Andes Technology Corp.
Investor Conference Report

2021/03/05
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
Andes Highlights

- 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

- **6B+** Accumulative SoC Shipped
Operation Results

http://www.andestech.com
Agreement Growth Analysis

<table>
<thead>
<tr>
<th>Year</th>
<th>IP agreements</th>
<th>Accumulated IP agreements</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2007</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2008</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>2009</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>2010</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>2011</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>2012</td>
<td>24</td>
<td>40</td>
</tr>
<tr>
<td>2013</td>
<td>27</td>
<td>56</td>
</tr>
<tr>
<td>2014</td>
<td>27</td>
<td>80</td>
</tr>
<tr>
<td>2015</td>
<td>31</td>
<td>107</td>
</tr>
<tr>
<td>2016</td>
<td>39</td>
<td>134</td>
</tr>
<tr>
<td>2017</td>
<td>43</td>
<td>165</td>
</tr>
<tr>
<td>2018</td>
<td>141</td>
<td>204</td>
</tr>
<tr>
<td>2019</td>
<td>155</td>
<td>247</td>
</tr>
<tr>
<td>2020</td>
<td>388</td>
<td>543</td>
</tr>
</tbody>
</table>
2020 Revenue Analysis

YoY +17.4%

(NT$ thousands)

2019 2020

494,851 581,012
4Q20 Revenue Analysis

YoY +101.6%
QoQ +156.4%

(NT$ thousands)

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Revenue (NT$ thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4Q19</td>
<td>133,204</td>
</tr>
<tr>
<td>3Q20</td>
<td>104,768</td>
</tr>
<tr>
<td>4Q20</td>
<td>268,585</td>
</tr>
</tbody>
</table>
2020 Top 10 Customers Analysis by Revenue

Top 10 Customer Contributed 63% Revenue
2020 Royalty Analysis

YoY
+48.8%

(NT$ thousands)

2019: 106,716
2020: 158,792
4Q20 Royalty Analysis

YoY
+82.7%

QoQ
+57.8%

(NT$ thousands)

70,000

60,000

50,000

40,000

30,000

20,000

10,000

0

4Q19 3Q20 4Q20

31,931 36,969 58,353
2020 Top 10 Royalty Contributors Analysis by Application

Top 10 Royalty Customers
Contribution Analysis: 89%
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>
<tr>
<td>2020</td>
<td>158,792</td>
<td>41</td>
</tr>
</tbody>
</table>
4Q20 Consolidated Gross Margin

<table>
<thead>
<tr>
<th>(NT$ thousands)</th>
<th>4Q19</th>
<th>3Q20</th>
<th>4Q20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Profit</td>
<td>133,094</td>
<td>104,177</td>
<td>268,261</td>
</tr>
<tr>
<td>Gross Margin</td>
<td>99.92%</td>
<td>99.43%</td>
<td>99.88%</td>
</tr>
</tbody>
</table>

Graph showing the comparison of Gross Profit and Gross Margin for 4Q19, 3Q20, and 4Q20.
2020 Consolidated Gross Margin

(NT$ thousands)

<table>
<thead>
<tr>
<th>Year</th>
<th>Gross Profit</th>
<th>Gross Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>494,031</td>
<td>99.83%</td>
</tr>
<tr>
<td>2020</td>
<td>579,829</td>
<td>99.80%</td>
</tr>
</tbody>
</table>
4Q20 Consolidated Operating Expenses

YoY +21.3%  QoQ +7.8%

(NT$ thousands)

<table>
<thead>
<tr>
<th>Period</th>
<th>R&amp;D expenses</th>
<th>Administration expenses</th>
<th>Selling expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>4Q19</td>
<td>57,778</td>
<td>21,553</td>
<td>38,112</td>
</tr>
<tr>
<td>3Q20</td>
<td>61,600</td>
<td>27,644</td>
<td>42,904</td>
</tr>
<tr>
<td>4Q20</td>
<td>56,455</td>
<td>22,904</td>
<td>63,078</td>
</tr>
</tbody>
</table>
2020 Consolidated Operating Expenses

YoY
+14%

(NT$ thousands)

<table>
<thead>
<tr>
<th>Year</th>
<th>R&amp;D expenses</th>
<th>Administration expenses</th>
<th>Selling expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>174,686</td>
<td>73,032</td>
<td>227,734</td>
</tr>
<tr>
<td>2020</td>
<td>194,810</td>
<td>110,313</td>
<td>237,084</td>
</tr>
</tbody>
</table>
4Q20 Consolidated Operating Income (Loss)

(NT$ thousands)

- 4Q19: 15,651
- 3Q20: (27,971)
- 4Q20: 125,824

YoY: +703.9%
QoQ: -
2020 Consolidated Operating Income

YoY
+102.5%

(NT$ thousands)

2019: 18,579
2020: 37,622

YoY growth: +102.5%
4Q20 Consolidated Operating Margin

YoY  
+35.1 PT

QoQ  
+73.5 PT

(%)

4Q19  
11.75%

3Q20  
-26.70%

4Q20  
46.85%
4Q20 Consolidated Net Income (Loss)

YoY +1061.2%  QoQ -

(NT$ thousands)

140,000
120,000
100,000
80,000
60,000
40,000
20,000
0

4Q19 3Q20 4Q20

10,336 (29,407) 120,018
2020 Consolidated Net Income (Loss)

YoY
+119.3%

(NT$ thousands)

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Income (Loss)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>16,023</td>
</tr>
<tr>
<td>2020</td>
<td>35,142</td>
</tr>
</tbody>
</table>

YoY Growth: 119.3%
4Q20 Consolidated Net Profit Margin

YoY: +36.93 PT
QoQ: +72.76 PT

4Q19: 7.76%
3Q20: 44.69%
4Q20: 44.69%

-28.07%
4Q20 Consolidated EPS

YoY +2.56 $  
QoQ +3.50 $

(NT$ thousands)

4Q19  |  3Q20  |  4Q20

0.25  |  (0.69) |  2.81
2017-2020 Consolidated EPS

![Bar chart showing Consolidated EPS for 2017 to 2020. The values are as follows: 2017: 0.51, 2018: 0.97, 2019: 0.38, 2020: 0.82.]
2020 Revenue Analysis by Payment Model

- License Fee: 54%
- Running Royalty: 27%
- Custom Computing Service: 11%
- Maintenance & Others: 8%
2020 Revenue Analysis by Region

- Taiwan: 43%
- USA: 26%
- China: 25%
- Korea: 4%
- Europe: 1%
- Japan: 0%
2020 Customer Application Analysis

- AI: 16%
- Video & Audio: 16%
- Sensing: 13%
- IoT: 13%
- MCU: 9%
- Others: 7%
- Navigation: 7%
- Networking: 2%
- Automotive: 2%
- HPC: 2%
- Storage: 2%
2020 Revenue Analysis by Product

- V3: 12%
- RISC-V: 42%
- Custom Computing: 46%

Product Revenue Breakdown:
- N8: 19%
- N9: 13%
- D25: 8%
- Customized IP: 8%
- N25: 7%
- NX27: 7%
- D10: 7%
- Service: 7%
- N45: 5%
- ACE: 4%
- AX25: 3%
- NX25: 3%
- A27: 3%
- A25: 3%
- AX27: 3%
- N22: 3%
- N10: 2%
- N13: 2%
- AndeSight: 2%
- D45: 2%
- NX45: 1%
- SYSTEM C: 1%
- N7: 1%
- OTHER: 1%
4Q20 Revenue Analysis - RISC-V

- **4Q20** Revenue Analysis
- **V3**
- **RISC-V**
- **Custom Computing**

<table>
<thead>
<tr>
<th>Quarter</th>
<th>V3</th>
<th>RISC-V</th>
<th>Custom Computing</th>
</tr>
</thead>
<tbody>
<tr>
<td>4Q19</td>
<td>55,634</td>
<td>57,427</td>
<td>20,143</td>
</tr>
<tr>
<td>3Q20</td>
<td>52,593</td>
<td>44,511</td>
<td>7,664</td>
</tr>
<tr>
<td>4Q20</td>
<td>105,013</td>
<td>162,096</td>
<td>1,476</td>
</tr>
</tbody>
</table>

**Quarterly Revenue Breakdown**

- **4Q19**: V3 = 55,634, RISC-V = 57,427, Custom Computing = 20,143
- **4Q20**: V3 = 105,013, RISC-V = 162,096, Custom Computing = 1,476
2020 Revenue Analysis - RISC-V
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)

Andes Embedded in Smart Phones

- Sensor Hub
- WiFi/ BT/ GPS/ FM (combo)
- Touch Screen Controller
- NFC Controller
- Storage Controller

Smart Speakers: WiFi IoT

Bike Sharing: GPS Ctrl

X-Trail: ADAS Ctrlr

Switch: Game Flash Ctrlr
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

- Single core
- 2-8 cores
- > 30 cores
- > 100 cores
- > 1000 cores
New Products and Ecosystems

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

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

AndeStar™ Architecture V5

AndeShape™ Platforms

AndesCore™ Processor
- Instr LM Intf
- Data LM Intf
- Standby & VIC
- COP Intf
- ITLB
- MMU/MPU
- DTLB
- Data Cache
- Instr Cache
- DMA Engine
- EDM

Andes Embedded™
Andes RISC-V Product Roadmap

**27-Series:**
- Cache-Coherent 1-4 Cores
- Linux with FPU/DSP
- Fast/Compact with FPU/DSP
- 5-stage (1.1 GHz)
- A25MP
- AX25MP
- A25
- AX25
- N25F
- D25F
- NX25F
- NX27V
- A27/AX27 and more.

**45-Series:**
- Dual Issue MemBoost
- 8-stage (1.2 GHz)
- 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

**RV32/RV64**
- Fast/Compact with FPU/DSP
- 2-stage (700 MHz)
- N22

**Superscalar**
- 8-stage (1.2 GHz)
- A25MP
- AX25MP
- A25
- AX25
- N25F
- D25F
- NX25F
- NX27V
- A27/AX27 and more.
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)

- **Andes Custom Extension**
- **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

Smart Camera

Smart IoT Devices

Smart Home

Mobile
AR/VR
Surveillance

Automotive

Data Center

D/A-Series CPUs

Vector 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

- MP3 decode
- AMR voice codec
- ML-KWS (keyword spotting)
- PNET (90% of Face Detection)
- CIFAR10 (Image Classification)

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**
    - 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](http://www.andestech.com)
Event Promotion

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

RISC-V Summit in San Jose
2020: Diamond Sponsor
Concluding Remarks
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 oppy.

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
+886-3-5726533