

FIRST PLENARY: Transforming Healthcare and Leveraging Digital Health for Better Health in Asia Pacific

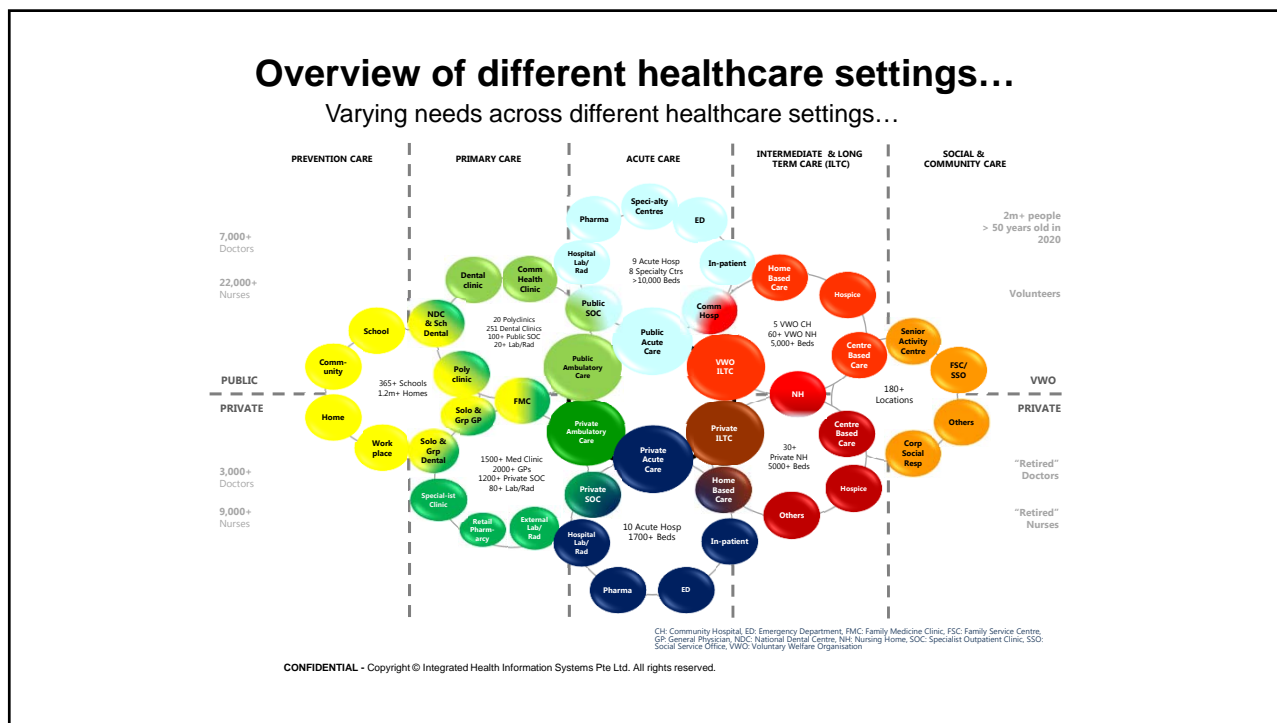


Huei-Xin Lou, PharmD, MSc
Integrated Health Information Systems Pte Ltd &
Ministry of Health
Singapore

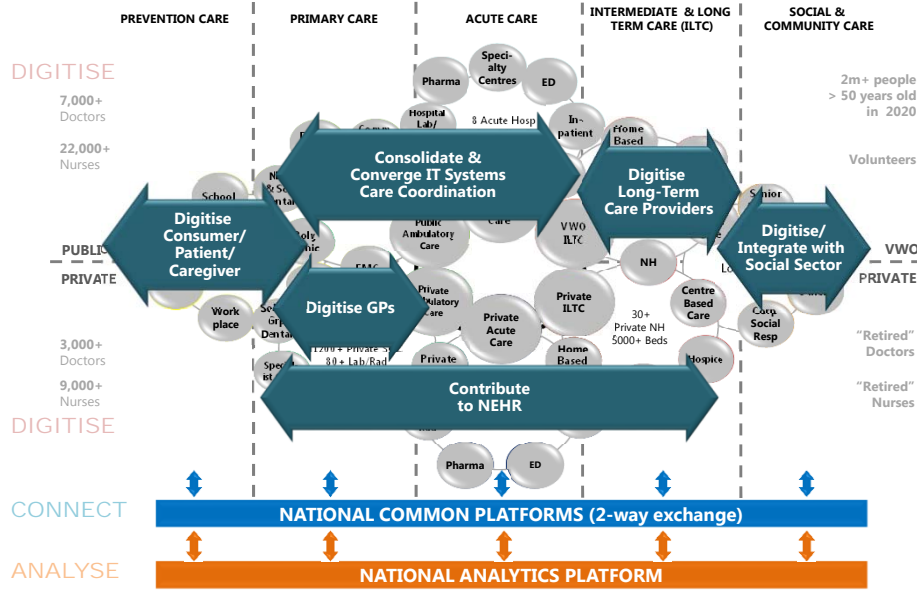
Harnessing Digital Health for Benefits – Singapore Experience



*Dr Lou Huei-Xin (Pharm D)
Director, Programme Delivery – Ancillary Care*

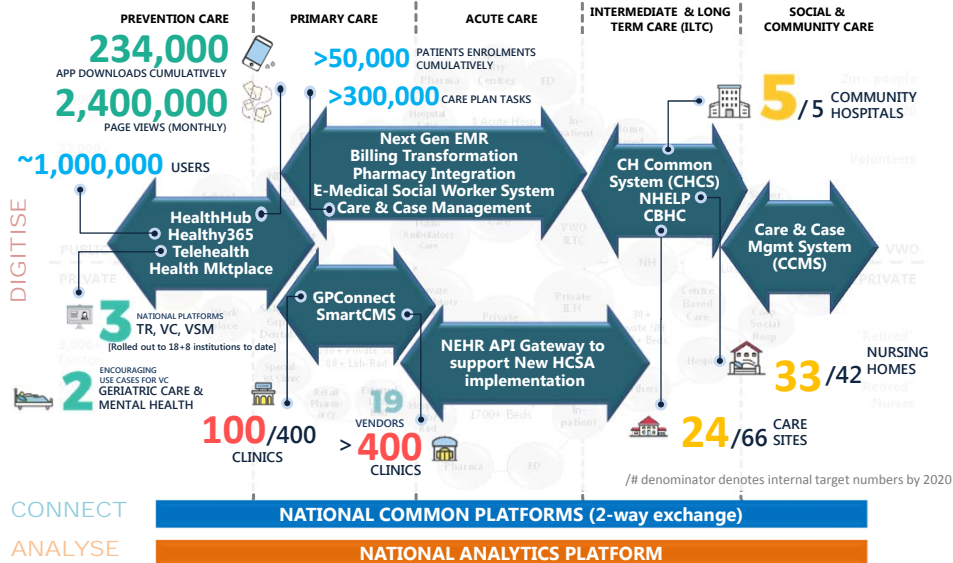


... call for targeted strategies by Care Sectors



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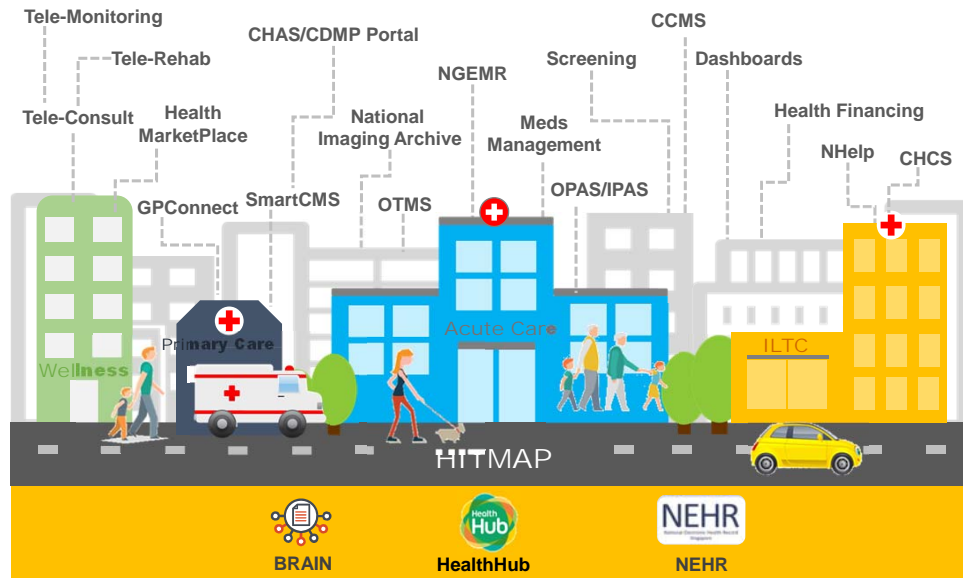
Common IT platforms and systems consolidation reduce fragmentation



API: Application Programming Interface, CBHC: Centre-Based and Home Care, CMS: Clinic Management System, EMR: Electronic Medical Records system, HCSA: Health Care Services Act, NHLP: Nursing Homes IT Enablement Programme, TR: Tele-Rehab, VC: Video Consultation, VSM: Vital Signs Monitoring

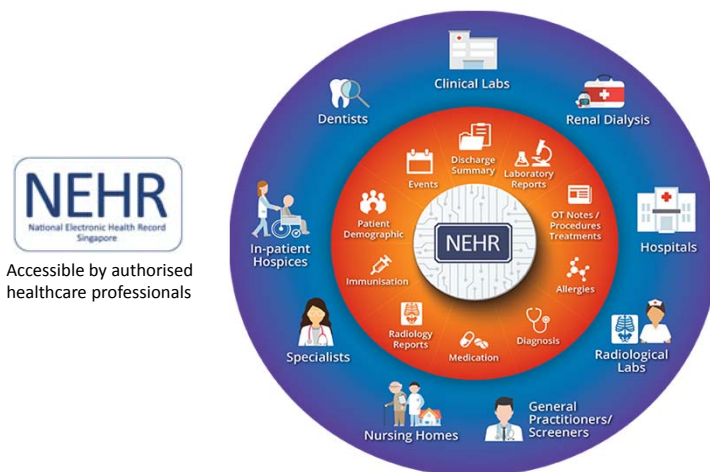
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Snapshot of Our Common IT Platforms



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National IT Platform – National Electronic Health Record (NEHR)



National IT Platform - NEHR

Lim Mae Mun
22-Feb-1960 (58 years) S3198712A Female Chinese

Medical Alert | Allergy / ADR

ACIP 06-Jul-2017 2300 PROGRAMMES PML SIGNIFICANT DIAGNOSTICS

SUMMARY VIEW LIST VIEW

Latest Records (Last 6 Months)

HEPB ...	PML	PML	PML	PML
21-Jan-2018	14-Dec-2017	14-Dec-2017	22-Nov-2017	22-Nov-2017

Summary Count (Last 6 Months)

VISITS	DIAGNOSES	INVESTIGATIONS	MEDICATION LIST
0	Clinical Event Claims Event PPV	0 0 0	Laboratory Cardiac Radiology / Nuclear Med
0	0	0	Ordered Dispensed PML
0	0	0	0 0 11

Investigations

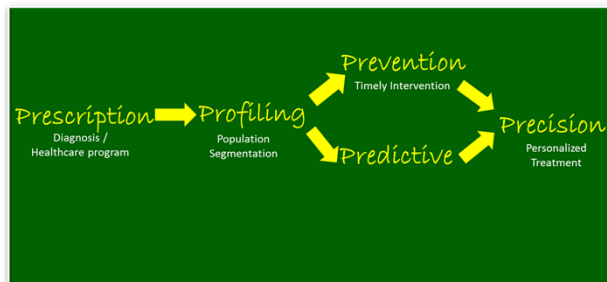
Date	Order Name	Ordering Facility
17-Sep-2015	HLA-B*1502 Genotype	TTSH
05-Dec-2014	Full Blood Count	SHP
17-Sep-2014	Blood Urea Nitrogen	TTSH
17-Sep-2014	Creatinine fluid	TTSH
17-Sep-2014	Electrolytes	TTSH

Medications - Latest List

Date	Medication Name	Facility
25-Apr-2017	S-Insulin Aspart 300IU/3ML Flexpen (Novorapid)	NEW...
25-Apr-2017	Insulin glargine 1,000unit/10ML Inj (Lantus)	NEW...

Healthcare will continue to digitize, connect and analyze

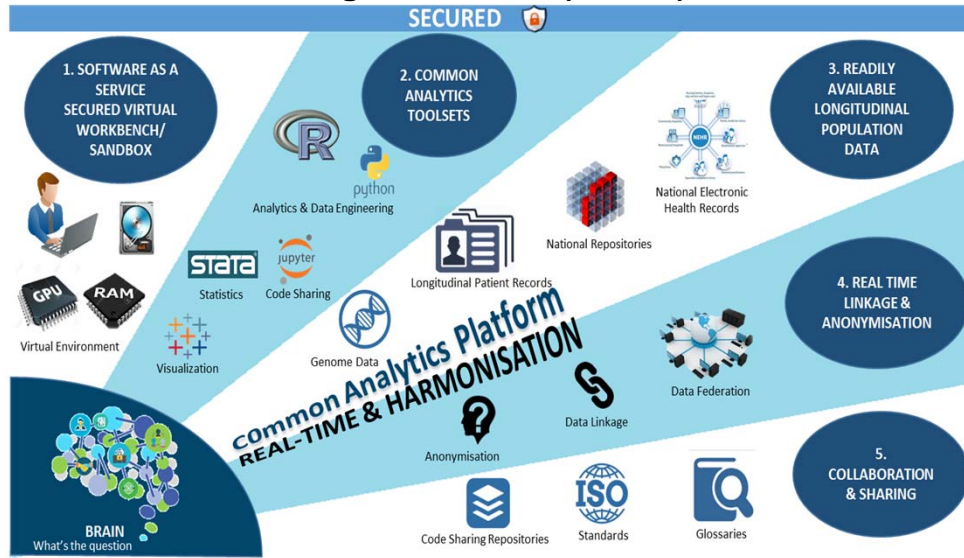
- Increasing needs for population profiling
- Increasing focus on preventive care and predictive measures
- Increasing trends in individualized medicines



Innovation is key in harnessing emerging technologies

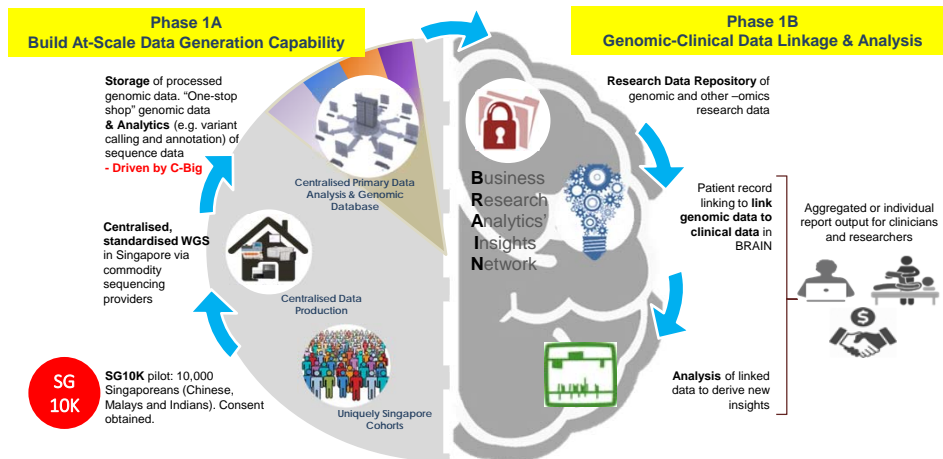
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National IT Platform – Business Research Analytic's Insights Network (BRAIN)



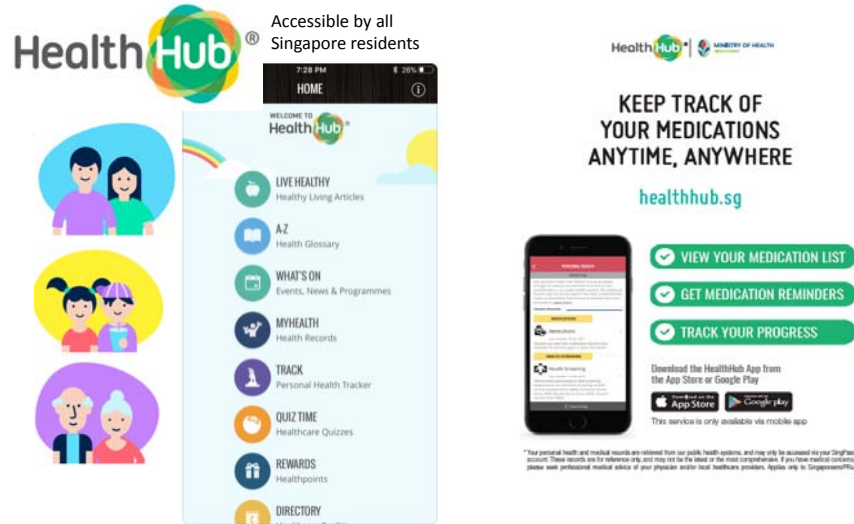
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BRAIN and National Precision Medicine



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National IT Platform – Health Hub (Citizen)



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- TRACK YOUR PROGRESS

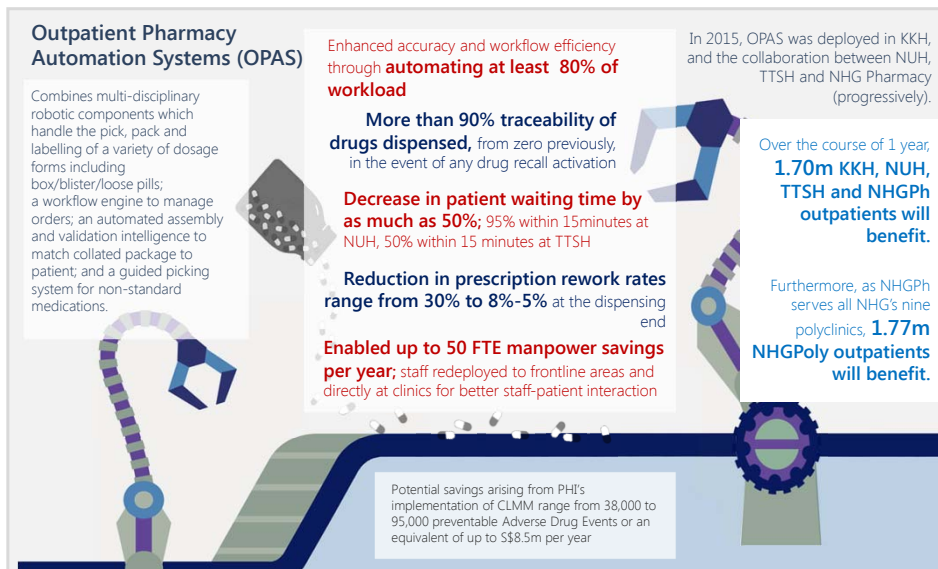
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This service is only available via mobile app

*Your personal health and medical records are retrieved from our public health systems, and may only be accessed via your SingPass account. These records are for reference only, and may not be the latest or the most comprehensive. If you have medical concerns, please seek professional medical advice of your physician and/or your healthcare provider. Applies only to Singaporeans/PRs.

Some examples in Meds Management - OPAS



Outpatient Pharmacy Automation Systems (OPAS)

Combines multi-disciplinary robotic components which handle the pick, pack and labelling of a variety of dosage forms including box/blister/loose pills; a workflow engine to manage orders; an automated assembly and validation intelligence to match collated package to patient; and a guided picking system for non-standard medications.

Enhanced accuracy and workflow efficiency through **automating at least 80% of workload**

More than 90% traceability of drugs dispensed, from zero previously, in the event of any drug recall activation

Decrease in patient waiting time by as much as 50%; 95% within 15 minutes at NUH, 50% within 15 minutes at TTSH

Reduction in prescription rework rates range from 30% to 8%-5% at the dispensing end

Enabled up to 50 FTE manpower savings per year; staff redeployed to frontline areas and directly at clinics for better staff-patient interaction

In 2015, OPAS was deployed in KKH, and the collaboration between NUH, TTSH and NHG Pharmacy (progressively).







Over the course of 1 year, **1.70m KKH, NUH, TTSH and NHGPh outpatients will benefit.**

Furthermore, as NHGPh serves all NHG's nine polyclinics, **1.77m NHGPoly outpatients will benefit.**

Potential savings arising from PHI's implementation of CLMM range from 38,000 to 95,000 preventable Adverse Drug Events or an equivalent of up to \$8.5m per year

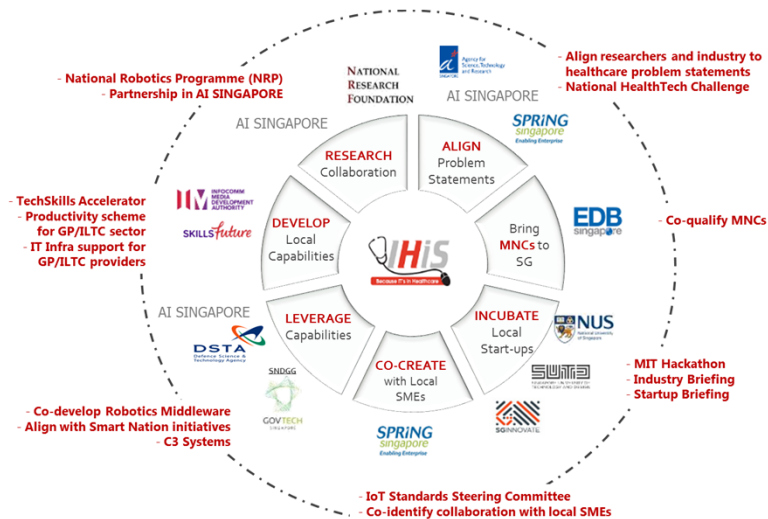
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How Digital Health has benefited our patients and healthcare workers

<p>7 mins only for Pharmacists' Prescription Review, down from 51 mins</p> <p>30 mins per medication session</p> <p>90 mins per inpatient ward nurses time saved daily</p>  <p>Closed Loop Medication Management (CLMM)</p>	<p>23 mins waiting time for urgent cases, 40% faster than before</p> <p>88 mins average waiting time for overall 95% of A&E patients, 30% faster than before</p>  <p>CGH Enterprise Management Dashboard</p>
<p>Remote post-discharge care helped reduce readmission rates</p> <p>from 3.5 times to 1.3 times</p>  <p>Ageing-in-Place (AIP)</p>	<p>Increased capacity to handle 10,000 OR 150% more urgent tests at one time</p> <p>Faster turnaround time to sort specimens 0.5 mins to complete all urgent tests 45 mins</p>  <p>Laboratory Automation System</p>
<p>Packaging Robot works 14x faster than humans</p> <p>17 man hours saved everyday</p>  <p>Multi-dose Medication Management (MMM)</p>	<p>Increased resiliency for HIT systems</p> <p>99.99% infrastructure availability</p> <p>with maximum downtime, over 30 days, of 21.56 minutes</p>  <p>IHiS Healthcare Cloud (H-Cloud)</p>

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Partnering for research, innovation and value creation is important



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Thank You



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