RISC-V Taiwan Alliance (RVTA) Update

May, 2020

Taiwan Semiconductor Ecosystem

Highly Specialized Supply Chain
Foundry (Worldwide 70% market share) and OSAT worldwide 50% are both world leading, and IC design 20% next only to the U.S., with extensive IP and design services.

While RVTA gathers industry and academia expertise, momentum of RISC-V is building up primarily by business and research opportunities.

Examples of RISC-V announcements

RISC-V Taiwan Alliance (RVTA)

Foundry	IP	Design service
TSMC Open Innovation Platform (OIP) in collaboration with SiFive.	**Andes** Launches RISC-V FreeStart Program with its Commercial-Grade CPU N22.	**Faraday** Unveils RISC-V ASIC Solution to Support Edge AI and IOT SoCs, proven in mass production.

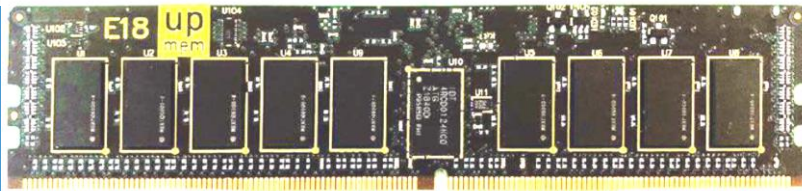## Highlight: Processing in Memory*

Powerchip forms AI Memory Corp. for solutions to the memory wall in computing.

Processing in Memory*

Unprecedented scalable ultra-efficient PIM* architecture and chip

4 Gb DRAM memory chips, embedding 8 processors on die

Source: HOT CHIPS 31, UPMEM 2019 Paper

Delivered as standard DDR4 2400 DIMM modules with 16 chips

Server CPU helped by thousands of additional cores

Boosting **20x** data intensive applications

Power efficiency **10x** better

By reducing drastically CPU-DRAM data movement

At marginal cost

RISC-V Application domain from edge to cloud

Andes V5 Adoption

Applications:

- ADAS
- AIoT at the edge
- Block chain
- Communication: BT, WiFi, 5G
- Datacenter AI accelerator
- SSD: enterprise/consumer
- Security
- FPGA
- MCU
- Multimedia: A/V, AR/VR

50% use AI

40nm to 7nm

Cloud

Consumer

IOT Edge

Courtesy of: Andes Technology

RISC-V Application domain from edge to cloud

Andes just announced it achieved a record of 125 licensing agreements for its new family of RISC-V processors during the year of 2019 so far.

Andes Embedded

N25/NX25
D15/N15/N13/
D10/N10/N9/
N8/E8/S8/N7

Cloud

Consumer

IOT Edge

Courtesy of: Andes Technology

Contribution in Foundation Task Groups

RISC-V Taiwan Alliance (RVTA)

Contribution in software ecosystem

RISC-V in University research is growing

RISC-V Taiwan Alliance (RVTA)

National Cheng Kung
University

National Chiao Tung
University

National Taiwan
University

National Sun Yat-Sen
University

National Tsing Hua
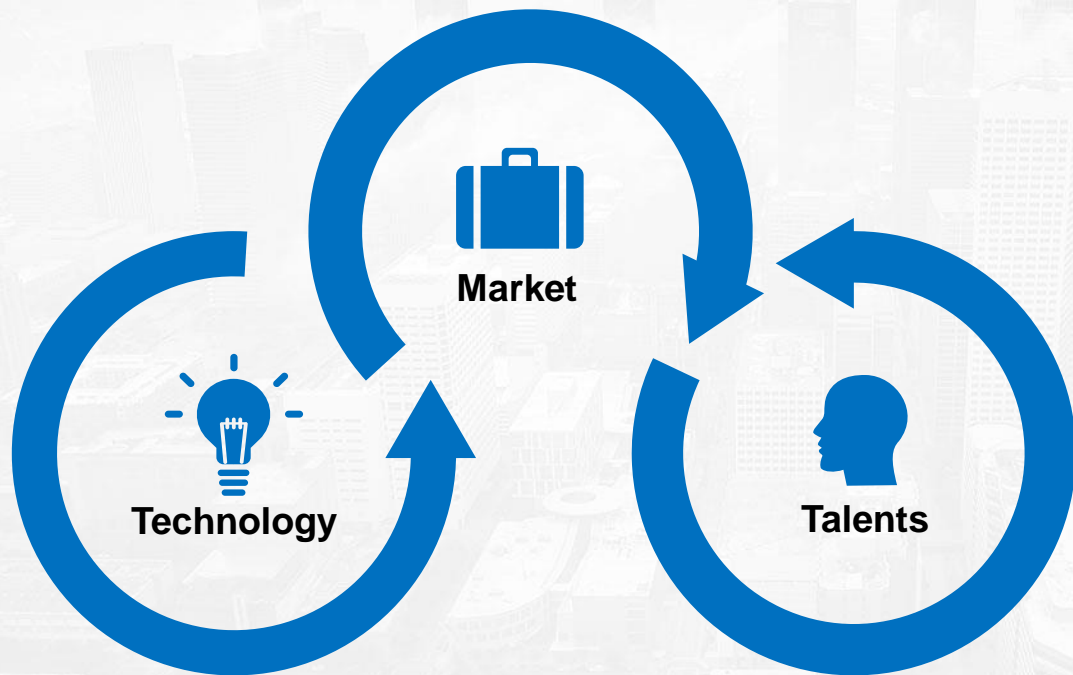University

RISC-V Taiwan Alliance

- Established on March 7th, 2019
- Initiated by Taiwan IOT industry association

RISC-V TAIWAN Alliance (RVTA) is committed to coordinating industry, academic, and research institute to work together and introduce RISC-V open architecture to Taiwan.

As soon as we connect resources from RISC-V ecosystems worldwide, Taiwan's R&D, design and application will be capable of integrating AIOT and hitchhiking 5G trends and business opportunities, improving Taiwan's industrial competitiveness.

Mission

RISC-V Taiwan Alliance (RVTA)

Market
Support Taiwan's semiconductor business to enter the core customization of IC design and expedite the RISC-V open architecture into commercial market.

Technology
Promote RISC-V technology and accelerate the development of AIoT and edge computing industry in Taiwan.

Talents
Cultivate talents, and connect resources from RISC-V ecosystems worldwide, making Taiwan's ICT industry a key player in the global supply chain and core AIoT solution provider.

Our Members

RISC-V Taiwan Alliance (RVTA)

What
we have achieved

- **Mar 7th , 2019**
  RVTA was established

- **May 22nd , 2019**
  Chairman Wang visited MIIT in Beijing

- **May 29th , 2019**
  RVTA hosted the RISC-V forum at COMPUTEX TAIPEI

- **Jul 30th & Sep 17th ,2019**
  RVTA co-hosted cross-strait standards forum in RISC-V section

Concluding Remarks

RISC-V Taiwan Alliance (RVTA)

Community is a great force to advance technologies.

But, you must be able to work with it and tolerate its pace.

www.twiota.org/risc-v

THANK YOU!