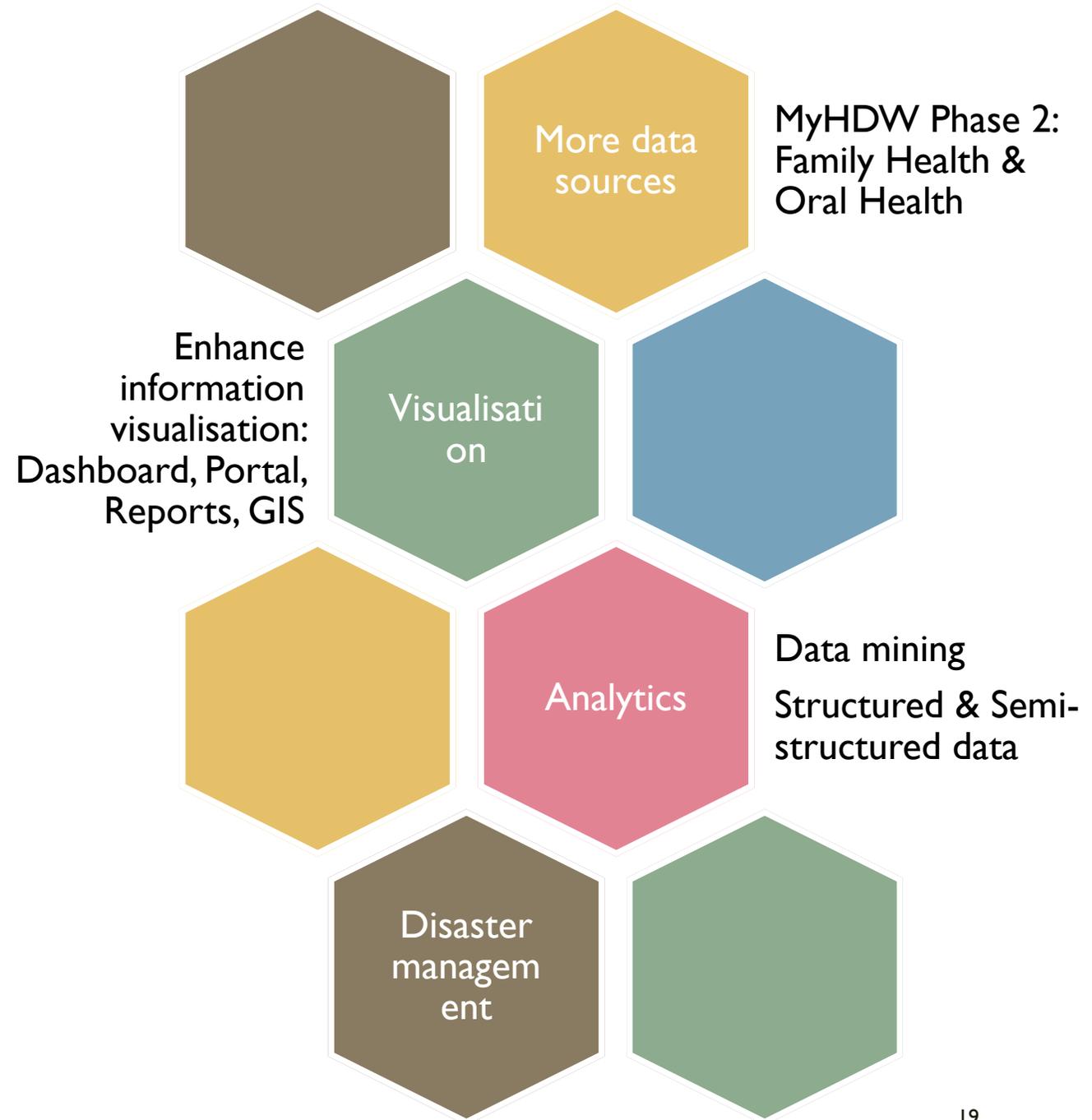
Challenges

Real time vs. right time

Accuracy

Interoperability

Granular data

Future possibilities

Sharing of data across government agencies

A comprehensive data warehouse with seamless information flow between different agencies

Build once, use many
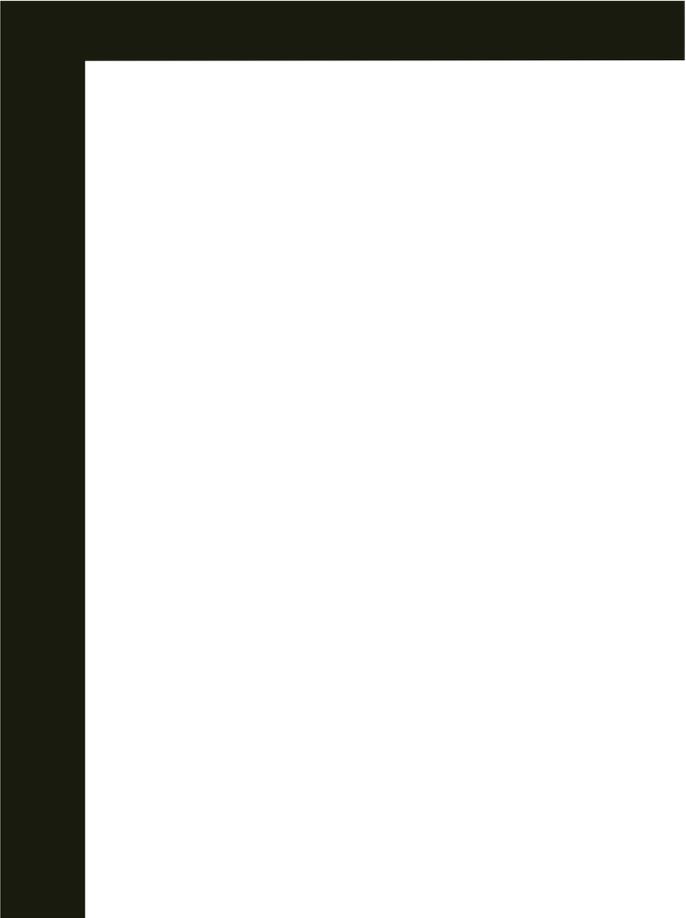
THANK YOU

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