Personal Health Management

Singapore's National Strategy to Engage People & Communities to Achieve Better Health Outcomes

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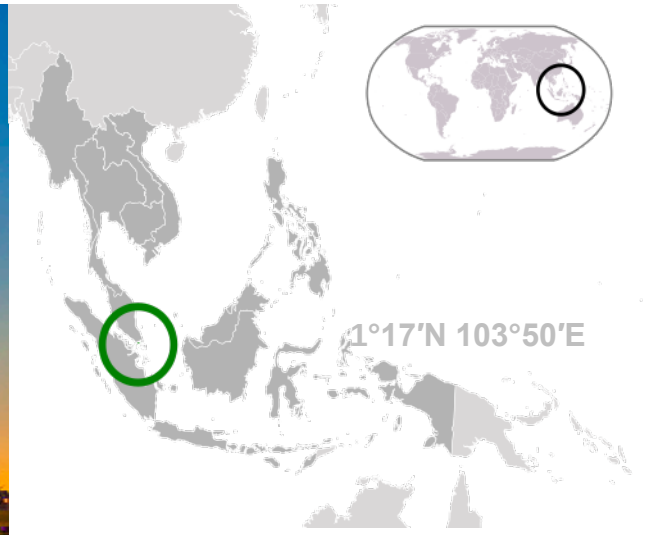
Singapore



274 sq miles (710 km²) ≒ ½ London

5.2 million | life expectancy: 79 Yrs (M) 84 Yrs (F) | fertility rate (per female) : 1.15

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Sources: Singapore Statistics

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The holding company of
Singapore's public healthcare assets

NUHS National University Health System · NUH National University Hospital · National University Cancer Institute, Singapore · National University Heart Centre, Singapore · National Healthcare Group (Adding years of healthy life) · Tan Tock Seng Hospital · Institute of Mental Health, Woodbridge Hospital (Loving Hearts, Beautiful Minds) · National Healthcare Group Polyclinics · National Skin Centre

SingHealth · Singapore General Hospital · KK Women's and Children's Hospital · National Cancer Centre Singapore · National Dental Centre Singapore · National Heart Centre Singapore · National Neuroscience Institute · Singapore National Eye Centre · Polyclinics SingHealth

Alexandra Health · Khoo Teck Puat Hospital, Alexandra Health · JurongHealth · JurongHealth Alexandra Hospital · JurongHealth Ng Teng Fong General Hospital · Eastern Health Alliance · Changi General Hospital · IHiS Integrated Health Information Systems · Singapore Clinical Research Institute · aic agency for integrated care

Our healthcare system at a glance

Overall
Private & Public Mix

80%

Primary Care

Private GPs
Fee for Service

Acute Care

80%

Public Hospitals
Co-pay

90+%

LTC

Voluntary / Private
Community Hospitals
Nursing Homes
Hospices
Co-pay

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Source: Ministry of Health, Singapore

Among the best in the World

Health system performance
(WHO, 2000)

6th of *191countries*

Health infrastructure
(IMD World Competitiveness Year Book, 2007)

3rd of *55 countries*

Challenges ahead: 2 mega trends

1 Demographic shifts

Aging population

2020:15% > age 65
2050: 4th Oldest in the World

2 Increased disease burden

Chronic diseases

Fiscal imbalances (currently 4% of GDP)
Strained healthcare delivery systems

Source: Ministerial Committee on Ageing

National past-time

Disease burden

	1998	2004	2010
Prevalence among adults aged 18 to 69 years[1] (%)			
▶ **Hypertension[2]**	27.3	24.9	23.5
▶ **Diabetes**	9.0	8.2	11.3
▶ **High Total Cholesterol**	25.4	18.7	17.4
▶ **Obesity**	6.0	6.9	10.8
▶ **Daily Smoking**	15.2	12.6	14.3

Definitions:

Hypertension: ≥140/90 mmHg

Diabetes: 2-hour plasma glucose during an oral glucose tolerance test ≥11.1 mmol/l
High Total Cholesterol: Total cholesterol ≥6.2 mmol/l
Obesity: BMI ≥30kg/m^2
Daily Smoking: Smokes cigarettes at least once a day

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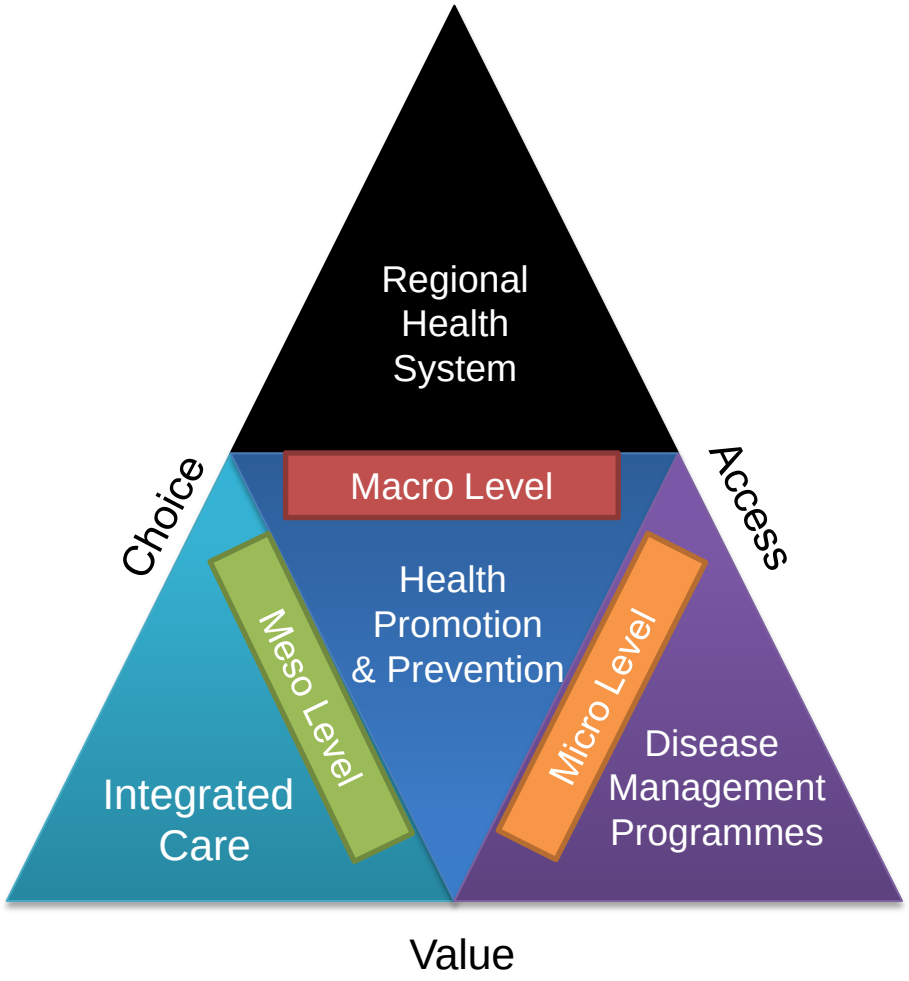
Source: Ministry of Health, Singapore

Healthcare system transformation at macro, meso and micro levels



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Source: National Personal Health Management Strategy 2011, Tikki Gee, MOH Holdings

Macro reforms: regional health systems

SingHealth

National Healthcare Group
Adding years of healthy life

new capacity

Jurong General Hospital (2014) 700 beds

Sengkang Hospital (2020) 500-600-Beds

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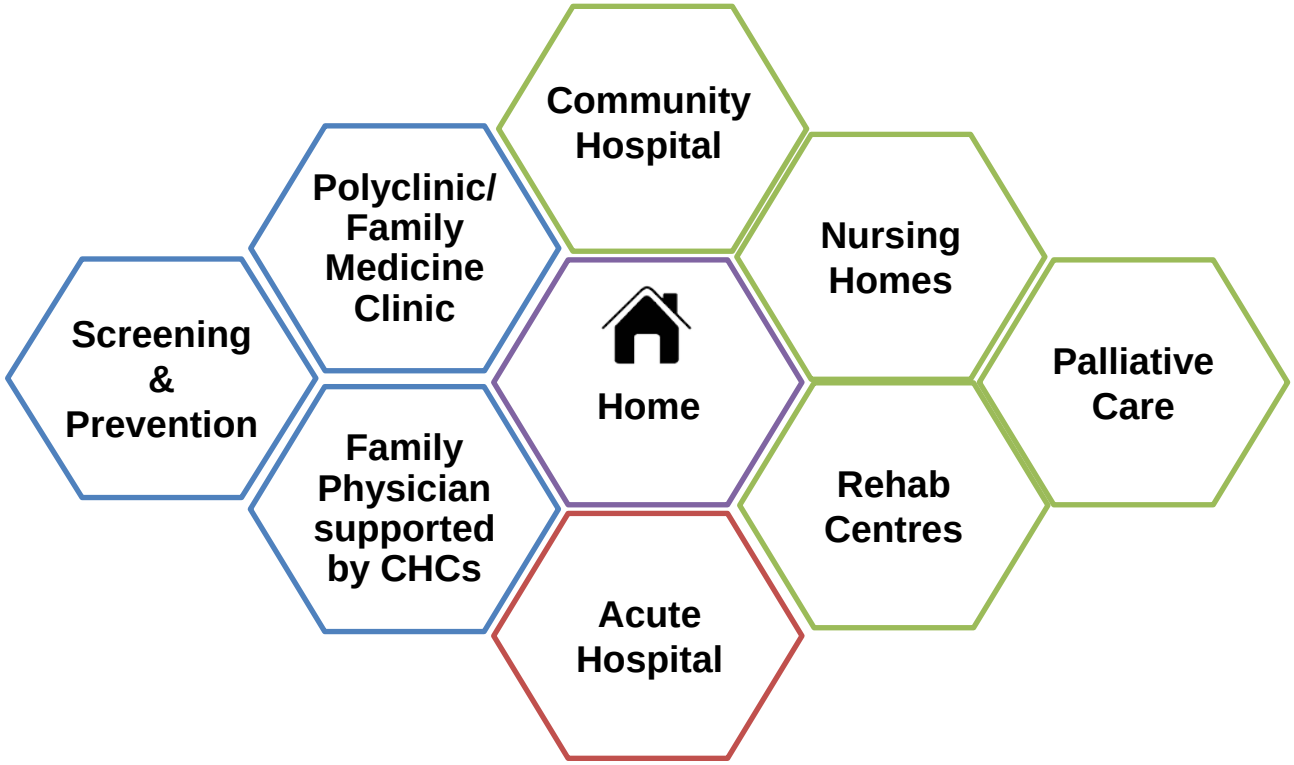
Meso level reforms: care integration

EASTERN HEALTH ALLIANCE



In partnership with:

Changi General Hospital

Peacehaven NURSING HOME

Polyclinics SingHealth

ST. ANDREW'S COMMUNITY HOSPITAL

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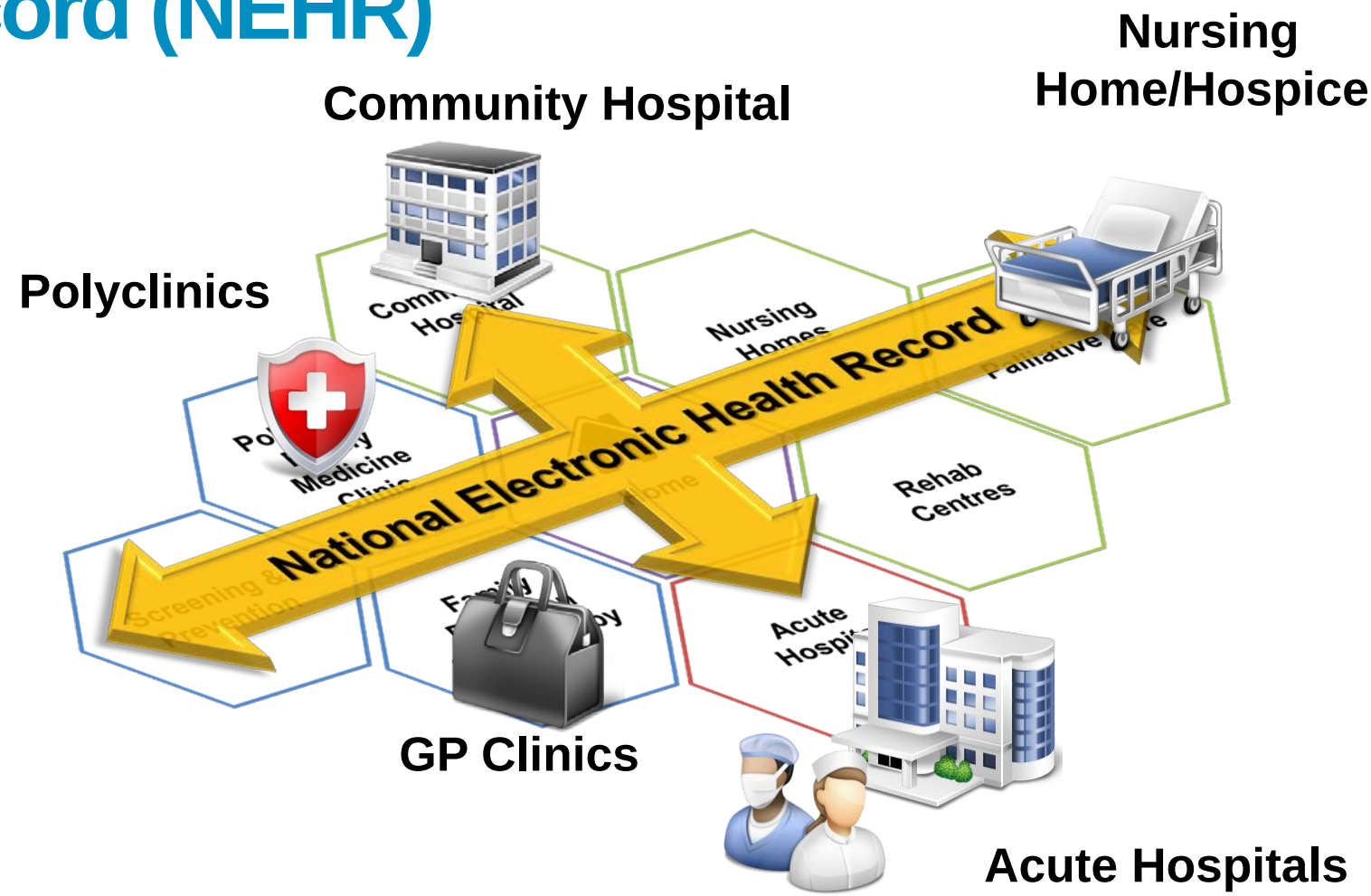
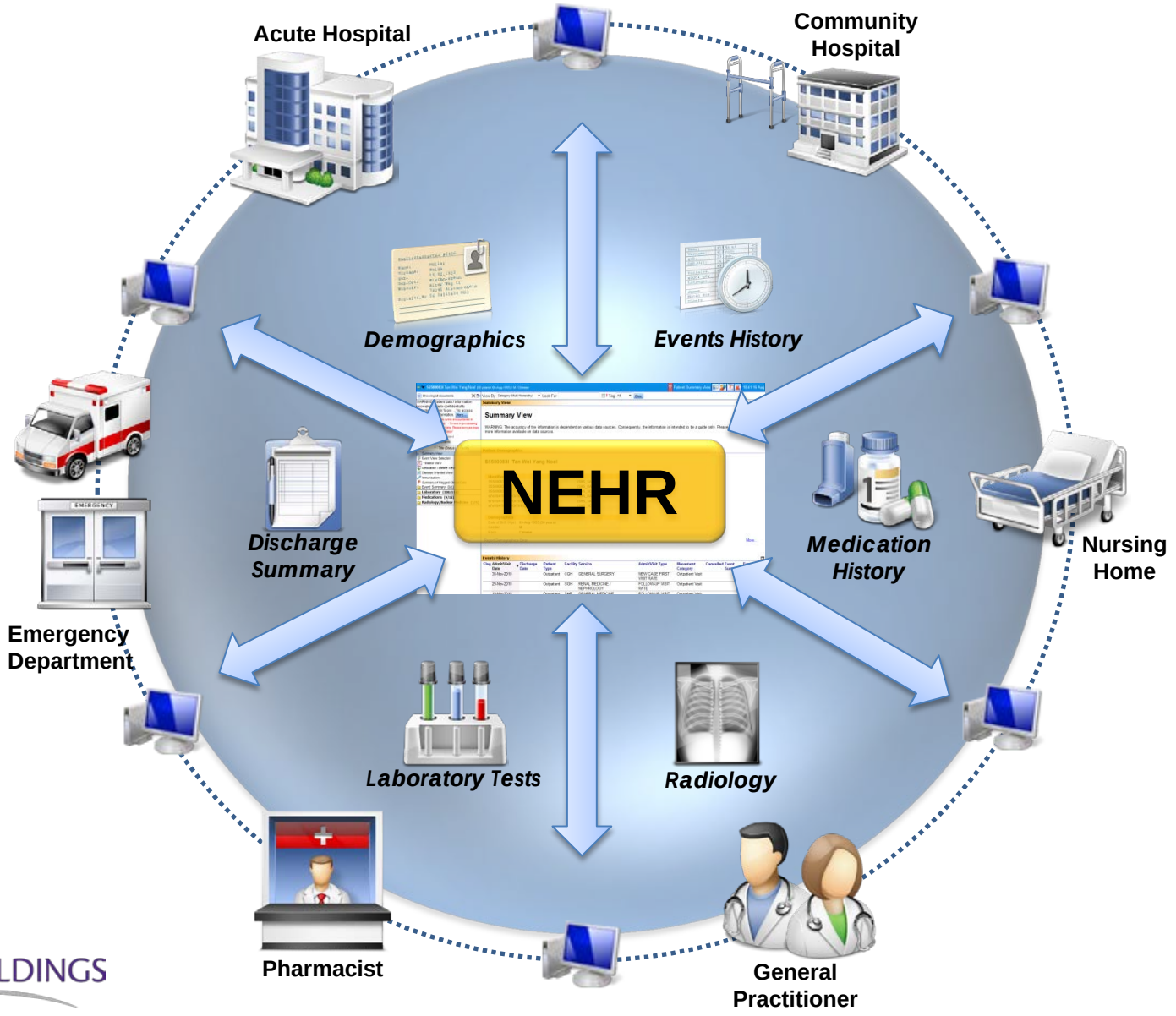
Enabled by the National Electronic Health Record (NEHR)



Integrated care record: "one patient, one record"

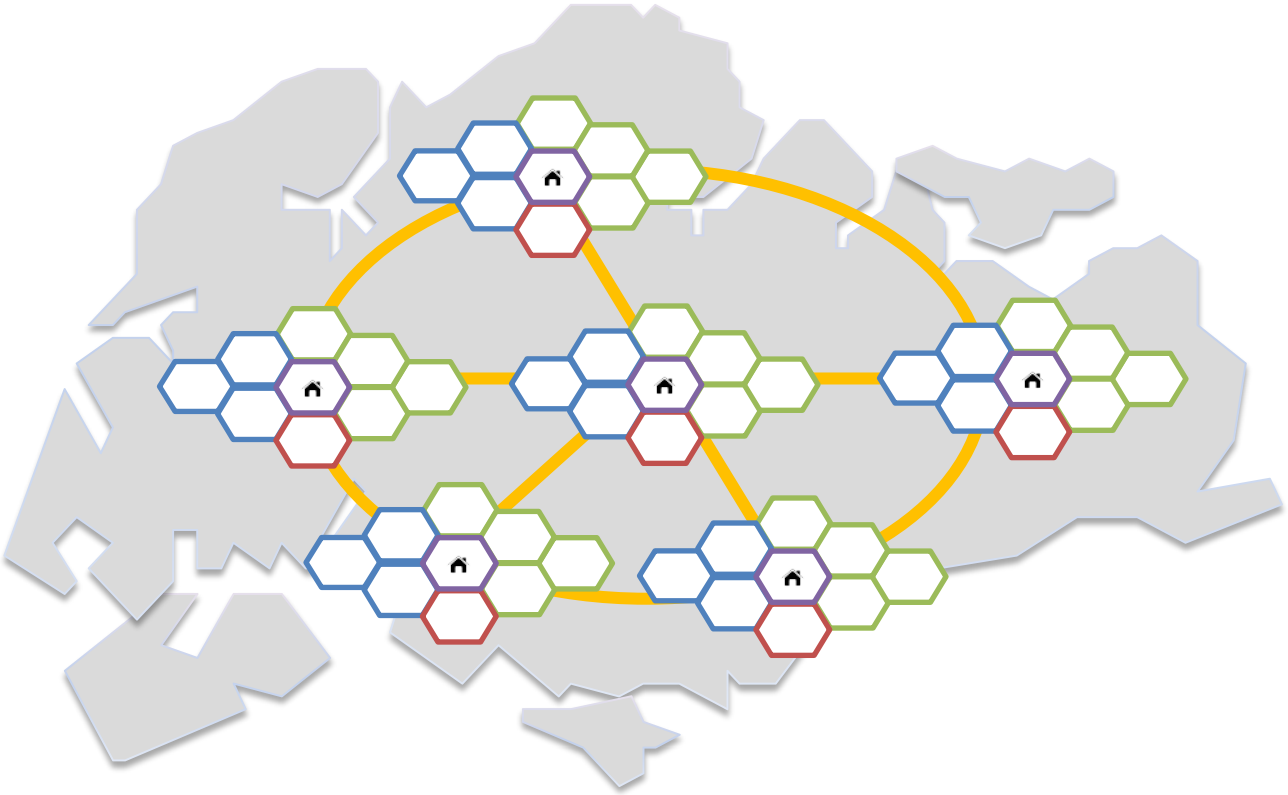


NEHR : health information exchange

Salient features:

Interoperability through national & intl' standards (HL7, SNOMED-CT)

Common services:
-National health identifier
-Enterprise integration



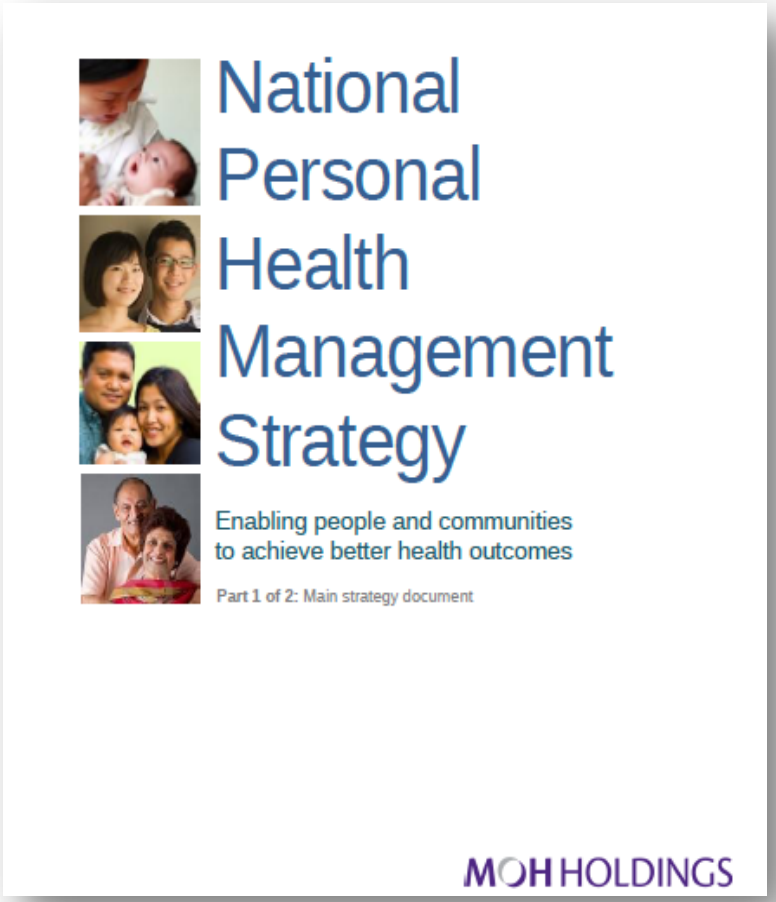
Is the current healthcare transformation enough?

activating people & communities

“one of the greatest untapped resources in healthcare”

National PHM strategy

- To be implemented **over 3 phases and 10 years** starting 2011
- **Evidence based**: multi-jurisdictional environmental scan and systematic review of evidence (largely Cochrane, RCT strength)



What is PHM?

"Putting the person in the centre of their own health and our healthcare system"

Access

- ✓Timely, relatable & actionable health info
- ✓Multi-channel communications
- ✓Choice

Partnerships

- ✓Participatory medicine
- ✓Trust and respect
- ✓Public-private

Personal Responsibility

- ✓Empowerment /self efficacy
- ✓Care giver networks (family, friends)
- ✓Community & volunteerism

Embedded into new models of care, education & re-engineered delivery systems

Key enablers: technology, financing and policy

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Source: National Personal Health Management Strategy 2011, Tikki Gee, MOH Holdings

Activation & empowerment

"**liberating & transforming data**" into meaningful and useful 'consumer'-oriented information

Providers

"**Big Data**"
Logitudinal, life-long

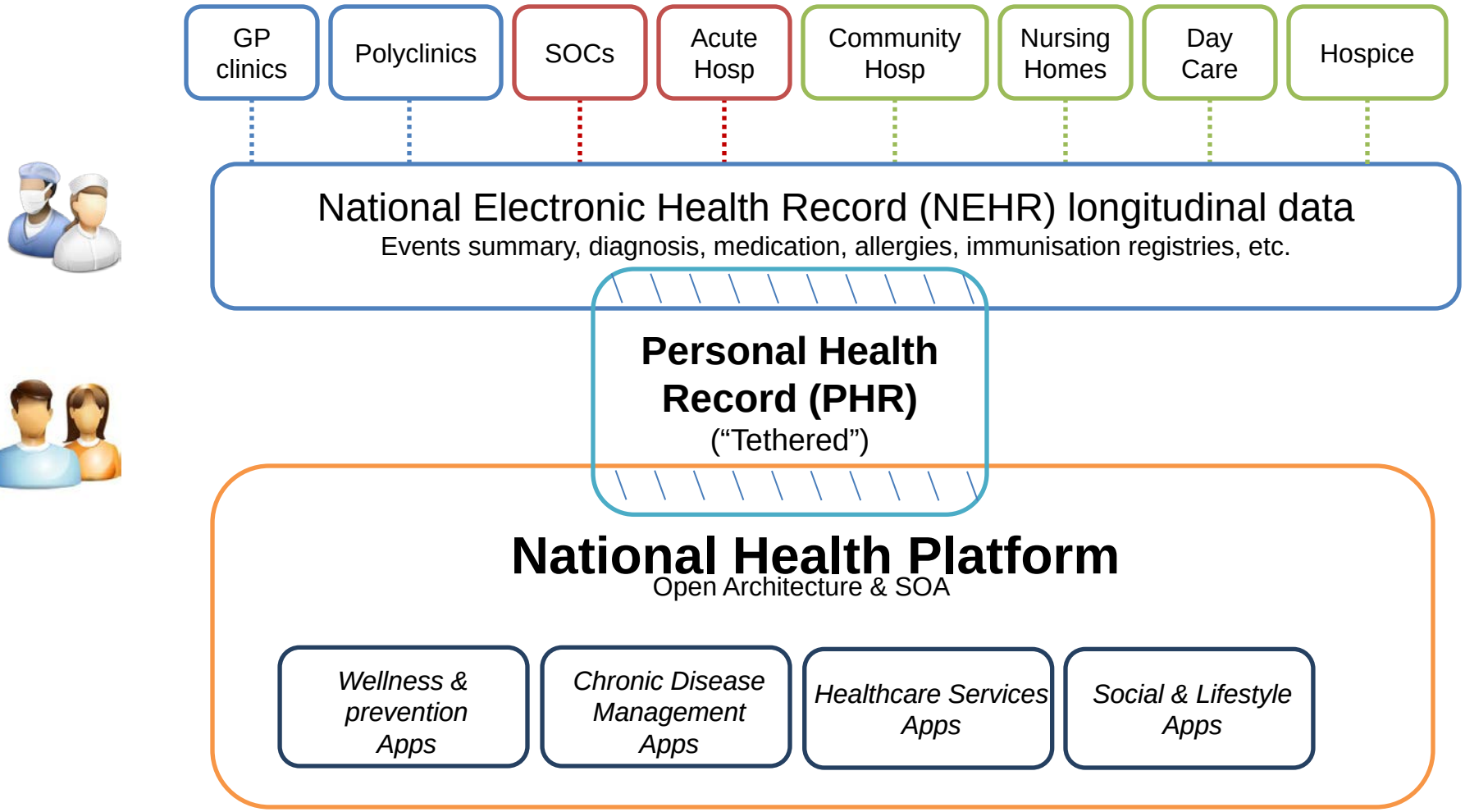
Information & communications

Patients, consumers and care givers

timely, relatable & actionable information

Source: National Personal Health Management Strategy 2011, Tikki Gee, MOH Holdings

“Info-structure”



Source: National Personal Health Management Strategy 2011, Tikki Gee, MOH Holdings

“Open” health platform: Consumer ecosystem

ILLUSTRATION

Open and secure architecture to build rich and innovative applications & services

Incentives

FairPrice

Cold Storage
The fresh food people

SINGAPORE FLYER
a moving experience at every turn

Financial

Great Eastern

Provident Fund Board Singapore

NTUC INCOME

Media, Learning

MEDIACORP

mda Media Development Authority

XBOX 360

Research/Innovation

DUKE NUS
GRADUATE MEDICAL SCHOOL SINGAPORE

NANYANG TECHNOLOGICAL UNIVERSITY

National Health Platform

Wellness Apps

FitnessFirst

Country Farm Organics

People's Association

Standard Chartered

Singapore Tourism Board

National Parks

Provider Apps

Alexandra Health

NUHS
National University Health System

Jurong Health

Health Promotion Board

National Healthcare Group

aic

Device agnostic

Capture

- Thermometer
- Pulse Oximeter
- Pulse / Blood Pressure
- Weight Scale
- Glucose Meter
- Cardio / Strength
- Independent Living Activity
- *Peak Flow*
- Medication Adherence
- *Physical Activity*
- *Electrocardiogram*
- *Insulin Pump*

Next Gen Nationwide Broadband Network

95% fiber coverage by mid 2012~ 1Gbps

National Health Platform

Interoperability & standards

ISO · CERTIFIED USB · Bluetooth · HL7 · W3C

Access

- Smartphone & Tablet
- Internet/IP TV
- Gaming consoles
- PC
- Smart Home

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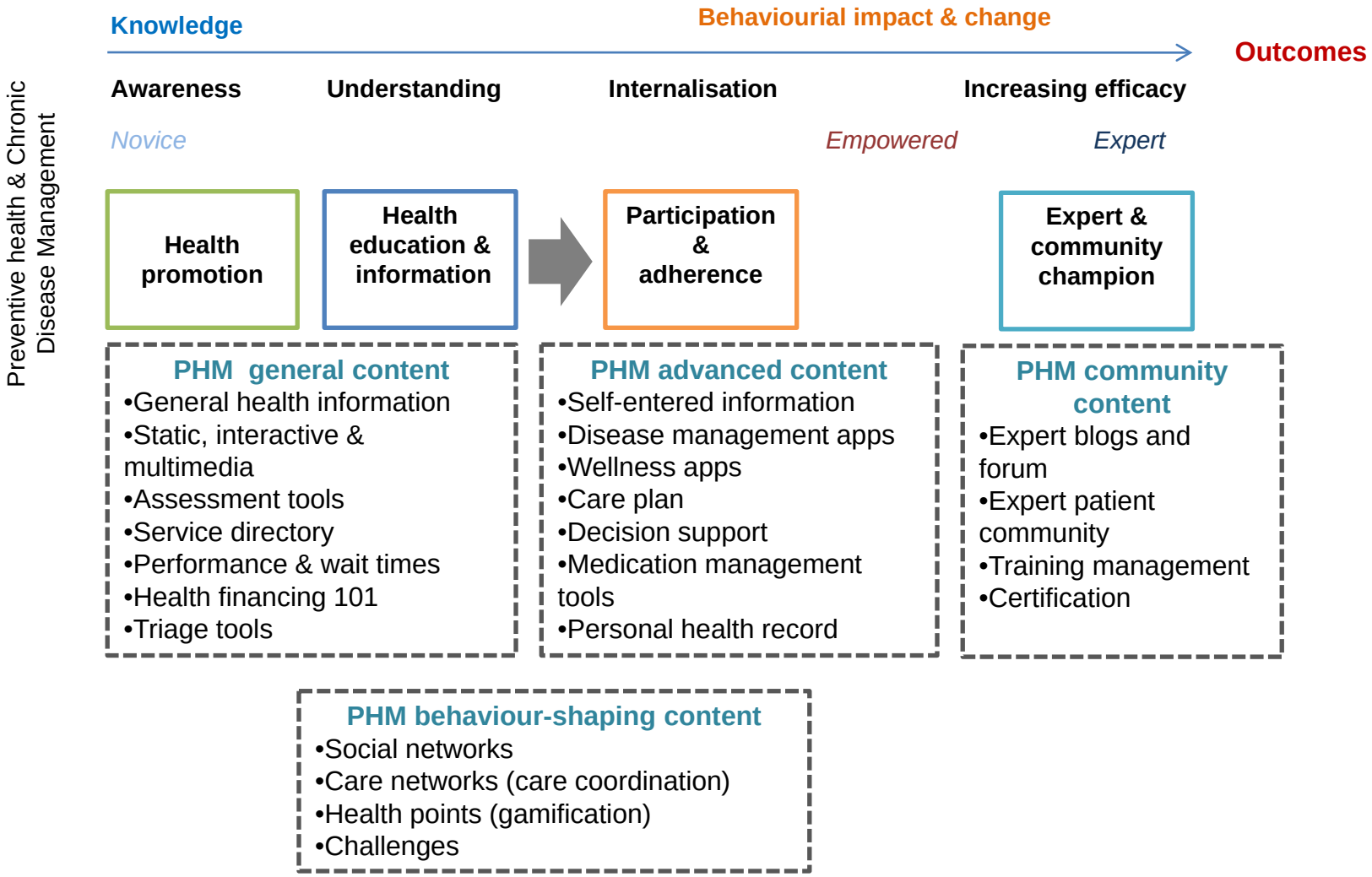
Source: National Personal Health Management Strategy 2011, Tikki Gee, MOH Holdings

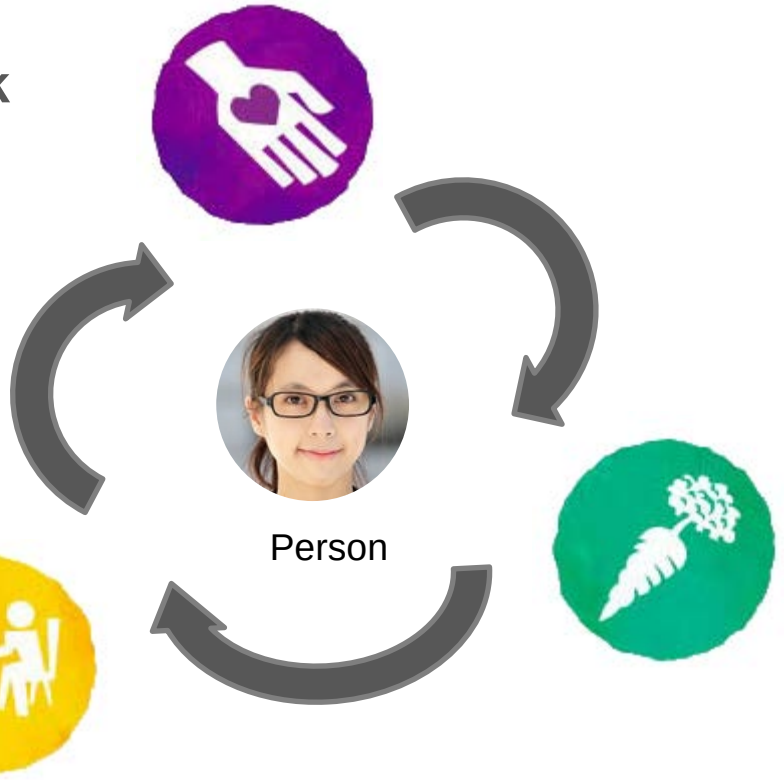
PHM content development



Source: National Personal Health Management Strategy 2011, Tikki Gee, MOH Holdings

Behaviour modification

Social Network
-motivate
-encourage



Gamification
-engage
-fun factor

Professionals
-coach
-mentor

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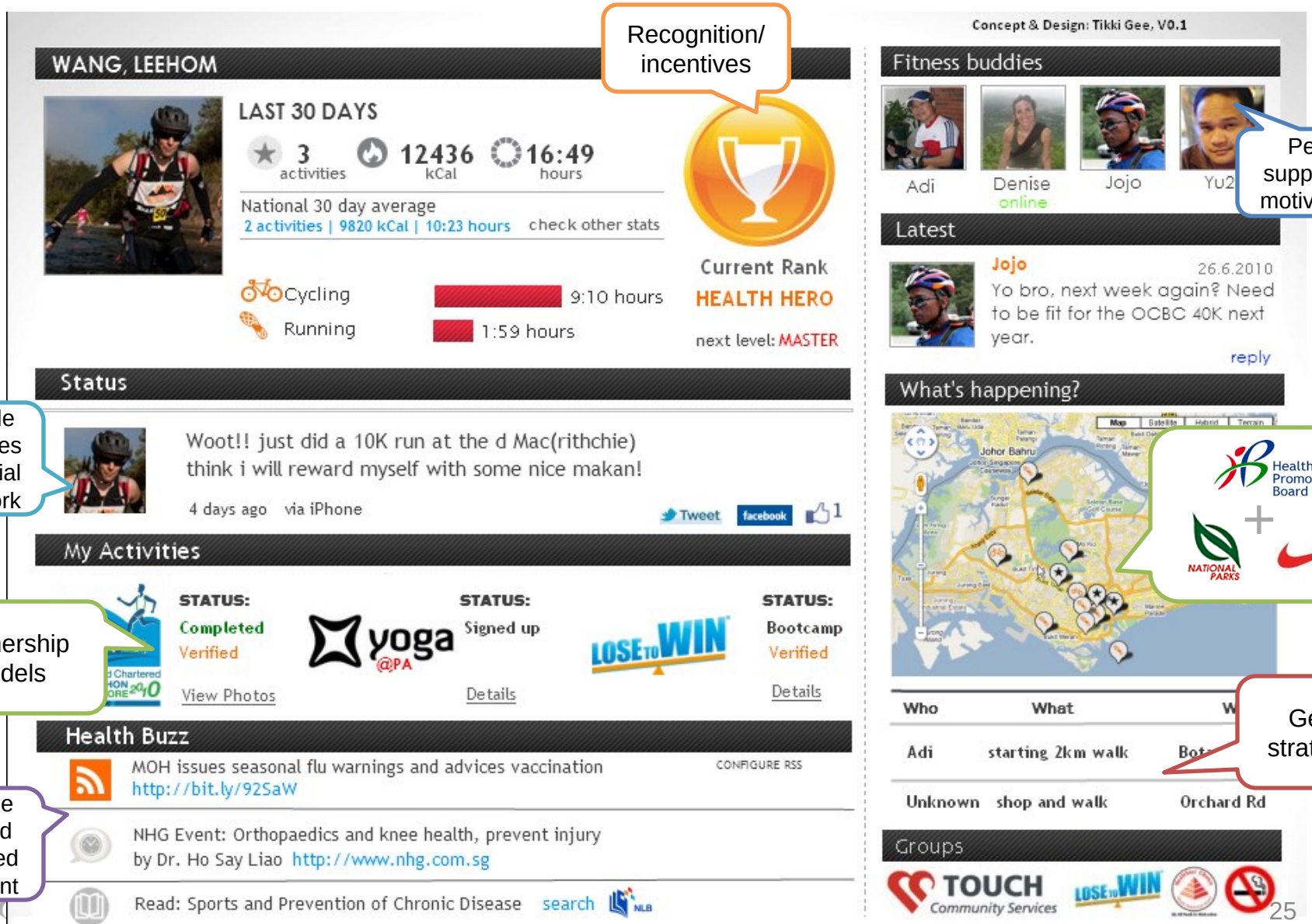
Source: National Personal Health Management Strategy 2012 (addendum), Tikki Gee, MOH Holdings

Gamification framework for Healthcare

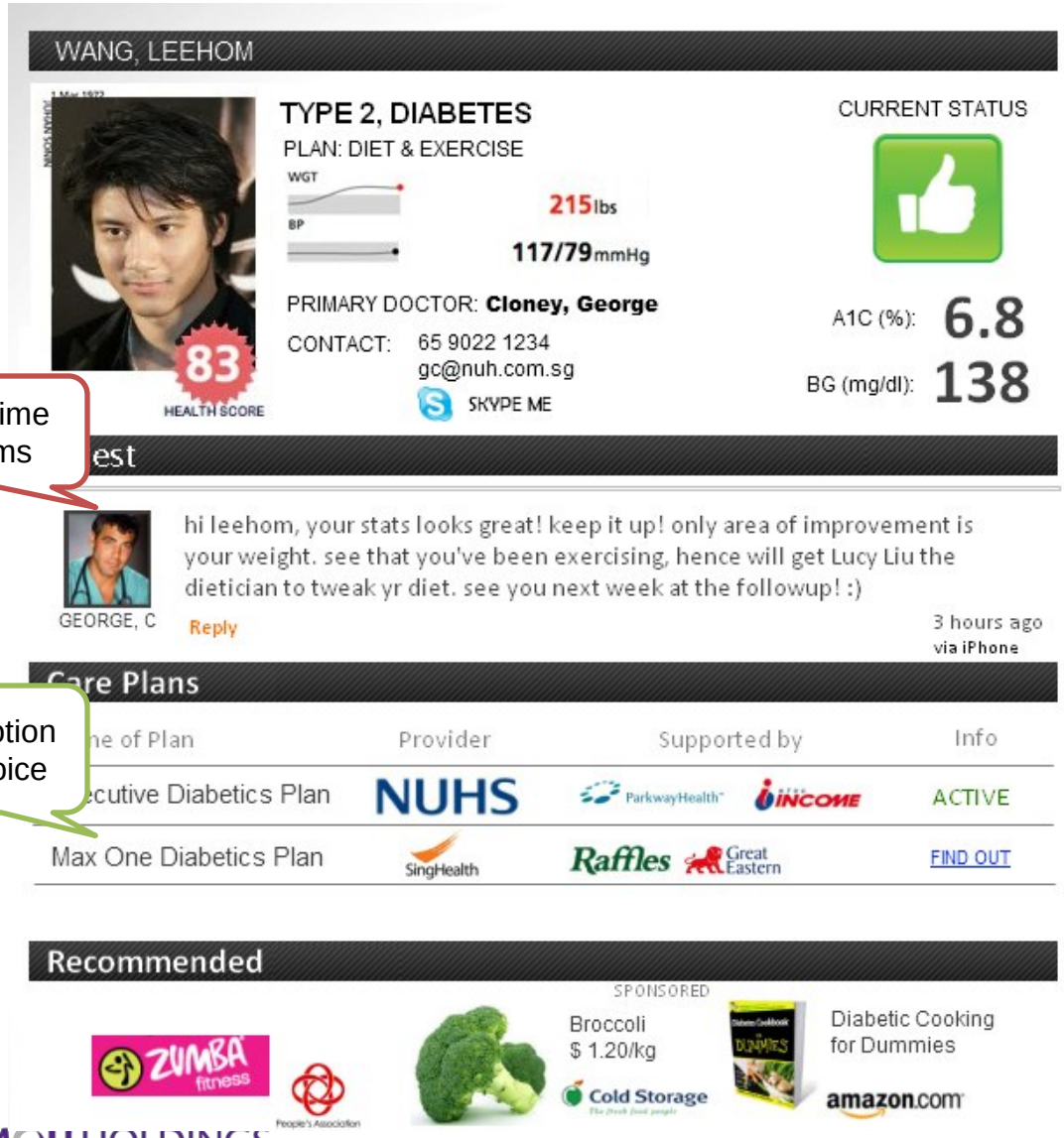
- Adopting gaming techniques
- Applied to
  - Service design
  - Programmes
  - Applications development
- To be completed by Q3 2012

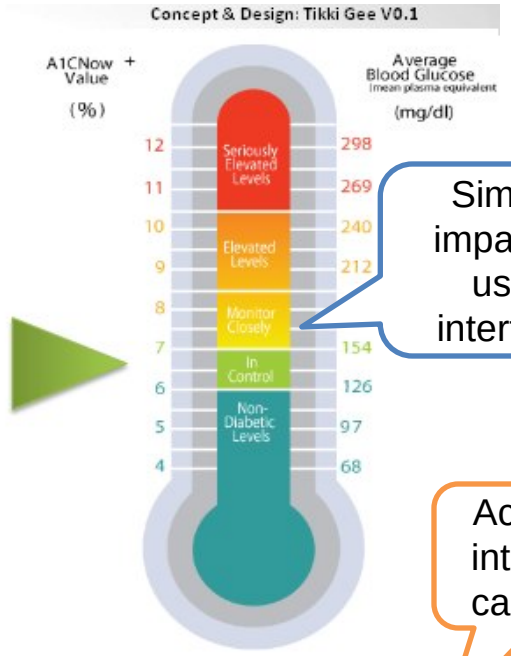
Source: Gamification Framework 2012, MOH Holdings

Obesity and physical activity example



Chronic disease example





A confluence of factors

propelling adoption

Consumerism

Mobility & access

148.5 %
mobile penetration

104.2 %
household broadband

Increased
Disease Burden

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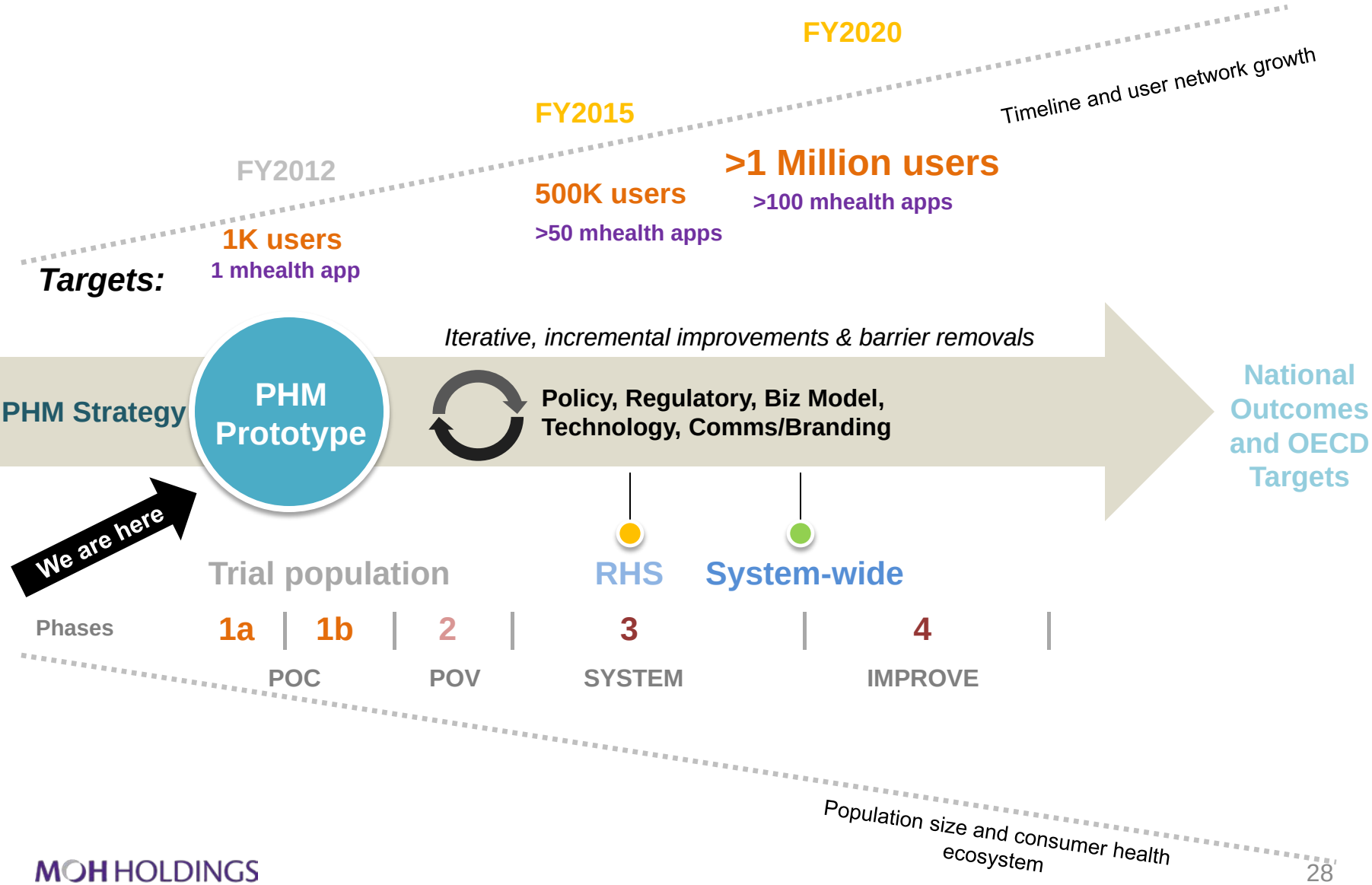
Source: Infocomm Development Authority (IDA) 2011 | Neilsen

PHM is a journey



PHM iLab

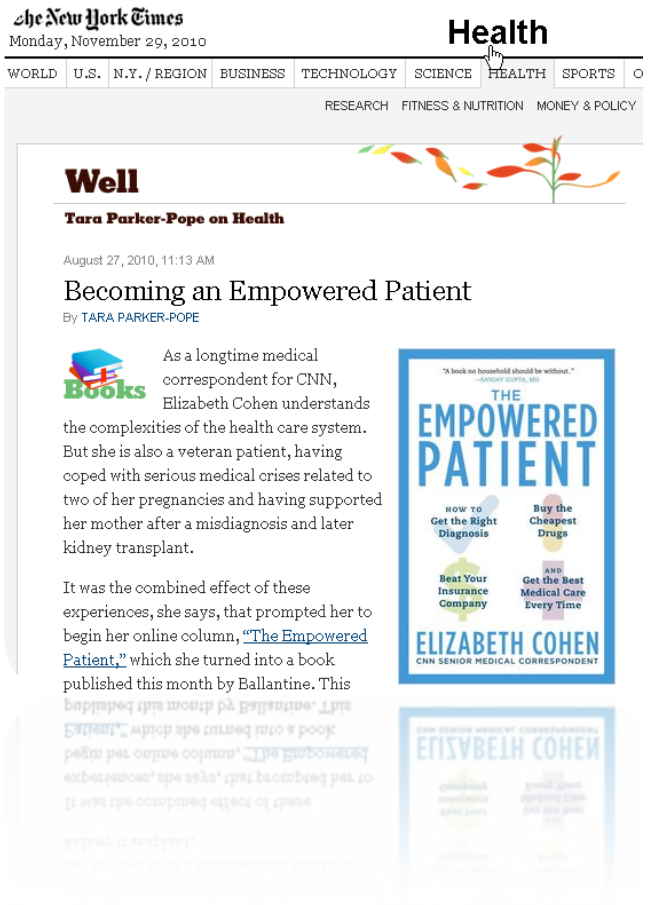
- Innovation lab to **co-develop** with industry **consumer health solutions**
- Applications, devices to Med-tech
- Challenges, call for collaboration
- Open data

Key take home: health follows life

"Healthy living doesn't happen at the doctor's office.

The road to better health is paved with the small decisions we make every day"

New York Times



Thank You

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