

把握創新AI晶片發展、應用領域與發展機會議題

盧超群 NAE(美國國家工程院)院士/ Stanford博士/台大學士

鈺創科技集團(Etron Tech) 執行長、董事長暨創辦人

IEEE Fellow (91)、IEEE Solid State Circuits Field Award (98)

GSA (全球半導體聯盟)董事、亞太領袖會主席、全球主席(09~11)

臺灣半導體產業協會TSIA常務理事、理事長(13~17)

WSC (世界半導體理事高峰會)理事長(14~15)

臺灣大學與交通大學傑出校友、交通大學 講座教授(05~07)

半導體技術正扮演多元應用的智慧核心



即時視頻流



VR / AR



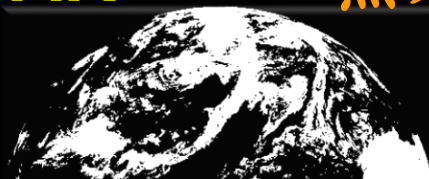
無人機



機器人安全系統



3D掃描和列印



Human &
Artificial Intelligences



可穿戴裝置



智能汽車



智能家居



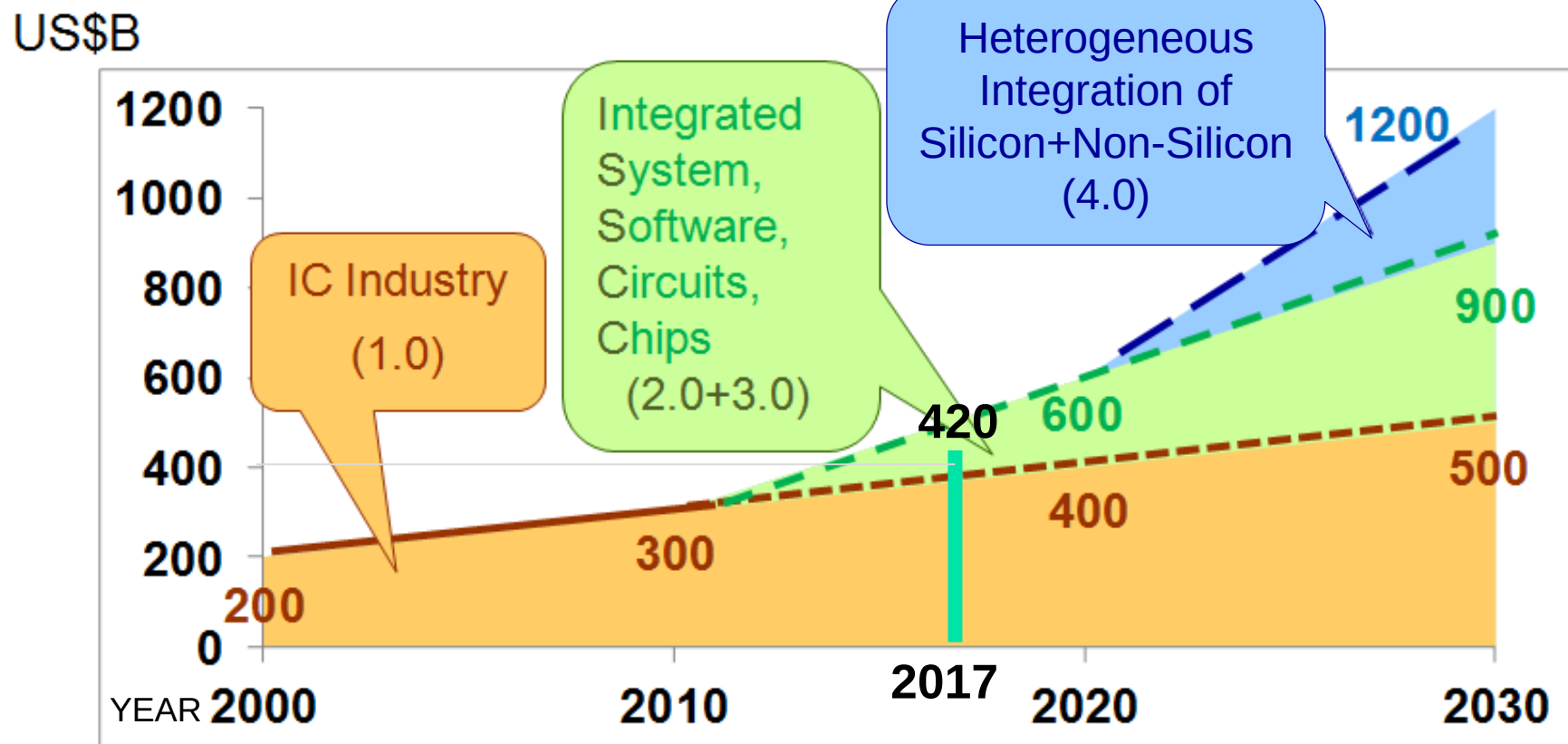
智能城市



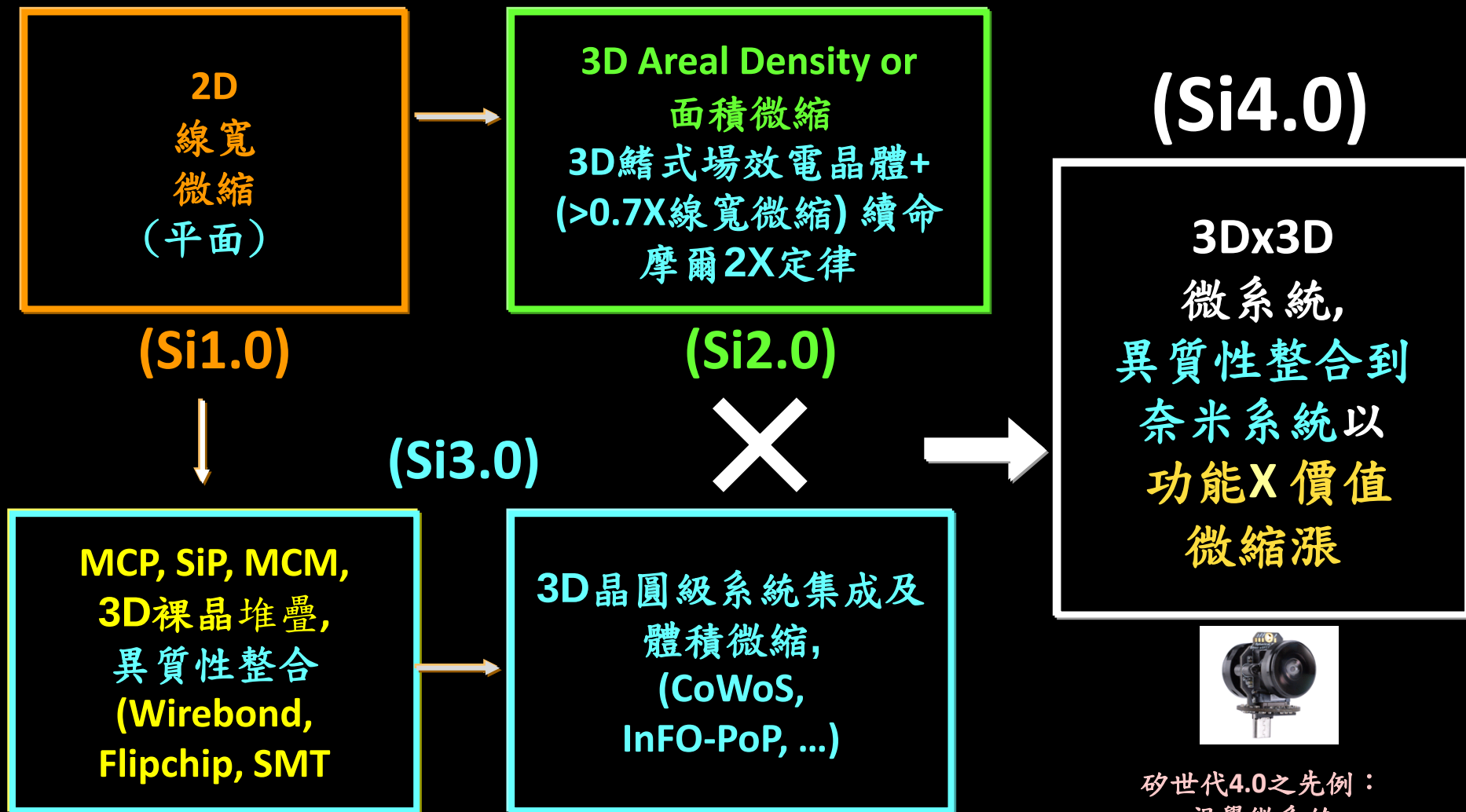
智能保健

矽世代4.0異質性整合－類摩爾定律經濟成長

人類可望1.0奈米積體電路、30年榮景、產值超越1兆美元



矽世代4.0【Silicon 4.0:矽X非矽異質性整合+功能X價值之微縮漲法則+奈米級系統設計】，創新【類摩爾定律經濟(Virtual Moore's Law Economy, VME)】，衍生巨大商機



矽世代4.0之先例：
視覺微系統



IEEE Heterogeneous Integration Roadmap Symposium

Hosted by IEEE Electronics Packaging Society Santa Clara Valley Chapter

Thursday, February 22nd, 2018

8:30 AM to 6:00 PM

at

Texas Instruments Building E Conference Center,
Silicon Valley, California

Roadmap Symposium Web Link

<http://www.cpmc.org/scv/?p=513>

Jointly Sponsored by



IEEE HIR ROADMAP AFTERNOON Program Feb 22, 2018

12:40 – 1:40 pm Lunch

1:40 – 2:25 pm Plenary Presentation Dr Nicky Lu

“Synergistic Growth of AI and Silicon Age 4.0 through
Heterogeneous Integration of Technologies”



Session 3 –Chaired by Luu Nguyen (IEEE Electronics Packaging Society)

2:25 – 3:45 pm ***Heterogeneous Integration for Special Applications***

2:25 – 2:40 pm Aerospace & Defense **Tim Lee** (Boeing), Daniel Green (Darpa)

2:40 – 2:55 pm 5G in RF and Analog Mixed Signal **Tim Lee** (Boeing), Herbert Bennett (NIST Retired)

2:55 – 3:10 pm Interconnect **Subramanian Iyer** (UCLA)

3:10 – 3:25 pm MEMS & Sensor integration **Shafi Saiyed** (ADI)

3:25 – 3:40 pm Cyber Security **Sohrab Aftabjahani** (Intel), Scott List (SRC)

3:40 – 3:45 pm Q&A

Break

Session 4 –Chaired by Subramanian Iyer (IEEE Electron Devices Society)

4:00 – 5:20 pm ***Heterogeneous Integration Applications, Materials & Simulation***

4:00 – 4:15 pm Mobile **William Chen** (ASE)

4:15 – 4:30 pm Automotive **Venky Sundaram** (GT), Rao Tummala (GT)

4:30 – 4:45 pm Simulation **Christopher Bailey** (Greenwich U), Xuejan Fan (Lamar)

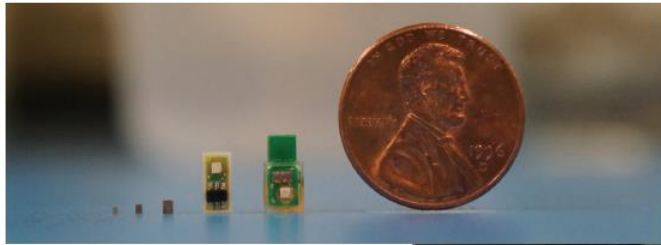
4:45 – 5:00 pm Materials & Emerging Research Materials WR Bottoms(3MTS), MJ Yim (Intel)

5:00 – 5:15 pm Supply Chain **Tom Salmon** (SEMI)

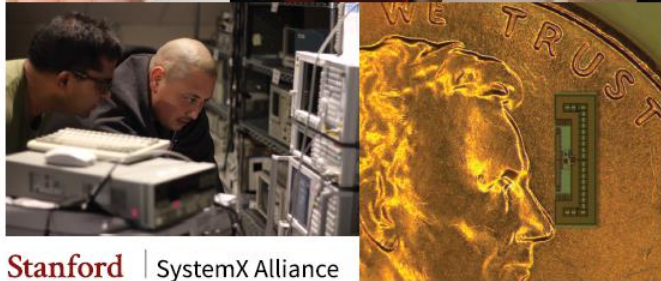
5:15 – 5:20 pm Q&A

5:20 – 5:45 pm Wrap Up William Chen , Bill Bottoms (HIR)

5:45 – 6:00 pm Symposium Closing Gaurang Choksi (Intel)



IoE
Internet of Everything



Stanford | SystemX Alliance

Stanford | SystemX Alliance

SystemX IoE Symposium

"Edge Intelligence" for the Hyper-Connected World of "IoE"

May 2nd - 3rd, 2018 - Li Ka Shing Conference Center, Stanford University

Ali Keshavarzi, Ph.D.
Prof. Amin Arbabian
Prof. Tom Lee
Dr. Nicky Lu



IoE Symposium - Berg Hall C <u>Program</u>			
9:00AM	Technological Challenges for Embedded Systems in the IoE/AI Age	Dr. Hideto Hidaka Renesas	Slides will not be shared, per speaker's request
9:30AM	Synergistic Growth of AI/IOT and Silicon Age 4.0 through Heterogeneous Integration of Technologies	Dr. Nicky Lu Etron	PDF & Video
10:00AM	Break (30 mins)		
10:30AM	Scaling to a Trillion IoT Devices	Dr. Dipesh Patel ARM/SoftBank	PDF (Recording will not be shared, per speaker's request)
11:00AM	Edge Computing and Connectivity: A Success Key for MindSphere	Robert Schwarz Siemens	PDF & Video
11:30AM	Group Discussion	Led by Ali Keshavarzi Stanford University	

科技新世代Intelligence⁵ 创造指数型经济成长

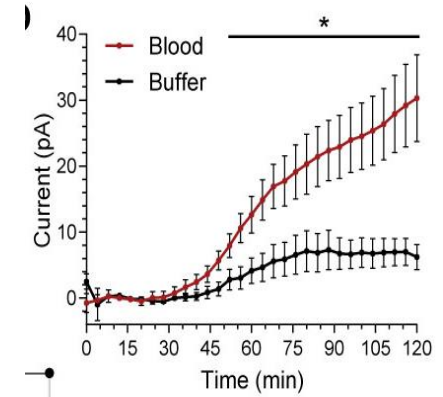
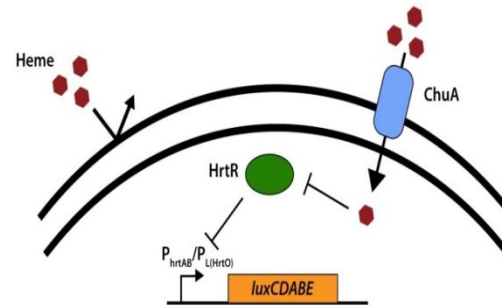
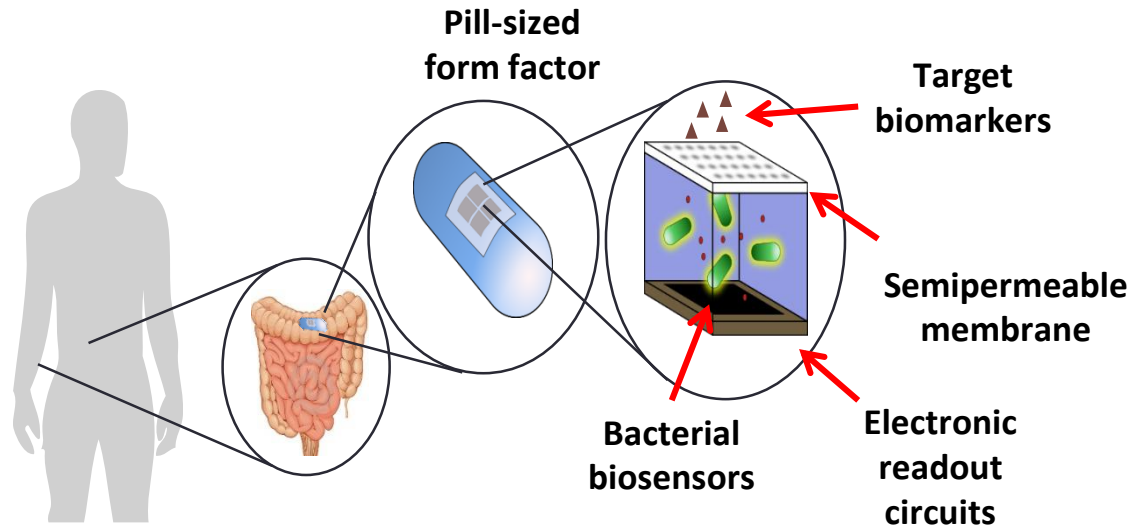
HI × AI × IoT(5G)技术引领到新加值整合(VI)与
普世智慧(PI)新纪元

- 自然人智能(Intelligence)
- 人工智能 & 机器、机器人与人类协同之人机智能
- 细胞/细菌智能创新改革医药及疗法
- 长寿质量与生活愉悦智能
- 人类与环境共生智能

* After Nicky Lu, PI: 2016; I⁵ (I Exponential 5指数型经济成长): 2018



Researchers are Working on an Electronic Pill You Can Take to See If You're Sick or Not (USA TODAY)



Mimee*, Nadeau, Chandraskasan, Lu (卢冠达)
Science 2018.

Confidential and Proprietary

From 1965 to 2015 to 2050 ...

Homogeneous Integration –

Moore's Law on ICs

$$2^{30} \leftarrow \frac{60 \text{ years}}{2 \text{ years}}$$

↑
no. of transistors

Heterogeneous Integration + Intelligence⁵ –

Lu's Theory on HIC × AI × IoT(5G) × C&C

$$\sum_{\text{years}} \left(H^A \leftarrow \frac{\text{New applications}}{\text{year}} \right) C\&C$$

↑
no. of HI/IC blocks

↑
Contents & Clouds

台灣AI晶片發展挑戰

垂直整合

- 系統應用為垂直，應以獎勵誘導從水平分工走向垂直整合
- 領導計劃支持
- 上位政策指導



留才政策

- 減稅
- 獎勵
- 產學研三界連結人才



AI挑戰

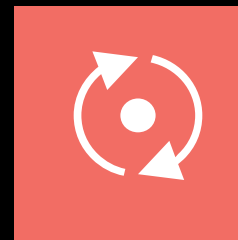
鼓勵創新

- 鼓勵年輕人創新，勇於嘗試，不要怕發明創新



形成產業

- 形成下世代AI產業，創造就業
- 以產帶學，以學支持產





謝謝Thank You!