Safe Harbor Notice

Except for the historical information contained herein, the matters addressed in this presentation are forward-looking statements that involve certain risks and uncertainties that could cause actual results to differ materially, including but not limited to weather, impact of competitive products and pricing, industry-wide shifts in the supply and demand for semiconductor products, rapid technology change, semiconductor industry cycle, and general economic conditions.

Except as required by law, Andes undertake no obligation to update any forward-looking statement, whether as a result of new information, future events or otherwise.
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Company Overview

http://www.andestech.com
• Founded in March 2005 in Hsinchu Science Park, Taiwan, ROC.
• Well-established high technology IPO company
• Over 220 people; 80% are engineers.
• TSMC OIP Award “Partner of the Year” for New IP (2015)
• Founding Premier membership in the RISC-V International Association (RISC-V Foundation) (2020)
• AI Global Media Award “Most Outstanding Embedded Processor IP Supplier” (2020)
• Hsinchu Science Park Innovation Award - AndesCore™ NX27V (2020)

Andes Mission

• Innovate performance-efficient processor solution for low-power SoC

Emerging Opportunities

• Smart and Green electronic devices
• Cloud Computing and Internet of Things and Machine Learning
Business Status Overview

- **200+** commercial licensees
  - Geographically distributed in Taiwan, China, Korea, Japan, Europe, and USA
  - **500+** license agreements signed

- **AndeSight™ IDE:**
  - **19,000+** installations

- **Eco-system:**
  - **160+** partners

- **7B+** Accumulative SoC Shipped
1Q21 Revenue Analysis

YoY +42.8%
QoQ -43.7%

(NT$ thousands)

1Q20: 105,862
4Q20: 268,585
1Q21: 151,126
2021Q1 Top 10 Customers Analysis by Revenue

Top 10 Customer Contributed 84% Revenue
1Q21 Royalty Analysis

- YoY +68.2%
- QoQ -6.3%

(NT$ thousands)

- 1Q20: 32,494
- 4Q20: 58,353
- 1Q21: 54,667
2021Q1 Top 10 Royalty Contributors Analysis by Application

(NT$ thousands)

Top 10 Royalty Customers Contribution Analysis: 92%
1Q21 Consolidated Gross Margin

(NT$ thousands)

<table>
<thead>
<tr>
<th></th>
<th>1Q20</th>
<th>4Q20</th>
<th>1Q21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Profit</td>
<td>105,737</td>
<td>268,261</td>
<td>150,700</td>
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<tr>
<td>Gross Margin</td>
<td>99.88%</td>
<td>99.87%</td>
<td>99.72%</td>
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</table>
1Q21 Consolidated Operating Expenses

YoY -5.3%
QoQ -3.5%

(NT$ thousands)

<table>
<thead>
<tr>
<th></th>
<th>1Q20</th>
<th>4Q20</th>
<th>1Q21</th>
</tr>
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<tbody>
<tr>
<td>R&amp;D</td>
<td>51,947</td>
<td>63,078</td>
<td>71,529</td>
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<tr>
<td>Admin</td>
<td>32,405</td>
<td>22,904</td>
<td>19,110</td>
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<tr>
<td>Selling</td>
<td>19,476</td>
<td>20,200</td>
<td>21,410</td>
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</tbody>
</table>

R&D expenses
Administration expenses
Selling expenses
1Q21 Consolidated Operating Income (Loss)

YoY -%  QoQ -89.5%

(NT$ thousands)

125,824

13,257

(39,411)

1Q20  4Q20  1Q21
1Q21 Consolidated Operating Margin

YoY +46.0 PT  QoQ -38.08 PT

46.85% 8.77%

1Q20 4Q20 1Q21

-37.23%-50.00%

(%)
1Q21 Consolidated Net Income (Loss)

YoY -\%
QoQ -77%
1Q21 Consolidated Net Profit Margin

YoY +53.99 PT
QoQ -26.38 PT

1Q20 -35.68%
4Q20 44.69%
1Q21 18.31%
1Q21 Consolidated EPS

YoY: +1.54 $  
QoQ: -2.16 $  

(NT$ thousands)
1Q21 Revenue Analysis by Payment Model

- License Fee: 51%
- Running Royalty: 36%
- Maintenance & Others: 9%
- Custom Computing Service: 4%
1Q21 Revenue Analysis by Region

- Taiwan: 55%
- China: 26%
- USA: 16%
- Korea: 2%
- Europe: 1%
- Japan: 1%
1Q21 Revenue Analysis by Product
1Q21 Revenue Analysis - RISC-V

![Revenue Analysis Chart]

- **1Q20**: 46,159
  - V3: 20,873 (15.7%)
  - RISC-V: 38,830 (29.2%)
  - Custom Computing: 1,476 (0.5%)

- **4Q20**: 105,013
  - V3: 60,4% (56.9%)
  - RISC-V: 86,059 (56.9%)
  - Custom Computing: 6,383 (4.2%)

- **1Q21**:

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Product Applications

http://www.andestech.com
Andes Updates

- A 16-year-old public CPU IP company
- 2B+ Andes-Embedded SoC annually in 2020
- A founding premier member of the RISC-V International
- An active role in RISC-V International & its extension task groups
  - RISC-V Board Director
  - Vice Chair of Technical Steering Committee
  - RISC-V Ambassador
  - Chair of P-extension (Packed DSP/SIMD) Task Group
  - Co-chair of Fast Interrupt Task Group
- A major open source maintainer/contributor
Andes Embedded in Various Applications

- In leading **machine learning computers** for datacenter
- In tier-one **switch routers** for datacenter
- Recent applications: **5G networking, WiFi 6/7, AI processors** (using Andes Custom Extension, ACE)
V5 Adoptions: From MCU to Datacenters

- **Edge to Cloud**
  - ADAS
  - AIoT
  - Blockchain
  - FPGA
  - MCU
  - Multimedia
  - Security
  - Wireless (BT/WiFi)

- **40nm to 5nm**

- **Many in AI**

  - Datacenter AI accelerators
  - SSD: enterprise (& consumer)
  - 5G macro/small cells
Andes RISC-V Cores Adopted in SoC
New Products and Ecosystems

http://www.andestech.com
Andes RISC-V Product Overview

**AndeStar™** Architecture V5

**AndesCore™** Processors
- Highly optimized design with leading PPA
- Handy peripheral IPs to speed up SoC construction

**AndeSight™** Tools
- Professional IDE with high code quality
- Extensive SW stacks from bare metal, RTOS to Linux

**AndeSoft™** Stacks
- Best extensions to RISC-V

**AndeShape™** Platforms

**Andes Embedded™**
Andes RISC-V Product Roadmap

**27-Series:**
- **Vector Ext. MemBoost**
  - NX27V
  - A27/AX27 and more.

**45-Series:**
- **Dual Issue MemBoost**
  - N45/NX45
  - D45/DX45
  - A45/AX45 and more.

**Benefits:**
- 512-bit SIMD raises MobileNet by 30x (CNN for mobile vision)
- Boost performance by 50%
- Raise bandwidth to 3x; Cut latency by 40%

**Applications:**
- AIOT, Comm., ML/DL, Multimedia, Networking, Storage
- For data processing as well as control processing
Andes V5 Architecture for All Levels of Computing

**AndeStar™ V5 CPUs**
- N/D-series
  - N22 N(X)25 D25...
- A-series
  - A(X)25 A(X)27 A(X)45 Multicore...
- Vector
  - NX27V, NX45V...

**Conventional Computing Architecture**
- Leading PPA Embedded Processor
  - IoT, Sensing, Storage, Audio, GPS
- High Performance and Power Efficient AP
  - 5G, AI, Datacenter, Video Surveillance, Networking

**Domain Specific Architecture (DSA)**
- Define custom instruction to handle time critical codes
- Better approach for accelerator/co-processor to do particular jobs
- Automation Tool for the generation of toolchain, ISS, partial RTL and verification
Andes Processors to Fit Your AI

- Voice trigger
- Voice command
- Always-on
- Face trigger
- Object detection
- Intelligent HMI
- Barge-in
- Beamforming
- Speech to text
- Natural language
- Face unlock
- Bokeh
- Avatar
- SLAM
- Gesture recognition
- High resolution
- > 1 camera

Smart Camera

Smart IoT Devices

Smart Home

Mobile AR/VR Surveillance

Automotive

Data Center

Vector CPUs

D/A-Series CPUs

N-Series CPUs

~30 MOPS

~100 MOPS

> 1 GOPS

> 1 TOPS

> 10 TOPS

> 100 TOPS
RISC-V DSP Extension

- Andes contributed market-proven DSP (SIMD) as P-Extension
- Designed to accelerate slow video, audio/voice and low data rate DSP workloads

Real world speedup using P-Extension

- Speed Up (times)
  - RV32P: MP3 decode (2), AMR voice codec (3.7), ML-KWS (keyword spotting) (5.2), PNET (90% of Face Detection) (8.9), CIFAR10 (Image Classification) (14)
  - RV64P: MP3 decode (2), AMR voice codec (3.7), ML-KWS (keyword spotting) (5.2), PNET (90% of Face Detection) (8.9), CIFAR10 (Image Classification) (14)

- Increase power efficiency to your DSP applications
NX27V One Vector for All Implementations

Cloud Computing – Datacenter, HPC, Server

Edge Computing – 5G, Vision Processing

Endpoint Computing – Natural Language Processing

* Configurable compute data width (VLEN)
Andes Custom Extension

- ACE unlocks RISC-V’s Potential of DSA
  - Define ACE instruction to handle time critical codes
  - Another approach to co-processor or accelerators

- All-in-one COPILOT development environment
  - Automation tool and ease of use
  - Extensions are easy to re-use, can be used as a library
Taking RISC-V Cores to Next Level

- Andes is the world-leading supplier shipping the commercial RISC-V cores to market with the support of:
  - P-Extension: D25, D45, A(X)25(MP), A(X)27(L2), A(X)45(MP)
  - V-Extension: NX27V, NX45V
  - Custom-Extension (w/ ACE* support): Entire 25, 27, 45 series

*: Andes Custom Extension
Bring Andes Strength to RISC-V Cores

Performance & Extensibility
- Leading PPA and code size
- Rich data processing in P, V, and ACE

Configurability
- Flexible configurations for rich features

Maturity
- Compiler optimizations, and SW stacks
- Comprehensive features in AndeSight IDE
Aggressive in RISC-V Community

Foundation Task Groups (partial list)

- Contributing hardware architecture extensions
  - Chair of the P-extension (Packed SIMD/DSP) Task Group
  - Co-chair of Fast Interrupts Task Group
  - Closely reviewing activities of other Task Groups
Andes Helps Strengthen RISC-V Ecosystem

- More choices for customers are good
- Andes works closely with partners to grow RISC-V ecosystem
Andes Position in RISC-V

- Complete product portfolio
- Reliable RISC-V core IP vendor
- Extreme low power consumption, high computing efficiency
- World’s leading P-, V- and Custom-Ext. Capable RISC-V cores
- Professional custom computing service
Two Ecosystems: Andes and Knect.me
Knect.me™ Ecosystem

- Built up the community to help developing IoT products
  - To knect solutions for silicon IP’s, SW stacks, tools, applications, systems and products
  - Including
    - SoC IP Platforms
    - Software Stack
    - Development Boards
    - Development Tools

- Forms a IoT League
  - To knect chip vendors, partners, application developers, system vendors
FreeStart Program

**FreeStart Evaluation Program (FSEP)**
- For all RISC-V enthusiasms and educator/researcher
- Fixed-Configuration N22 RTL
- Sign simple evaluation agreement directly on website

**FreeStart Mass-production Program (FSMP)**
- For industrial and academy mass production
- Full-configuration N22 RTL
- License fee: $0; only running royalty is required when mass production

**Support Package (FSSP)**
- For all
- $20K for 1st year, including
  - 1 year e-service
  - FreeStart AE250 RTL
  - Corvette F1 FPGA board

For more info., please visit www.andestech.com
Event Promotion

RISC-V CON series
RISC-V Summit, Forum, Workshop & Meetup series
TSMC Symposium & OIP series
Concluding Remarks

http://www.andestech.com
Andes Technology

Successfully rolled out new series of RISC-V cores (w/ leading P-, V- and Custom-Ext.), custom computing service and FreeStart program to extend more oppty.

Aggressively involved in RISC-V International new technology development, contributing and leveraging RISC-V eco-system.

Becoming a technology contributor, market promoter, and sales leader in the RISC-V industry

A Trusted Computing Expert
Thank You

http://www.andestech.com

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