CAPRI Annual Forum 2024

Panel Discussion

Impact of AI
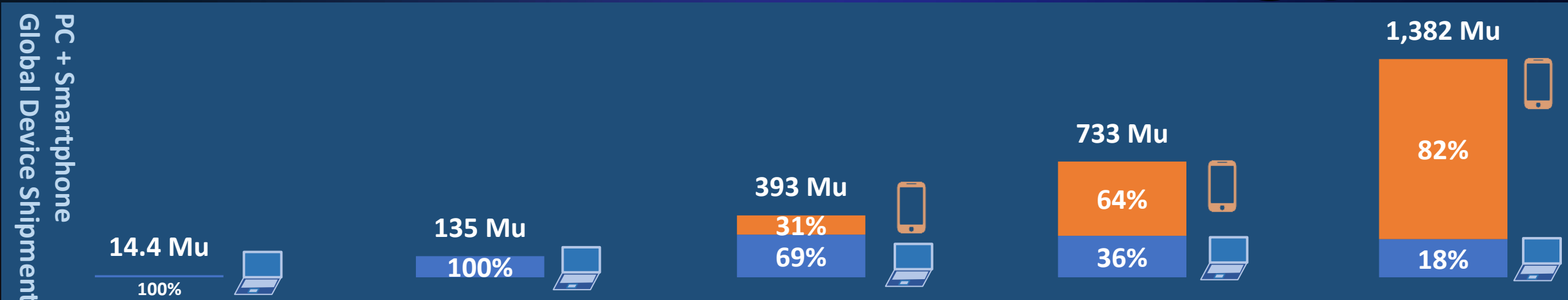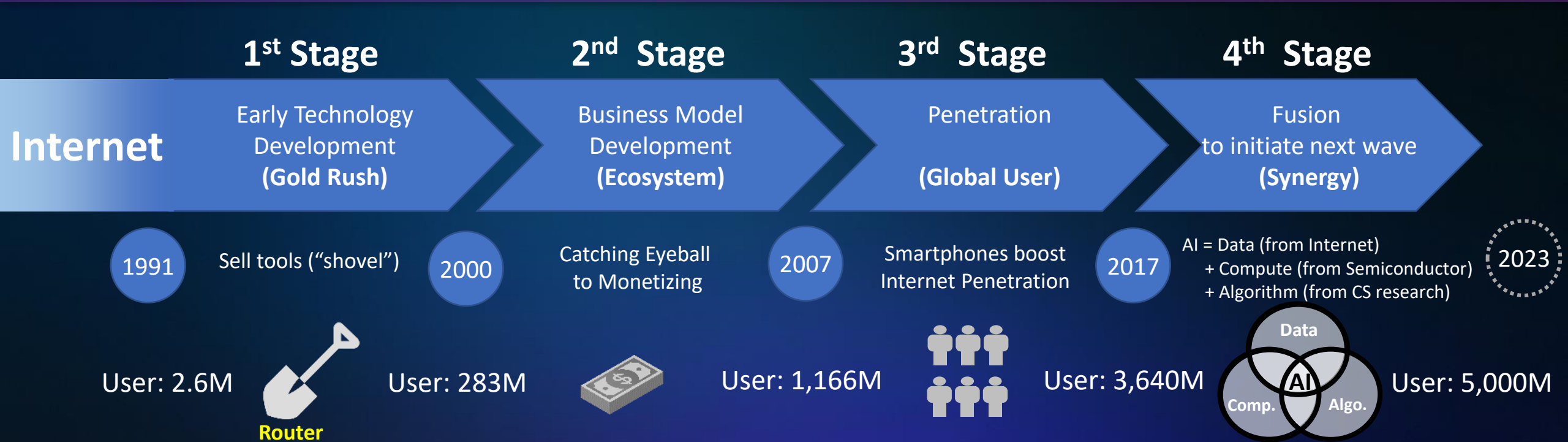
梁伯嵩
Bor-Sung Liang
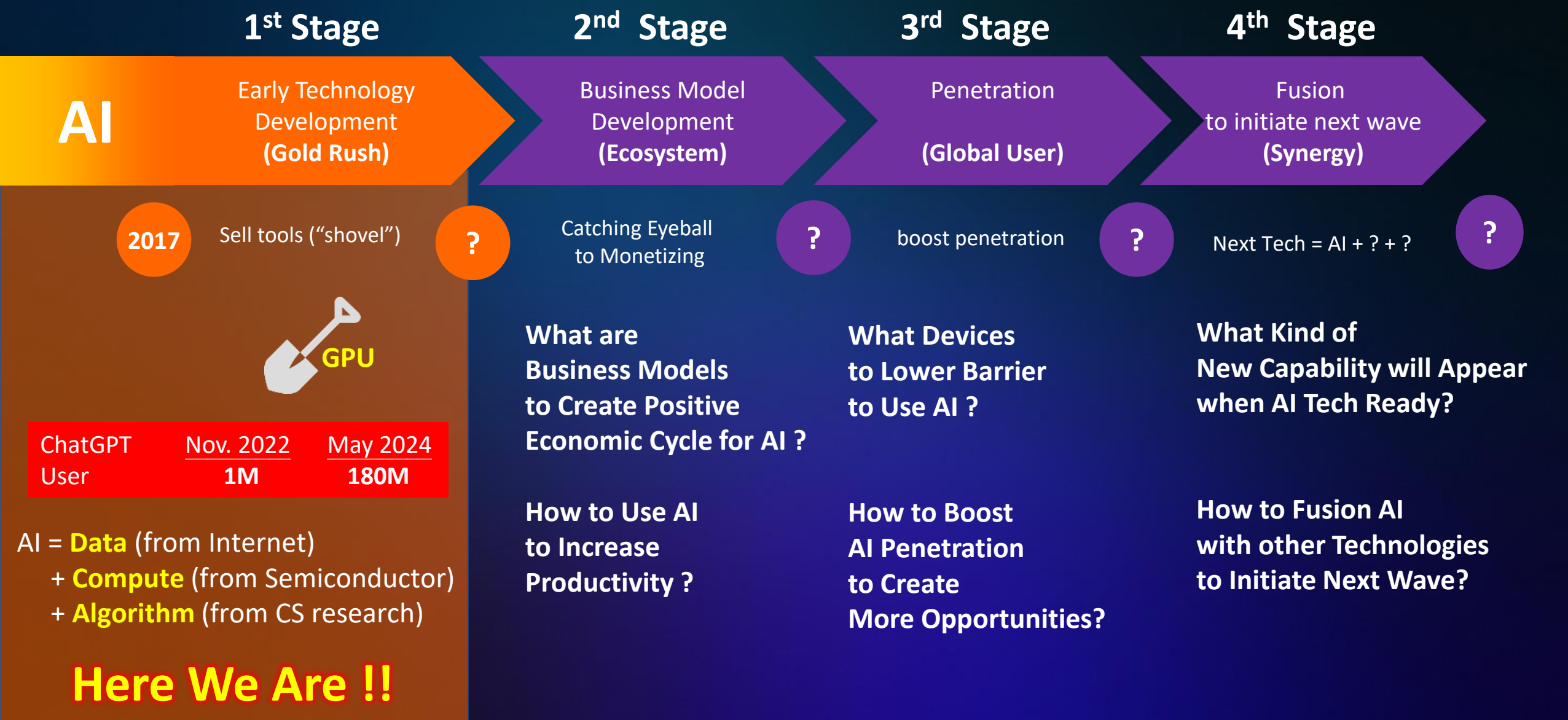**MediaTek**

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Internet Tech Development Trajectory

1st Stage	2nd Stage	3rd Stage	4th Stage
Early Technology Development **(Gold Rush)**	Business Model Development **(Ecosystem)**	Penetration **(Global User)**	Fusion to initiate next wave **(Synergy)**

Internet

1991 — Sell tools ("shovel")

2000 — Catching Eyeball to Monetizing

2007 — Smartphones boost Internet Penetration

2017 — AI = Data (from Internet) + Compute (from Semiconductor) + Algorithm (from CS research)

2023

User: 2.6M

Router

User: 283M

User: 1,166M

User: 3,640M

Data / Comp. / AI / Algo.

User: 5,000M

PC + Smartphone Global Device Shipment

14.4 Mu — 100%

135 Mu — 100%

393 Mu — 31% / 69%

733 Mu — 64% / 36%

1,382 Mu — 82% / 18%

1st Stage	2nd Stage	3rd Stage	4th Stage

AI

Early Technology Development (Gold Rush) → **Business Model Development (Ecosystem)** → **Penetration (Global User)** → **Fusion to initiate next wave (Synergy)**

2017 Sell tools ("shovel") **?**

Catching Eyeball to Monetizing **?**

boost penetration **?**

Next Tech = AI + ? + ? **?**

GPU

ChatGPT User	Nov. 2022 1M	May 2024 180M

AI = **Data** (from Internet)
+ **Compute** (from Semiconductor)
+ **Algorithm** (from CS research)

Here We Are !!

What are Business Models to Create Positive Economic Cycle for AI ?

How to Use AI to Increase Productivity ?

What Devices to Lower Barrier to Use AI ?

How to Boost AI Penetration to Create More Opportunities?

What Kind of New Capability will Appear when AI Tech Ready?

How to Fusion AI with other Technologies to Initiate Next Wave?

Three Pillars of AI : Data, Compute, Algorithm

AI

Data **Compute** **Algorithm**

Talents

Application

- Different industrials have different data types

  - ➢ Finance
  - ➢ Medical
  - ➢ Smart City
  - ➢ Manufactory
  - ➢ Research
  - ➢ :

Semiconductor

- AI Compute demand growth higher than Moore's Law.

- Single Chip Performance 1000x in 10 years

  - 2.5x gain from semiconductor process
  - 400x gain from design (IC Design and domain specific architecture)

Energy

- Global AI Data Center 85~134 TWh in 2027
  - ➢ total electricity gen. of Netherland (2023)
  - ➢ 47.5% of Taiwan (2023)

- Run AI on smartphones
  (~4.88 Bn Unit in 2023)
  with higher energy efficiency to offload AI computing

Energy Efficiency

- Human Brain: 20W very high energy efficiency.

- Supercomputers 20~30 MW to offer similar compute density (1 EFLOPs)

- Energy Efficiency Gap ~ million times

AI: Candidate Tech for New Industrial Revolution

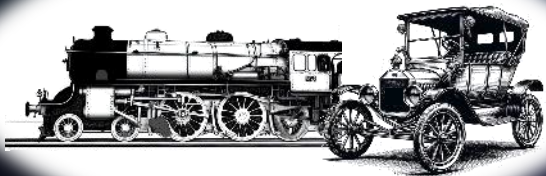Can AI significantly increase **productivity** for society and economy ?

1st Industrial Revolution	2nd Industrial Rev.	3rd Industrial Rev.	(4th Industrial Rev.)
Fire	Electricity	Digital	AI

Steam Engine
Internal Combustion Engine
Railway, Automobile

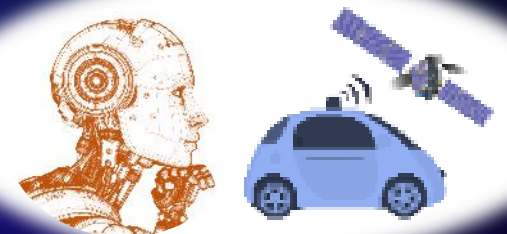Light, Telephone, TV
Electric Motor
Electricity Power Network

IC, Computer, Internet
Smartphone

Large Language Models
Robots, Self-Driving Vehicle