



財團法人生物技術開發中心
Development Center for Biotechnology

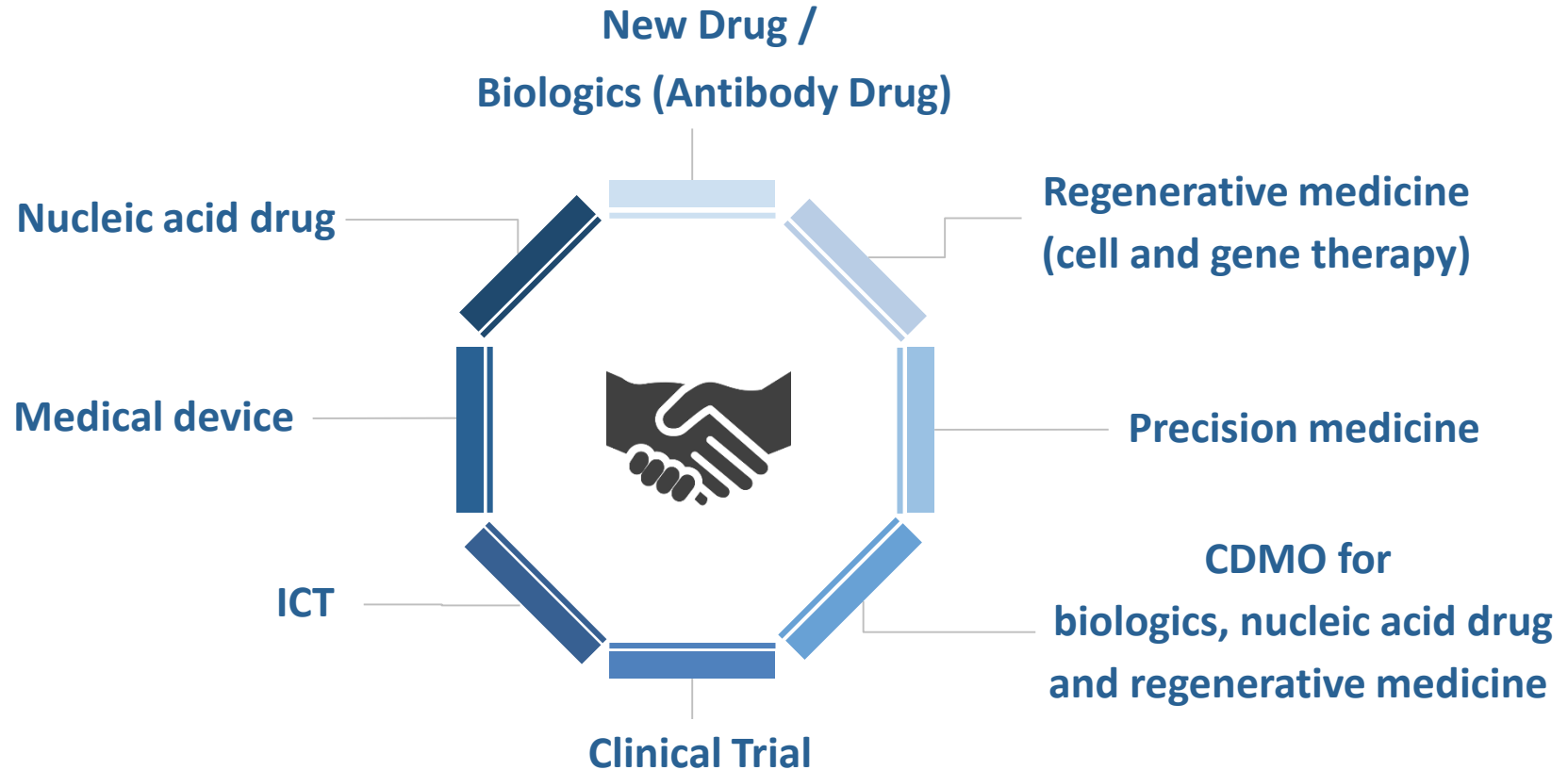
Taiwan Biotechnology Spotlight

The 34th Joint Conference of the ROC-Australia and Australia-Taiwan Business Councils

November 4, 2021

Dr. C.H. Herbert Wu
President, Development Center for Biotechnology

Collaboration Opportunities of Biomedical Industry in Taiwan



The Transformation of Biomedical Industry Policy in Taiwan



ICT, Big data

AI, Bio + ICT, multi-sectors integration

Population Medicine

Precision Medicine

Precision Health

— 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 — // — 2030 —>

National Plans

Two Trillion & Twin Star Development Program

Biotech Diamond Action Plan

Biotech Take-off Action Plan

5+2 Industry Innovation Program

Biomedical Industry Innovation Program

President Tsai's inaugural address(2020)

Six core strategic industries

Taiwan Precision Health Initiative

Upgrade

Accelerate industrial upgrading and development

Strengthen **biomed translation** outcome and commercialization

4 aspects to promote innovation

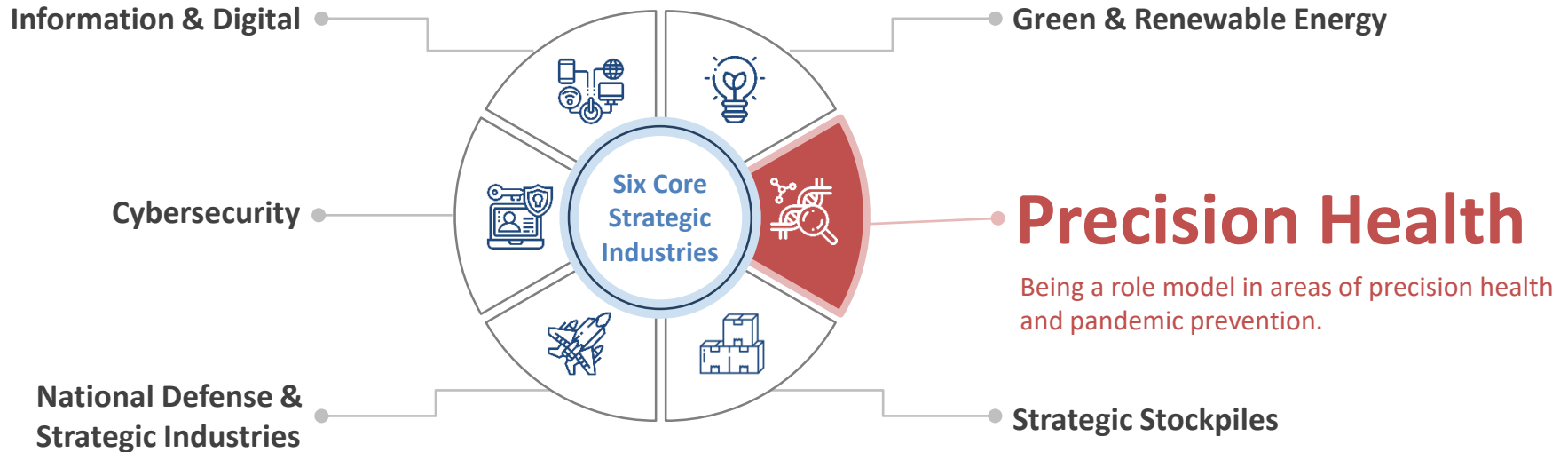
- Infrastructure & ecosystem
- International connection
- Biomedical corridor
- Emerging industries

- **Data science + biomedical + ICT interdisciplinary**
- **Interdisciplinary integration**
- **International participation**

Precision Health Is One of the most Important Industries in Taiwan



★★★ Six core strategic industries ★★★

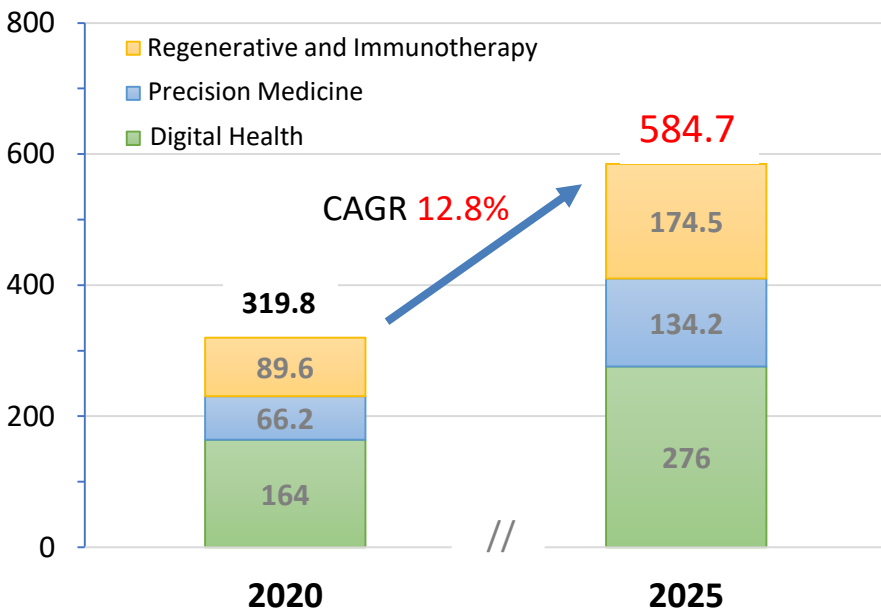


Soft Infrastructure: Bilingual/Digital Talent, Regulatory Environment, Financial Support

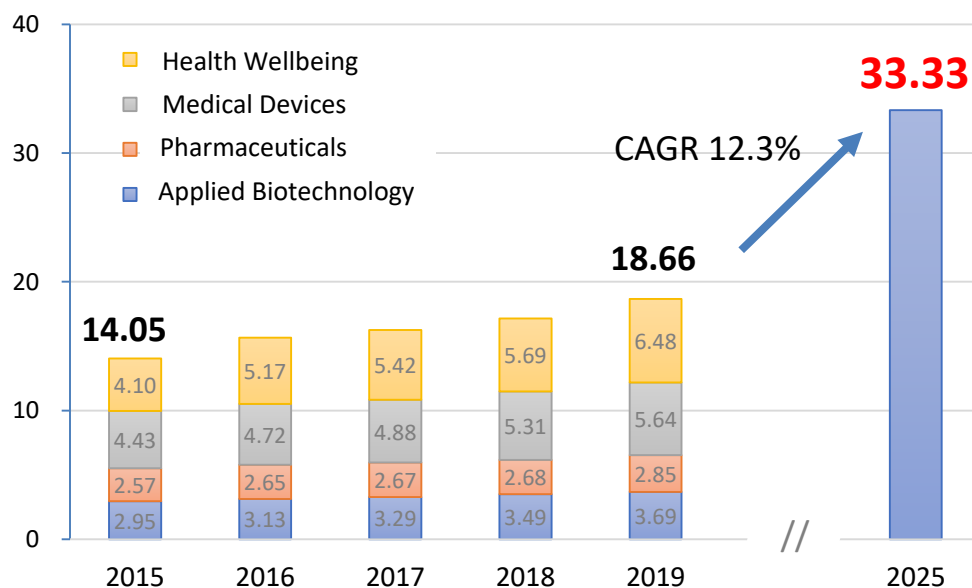
Precision Health Industry Revenue in 2025

The global revenue prediction of precision health industry will increase to 584.7 bil. USD in 2025, and >33.33 bil. USD in Taiwan.

Global revenue (bil. USD)



Taiwan revenue (bil. USD)



Taiwan Has Established Biomedical Clusters for Integration between Drug, Medical Device, and Smart-Agri.



Drug Mfg/ Medical Device



Taichung

- Drugs Mfg (Pharmaceuticals, Vaccines)
- Medical Devices (Rehabilitation Devices, Minimal Invasive Surgical Devices)

API Mfg/ Medical Device/ Smart Agri-tech



Tainan & Kaohsiung

- Drugs Mfg (API),
- Medical Devices (Implantable Devices, Minimal Invasive Surgical Devices)

Pingtung

- Herbal Medicines, Functional Foods, Animal Breeding and Vaccines

New Drug/ Biologics Mfg/ Adv. Medical Device

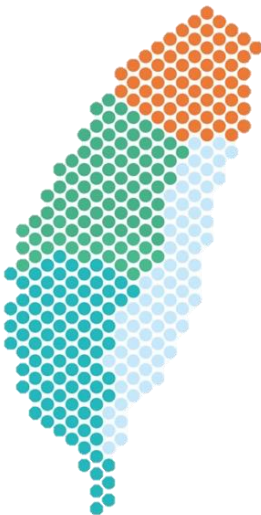


Taipei

- Drugs (Discovery, Pharmaceuticals),
- Medical Devices (Diagnostics, Medical Electronics)

Hsinchu

- Drugs (Biologics),
- Medical Devices (IVD, Medical Imaging)



API: active pharmaceutical ingredient
Smart-Agri: smart agriculture
IVD: in vitro diagnostic
Mfg: manufacturing

Complete and Comprehensive Biomedical, Electronic Industry Supply Chain and Medical System



Innovative R&D

- 626** applied biotech companies
- 360** pharma companies
- 1157** medical device companies
- 157** academic institutions
- 9** major research organizations*



Customizable Manufacturing

- 145** PIC/s GMP facilities for western medicine
- 29** GMP facilities for raw materials
- 87** GMP facilities for Chinese medicine
- 653** ISO13485/GMP facilities

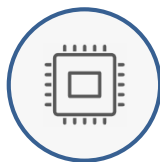


High Quality Clinical Research

- 20** clinical Trial Centers
- 127** hospitals
- 33** CRO
- 14** therapeutic areas

Taiwan Clinical Trial Consortium (TCTC)

World's Leading Technologies



Semiconductor



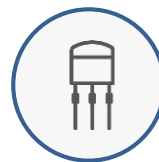
Precision Molding



Display



ICT



Electro-Mechanics



Metal Processing



Petrochemical Materials

Collaboration Opportunities

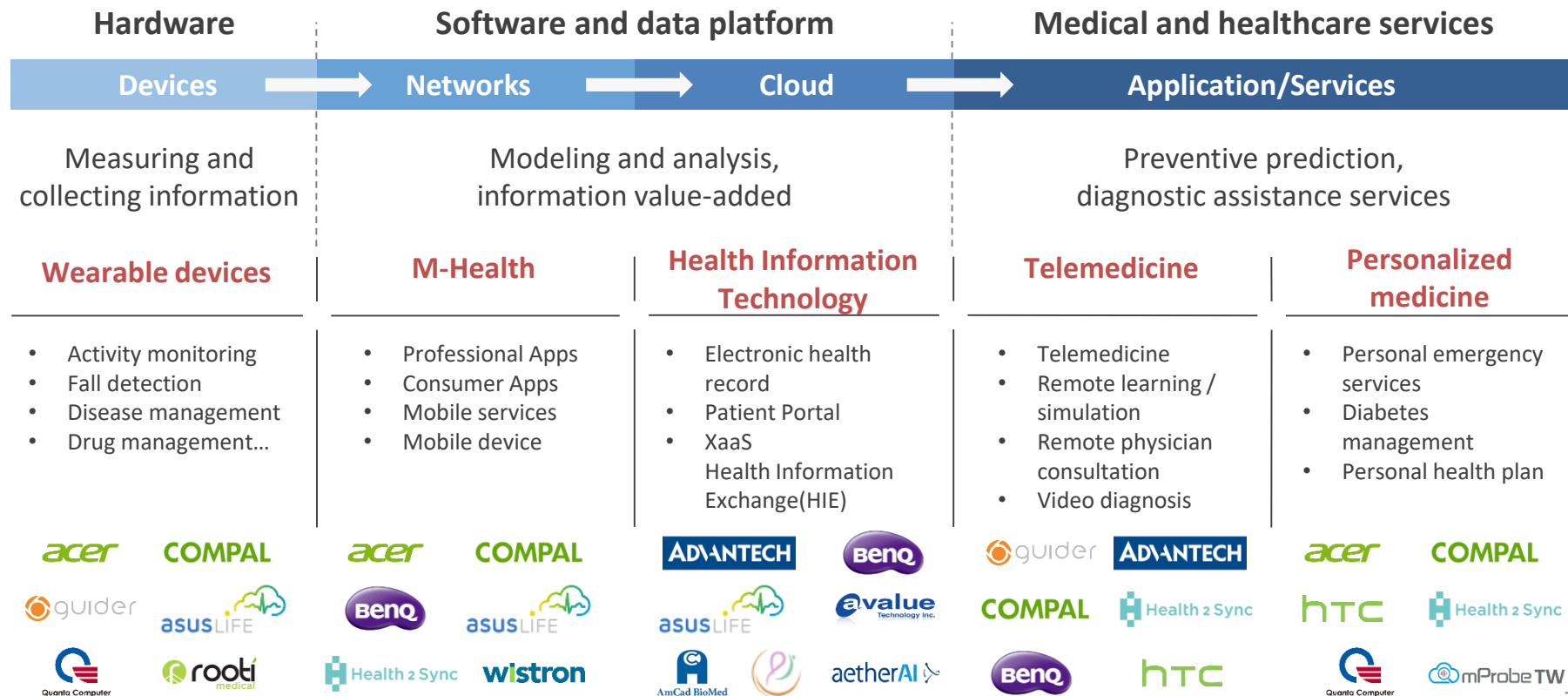
R&D, Prototyping, OEM, ODM, Customization

*DCB, ITRI, NHRI, PDC....etc.

Taiwan's ICT Capability Serves as a Catalyst for Precision Health



ICT: Information and Communication Technology



Accumulate Medical Data on Taiwan Healthy People and Diseases, Open Up Cooperation between Academia and Industry



National Health Insurance Research Database

- **99.7%** (23.92 million) citizens covered
- **25 years** data
- **850 million** medical records every year
- open collaboration to general public, academia and industries from 2019
- released de-identified **CT** and **MRI medical images** for artificial intelligence analysis



National Biobank Consortium of Taiwan

- **27** Biobanks in hospitals
- collect **4.5 million** samples
- recruited **460,000** participants

Taiwan Clinical Trials

- ✓ Approved clinical trials in Taiwan (2008-2020) : 3391
- ✓ Qualified clinical trial sites: 149
- ✓ Recognized IRB/ECs: 24
- ✓ Fully accreditation IRBs/ECs: 12
- ✓ The Taiwan Clinical trial Consortium (TCTC) :
 - 14 disease-specific clinical trial consortiums
 - More than 280 experienced clinical trial members and PIs

Taiwan Clinical Trial Consortium (TCTC)

Disease-specific consortia involving multiple hospitals

 肺癌臨床試驗聯盟 Lung Cancer Consortium	 胃腸疾病與幽門桿菌合作聯盟 Gastrointestinal Disease And Helicobacter Consortium	 肝炎及肝癌臨床試驗聯盟 LiverNet Consortium
 乳癌臨床試驗合作聯盟 Breast Cancer Consortium	 高血壓相關疾病聯盟 Hypertension Associated Cardiac Disease Consortium	 慢性阻塞性肺病聯盟 COPD Consortium
 婦科癌症研究聯盟 GYN Oncology Group	 血脂和動脈粥硬化聯盟 Lipid and Atherosclerosis Consortium	 精神疾病臨床試驗聯盟 Mental Disorders Consortium
 癌症早期臨床試驗聯盟 Oncology Phase I Consortium	 小兒感染症聯盟 Pediatric Infectious Diseases Alliance	 成人感染症臨床試驗聯盟 Adult Infectious Diseases
 中風臨床試驗聯盟 Stroke	 腎臟疾病臨床試驗聯盟 Acute Kidney Injury & Renal Diseases	

Taiwan Clinical Trial Consortium (TCTC): <http://tc2.ntu.edu.tw/>

THANK YOU.



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