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.
Agenda

- Overview of Andes Technology Corporation
- Operating Results
- Product Applications
- New Products and Ecosystems
- Concluding Remarks
Overview of Andes Technology Corporation

Andes Highlights

• Founded in March 2005 in Hsinchu Science Park, Taiwan, ROC.
• Well-established high technology IPO company
• Just over 200 people; 80% are engineers.
• EETimes' Silicon 60 Hot Startups to Watch (2012)
• TSMC OIP Award “Partner of the Year” for New IP (2015)
• A founding member of RISC-V Foundation (2016)
• MCU innovation award by China online press (2018)

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
Operating Results
Business Status Overview

- **>180** commercial licensees
  - Geographically distributed in Taiwan, China, Korea, Japan, Europe, and USA.
- **>300** license agreements signed
- 2019 Licensees: **38+103**
  (**: On-line Licensees)

- AndeSight™ IDE:
  - **>17,000** installations

- Eco-system:
  - **>145** partners

- **>5B** Accumulative SoC Shipped
Agreement Growth Analysis

IP agreements

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<td>27</td>
<td>27</td>
<td>31</td>
<td>39</td>
<td>43</td>
<td>141</td>
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Accumulated IP agreements

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<td>3</td>
<td>6</td>
<td>12</td>
<td>24</td>
<td>40</td>
<td>56</td>
<td>80</td>
<td>107</td>
<td>134</td>
<td>165</td>
<td>204</td>
<td>247</td>
<td>388</td>
</tr>
</tbody>
</table>
4Q19 Revenue Analysis

2019 Revenue: 494,851

QoQ +4.2%
YoY +6%
2019 Top 10 Customers Analysis by Revenue

Top 10 Customer Contributed 66% Revenue

(NT$ thousands)

- AI (US)
- Touch Panel (TW)
- 5G (US)
- Sensing (TW)
- Audio (CN)
- Security IC (CN)
- AI (US)
- Bluetooth (TW)
- Sensing (TW)
- Touch Panel (TW)
4Q19 Royalty Analysis

YoY
+11.1%

QoQ
+12.0%

(NT$ thousands)

<table>
<thead>
<tr>
<th></th>
<th>4Q 18</th>
<th>3Q 19</th>
<th>4Q 19</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28,744</td>
<td>28,519</td>
<td>31,931</td>
</tr>
</tbody>
</table>

+12.0%
2019 Top Ten Royalty Contributors
Analysis by Application

Top 10 Royalty Customers
Contribution Analysis: 92%
Royalty Analysis

(NT$ thousands)

<table>
<thead>
<tr>
<th>Year</th>
<th>Royalty (NT$ thousands)</th>
<th>Customer numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>445</td>
<td>1</td>
</tr>
<tr>
<td>2012</td>
<td>660</td>
<td>2</td>
</tr>
<tr>
<td>2013</td>
<td>1,285</td>
<td>5</td>
</tr>
<tr>
<td>2014</td>
<td>10,819</td>
<td>9</td>
</tr>
<tr>
<td>2015</td>
<td>12,232</td>
<td>15</td>
</tr>
<tr>
<td>2016</td>
<td>13,320</td>
<td>15</td>
</tr>
<tr>
<td>2017</td>
<td>38,287</td>
<td>25</td>
</tr>
<tr>
<td>2018</td>
<td>74,953</td>
<td>28</td>
</tr>
<tr>
<td>2019</td>
<td>106,716</td>
<td>33</td>
</tr>
</tbody>
</table>
**Consolidated Gross Margin**

<table>
<thead>
<tr>
<th>(NT$ thousands)</th>
<th>4Q 18</th>
<th>3Q 19</th>
<th>4Q 19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Profit</td>
<td>125,574</td>
<td>127,528</td>
<td>133,094</td>
</tr>
<tr>
<td>Gross Margin</td>
<td>99.96%</td>
<td>99.75%</td>
<td>99.92%</td>
</tr>
<tr>
<td>Quarter</td>
<td>R&amp;D Expenses</td>
<td>Administration Expenses</td>
<td>Selling Expenses</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------</td>
<td>--------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>4Q 18</td>
<td>39,928</td>
<td>15,138</td>
<td>30,457</td>
</tr>
<tr>
<td>3Q 19</td>
<td>54,211</td>
<td>14,991</td>
<td>54,465</td>
</tr>
<tr>
<td>4Q 19</td>
<td>57,778</td>
<td>21,553</td>
<td>38,112</td>
</tr>
</tbody>
</table>

**Consolidated Operating Expenses**

- **YoY**: +37.3%
- **QoQ**: -5.0%

(NT$ thousands)
Consolidated Operating Income (Loss)

- **QoQ**: +305.4%
- **YoY**: -60.9%

Consolidated Operating Income (Loss) (NT$ thousands):
- **4Q 19**: 15,651
- **3Q 19**: 3,861
- **4Q 18**: 40,051

Comparison:
- **4Q 18** to **3Q 19**: +305.4% change
- **3Q 19** to **4Q 19**: -60.9% change
Consolidated Operating Margin

(YoY -20.12 pt, QoQ +8.73 pt)

(NT$ thousands)

31.87%
3.02%
11.75%

4Q 18 3Q 19 4Q 19
Consolidated Net Income (Loss)

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Net Income (Loss) (NT$ thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4Q 18</td>
<td>40,070</td>
</tr>
<tr>
<td>3Q 19</td>
<td>4,077</td>
</tr>
<tr>
<td>4Q 19</td>
<td>10,336</td>
</tr>
</tbody>
</table>

YoY: -74.2%
QoQ: +153.5%
Consolidated Net Profit Margin

- YoY: -24.14 pt
- QoQ: +4.57 pt

(NT$ thousands)

- 4Q 18: 31.90%
- 3Q 19: 3.19%
- 4Q 19: 7.76%
Consolidated Earnings Per Share

QoQ +0.15
YoY -0.68

2019 EPS: 0.38

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Earnings Per Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>4Q 18</td>
<td>0.93</td>
</tr>
<tr>
<td>3Q 19</td>
<td>0.10</td>
</tr>
<tr>
<td>4Q 19</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Consolidated Earnings Per Share
2019 Revenue Analysis by Payment Model

- License Fee: 56%
- Running Royalty: 22%
- Custom Computing Service: 16%
- Maintenance & Others: 6%
2019 Revenue Analysis by Region

- Taiwan: 39%
- USA: 30%
- China: 21%
- Europe: 6%
- Korea: 3%
- Japan: 1%
2019 Customer Application Analysis

*Based on agreement number
2019 Revenue Analysis by Product

V3: 37%
RISC-V: 16%
Customer Computing: 47%

N8: 13%
N25: 19%
Service: 12%
D25: 6%
N9: 5%
NX25: 4%
AX25: 3%
ACE: 1%
Customized IP: 1%
D10: 1%
S8: 1%
N15: 1%
N7: 1%
N22: 1%
Other: 5%
4Q19 Revenue Analysis - RISC-V

<table>
<thead>
<tr>
<th>Quarter</th>
<th>V3</th>
<th>RISC-V</th>
<th>Custom Computing</th>
</tr>
</thead>
<tbody>
<tr>
<td>4Q18</td>
<td>90,918</td>
<td>34,706</td>
<td>27.6%</td>
</tr>
<tr>
<td>3Q19</td>
<td>69,057</td>
<td>31,683</td>
<td>54.0% 21.2%</td>
</tr>
<tr>
<td>4Q19</td>
<td>55,634</td>
<td>57,427</td>
<td>43.1% 15.1%</td>
</tr>
</tbody>
</table>

(NT$ thousands)
2019 Revenue Analysis - RISC-V

<table>
<thead>
<tr>
<th>Year</th>
<th>V3</th>
<th>RISC-V</th>
<th>Custom Computing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>215,651</td>
<td>89,105</td>
<td>29.2%</td>
</tr>
<tr>
<td>2019</td>
<td>233,644</td>
<td>80,565</td>
<td>16.3%</td>
</tr>
</tbody>
</table>

(NT$ thousands)
Product Application
Andes Updates

- A 15-year-old public CPU IP company
- A founding & platinum member of the RISC-V Foundation
- A major open source maintainer/ contributor
- Active involvement in standard extensions
  - Chair of P-extension (Packed DSP/ SIMD) Task Group
  - Co-chair of Fast Interrupt Task Group

GNU Toolchains

LLVM

Linux
Example Applications of Andes-Embedded SoC

- Touch Screen
- eBook/ eDictionary
- Power management
- Bio-medical device
- CMMB
- MCU
- TCON

- Wireless display
- WiFi, Bluetooth
- GPS, GPON, NFC
- Gateway/ router
- Portable Karaoke
- Sigfox LPWAN
- IoT Cat0 base station
- IoT MCU
- ESL
- Smart Meter
- Smart Lighting

- USB3.0
- SSD, eMMC
- Anti-virus
- Sensor Hub
- mSATA
- Secure SD
- Fingerprint Recognition

- Motor Control
- Wireless Charger
- Surveillance
- Barcode scanner
- ADAS
- VEDR
- 4K2K CODEC
- 8K4K CODEC

and more…..
IoT Application - 1

- Bluetooth Speaker
- Sigfox LPWAN
- Healthcare device
- Wearable device
- Electronic price tags
- Sensor Hub
IoT Application - 2

- Wearable devices
- Drone
- Portable Karaoke
- WiFi/ GPS/ FM/ Bluetooth combo
- GPS/ Beido in shared bikes
- Contactless payment (NFC)
Andes Embedded in Smart Phones

1 in 5 Smart Phones are with Andes Embedded

Sensor Hub

NFC Controller

Storage Controller

WiFi/ BT/ GPS/ FM (combo)

Touch Screen Controller
Andes Embedded in Consumer Devices, Cars and Datacenters

- Switch: MXIC Flash Ctrl
- Echo Dot2: Mediatek WiFi IoT
- Bike Sharing: GPS Ctrl
- X-Trail: ADAS Ctrl

- In leading machine learning computers for datacenter
- In tier-one switch routers for datacenter

- Recent applications: 5G networking, 802.11ax, machine learning processors (using Andes Custom Extension, ACE)
Andes RISC-V Serving SoC from Edge to Cloud

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

- 40nm to 7nm

- Datacenter AI accelerators
- SSD: enterprise (& consumer)
- 5G macro/ small cells

Driving Innovations™
New Products and Ecosystems
Andes RISC-V Product Overview

Best extensions to RISC-V

AndesStar™ Architecture V5

AndesCore™ Processors
Highly optimized design with leading PPA

AndeSight™ Tools
Professional IDE with high code quality

AndesShape™ Platforms
Handy peripheral IPs to speed up SoC construction

AndesEmbedded™

AndesSoft™ Stacks
Extensive SW stacks from bare metal, RTOS to Linux
Product Lines

ANDES
AndesCore™ V3 Families

**Embedded Controller Solutions:**
Connectivity, IoT, PC Peripherals, Storage, UI, Wearable

**Linux Solutions:** N10, N13, D/N15(F)
Multimedia, Networking, Storage, Telecomm

**Total Performance**

**Mid-range**
- 1 GHz, CoDense™, AHB, AXI, Caches, BrPred, Linux, MPU, FPU
- D1088
- N15(F)
- N1068

**Advanced**
- 1.5 GHz, CoDense™, Caches, BrPred, Linux, MPU, FPU
- 64b AXI, L2$, ECC
- N1337

**Deeply Embedded**
16b/32b app.
- Upgrade for 8b MCU
- 500 MHz, ILM, DLM, APB, AHBL
- N705
- N820
- E830, S801

**800 MHz, ILM, DLM, APB, AHBL**
- N968
- D1088
- N1068

**Novel**
- DSP-Capable
- Extensible
- Security
Andes RISC-V Processor Roadmap

**27-Series:**
- Vector Ext.
- MemBoost
- NX27V
- A27/AX27 and more.
- 5-stage (1.1 GHz)

**45-Series:**
- Dual Issue
- MemBoost
- N45/NX45
- D45/DX45
- A45/AX45 and more.
- 8-stage (1.2 GHz)

**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:**
- AI/OT, Comm., ML/DL, Multimedia, Networking, Storage
- For data processing as well as control processing

**Cache-Coherent 1-4 Cores**
- RV32/ RV64
- A25MP
- AX25MP

**Linux with FPU/ DSP**
- A25
- AX25

**Fast/ Compact with FPU/ DSP**
- N25F
- D25F
- NX25F

**5-stage (1.1 GHz)**
- N22
- 2-stage (700 MHz)

**5-stage (1.1 GHz)**
Andes is the industry leading CPU IP vendor to deliver RISC-V cores with

- P-Extension \( \rightarrow \) A(X)25(MP), A(X)27, A(X)45, D25F
- V-Extension \( \rightarrow \) NX27V
- Custom-Extension (w/ ACE* support) \( \rightarrow \) Entire 25, 27, 45 series

*: Andes Custom Extension
Andes RISC-V Adoptions: Cores in SoC

- Single core
- 2-8 cores
- > 30 cores
- > 100 cores
- > 1000 cores
Bring Andes Strength to RISC-V Core Family

- **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
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 provider
- 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
Built up Ecosystem **knect.me** to help IoT Developing

- to **knect** solutions - Silicon IP’s, SW stacks, tools, applications, systems and products

Includes:
- SoC IP Platforms
- Software Stack
- Development Boards
- Development Tools

To Form a IoT League
- to **knect** chip vendors, partners, application developers, system vendors
FreeStart Program

- **FreeStart Evaluation Program (FSEP)**
  - For all RISC-V enthusiasts and educator/researcher
  - Good for N22 evaluation and research project
  - 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
2019 Event Promotion

RISC-V CON series
RISC-V Roadshow & Workshop Series
TSMC symposium & OIP series
Concluding Remarks
Andes: Trusted Computing Expert

- Andes successfully rolled out the new series of RISC-V cores (w/ industry leading P-, V- and Custom-Ext. capability), custom computing value service and FreeStart program to extend more opportunities.

- Andes aggressively involved in RISC-V Foundation new technology development, contributing and leveraging RISC-V eco-system.

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

www.andestech.com