



臺灣健康產業發展現況

錢宗良

Chung-Liang Chien, Ph.D.

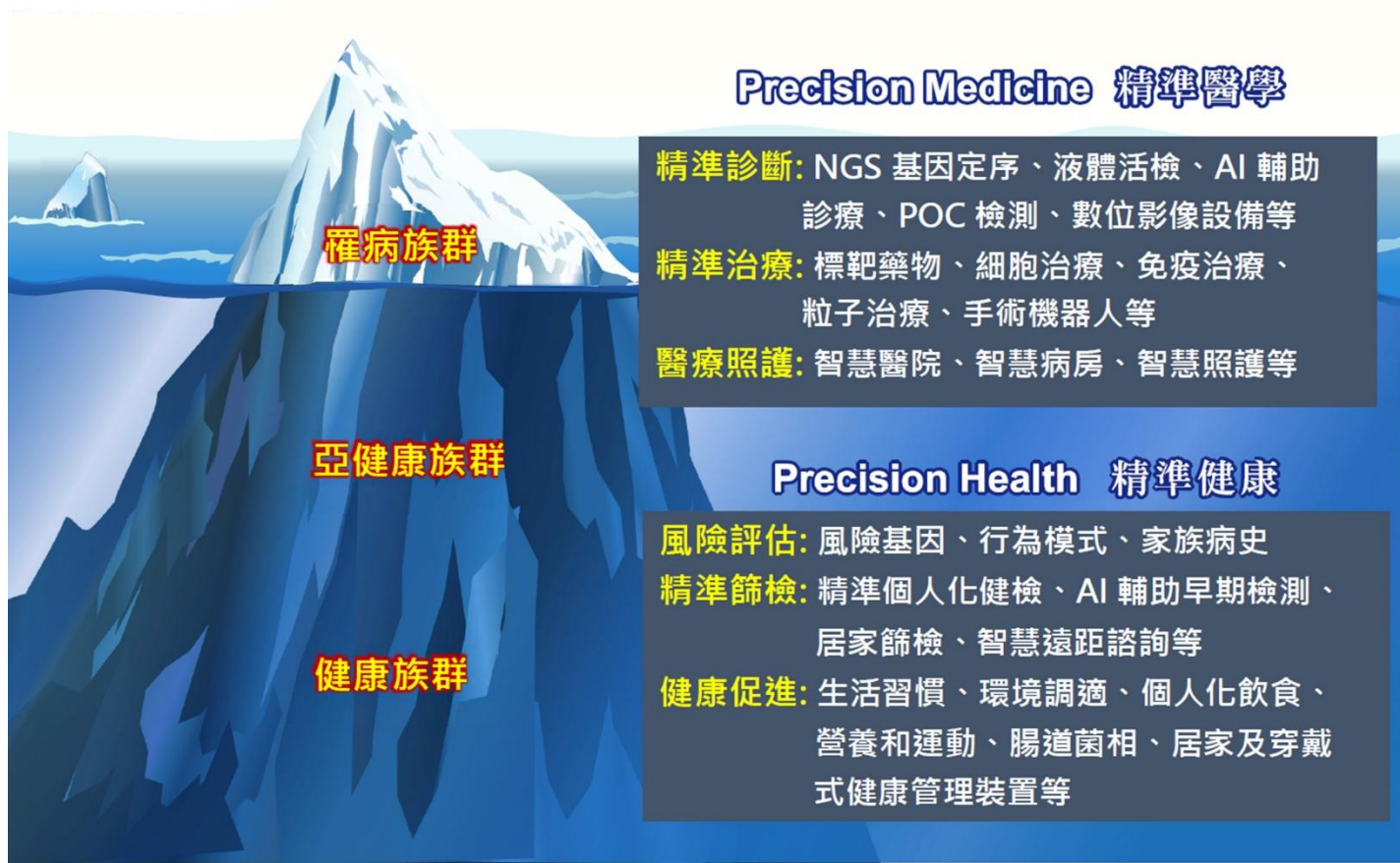
**Professor, College of Medicine, National Taiwan University
CEO, Institute for Biotechnology and Medicine Industry
Advisor, Century Biotech Development Corporation (TBIP)**



大綱

1. 精準健康與精準醫學
2. 臺灣精準健康產業：資通訊＋生醫產業
3. 臺北生技園區 (Taipei BioInnovation Park)
4. 國際行銷臺灣健康產業

精準醫學與精準健康： 誰是未來大健康產業的藍海？



Precision Medicine 精準醫學

精準診斷: NGS 基因定序、液體活檢、AI 輔助
診療、POC 檢測、數位影像設備等

精準治療: 標靶藥物、細胞治療、免疫治療、
粒子治療、手術機器人等

醫療照護: 智慧醫院、智慧病房、智慧照護等

Precision Health 精準健康

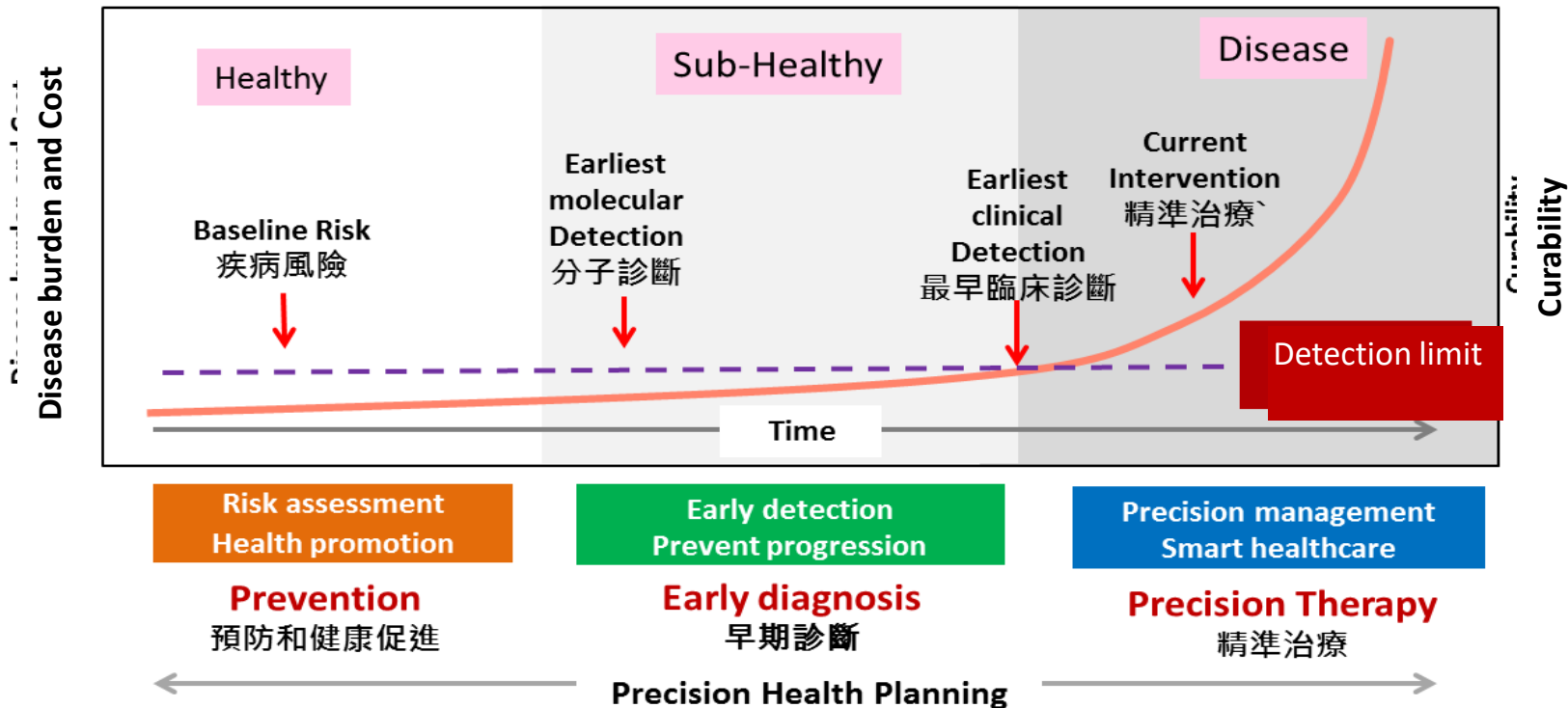
風險評估: 風險基因、行為模式、家族病史

精準篩檢: 精準個人化健檢、AI 輔助早期檢測、
居家篩檢、智慧遠距諮詢等

健康促進: 生活習慣、環境調適、個人化飲食、
營養和運動、腸道菌相、居家及穿戴
式健康管理裝置等

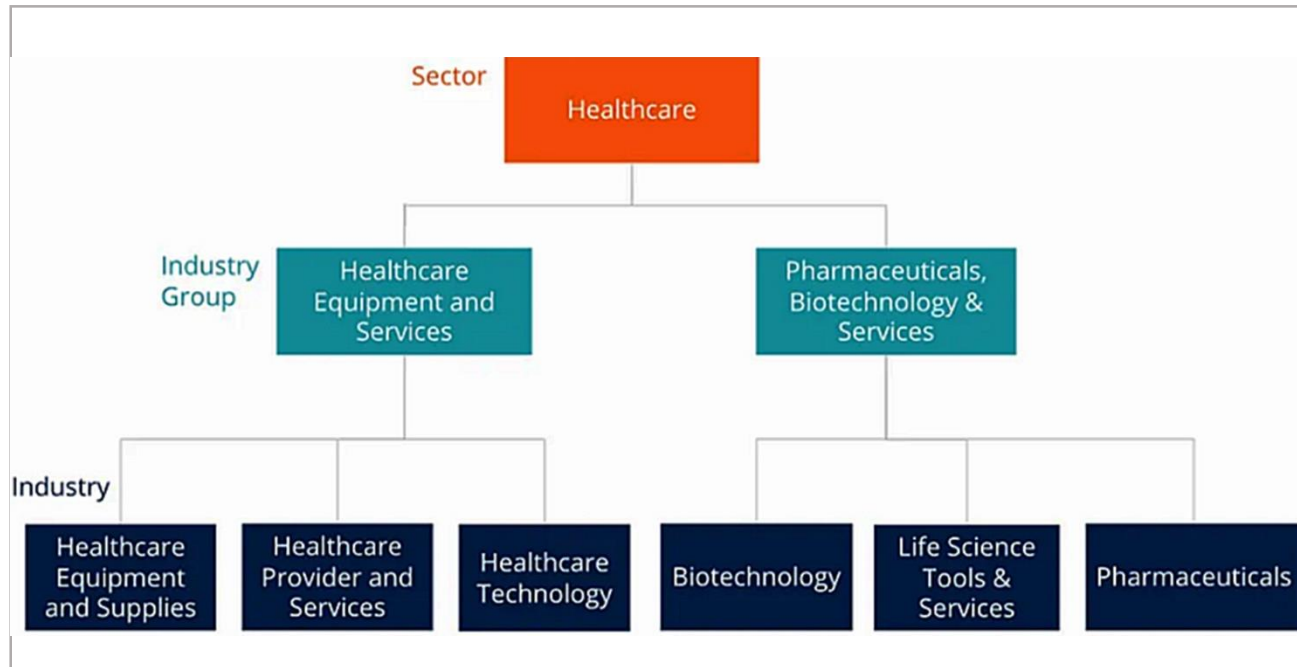
Healthcare from disease treatment to prevention

- Healthcare nowadays provides individuals with products and services ranging from prevention, health promotion, diagnosis to treatment.



Healthcare sector by GICS definition

- ❑ The healthcare sector includes the following subsections, as per Global Industry Classification Standard (GICS)

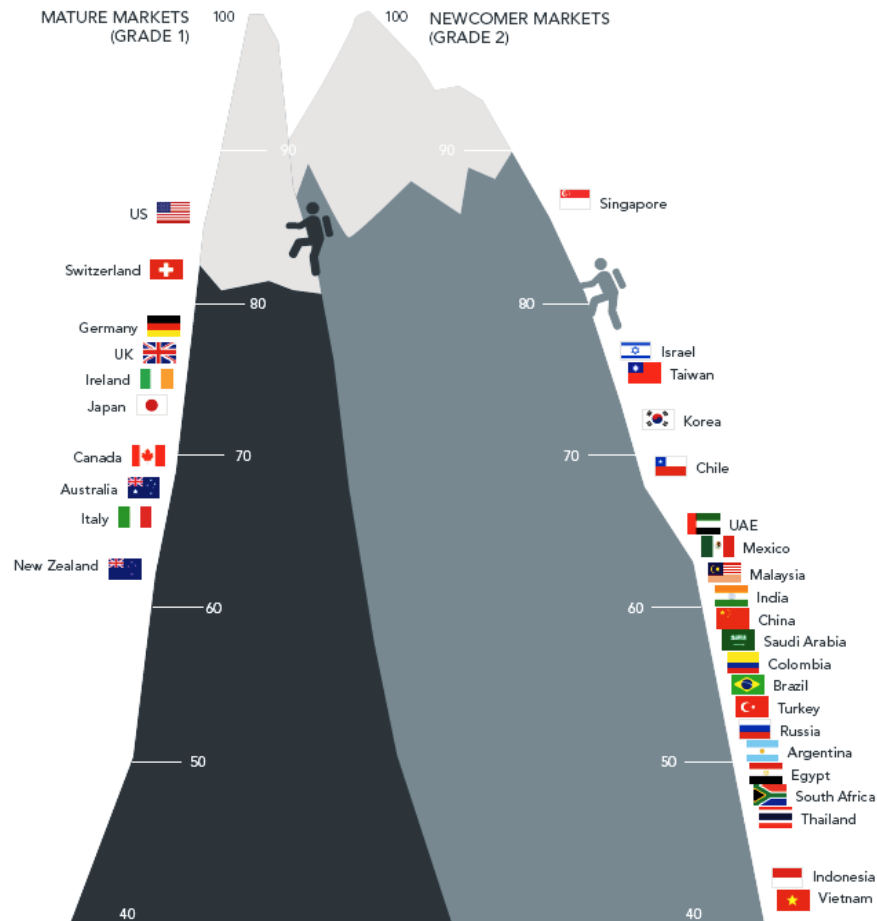


Global Markets:

- International Healthcare
- Bio-pharmaceutical
- Medical device
- Regenerative medicine
- Smart health
- Precision medicine
- Sports medicine

Taiwan Core Competences

- Taiwan ranks 3rd in the newcomer markets
- World-class quality of medicine and talent
- The best healthcare system and big data
- High quality clinical trials and R&D capacity
- Well-established research infrastructure
- ICT supply chain, talent and manufacturing
- AI and 5G R&D in national level



Source compiled by IBMI, RBMP (2021)

Key drivers of Taiwan's healthcare industry

Advanced Medical Care

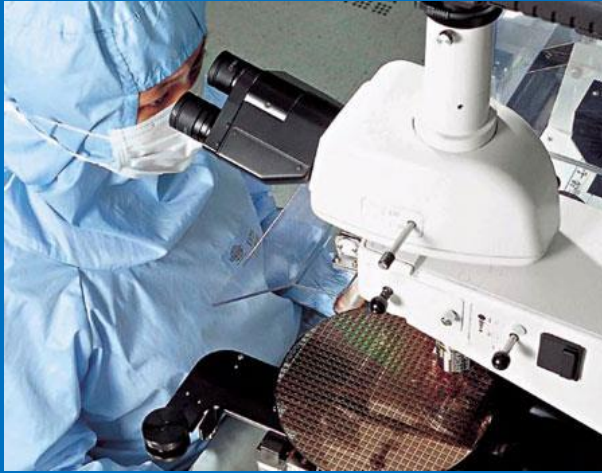


High Quality R&D and MFG



Strong ICT and Elec. Tech.





ICT



Hospital



Smart Hospital



Healthcare IoT
Platform



Health AI



Medical &
Wearable Devices



Hospital
Equipment

Cross-industry cooperation at a glance



- 1) AI medical platform
- 2) Telemedicine / remote care
- 3) AI-assisted arrhythmia diagnosis
- 4) AIoT device/equipment



- 1) Genome database for Chinese
- 2) Medical wearables
- 3) Epidemic management products
- 4) Proton therapy / 8K medical imaging



- 1) Innovative devices / AI diagnostics
- 2) Health & chronic disease management
- 3) Medical imaging for animals
- 4) Cell therapy / AIoT solutions



- 1) Miniaturization of medical equipment
- 2) Exoskeleton / assistive devices
- 3) AI dialysis / medical AI imaging
- 4) Digital pathology / health management



- 1) Telehealth / IoT products
- 2) Auto detection of CTC
- 3) Data integration of sports health
- 4) AI-assisted detection of disease

Taiwan's ICT Sector in Healthcare

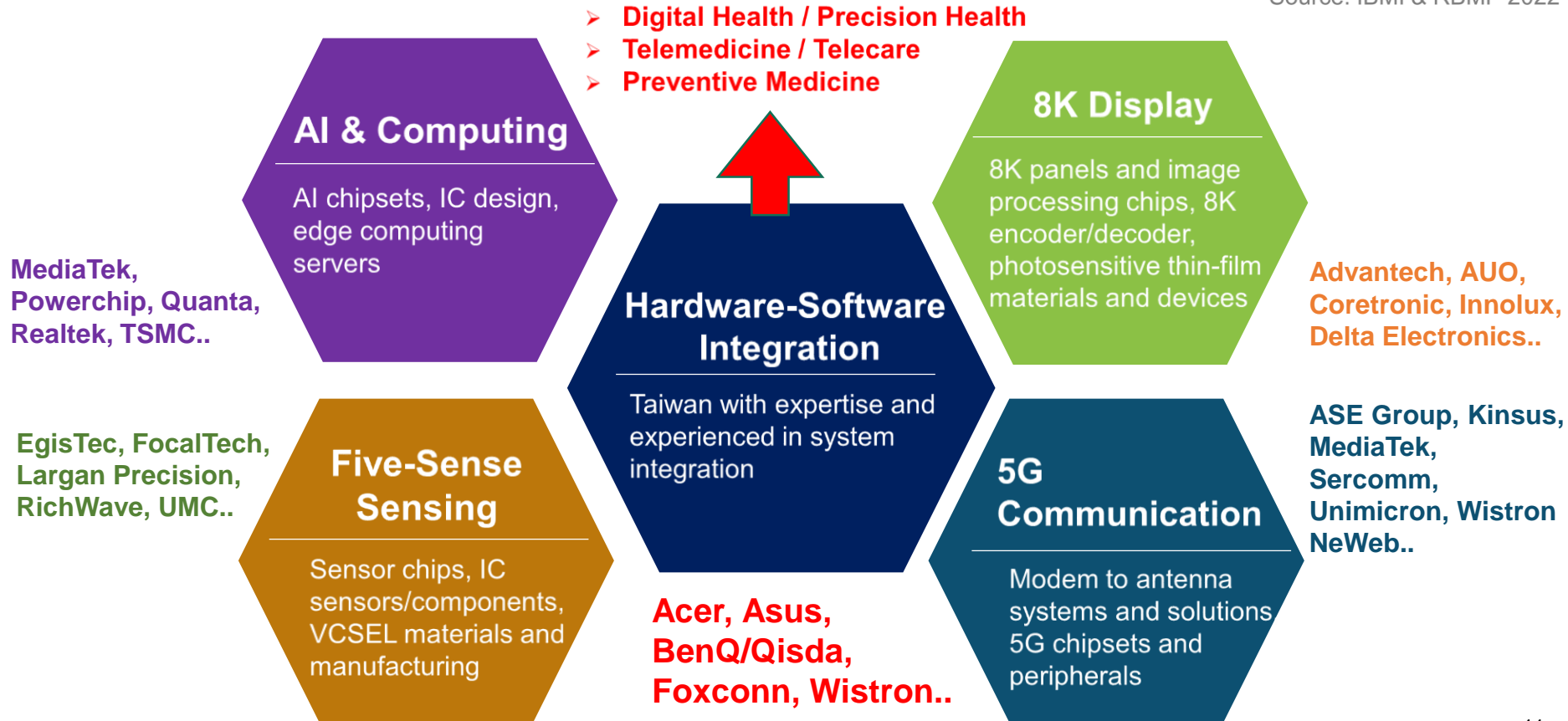
Precision Healthcare Industry

	Mobile health	Medical equipment	Smart hospital	Gene/cell therapy	Biomedicine	
Companies						
Product pipelines	<ul style="list-style-type: none"> ■ Tele-healthcare ■ IoT solutions ■ Wearables ■ Health management 	<ul style="list-style-type: none"> ■ X ray/ultrasound ■ Micro CT ■ Surgical robots ■ Capsule endoscopy ■ Hemodialyzer ■ Pathology/AI Image ■ Vital sign monitor 	<ul style="list-style-type: none"> ■ Smart ward/operating room ■ Surgical VR ■ AI solution ■ HMS ■ EMR / EHR ■ Medical display 	<ul style="list-style-type: none"> ■ DNA sequencer ■ DNA microarray ■ Protein & genetic testing ■ CTC system ■ Cellular therapy 	<ul style="list-style-type: none"> ■ AI chip ■ Biochip for gene sequencing ■ RF & Wireless chip ■ Biosensor ■ Display component ■ Organic semiconductor 	
Areas of application						

Taiwan Industry Overview

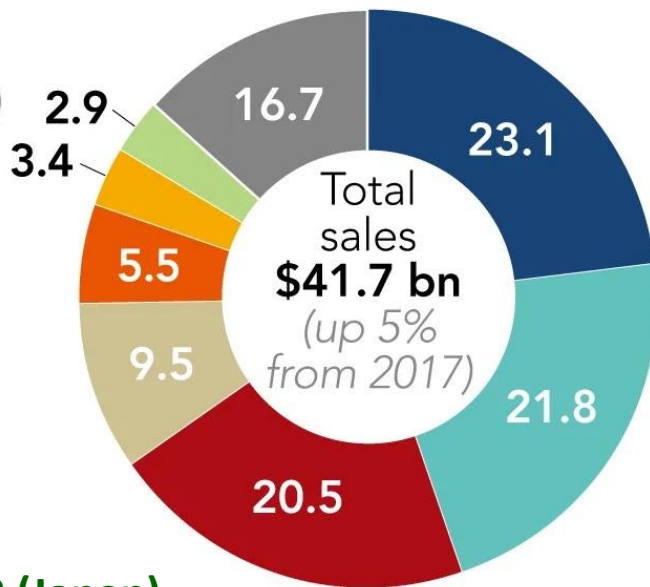
Market Players and Focus Areas

Source: IBMI & RBMP 2022



Diagnostic imaging equipment global market share by sales (2018, in percent)

- Siemens Healthcare (Germany) 2.9
- General Electric (U.S.) 3.4
- Philips (Netherlands) 9.5
- Canon (Japan) 5.5
- Fujifilm Holdings (Japan) 5.5
- Carestream Health (U.S.) 2.9
- Hitachi (Japan) 2.9
- Others 16.7

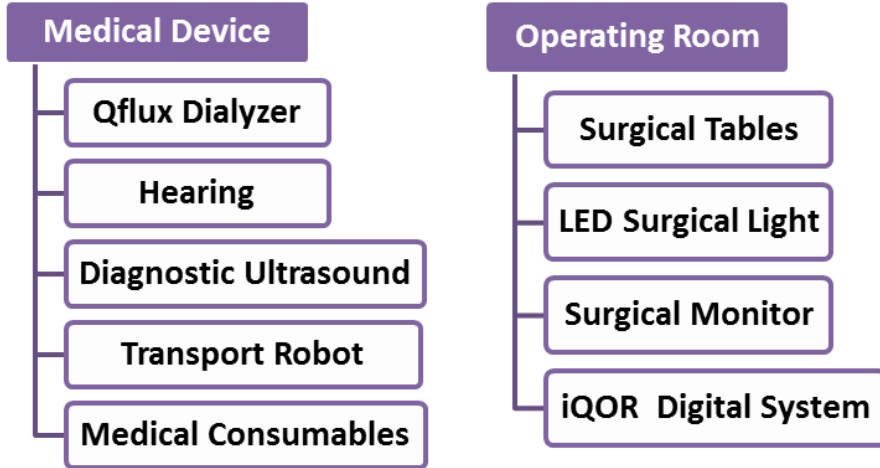


Source: Evaluate

8.4 + 9.5 = 17.9 (Japan)

2月18日，富士表示：「兩家企業合併後，會將各自影像處理和人工智慧軟體和日立超音波、MRI 結合，**打包販售給醫療機構**。」 **To provide the total solution!**

Featured Products



Solutions

Smart Operation Room



ODM / OEM of Medical Device

Other Smart Healthcare Solutions

Fitness System

Smart Wearables

Smart Ward

Health Management System

Long-Term Care Monitoring Solution

Taiwan leading hospitals are expanding their productivity from building smart hospital...



彰化基督教醫院
CHANGHUA CHRISTIAN HOSPITAL



員林基督教醫院
Yuanlin Christian Hospital



U.S. Green Building Council
LEED Gold Level Certification on
Dec, 2015



ICT Players launch
products and solutions:

- ◆ Smart Nurse Station
- ◆ Smart Ward
- ◆ Smart Clinic
- ◆ Smart Counter
- ◆ Smart Dialysis
- ◆ Smart Operation Room
- ◆ Multimedia interaction
- ◆ Accompany robot
- ◆ Logistics Management



Smart Ward: Beside Infotainment System

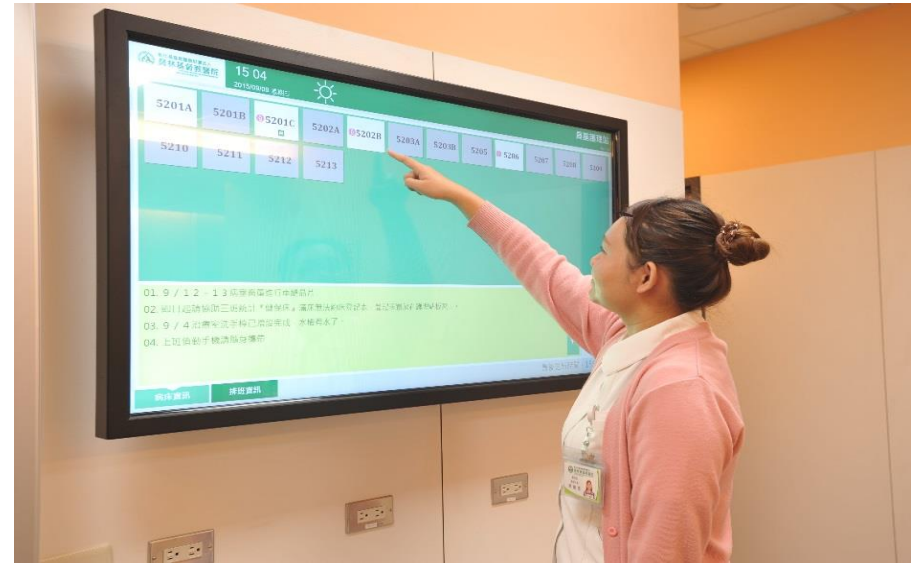
- ◆ Interactive environment
- ◆ Disclosure real-time information
- ◆ Treatment schedule



Smart Nurse Station: Nursing Dashboard

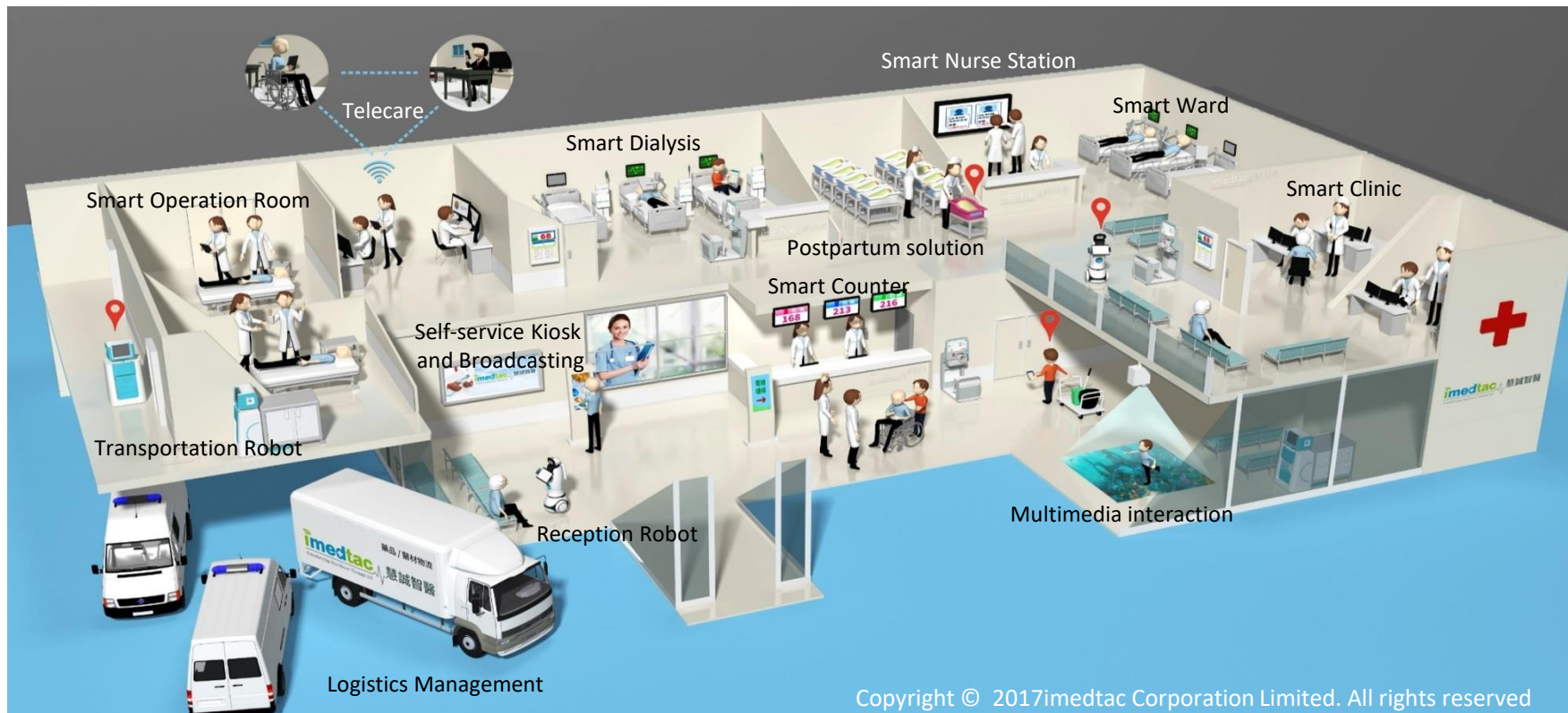
Improvement Nurse Care Quality and Work Flow

1. No paper works
2. Real time nursing shifting
3. Real time patient information (location, activity, schedule)
4. Pre-alarm system



Integrated Solutions in Smart Hospital

Modularize IoT for Hospital and Healthcare Application by **imedtac** 慧誠智醫



臺北生技園區 Taipei BioInnovation Park (TBIP)

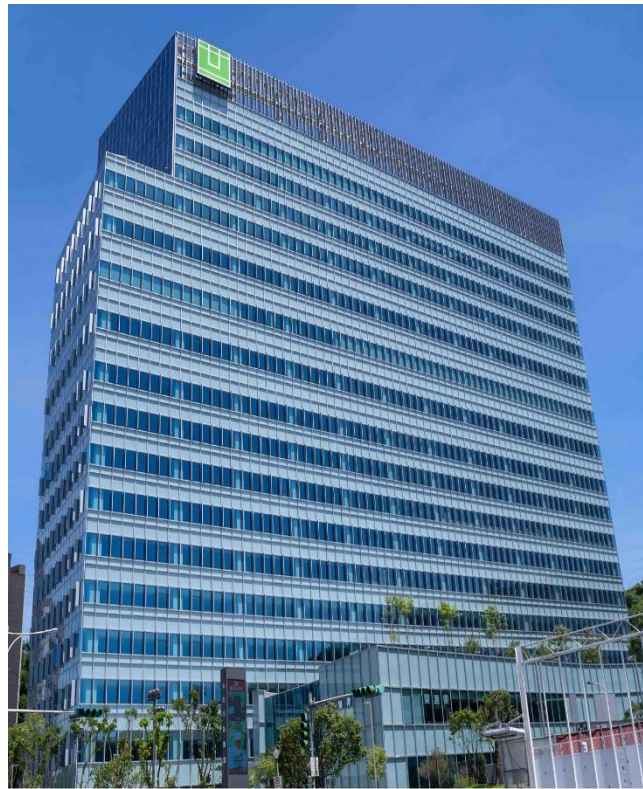
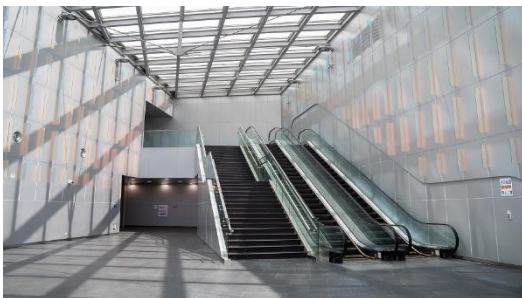


Taipei BioInnovation Park is Taiwan's first BOT development project for the biotech industry. It serves as a key core base, promoting nationwide biotech integration and international collaboration while nurturing talent and fostering innovation.

TBIP is a biotechnology industrial park with 17 floors (**14F-17F are designed as the Incubation Center**). The park is located near the NanGang Station, a transportation hub for high-speed rail and MRT.

世康開發股份有限公司

Century Biotech Development Corporation





PharmaEssentia



MERCK

ThermoFisher SCIENTIFIC

NavifUS

OBIGEN PHARMA

signify PHILIPS

ELIXIRON

STEMCYTE Taiwan

AnnJi



EXCELSIOR

AP Biosciences 圓祥生技



GNTbm 華上生醫



Intelligence 智新生技

PHARMOSA 國邑藥品科技

ExoOne Bio 艾萬霖生技



PROMISE 美康諾生醫



LKST 禾豐醫企業有限公司 LKST Biosciences Inc.

SOPHIE'S BIONUTRIENTS

LumiSTAR Biotech for revolution in light

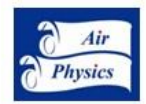
Precision Biotech

全瑩生技 TRADE WIND BIOTECH

EG BIOMED

BENED BIOMEDICAL 益福生醫

InSeed 惠生研



TEKCORE

AeroCool



MOS BURGER

Royal Host

submer

Ducky

御大倉 Yu Da Cang



雲象科技 aetherAI provides **solutions for digital pathology and AI-powered diagnostic support** to help pathologists perform more effectively, realizing the true potential of the digital transformation.



新析生技 .SYNCELL's Microscoop spatial proteomics technology can turn a microscope into a "Microscoop" - the world's first in-cell "pickable" microscope that applies **an AI algorithm to selectively recover proteins and nucleic acids** from a specified subcellular location.



臺灣生物醫藥製造 Taiwan Bio-Manufacturing Corporation (TBMC) is a pioneering **CDMO** focusing on advancing biomanufacturing innovations. TBMC is developing an automated platform for the **mass production of MSC and cancer immunotherapy cell therapy drugs**. TBMC also offer comprehensive one-stop services including IRB planning and writing, process development, QC method establishment, functional verification, CMC document preparation, as well as clinical trial design.



臺灣浩鼎 **OBI Pharma** is a global clinical stage oncology company that is headquartered in Taiwan. The core value of OBI lies in its passion to develop and deliver a portfolio of **unique antibody-drug conjugates (ADC) drugs** for patients, in addition to its promising Globo series (e.g., Globo H) of **cancer therapeutic vaccines**.

Cell Therapy-related Companies



艾萬霖生技
ExoOne Bio

艾萬霖生技 ExoOne Biotech is committed to developing the clinical application of **exosomes** and focusing on the treatment of **degenerative diseases**. The exosomes are mainly isolated from the mesenchymal stem cells of the umbilical cord (**UC-MSCs**).



Precision Biotech

精準生技 Precision Biotech is focusing on the **immune cell (NK/NKT) therapy for cancers**. They also provide services for cell processing and banking. IRB planning and writing, CMC document preparation, as well as clinical trial design.



高端疫苗 MVC is focusing on the development and mass production of vaccines and biologics. MVC have PIC/S GMP certified cell culture mass production capabilities, and **target infectious diseases to develop novel vaccines** and affordable **biosimilar drugs** via international alliances.



昱星生技 LumiSTAR is developing a pipeline of innovative cell therapies based on **induced pluripotent stem cell (iPSC)** technology. LumiSTAR also equipped with iPSC and bioimaging-based high throughput drug screening platform to develop new drugs.



育世博 Acepodia is developing innovative, highly effective cell therapies for cancer that are broadly accessible for patients. By arming our powerful **cancer-killing cells** with the tumor-targeting technology, Antibody-Cell Conjugation (ACC), Acepodia believes it can develop powerful, accessible cell therapies for patients with cancer.



瑞福生醫 Cytopacx is focusing on the neural regeneration and tissue engineering with **exosome technology**. Cytopacx is also providing a health supplement with combination of probiotics formulated with useful skin activating factors to improve the skin condition.



美商永生 Stemcyte provides the private **cord blood banking** service also offers Newborn Genetic Analysis (NGA) which identifies any DNA irregularities and screens for over 200 health disorders.



禾豐醫 LKST Biosciences is Taiwan dealer of LONZA COCON (The **Cell Therapy** Manufacturing Platform) and CYTEK Biosciences (Full spectrum flow cytometry systems). LKST Biosciences provide researchers with advanced cell culture solutions to support the R&D for cell therapy.



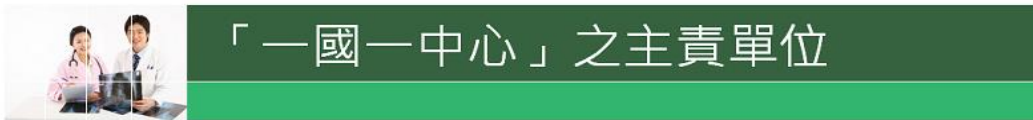
- Thailand (彰基 + 雙和)
- Malaysia (長庚 + 中國附醫)
- India (成大)
- Vietnam (榮總 + 高醫)
- Indonesia (台大 + 亞東)
- Philippine (慈濟 + 萬芳)
- Myanmar (新光)
- Cambodia (部桃)

衛生福利部 113年度 新南向醫衛資源整合平臺計畫後續擴充

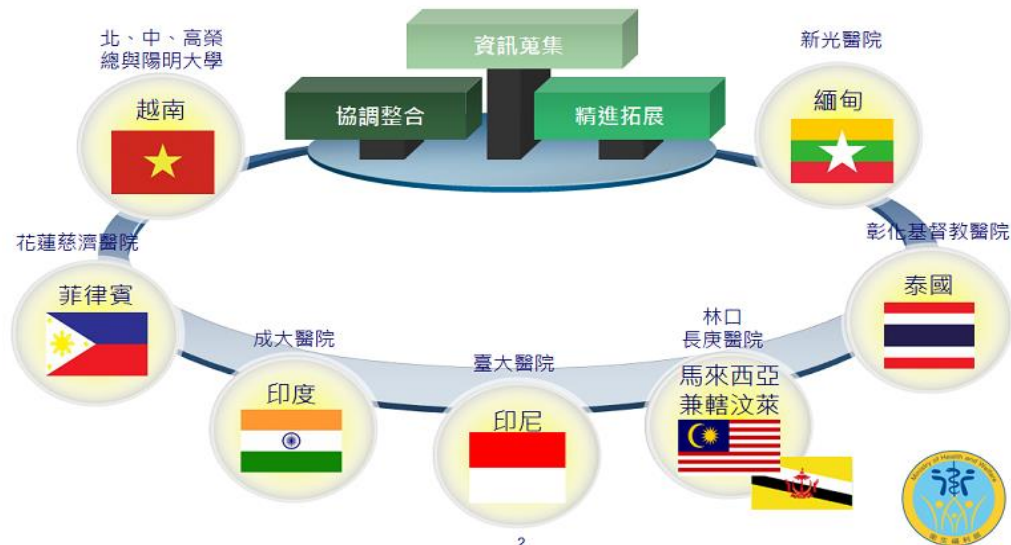


- Taiwan has become the most important exporting Smart Hospital Solution country in Asia.
- Offer Total solutions to assist Asia countries to build smart hospitals or improve hospital management effectiveness.

- Thailand (彰基+雙和)
- Malaysia (長庚+中國附醫)
- India (成大)
- Vietnam (榮總+高醫)
- Indonesia (台大+亞東)
- Philippine (慈濟+萬芳)
- Myanmar (新光)
- Cambodia (部桃)



透過委託具醫學中心量能之機構，在當地執行一國一中心計畫。





《主責新南向政策醫衛產業供應鏈工作小組》 醫衛產業合作搭橋



台灣利基醫衛產業鏈

數位醫療

企業

產品

- ✓ 遠距照護系統
- ✓ IoT設備/維修
- ✓ 穿戴式裝置
- ✓ 健康數據監測分析與管理系統

醫材設備

- ✓ 血液透析器
- ✓ 微型電腦斷層
- ✓ X光/超音波
- ✓ 生理監測設備
- ✓ 膠囊內視鏡

細胞治療

- ✓ CTC檢測系統
- ✓ 細胞療法
- ✓ 基因定序及晶片
- ✓ 蛋白質與基因檢測

精準檢測

- ✓ AI晶片
- ✓ 有機半導體元件
- ✓ 影像顯示元件
- ✓ 體徵訊號量測感應器

112年度執行成果：

-新南向國家產業媒合與市場拓銷活動

2023台泰智慧醫療研討會坊（泰國曼谷）

- ◆ 國內廠商：慧誠智醫、大江基因、龍骨王、世基生物、安克生醫、醫百科技、倍利科技、上銀科技、神經元、三鼎生物、英華達、柏瑞醫、福濟生物、雅博、安奕生物、和鑫生技、振馨科技、慧術科技、中華電信、華碩電腦
- ◆ 展示項目：智慧醫療產品，包括5G技術、人工智能解決方案、圖像分析平台、遠程醫療解決方案、智能病房



08.02 (Fri)



08.04 (Sun)

TWTC Hall 1



高齡健康產業博覽會

Healthy Ageing Tech Show

完整串聯高齡健康生態圈！

推進高齡健康生活、智慧生活、快樂生活！

主辦單位：生策會、生策中心、工商協進會、產業發展署、數位產業署、國家衛生研究院

To Establish Taiwan Ecosystem for Elderly Health

To Integrate Smart Services, Healthcare, and Happy Living for Seniors!



活動網址

完整串聯高齡健康生態圈！推進高齡智慧服務、健康照護、快樂生活！



Healthcare[®]

EXPO · TAIWAN 2024.12.05-12.08



2024 活動網址

◆ Tech x Medicine: Expo Highlights in Medtech, Biotech and Healthtech

The Expo stands out among exhibitions of its type, fostering accelerated collaborations between the Medtech, Biotech, and Healthtech sectors. It provides a platform for showcasing cutting-edge technologies and solutions, sparking innovation, and fostering partnerships in healthcare.

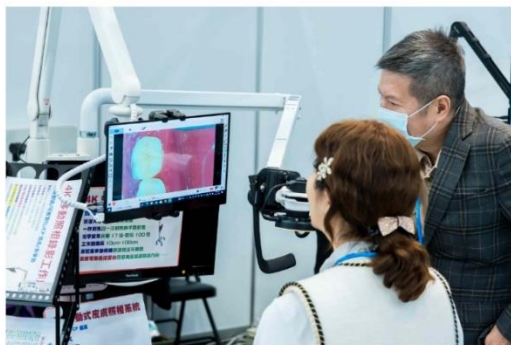
Medtech



The Expo features upstream-to-downstream supply chains, showcasing innovative technologies, products, and services for therapeutics and patient care.

- Smart Hospital Solutions
- Medical Devices & Equipment
- Digital Health Technologies

Biotech



The Expo showcases supply chains from upstream to downstream, emphasizing diagnostics, labs, and services for screening, prevention, and treatment.

- Diagnostics, Laboratory
- Equipment & Services
- Biopharmaceutical Products & Services
- Regenerative Medicine Products & Services

Healthtech



The Expo presents consumer health products for people in various health states, aiding in immune health, managing risks, and promoting a healthy lifestyle.

- Preventive Medicine
- Consumer Health
- Long-term Care & Assistive Technology

Branding Taiwan



Thank you for your attention