

# Singapore Healthcare IT development & Applications

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# Outline:

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1.How is the Singapore healthcare system organized?

2.Risk stratification model development

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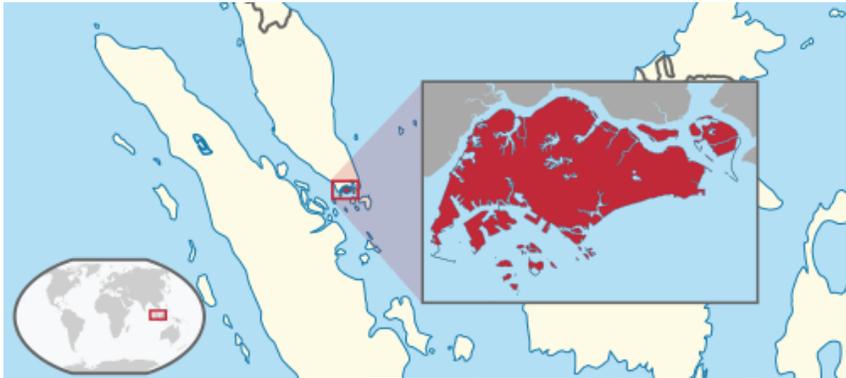
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# Singapore

Third GDP per Capita in the world



<b>Demonym</b>	Singaporean
<b>Government</b>	Unitary dominant-party parliamentary republic
• President	Tony Tan
• Prime Minister	Lee Hsien Loong
• Speaker of Parliament	Halimah Yacob
• Chief Justice	Sundares Menon
<b>Legislature</b>	Parliament
<b>Area</b>	
• Total	719.1 km <sup>2</sup> (277.6 sq mi) <sup>[2]</sup> (176th)
<b>Population</b>	
• 2016 <sup>[2]</sup> estimate	5,607,300 (113th)
• Density	7,797/km <sup>2</sup> (20,194.1/sq mi) (3rd)
<b>GDP (PPP)</b>	2017 <sup>[3]</sup> estimate
• Total	\$508.449 billion (39th)
• Per capita	\$90,724 (3rd)

# One of the most cost-effective Healthcare Systems in the World

## Singapore- A Strong & Growing Healthcare Industry



Pharma

> Singapore – A Strong & Growing Healthcare Industry



## 2. Access to Internet

Australia, Singapore and Sweden top new technological readiness ranking from The EIU

By Enterprise Innovation editors | 2018-06-06



## 3. Openness to innovation



Australia, Singapore and Sweden top The Economist Intelligence Unit's new Technological Readiness Ranking for 2018-2022.

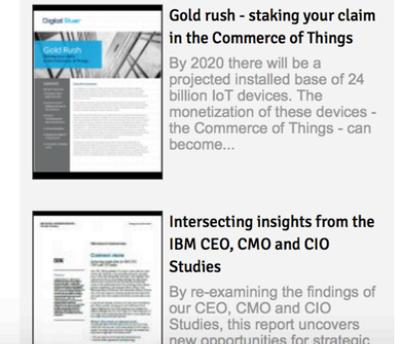
This ranking considers access to the Internet, the digital economy infrastructure and openness to innovation—key elements of today's most competitive business locations.

In 2013-17 the top-scoring countries were Finland and Sweden. The US and France will join the top 10 in 2018-22; Libya and Angola will retain the lowest positions.

The breakdown of scores shows that the Netherlands has the best e-

KNOWLEDGE CENTRAL

WHITEPAPERS CASE STUDIES



# Public-funded Healthcare System

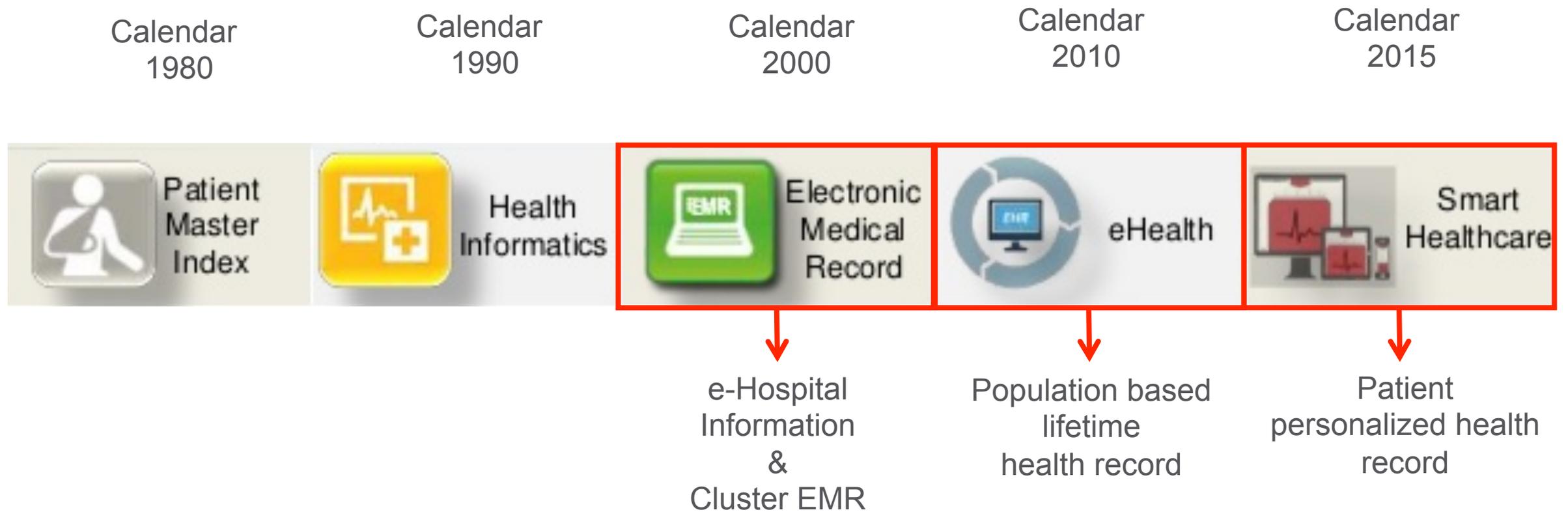
## Re-Structured System



# Vibrant Pharma-University System

Rank	University	Country
4	University of Cambridge	United Kingdom
5	Caltech California Institute of Technology (Caltech)	United States
6	University of Oxford	United Kingdom
7	UCL (University College London)	United Kingdom
8	ETH Zurich - Swiss Federal Institute of Technology	Switzerland
9	Imperial College London	United Kingdom
10	University of Chicago	United States
11	Princeton University	United States
12	NUS National University of Singapore (NUS)	Singapore
13	Nanyang Technological University, Singapore (NTU)	Singapore

# Singapore Healthcare IT development



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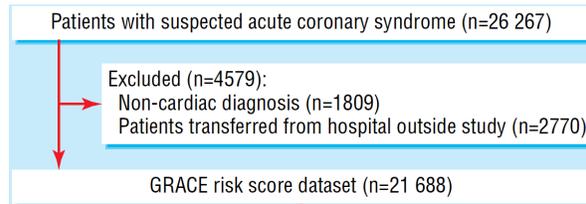
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# What we did?

## Risk Extratification in Cardiology

### Grace Score



AHJ 2011 Mark et al

EHJ 2013 Leonardo et al

JACC 2018 Leonardo et al

Use the most world-wide risk stratification Score

Recalibrate for the local population

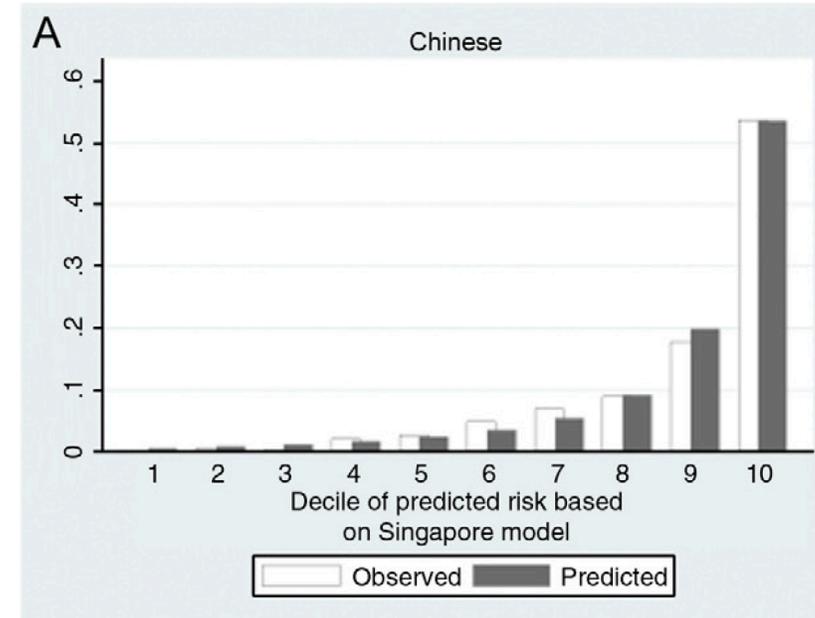
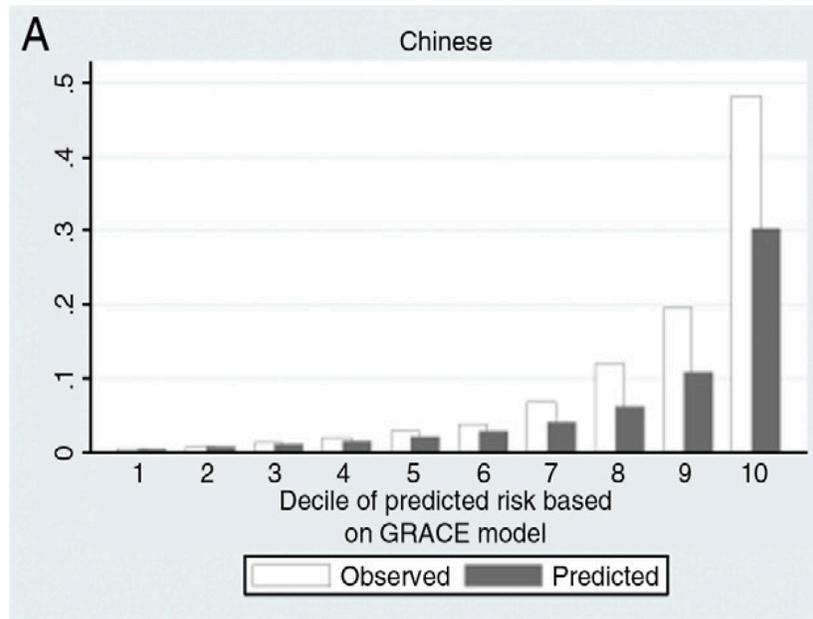
Evaluate the risk in long-term outcomes & Real mortality rate of AMI

Develop deep-personal Health care biomarker



# Risk Score Recalibration

## Customized Health Risk



**Table V.** Recalibrated GRACE Scores

Chinese

$$P_{(\text{Chinese})} = -3.1953 + 0.0531 \times (\text{age} - 64) + 0.0087 \times (\text{pulse} - 82) - 0.0168 \times (\text{SBP} - 133) + 0.1823 \times (\text{creatinine} - 1.4) + 0.6931 \times (\text{Killip} - 1.53) + 1.4586 \times (\text{cardiac arrest} - 0.01) + 0.47 \times (\text{cardiac enzymes} - 0.87) + 0.8755 \times (\text{ST deviation} - 0.64)$$

