

AI is now spreading in our everyday products¹

AI features are becoming standard in consumer applications. Yole announces a US\$ 5.6 billion market by 2026.

OUTLINE:

- **Market forecasts:**
Processor market is showing a 7.6% CAGR² between 2020 and 2026, driven by dynamic consumer applications.
AI unit revenue will reach a 24.7% CAGR during the same period, boosted by a strong AI³ penetration.
Yole Développement (Yole) expects a growth of mobile and consumer SoC⁴ shipments, with a 6.8% CAGR₂₀₂₀₋₂₀₂₆.
- **Technology trends:**
Processors for consumer markets are today mostly SoCs, which are integrating all required functions.
AI inferences are more and more computed at the edge.
Audio AI is today getting integrated into SoC, as an AI unit, following what Yole was seeing for AI imaging in 2019.
- **Supply chain:**
Qualcomm and MediaTek are the two biggest processors fabless companies in this domain, both in terms of shipments and revenues.
MediaTek is in a very good for few years, and its strong relationship with the Asian market draws its growth.
Apple is completing the podium: the company is following a different model as they are not selling any processors to anyone, and it is not their objective.

*“AI technologies are already in many products that we use every day.” asserts **Adrien Sanchez, Technology & Market Analyst, Computing & Software at Yole Développement (Yole)**. He adds: “They started in our smartphones, through applications such as face recognition or photography setting optimization. They are now spreading into most consumer*

¹ Extracted from: Computing and AI technologies for mobile and consumer applications report, Yole Développement, 2021

² CAGR: Compound Annual Growth Rate

³ AI: Artificial Intelligence

⁴ SoC: System-on-Chip

applications, from smart home cameras with features such as intrusion detection to smart assistant support integrated into earbuds”.

Today imaging and audio are the most widespread AI applications. For several reasons including privacy protection and low latency requirements, AI inference is increasingly computed at the edge of the network, in the actual consumer device. This requires special processor capabilities to run these operations in real time. Share of processors dedicated to run AI is therefore growing.

Yole analyzes today the market and delivers detailed market figures and trends, at both levels, processor and AI unit, including the area of silicon specifically dedicated to accelerating AI operations. The processor market for AI consumer applications should reach more than US\$ 59 billion by 2026. At the same time, AI units is showing a US\$ 5.5 billion market the same year.

2020–2026 mobile and consumer computing and AI forecast

(Source: Computing and AI technologies for mobile and consumer applications 2021 report, Yole Développement, 2021)



The market research and strategy consulting company, Yole announces today its [Computing and AI technologies for mobile and consumer applications 2021 report](#). With this new technology & market study, analysts deliver a comprehensive understanding of computing trends and dynamics for key mobile and consumer applications. Their aim is to propose a detailed scenario for AI within the dynamics of the consumer market, understand AI’s impact on the semiconductor industry and deliver an in-depth understanding of the ecosystem and players. Yole’s report also points out key technical insight and analysis into future technology trends and challenges.

This report is part of a significant collection of technology & market analyses and monitors. Therefore, Yole investigates MCU⁵ and processor markets each quarter and proposes dedicated tools to monitor the evolution of the markets and strategy of key players. Both [Processor Quarterly Market Monitor](#) and [MCU Quarterly Market Monitor](#), are published

⁵ MCU: Microcontroller

every beginning of March (Q1), June (Q2), September (Q3) and December (Q4)... Aim of these services is to provide an in-depth coverage of rapidly changing market dynamics and main players' status and strategy.

According to **John Lorenz, Technology and Market Analyst, Computing & Software within the Semiconductor, Memory & Computing division at Yole**: *“The long-term trend within the application processor industry is for OEMs to seek differentiation and demand increasing processing capabilities for end-products, while living within the power and BOM constraints of high mobility. Artificial intelligence enablement, through standalone or embedded AI accelerators, is the newest differentiator for processor designers and OEMs.”*

As detailed in the [Computing and AI technologies for mobile and consumer applications 2021 report](#), Yole identified two main families of processor players:

- The one is the smartphone-making OEMs⁶ with processor design capabilities, such as Apple, Samsung, Huawei, and soon Google.
- The second group is the fabless processor companies such as Qualcomm, MediaTek, and UniSoC. For **John Lorenz**: *“Qualcomm and MediaTek are the two biggest fabless processor companies for consumer applications, both in terms of shipments and revenues. They have products targeting most consumer applications, with either one or the other usually being the leading player”.*

Apple follows a specific model, however. It is the third-placed processor maker for consumer markets but doesn't sell processors to anyone. Processors let Apple control its ecosystem and to adapt its products' hardware to its software. Even if Apple's silicon design activity is just to support its products, it designs top-level processors and frequently drives innovation in this domain.

Following a similar strategy, HiSilicon, a Huawei subsidiary, was very dynamic in 2020, following the strong growth of Huawei products. However, following the application of US sanctions, the story will be totally different. Yole expects HiSilicon to lose almost half of its APU⁷ revenue in 2021. In the short term, the future of high-end HiSilicon products made technology beyond the 14nm lithography node is uncertain.

According to **Adrien Sanchez**: *“Smartphone processor designers also lead the race in most other consumer product processor markets. That is especially true in smartwatches which has the same players, both for end-products and processor. For TWS⁸ earbuds, the story is different. Big processor players compete with historical processor players specialized in Bluetooth and audio technologies, but also with new players, mainly from China”.*

⁶ OEM: Original Equipment Manufacturer

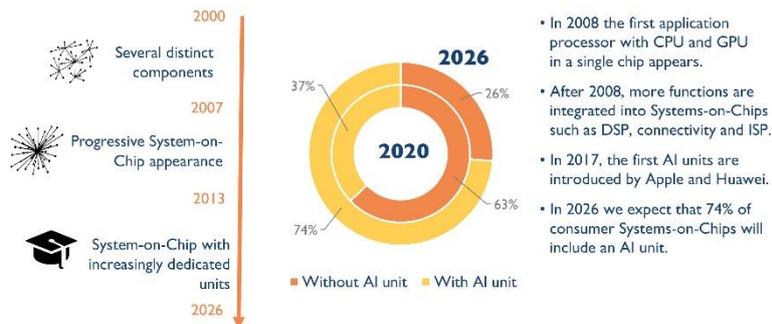
⁷ APU: Application Processor Unit

⁸ TWS: True Wireless Stereo

For example, BES Technic has leveraged the sky-rocketing growth of TWS earbuds to become a major player in this market. Smart speaker makers are also different from big smartphone players. They are US and Chinese tech giants, through partnerships with processor players. For example, Amazon and MediaTek make a processor that integrates Amazon’s custom AZI Neural Edge processor. Other players include Synaptics, Amlogic, and Allwinner Technologies. All the big players, and US and Chinese tech giants especially, are very involved in acquisitions of and investment into AI start-ups. This entire dynamic ecosystem is analyzed in detail in this report, including a broad analysis but also specific focuses on wearables and smart homes.

2020–2026 penetration rate of AI units: mobile and consumer System-on-Chip

(Source: Computing and AI technologies for mobile and consumer applications 2021 report, Yole Développement, 2021)



All year long, *Yole Développement* publishes an impressive collection of computing-dedicated reports and monitors. Experts also realize various key presentations, organize key conferences and interview leading industrial companies. Their aim is to deliver key results and technology and market trends and explain the major changes.

In this regard, do not miss the webinar on Tuesday 16, November 2021: *Neuromorphic Sensing and Computing: Compelling Options for a Host of AI Applications*. Register on *i-Micronews* !

Make sure to be aware of the latest news coming from the industry and get an overview of our activities on *i-Micronews*.

Stay tuned!

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About our analysts

As a Technology & Market Analyst, Computing & Software, **Adrien Sanchez** belongs to the Semiconductor, Memory & Computing division at Yole Développement (Yole), part of the Yole Group of Companies. In collaboration with his team, Adrien produces technology & market analyses covering computing hardware and software, AI, machine learning and neural networks. Prior to Yole, he worked as an intern at AW Europe (Belgium), where he focused on image recognition & comprehension for ADAS. He also worked at ACOEM (France), where he focused on real-time sound classification using deep learning and edge computing. Adrien graduated with a double degree at Grenoble Institute of Technology PHELMA (Grenoble INP Phelma, France) and Grenoble Ecole de Management (GEM, France), and he earned an MSc on AI at Heriot-Watt University (Edinburgh, UK).

John Lorenz is a Technology and Market Analyst, Computing & Software within the Semiconductor, Memory & Computing division at Yole Développement (Yole), part of Yole Group of Companies. John is engaged in the development of market and technology monitors for the logic segment of advanced semiconductors, with an initial focus on processors. Prior to joining Yole, John held various technical and strategic roles at Micron Technology. On the engineering side, his roles included thin film process development and manufacturing integration on DRAM, NAND, and emerging memory technologies and industrial engineering / factory physics for the R&D fab. On the strategic side, John ran the memory industry supply & capex model for corporate strategy / market intelligence and established the industry front-end costing model within strategic finance. John has a Bachelor of Science degree in Mechanical Engineering from the University of Illinois Urbana-Champaign (USA), with a focus on MEMS devices.

About the report

Computing and AI technologies for mobile and consumer applications 2021

Penetrating everyday products will see the market for AI technologies for the consumer market reach \$5.6B in 2026. – Performed by Yole Développement

Companies cited:

Airoha, Alibaba, Allwinner Technology, Alphabet, Amazon, Ambarella, Amlogic, AMD, Analog Devices, Anker, Apple, ARM, Asus, ATI, Axis Communication, Baidu, Bes Technic, Bluetrum, Bose, Broadcom, CEVA, Cirrus Logic, Cray, Cypress, Deephi Tech, DeepMind, DJI, DSP Group, Edifier, Facebook, Fossil, Fitbit, Garmin, Greenwaves, Google, Graphcore, Hailo, Hisilicon, Hover Camera, Honor, HTC, Huawei, Huawei, IBM, Imagination, Infineon, Instagram, Intel, Inventiv, Jabra, Jaybird, Jieli Technology, Kealtek, Knowles, Lenovo, Lemfo, LG, LightOn, Magic Leap, Mediatek, Microsoft, Mobvoi, Motorola, Nokia, Nordic Semiconductor, Novatek, Nuance, Nubia, Nvidia, Nuvia, NXP, Oculus, Oppo, Omnivision, Qualcomm, Realme, Rockchip, Samsung, Skydio, Silicon Labs, Socionext, Sonos, Sony, STMicroelectronics, Synaptics, Synopsis, Tencent, Texas Instruments, Toshiba, TSMC, UniSoc, VeriSilicon, Videantis, Vivo, Xiaomi, Xilinx, Zepp, ZTE, and many more...

Related reports and monitors:

- [Neuromorphic Computing and Sensing 2021](#)
- [Cameras and Computing for Surveillance and Security 2020](#)
- [Processor Quarterly Market Monitor](#)
- [Microcontroller \(MCU\) Quarterly Market Monitor](#)

About Yole Développement

Founded in 1998, Yole Développement (Yole) has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services, reverse engineering and reverse costing services as well as IP and patent analysis. With a strong focus on emerging applications using silicon and/or micro manufacturing, the Yole group of companies has expanded to include more than 80 collaborators worldwide... [More](#)

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