



Institute for Biotechnology
and Medicine Industry



Research Center for Biotechnology
and Medicine Policy

Visions of the healthcare industry Taiwan

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Healthcare⁺
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Key drivers of Taiwan's healthcare industry



Advanced Medical Care



High Quality Bio R&D and Manufacturing



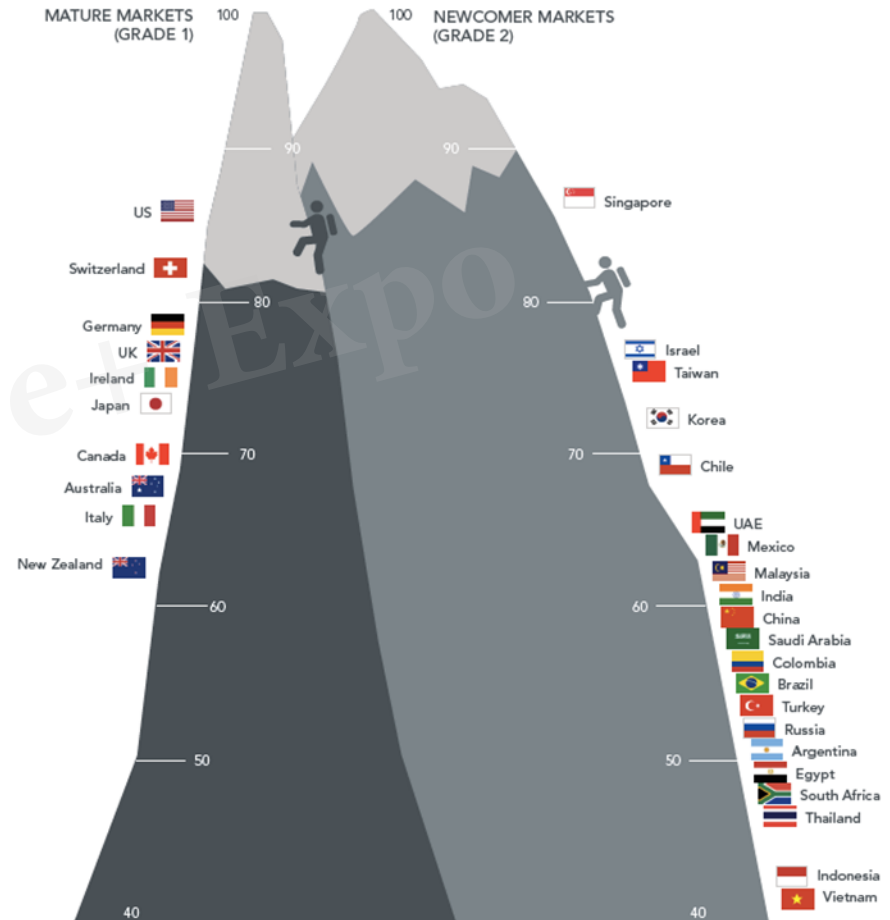
Strong ICT and electronic technologies



Taiwan's Core Competences

Where in the World Taiwan Places in Bio-Medical Areas

- Taiwan sits the third place, next to Singapore and Israel in the newcomer markets
- World-class quality of medicine and talent
- The best healthcare system with a gigantic amount of data
- Proven quality and capacity for R&D and clinical trials
- Well-established infrastructure
- Globally known source of talents and supply chains for ICT and manufacturing
- AI and 5G research and development in national level



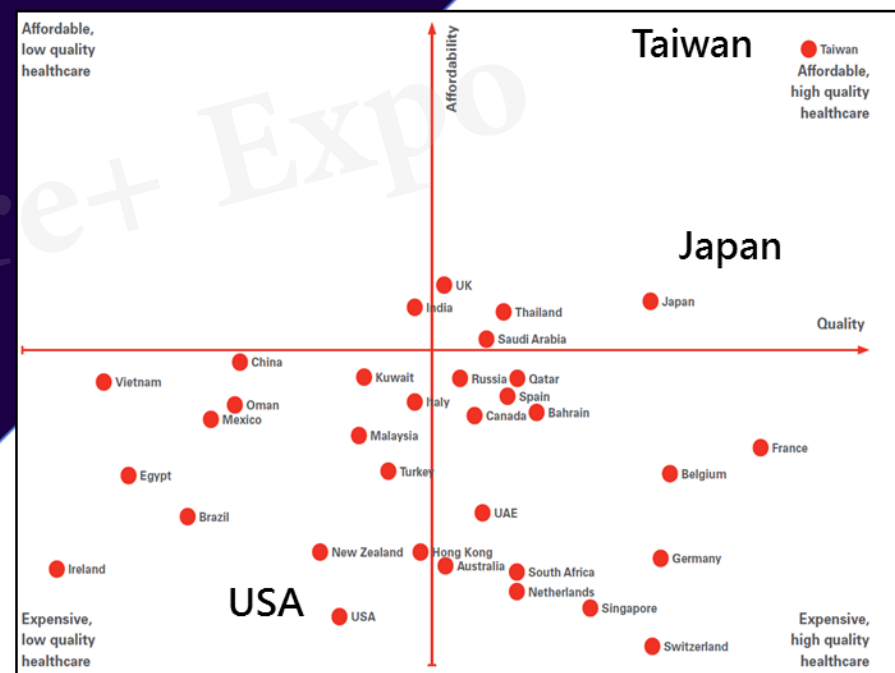
Healthcare Affordability and Quality



CEOWORLD Magazine, 2019: Countries With The Best Health Care Systems

Rank	1	2	3	4	5
Country	Taiwan	S. Korea	Japan	Austria	Denmark
Health Care Index	78.72	77.7	74.11	71.32	70.73
Infrastructure	87.16	79.05	90.75	86.18	78.77
Professionals	14.23	13.06	30.01	20.25	21.6
Cost	83.59	78.39	82.59	78.99	74.88
Availability	82.3	78.99	92.06	88.23	74.18
Government Readiness	87.89	65.09	96.3	91.8	93.2

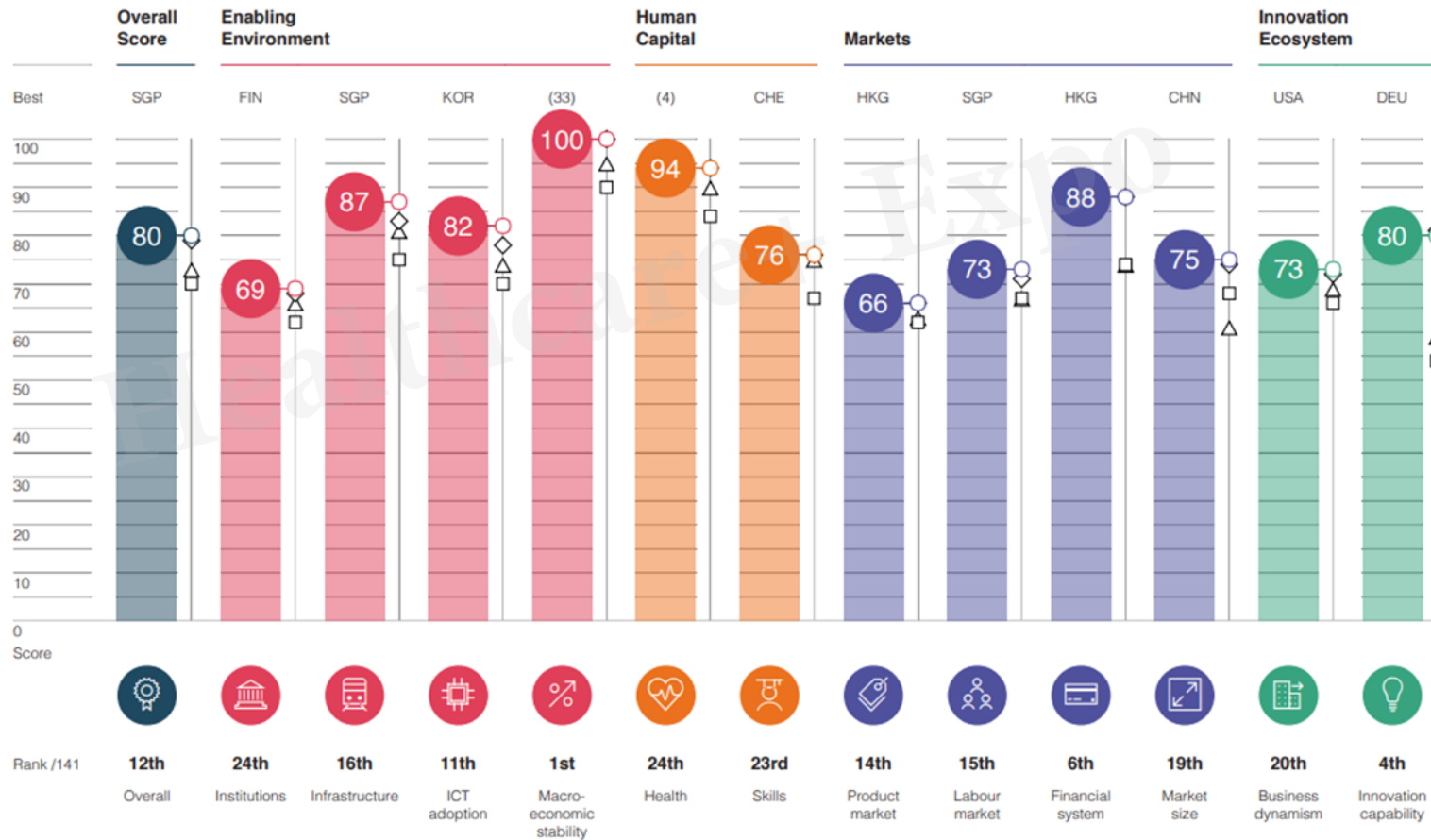
HSBC Expat Explorer, 2014 : Taiwanese healthcare as one of the best in the world in terms of affordability and quality



World Economic Forum — The Global Competitiveness Report 2019

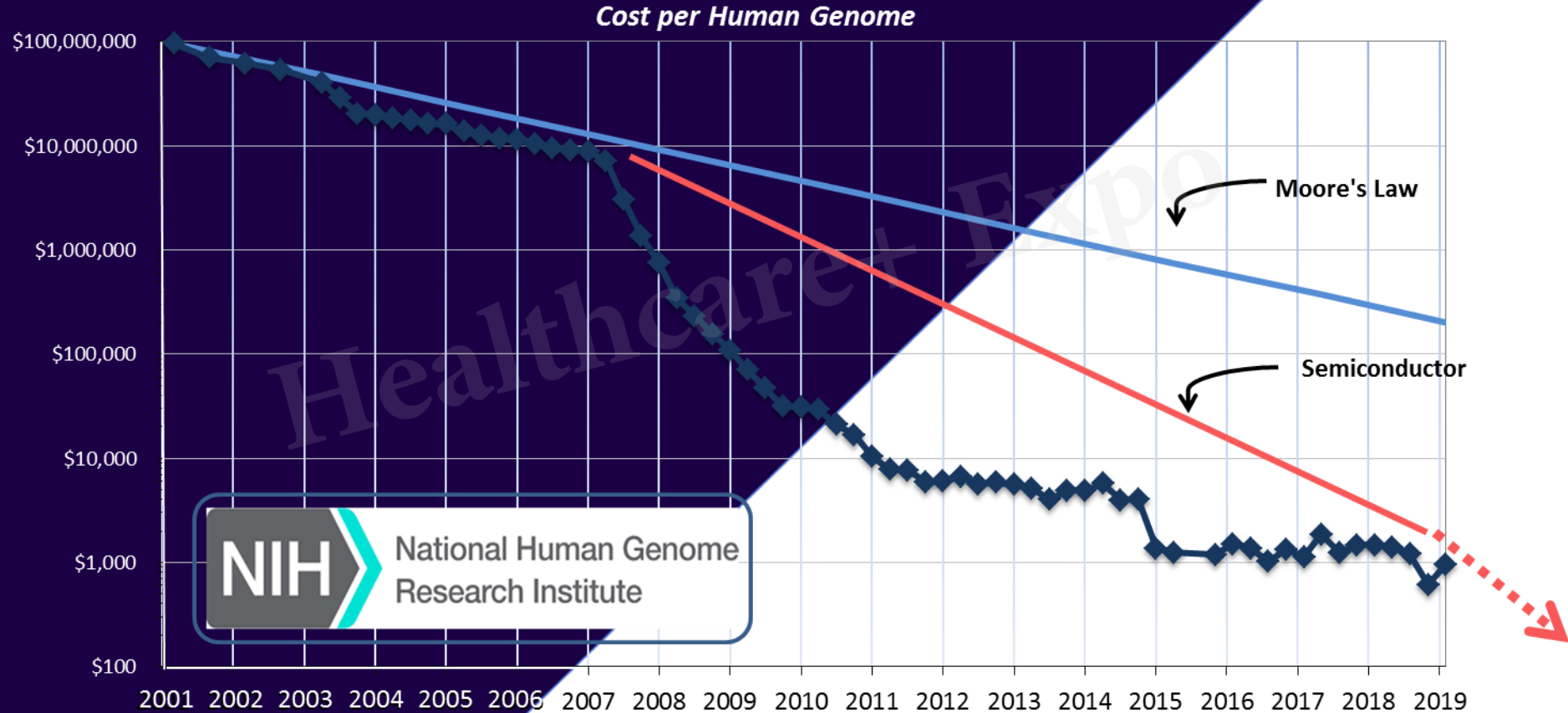
Taiwan Rank in **12th** among 141 countries

1st in Macro economic stability 、 **4th** in innovation capability



Taiwan's contribution to the Next-generation Sequencing

Semiconductor: 20-25% Sequencing chips > 20%



Precision Medicine and Precision Health

What should be Focused?



【 Precision Medicine 】

Precision Diagnosis : NGS, Liquid Biopsy, Medical AI, POC devices , Digital Imaging Equipment etc.

Precision Treatment : Targeted Therapy, Cell Therapy, Immunotherapy, Surgical Robot, etc.

Medical Care: Smart Hospital, Smart healthcare, etc.

【 Precision Health 】

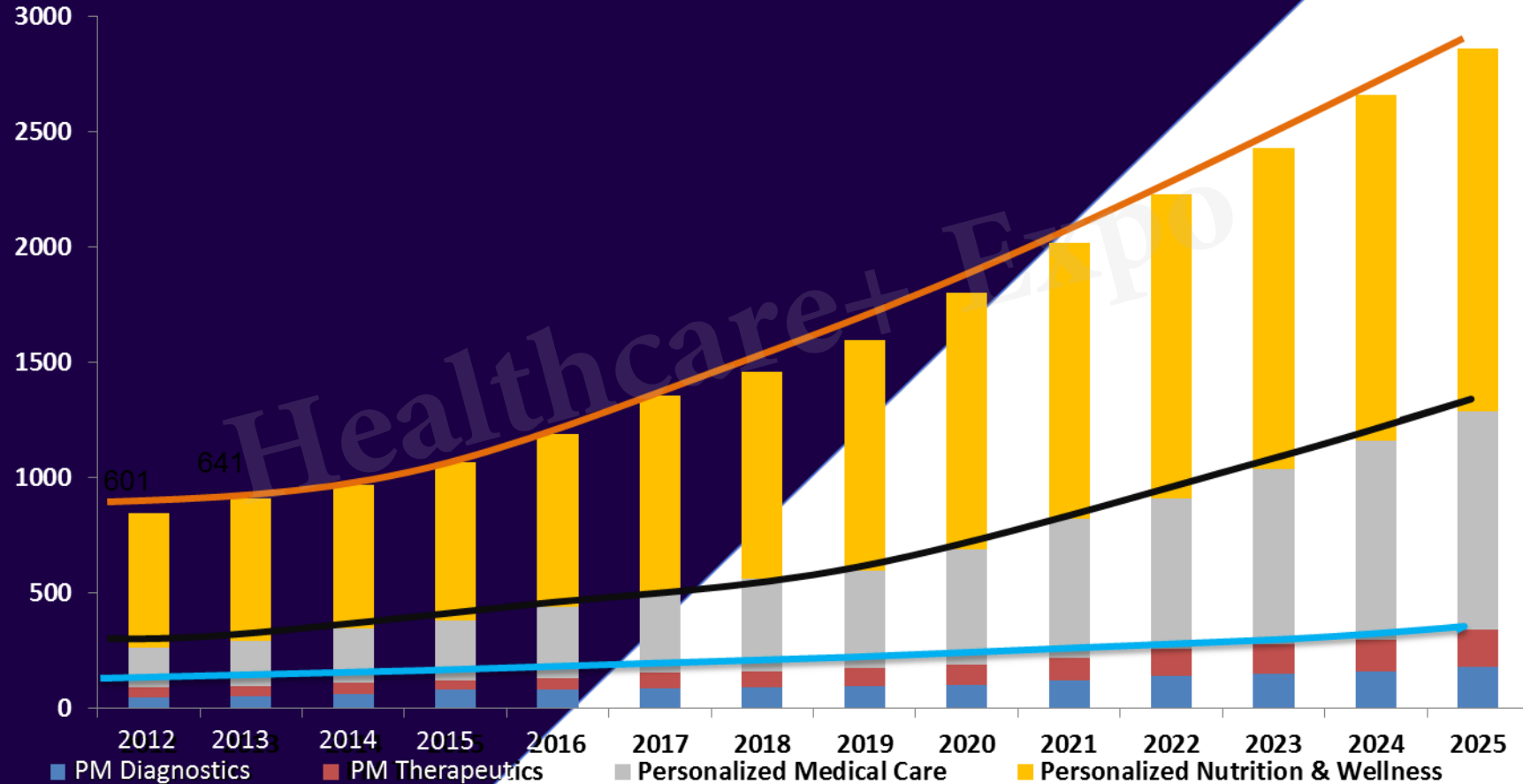
Risk Assessment : Genetic risk, Behavioral Patterns, family history etc.

Precision Prevention : Personalized Health Check 、 AI for Early Detection, Home Screening, Tele Health Consulting Services etc.

Health Promotion: Lifestyle, Environmental Adjustments, Personalized Diet, Sport and Exercise, Microbiota, Homecare and Wearable Devices, Health Management, etc.

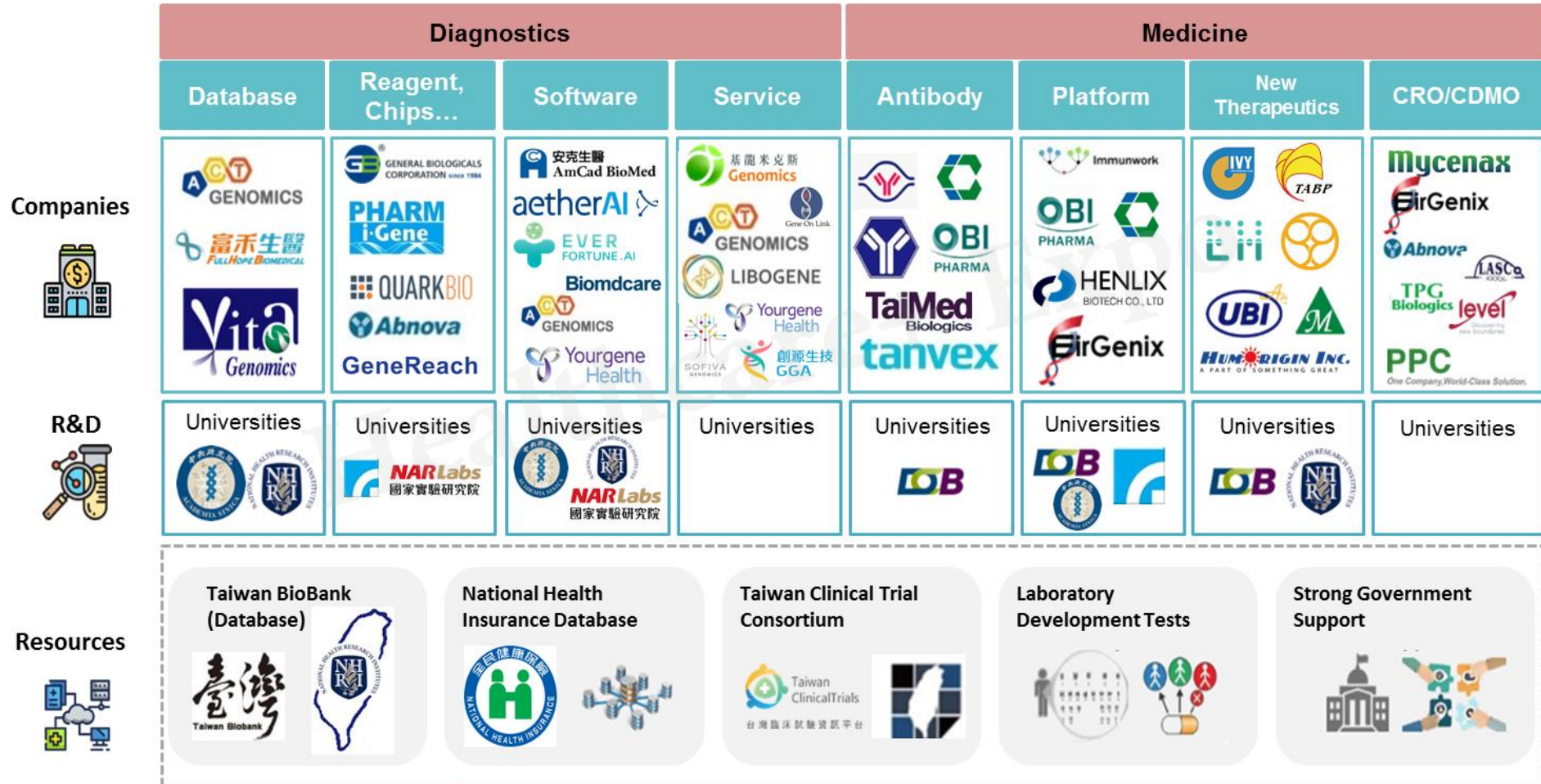
Global Precision Healthcare Market 2012-2025 (USD Billion)

OECD: Global Healthcare Spending is projected to reach \$8.7 (USD Trillion) in 2020.



Source: Grand View Research

Precision Medicine in Taiwan



Taiwanese ICT giants setting foot in healthcare



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	Mobile Healthcare	Medical Equipment	Smart Hospital Solution	Gene & Cell Therapy	Biomedical Essential Components
Enterprise					
Product	<ul style="list-style-type: none"> ■ Tele-healthcare ■ IoT Equipment & Solution ■ Wearable Devices ■ Health Management System ■ Medical Bioinformatic Security 	<ul style="list-style-type: none"> ■ X-ray/Ultrasonic ■ Micro CT ■ Rehabilitation, Surgery, Assistive Robotics ■ Capsule Endoscopy ■ Hemodialyzer ■ Clinical Pathology Analyzer ■ Molecular Diagnosis ■ Physiology Monitor 	<ul style="list-style-type: none"> ■ Smart Ward & Operating Room. ■ 3D Surgical navigation & VR training ■ AI Medical Solution ■ Mobile Nursing System ■ HER, EPR & EMR Streaming ■ Medical Monitor 	<ul style="list-style-type: none"> ■ Micro/Portable Sequencer ■ Thermal Control System ■ Gene/ Protein Chips ■ Enrichment & Recognition for CTC ■ Incubation/ Isolation System for Advanced Cell Therapy 	<ul style="list-style-type: none"> ■ AI Chip ■ GPU & AI accelerator ■ Multi-zoom lens & Medical Optics ■ RF & Wireless chip ■ Physiological Sensors ■ High image resolution elements ■ Radiology organic semiconductor

Advanced technologies Taiwan has that can be a game changer in the healthcare industry

IC design & manufacturing

AIoT & sensors

8K Ultra-HD Displays

5G Wireless Technology

Hardware-software integration

A strong growth in the Healthcare industry will be driven by the ICT sector

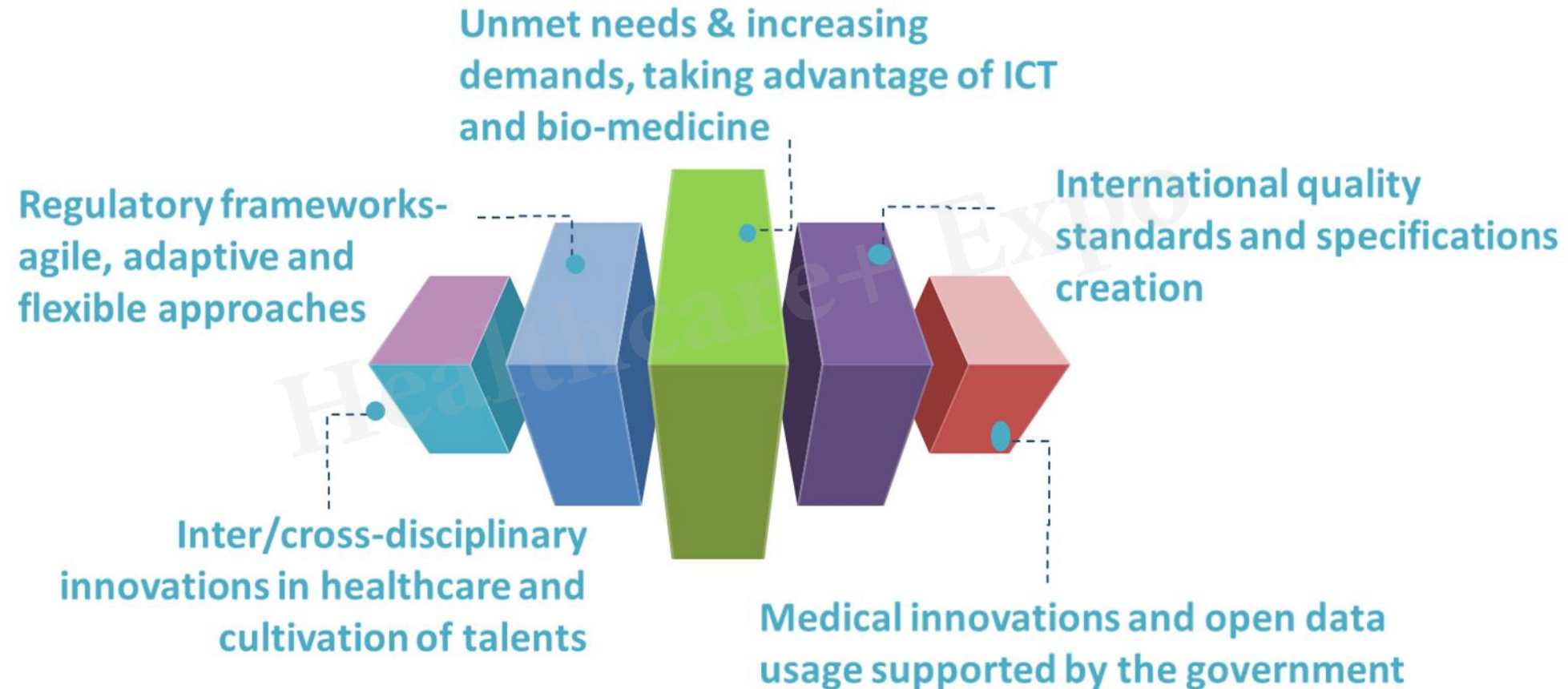
The sector generated US\$ 420 billion in annual revenue, of 2.85 per cent allocated for R&D.

With merely 1 per cent of the ICT gain reinvested in healthcare, it suggests R&D investment would reach US\$ 4.2 billion a year.

Taiwan ICT companies	Revenue (2018) NT\$ dollars	R&D (2018) NT\$ dollars	Achievements
FOXCONN	\$5.29 TN	\$84.4 BN	No. 24 of Fortune Global 500 No. 1 of EMS Providers Global
PEGATRON	\$1.34 TN	\$14.8 BN	No. 285 of Fortune Global 500
TSMC	\$1.03 TN	\$85.9 BN	No. 368 of Fortune Global 500
廣達電腦 Quantia Computer	\$1.03 TN	\$13.8 BN	No. 354 of Fortune Global 500
COMPAL	\$0.97 TN	\$12.8 BN	No. 404 of Fortune Global 500 No. 1 of NB manufacturer Global
wistron	\$0.75 TN	\$11.2 BN	No. 432 of Fortune Global 500 No. 5 of EMS Providers Global
英業達 Inventec	\$0.35 TN	\$5.0 BN	One of Leading EMS-ODM Manufacturers Global
ASUS	\$0.35 TN	\$11.0 BN	No. 5 of Best Laptop Brands 2018
acer	\$0.24 TN	\$2.6 BN	No. 4 of PC manufacturer Global No. 4 of Best Laptop Brands 2018
MEDIATEK	\$238.1 BN	\$57.6 BN	Top 3 IC Designer Global
DELTA	\$237.0 BN	\$19.3 BN	One of leader in power and thermal management solutions in the world
LITEON	\$207.1 BN	\$6.4 BN	Top 3 ODD manufacturers Top 10 EMS Providers Global
benq Qisda	\$155.8 BN	\$ 3.7 BN	Top 10 Electronic ODM Global Top 3 manufacturers of TFT-LCD
UMC	\$142.7 BN	\$13.0 BN	Leading global semiconductor foundry
CATCHER	\$95.4 BN	\$2.0 BN	No. 24 of Top 100 Digital Companies
Coretronic	\$55.7 BN	\$3.5 BN	One of leading DLP Projector Manufacturers
LARGAN	\$50.0 BN	\$3.3 BN	World's leading smartphone camera lens supplier
ADVANTECH	\$48.7 BN	\$4.0 BN	Leading provider of medical computing solutions
REALTEK	\$45.8 BN	\$13.0 BN	Top 10 Network and Multimedia IC Providers Global

(Source: Research Center for Biotechnology and Medicine Policy)

What We Can Do Collectively to Shape the Future of Healthcare





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The healthcare industry Taiwan in a global landscape
A visionary outlook on the healthcare industry Taiwan

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