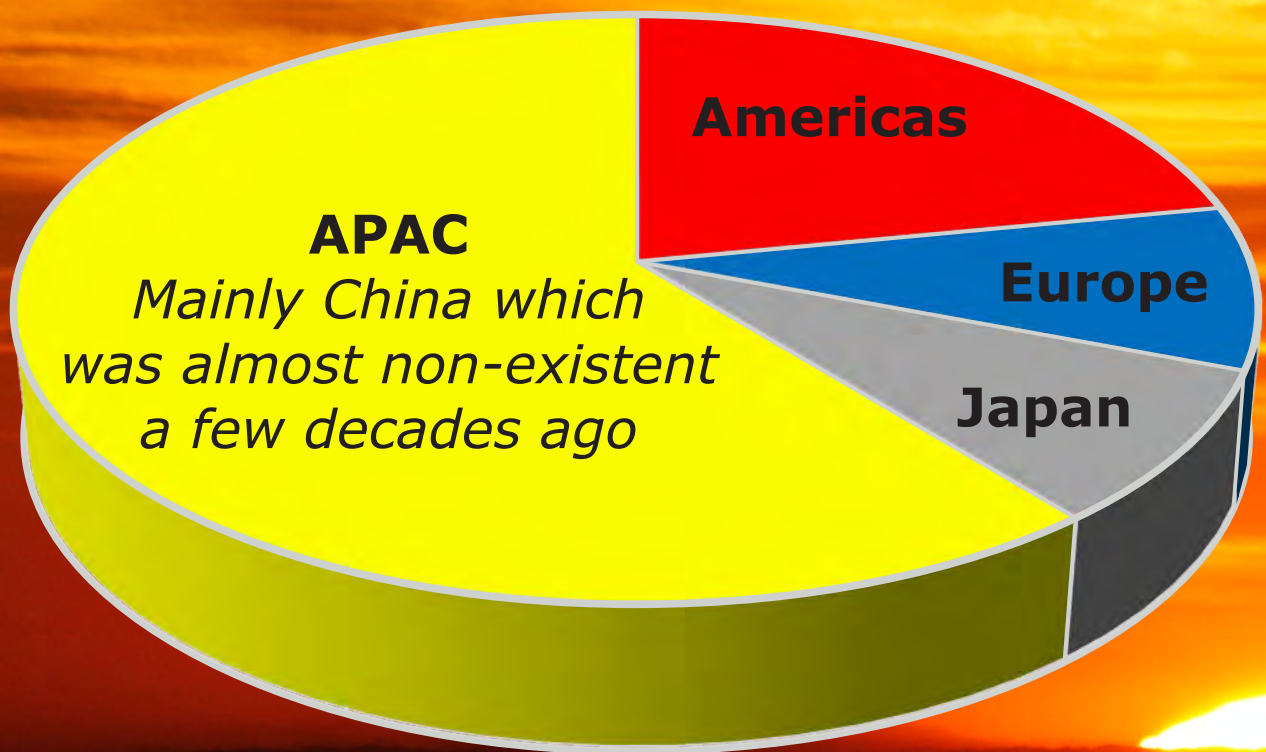


Headlines

- ARM based AWS Graviton, a world-class processor built by Annapurna
- Europe approves €1.75 billion public support in microelectronics
- SoftBank confirms sell-off of ARM China stake
- Huawei Unveils Industry's Highest-Performance ARM-based CPU

2019 starts with a Global Chip Market of \$ 500 Billion

Share by Region has changed dramatically during the last 50 years



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Which videos had the most traffic and why
- SoftBank confirms sell off of ARM China stake
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- Huawei Unveils Industry's Highest-Performance ARM-based CPU
- Imec Belgium & CEA-Leti France join forces on Artificial Intelligence and Quantum Computing
- NXP and Kalray Enter Partnership to Develop Platform for Safe, Reliable Autonomous Driving
- Infineon: World's first TPM for cybersecurity in the connected car
- Bosch Sensortec: Ultra-low power accelerometer for IoT and wearables

Daniel Dierickx
CEO & co-Founder
at e2mos
Acting Chief Editor



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Arm and AWS: Working together to "Re:Invent" the cloud

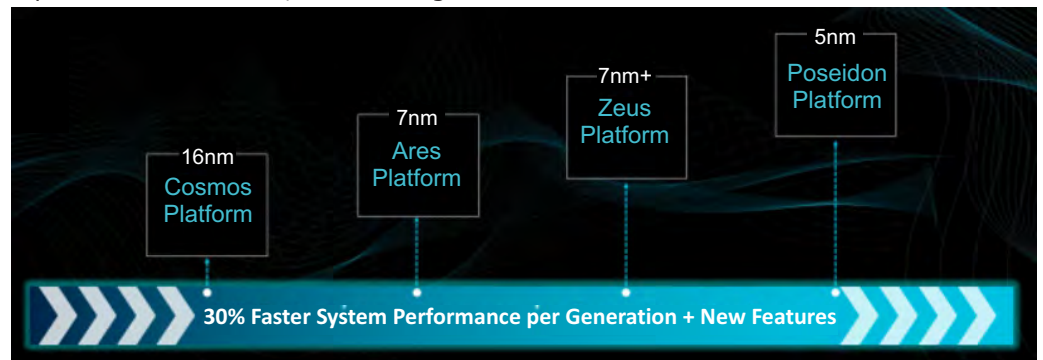
By: Drew Henry, senior vice president and general manager, Infrastructure Line of Business, Arm | Nov 27, 2018

Last night was a seminal moment for the entire Arm ecosystem, a moment that many people have worked tirelessly towards for a long time. At their annual Re:Invent conference, and during Peter Desantis' "Monday Night Live" keynote, [AWS announced the immediate availability of Arm® Neoverse™-based application servers!](#)

Before I go into more detail, let me recap the announcement we made last month at Arm Techcon. Arm Neoverse is our new brand for the architectures, products, and solutions we specifically design for the rapidly transforming cloud to edge internet infrastructure needed to enable a world of a trillion intelligent devices. For years we have been developing technologies for the networking, storage, and compute platforms needed for the internet infrastructure and integrating those technologies into our existing Arm Cortex® products, but Cortex is best known as the leading processor architecture for smartphones and the emerging world of IoT devices, so we've segmented our product line and Neoverse is the result. During Techcon we shared our new Neoverse roadmap, building off our current "Cosmos" platform, followed annually by "Ares", "Zeus", and "Poseidon" platforms.

To date, Arm powered infrastructure solutions are doing very well. During Techcon we shared that Arm is now the leading processor architecture powering these solutions, and that Arm processors are being rapidly adopted into a new class of cloud servers that manage the networking, storage, and security workloads in modern cloud datacenters. What you may not realize is that these workloads, until recently, only ran on x86-based application servers. The Arm ecosystem will ship well over 1M of these servers this year!

Yet despite the success we are having, we are constantly asked when Arm-based application processors will be deployed in volume. Well, today is that day! AWS announced that they are running application workloads on Arm. These servers are powered by **AWS Graviton, a world-class processor built by Annapurna Labs, a wholly owned AWS subsidiary**, based on the Arm Neoverse "Cosmos" platform, and specifically built to run customer application workloads. The Arm-based Graviton processors are powering all new Amazon EC2 A1 instances. The new instances will lower costs by up to 45%, and are being targeted for scale-out workloads, including containerized microservices, web servers, development environments, and caching fleets.



If you don't know who Annapurna Labs is, then you need to know their story. Bilik "Billy" Hrvoye and Nafea Bshara co-founded the company in Israel with a vision to build great products for the cloud. They chose Arm as their base architecture and we were an early investor in their start up. Billy and Nafea put together a world-class team and started designing storage and networking processors. AWS was an early customer and in 2015 they acquired Annapurna Labs since they knew that building their own silicon would allow them the control and design flexibility needed to rapidly expand the AWS cloud. James Hamilton, an AWS fellow and vice president, teased this vision in his 2016 Re:Invent keynote and in each subsequent year more of this vision was unveiled as new Annapurna designed processors were powering more of the core infrastructure within AWS.

I am incredibly excited about this announcement and very proud of all the work the Arm Neoverse ecosystem has put in to make this happen. From close collaboration with the most cutting-edge foundries in the world, through to a robust set of software offerings, the Arm Neoverse ecosystem is transforming the infrastructure. The deployment of Arm Neoverse application processors by a hyperscaler is validation of our architectural choices, software maturity, and investment decisions. For the Arm Neoverse ecosystem, yesterday's announcement is proof of the broad applicability of the Arm architecture. It means growth in the market for products within the Arm Neoverse ecosystem is accelerating.

We are particularly excited for Billy and Nafea and the entire team at Annapurna and the rest of AWS who built an amazing Arm-based application processor powering some innovative AWS solutions. Congratulations!

mtes Neural Networks Selects QuickLogic's QuickAI HW/SW Platform for AI-Enabled Endpoint Devices

- The end-to-end QuickAI Hardware / Software (HW/SW) Platform can be implemented quickly and easily with minimal data science and firmware resources

- QuickAI enables local inferencing (decision making), which reduces latency, power consumption and costs by eliminating the need for high bandwidth cloud connections

- With QuickAI, algorithms can be updated remotely, which reduces maintenance costs while insuring optimal performance



SUNNYVALE, Calif., Dec. 5, 2018 /PRNewswire/ -- QuickLogic Corporation (NASDAQ: QUIK), a developer of ultra-low power multi-core voice-enabled SoCs, embedded FPGA IP, display bridge, programmable logic and Endpoint AI solutions, announced today that **mtes Neural Networks (mtesNN) of Japan** has selected its [QuickAI™ Platform](#) for a new generation of AI-enabled endpoint devices. With the complete end-to-end QuickAI Platform solution, mtesNN is accelerating new product designs that leverage the benefits of local decision making based on real-time sensor data. This significantly lowers decision latency, improves reliability and eliminates the cost and high power consumption of a full-time broadband connection to cloud-based AI processing.

mtesNN was founded in 2015 and has developed expertise in structural health and surveillance monitoring with sensor modules and cognitive cameras that leverage the benefits of AI. Sensor modules will be deployed around cities to analyze the impact of earthquake tremors on railways, bridges and tall buildings so that preventive maintenance can be deployed. Cognitive camera systems will be deployed for surveillance and actionable event detection along streets and in large venues to improve safety and provide real-time information for emergency responders.

The challenge mtesNN faced was that cloud-based AI processing is simply not suitable for its endpoint applications. Cloud-based AI systems require broadband connections to send large amounts of raw sensor data and images to the cloud for processing and decision making. This requirement increases system costs, operating costs, latency, power consumption and the risk of downtime.

With the QuickAI Platform, the inferencing (decision making) is done locally with substantially reduced latency and power consumption. This is particularly important for mtesNN, which depends on solar power with battery back-up in some applications. The QuickAI Platform also allows mtesNN to lower system and operating costs and improve reliability by eliminating the need for continuous high-bandwidth connectivity. Because the QuickAI hardware and software Platform enables AI endpoint solutions to be developed easily and quickly with minimal data science and firmware engineering resources, mtesNN is also benefitting from lower product development costs while gaining valuable time-to-market advantages.

"We evaluated numerous design approaches before selecting QuickLogic's QuickAI Platform to develop new AI-enabled endpoint devices that leverage the many benefits of local AI processing," said Takaro Harada, CEO of mtes Neural Networks. "With QuickAI's end-to-end hardware and software, we are able to extend battery life while accelerating our new product development cycles. We are excited to use the QuickAI Platform for this and future generations of AI-enabled endpoint devices."

"We are very happy that mtes Neural Networks chose our QuickAI Platform to enable endpoint artificial intelligence in their next generation of AI-enabled endpoint devices," said Brian Faith, CEO of QuickLogic. "The unique heterogeneous multi-core architecture and end-to-end hardware /software solution provided by QuickAI Platform simplifies and accelerates the implementation of AI by providing standard interfaces to sensors and traditional digital computing resources while leveraging leading edge Neural Processing (NPU) technology. We look forward to continuing our work with mtes Neural Networks as it develops new AI-enabled endpoint devices."

Availability

The QuickAI Platform and its associated Data Analytics Toolkit is available now. For more information, please visit www.quicklogic.com/platforms/sensor-processing/quickai. The mtes Neural Networks Sensor Module and Cognitive Camera will be available during Q1, 2019.

About QuickLogic

QuickLogic Corporation (NASDAQ: QUIK) enables OEMs to maximize battery life for highly differentiated, immersive user experiences with Smartphone, Wearable, Hearable and IoT devices. QuickLogic delivers these benefits through industry leading ultra-low power customer programmable SoC semiconductor solutions, embedded software, and algorithm solutions for always-on voice and sensor processing. The company's embedded FPGA initiative also enables SoC designers to easily implement post production changes, and increase revenue by providing hardware programmability to their end customers. Please visit www.quicklogic.com and <http://blog.quicklogic.com>

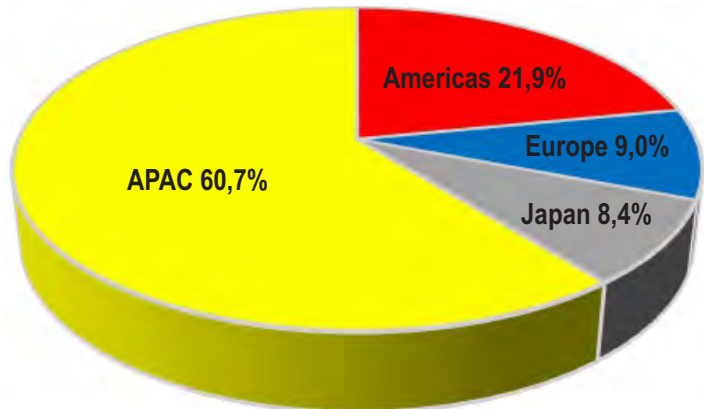
Global Semiconductor Market 2018-2019 \$ 500 Billion

The intention of this infographic is to give an overview of the major figures to know, together with some key remarks. Sources of analytics are from well-known companies like IC Insights and more. Observations are from Daniel Dierickx, e2mos « decades at the forefront of the Semiconductor Business »

Market by Region

The Share by Region has changed dramatically during the last 50 years

APAC (Asia Pacific) is mainly China which was almost non-existent a few decades ago

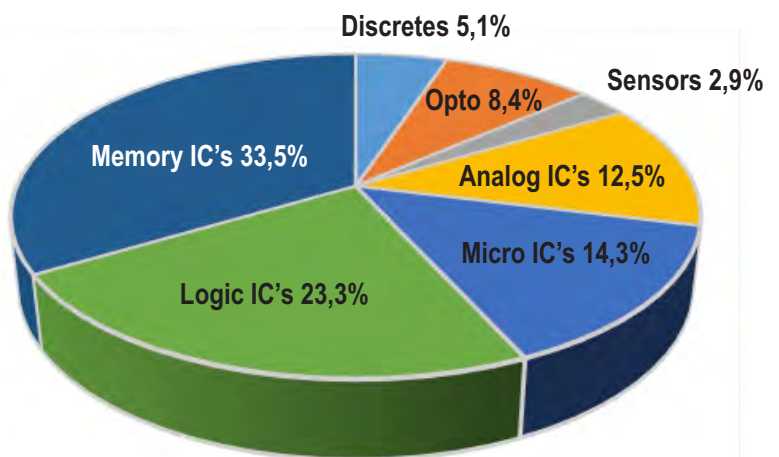


Market by Product Group

Memory is one third of Total Semiconductors

Total IC's has over 80% Share

Total IC's Market is projected to grow from \$430B in 2018 to \$570B in 2023. That is 33% over 5 years!



Top 15 Vendors 2018

The Memory business has pushed **Intel** from Gold-to-Silver. But Memory Business is not as strategic as CPU's, look at Datacenters and Telecom it is « **Intel XEON** » all over the place. In your current designs you have multiple second sources for Memories, not for CPU's.

Memory Business leaders are: **Samsung, SK Hynix, Micron** and **Toshiba**

About CPU Business:

- at first Intel missed the acquisition of **ARM** which is now owned **SoftBank** Japan (Telecom Operator), but now **China** has taken a big stake in ARM! (see page 9)
- **ARM** has been talking years about a Server CPU but was not able to convince one of their customer to make It (**ST** would have been a good candidate)
- anyhow it could be too late for a while as **Huawei** just introduced a **Super Server ARM-based CPU** (see page 14, 15 and 16)

Did you notice **Nvidia** (GPU) taking the spot 10 and **ST** spot 11. **ST** is leader in Europe in spite of **NXP** who did acquire **Freescale** (formerly **Motorola**)

Rank 2018	Vendor	Country	Market Share %
1	Samsung	S. Korea	17,2
2	Intel	US	14,5
3	SK Hynix	S. Korea	7,9
4	TSMC (1)	Taiwan	7,0
5	Micron	US	6,6
6	Broadcom Ltd (2)	US	3,9
7	Qualcomm (2)	US	3,4
8	Toshiba/Toshiba Memory	Japan	3,2
9	TI	US	3,1
10	Nvidia (2)	US	2,6
11	ST	Europe	2,0
12	WD/SanDisk	US	1,9
13	NXP	Europe	1,9
14	Infineon	Europe	1,9
15	Sony	Japan	1,6
	Top 15	380 \$B	80,0
	Others	100 \$B	20,0
	Total 2018	480 \$B	100,0
	Total 2019 Forecast	500 \$B	

(1) Foundry (2) Fabless

Tiniest data converters: small-size, for high performance designs

Applications: optical modules, field transmitters, battery-powered systems, building automation and wearables.



The DAC80508 and DAC70508 are eight-channel precision digital-to-analog converters (DACs) that provide true 16- and 14-bit resolution, respectively. The ADS122C04 and ADS122U04 are 24-bit precision analog-to-digital converters (ADCs) that feature a two-wire, I2C-compatible interface and a two-wire, UART-compatible interface, respectively. [MORE](#)

Highly accurate digital temperature sensors provide unparalleled simplicity for RTD-based and medical designs

At $\pm 0.1^\circ\text{C}$ accuracy over a wide temperature range, TI's single-chip digital temperature sensors help engineers reduce design complexity

Medical applications: supports American Society for Testing and Materials (ASTM) E1112 & ISO 80601 for patient thermometers.

Industrial applications: Achieve Class-AA RTD accuracy. [MORE](#)



First 12-bit, 29-kHz RGB LED driver family enables vivid color & seamless animation with zero audible noise

Reducing power consumption and improving total system efficiency in human-machine interface applications

High-resolution PWM dimming: The devices in TI's LP50xx family integrate a 12-bit PWM generator that operates above a human-audible frequency, at 29 kHz per channel, enabling smooth, vivid color with zero audible noise.

Ultra-low quiescent current: An integrated power-saving mode dramatically reduces power consumption to as low as 0.01 mA.

Multichannel: 18-, 24-, 30- and 36-channel options provide independent color mixing & brightness control. [MORE](#)



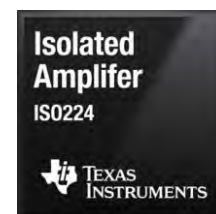
Ready-to-use portfolio of 600-V GaN FET power stages for applications up to 10 KW - LMG341x Family

- Each device is capable of fast, 1-MHz switching frequencies and slew rates of up to 100 V/ns
- Driver and protection features at 50 m Ω or 70 m Ω to provide a single-chip solution for applications ranging from sub-100 W to 10 kW [MORE](#)



Highest-precision reinforced isolated amplifier enables longest lifetimes in industrial voltage-sensing application

Highest reliability: TI's [capacitive isolation technology](#) enables the longest lifetimes and 50 percent higher working voltages than required by isolation industry standards, common-mode transient immunity (CMTI) of up to 80 kV/ μs and robust operation over an extended industrial temperature range of -55°C to $+125^\circ\text{C}$.



Industry's highest performance: The high-precision ISO224 enables more accurate measurements of $\pm 10\text{-V}$ signals [MORE](#)

TI unlocks mmWave technology for worldwide industrial market through new 60-GHz sensor portfolio

Highest-resolution single-chip mmWave sensors enable intelligent autonomy at the edge.

IWR6x mmWave sensors enable industrial automation through on-chip processing capabilities, providing real-time decision-making and signal processing. [MORE](#)



Qualcomm launches 9205 chipset for IoT, wearables, and smart cities

The new modem is intended for vendors creating IoT applications suitable for LPWAN networks.

By Charlie Osborne | December 17, 2018 -- 12:30 GMT (12:30 GMT)

Qualcomm has launched the 9205 LTE modem, a chipset designed for Internet of Things (IoT) applications which require Low-Power, Wide-Area Networks (LPWAN).

The US chip giant said on Monday that the modem has been purpose-built for devices and applications which operate on LPWAN, which includes wearables, asset trackers, health monitors, security systems, smart city sensors, and smart meters.

The new Qualcomm 9205 LTE modem supports global multimode LTE category M1 (eMTC) and NB2 (NB-IoT) as well as 2G/E-GPRS connectivity in one chipset.

In addition, the modem contains application processing power provided by an Arm Cortex A7 -- up to 800MHz -- with support for ThreadX and AliOS Things "The integrated applications processor avoids the need for an external microcontroller to improve cost-efficiency, and device security," Qualcomm says.

The chipset also includes geolocation positioning capabilities such as through GPS, Beidou, Glonass, and Galileo, as well as bolstered security at the hardware level by way of Qualcomm's Trusted Execution Environment. Cloud service support is also available



TechRepublic: [Qualcomm XR1 chip could bring faster, cheaper AR/VR to the enterprise](#)

An RF transceiver which supports bandwidth between the 450 MHz to 2100 MHz bands has also been integrated into the front-end, which the tech giant says is a "commercial first" in the cellular IoT space.

Qualcomm says that in comparison to its predecessor, the 9205 modem is 50 percent smaller and more cost-effective. The modem has also been designed to reduce power consumption by up to 70 percent while idle.

Developers interested in using the chipset are able to access a software development kit (SDK) suitable for use when custom software in use on the applications processor.

The SDK comes with pre-integrated support for cloud platforms including Alibaba Cloud Link One, China Mobile OneNET, DTSTON DTCloud, and Verizon ThingSpace

See also: [Qualcomm: Meet the new boss of everything mobile](#)

"The innovations included in the Qualcomm 9205 LTE modem are critical to support many of the six billion IoT devices expected to use low-power, wide-area connectivity by 2026," said Vieri Vanghi, vice president of product management at Qualcomm Europe. "LTE IoT technologies are the foundation of how 5G will help connect the massive IoT, and we are making these technologies available to customers worldwide to help them build innovative solutions that can help transform industries and improve people's lives."

CNET: [Qualcomm's newest chips promise Google smartwatch battery boosts](#)

According to Qualcomm VP of Product Management Vieri Vanghi, the chipset has been in development for the past 15 months and there are now over 80 licensees, with more than 110 designs already completed and certified or in the final stages of design.

Designs based on the modem are expected to become commercially available in 2019.

In related news, earlier this month Qualcomm announced the Snapdragon 855 mobile platform. The latest chipset in the product family sports an X50 5G modem for both sub-6 GHz and mmWave frequencies, Wi-Fi 6 support, QTM052 antenna modules, and Qualcomm's fourth-generation artificial intelligence (AI) engine.



About Charlie Osborne

Charlie Osborne is a cybersecurity journalist and photographer who writes for ZDNet and CNET from London. PGP Key: AF40821B

Top Tech Talks Of 2018

Which videos had the most traffic and why

December 31st, 2018 - By: Linda Christensen

2018 shaped up to be a year of transition and inflection, sometimes in the same design. There were new opportunities in automotive, continued difficulties in scaling, and an explosion in AI and machine learning everywhere.

Traffic numbers on stories give a snapshot of the most current trends, but with videos those trends are even more apparent because of the time invested in watching those videos. Here's where the numbers pointed in each area and which videos topped the list:

Automotive

Self-driving car technology hit the top of the video list. [ISO 26262 Drilldown](#) looked at some of the basics required to play in the automotive electronics market. [DO-254](#) takes a look at the safety-critical standard for aerospace and how that crosses over into automotive electronics, while [ISO 26262 Statistics](#) drills into the statistical underpinnings of safety standards.

Memory

Memory was a recurring theme this year for a number of reasons, including shortages of DRAM, tradeoffs in high-performance/low-power designs, and a resurgence of issues involving performance and reliability. All of this generated confusion in a market that was relatively quiet for the better part of two decades. [Making Sense Of DRAM](#) was the top video. Alongside of that, [HBM Vs. GDDR6](#) compares two different memory options. Also racking up views was a discussion about the tradeoffs between embedded NVM and system-in-package approaches, in [MCU Memory Options](#), as well as one on hw memory architectures are shifting in [Data-Driven Design](#).

System-Level Design

Moore's Law continues, and so does interest in how far it can be extended. [Parasitic Extraction At 5/3nm](#) dives into what to expect with new materials and gate structures such as gate-all-around FETs and vertical nanowire FETs. How to ensure the RTL created by design engineers matches what shows up in an FPGA was explained in this [FPGA RTL Checking](#) video. [Energy-Efficient AI](#) looks at how to improve the efficiency of AI operations by focusing on the individual operations, including data transport, computation and memory.

Low-Power High Performance

Along the same lines, [Huge Performance Gains Ahead](#) delves into what will drive the next big performance gains after Moore's Law, from the data center to the edge. [Aging Effects](#) talks about how to model aging effects and why the problems are becoming more difficult at advanced nodes. [Applying Machine Learning](#) discusses how to use AI, deep learning and machine learning.

Manufacturing & Process

[Variation At 10/7nm](#) dives into why variability is a growing challenge at advanced nodes, why middle of line is now one of the big problem areas, and what happens when a via is misaligned due to a small process variation. But 3D transistors aren't the only option. [22nm Process Technology](#) describes how FD-SOI compares with bulk technologies. And [New Roadmap For Electronics](#) looks at what's changing now that Moore's Law is slowing, and how packaging is changing as the traditional physical boundaries of electronics begin breaking down

Packaging, Test & Materials

[ATE Lab to Fab](#) emerged as the top video in this sector, targeting how to close the gap between the design and test worlds to improve coverage and shorten time to market. [The Case For Chiplets](#) looks at what's behind the momentum for a LEGO-like approach, where the challenges are, and how the cost compares with other approaches. And using [DSA with EUV](#) reveals why directed self-assembly still has an important role to play at the most advanced nodes.

FPGAs, AI & Communication

AI is one of the hot buttons for the entire industry, and that was apparent in reader traffic on [Inferencing In Hardware](#), which examines shifting neural network models, how many multiply-accumulates are needed for different applications, and why programmable neural inferencing will be required for years to come. [AI Training Chips](#) looks at how to speed up algorithms and improve performance. [eFPGA Vs. FPGA Design Methodologies](#) discusses the differences between discrete and embedded FPGAs. [802.11ax: Faster Wireless](#) talks with about the new 802.11ax wireless standard, how it will work with 5G and existing networks, and how to set up an integrated solution to reduce bottlenecks in the home and in the enterprise.



Linda Christensen

Linda Christensen is vice president of operations and a contributing writer at [Semiconductor Engineering](#).

SoftBank confirms sell off of ARM China stake

This article was already published in June 2018 « BUT » Just to remember as it may have a dramatic impact
REMEMBER: 05 September 2016 (2016) Completion of Acquisition of ARM by SoftBank

SoftBank Group Corp., the owner of leading IP licensor ARM Ltd., has confirmed that it has agreed to sell a majority stake in ARM's Chinese trading subsidiary to financial investors and certain ARM ecosystem partners.



June 12, 2018 // By Peter Clarke, eeNEWS | The move had been previously reported (see Report: Control of ARM's China business passes to JV) and was thought to include China Investment Corp., Silk Road Fund, Singapore's Temasek Holdings, ARM, Hopu Investment Management and Shum Yip Group.

SoftBank has now provided more detail in that it has said that ARM will sell 51 percent of its equity interest in Arm China for US\$775.2 million to the investors. However, it did not confirm the participants, saying the names were not disclosed at the request of the relevant parties. It said the transaction was expected to close in June 2018.

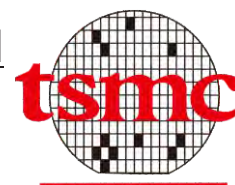
Nonetheless the result will be that ARM will not control the company that operates in China to collect royalties on ARM IP.

SoftBank said the rationale behind the deal was that by relinquishing control and taking a reduced royalty by way of dilution, the joint venture could locally license ARM semiconductor technology to Chinese companies and locally develop ARM technology in China and that this would expand ARM's opportunities in the Chinese market.

SoftBank also stated: "ARM will continue to receive a significant proportion of all licence, royalty, software and services revenues arising from ARM China's licensing of ARM semiconductor products."

Related links: www.softbank.com www.arm.com

TSMC's 7nm Production Likely to Be Underutilized in 2019 as Smartphone Chip Demand Weakens



By: Raevenlord | Dec 5th, 2018 17:25

DigiTimes, citing a Chinese-language Commercial Times report, cites TSMC's 7 nm foundry capacity as likely being underutilized in 2019. After TSMC announced it expected cutting-edge 7 nm designs to correspond to around 20% of the company's revenues in 2019, the company will likely have to review those projections, as lower demand from smartphone chip manufacturers will likely leave TSMC with less actual output than that which it can churn out.

Due to a cutback in orders placed by Apple, HiSilicon and Qualcomm, concerns regarding TSMC's ability to be the sole 7 nm chip fabrication tech for the industry can likely be laid to rest. That the smartphone market is reaching saturation is a well-known quantity - it's becoming harder and harder to cram new technologies that justify the yearly smartphone upgrade that most companies vie for - and one of the reasons for the launch of various brand-specific smartphone subscription services. The difference isn't scandalous - TSMC will still be making use of 80-90% of its total 7nm process capacity during the first half of 2019, the report quoted industry sources as saying.

INTRODUCING THE LATEST WIND RIVER LINUX

**Explore
Wind River
Linux**

Continuous Integration of Open Source Innovation

06 December 2018 | Our newest Wind River Linux release continues the proven predictable cadence of integrating the latest and greatest open source technologies. Based on Yocto Project 2.6 (code-named "Thud"), this release delivers incremental updates with newer kernel version and tools, updated user space packages, and hardware support.

Open Source Flexibility, Supported by Professionals

Wind River Linux gives you risk mitigation and lower cost of ownership for your embedded and IoT project with:

- Commercial supported open source technologies, based on Yocto Project and OpenEmbedded
- Predictive maintenance and hot patches with long-term support options
- Continuous monitoring and fixes for Common Vulnerabilities and Exposures (CVEs)
- Extended list of board support packages (BSPs) across a variety of architectures
- Cloud native compatible configuration for container deployment at the edge
- ISO 9001:2015 quality management system certified for development and maintenance
- Open source compliance artifacts, including IP disclosure and licensing data

Europe approves €1.75 billion public support in microelectronics



State aid: Commission approves plan by France, Germany, Italy and the UK to give €1.75 billion public support to joint research and innovation project in microelectronics

Brussels, 18 December 2018 | European Commission - Press release

The European Commission has found that an integrated project jointly notified by France, Germany, Italy and the UK for research and innovation in microelectronics, a key enabling technology, is in line with EU State aid rules and contributes to a common European interest.

The four Member States will provide in the coming years up to €1.75 billion in funding for this project that aims to unlock an additional €6 billion in private investment. The project should be completed by 2024 (with differing timelines for each sub-project).

Commissioner **Margrethe Vestager**, in charge of competition policy, said: "Microelectronics can be found in almost all electronic devices we use every day – be it your phone, computer, washing machine, or your car. Innovation in microelectronics can help the whole of Europe leap ahead in innovation. That's why it makes sense for European governments to come together to support such important projects of common European interest, if the market alone would not take the risk. And it is why we have put special State aid rules in place to smooth the way. They enable risky and groundbreaking research and innovation to see the light of day, whilst ensuring that its benefits are shared widely and do not distort the level playing field in Europe. So that innovation supported by taxpayer money truly serves European citizens."

Commissioner **Mariya Gabriel**, in charge of Digital Economy and Society said: "Every connected device, every modern machine, all our digital services depend on microelectronic components that become smaller and faster with time. If we don't want to depend on others for such essential technology, for example for security or performance reasons, we have to be able to design and produce them ourselves. Today's decision is a result of enhanced cooperation and shared European vision."

On 30 November, France, Germany, Italy and the UK jointly notified to the Commission an Important Project of Common European Interest ("IPCEI") to support research and innovation in microelectronics. Microelectronics are small electronic components usually made of semiconductor materials such as silicon. The basic microelectronic components, commonly known as chips and sensors, can be found in almost all electronic devices. The integrated research and innovation project will involve **29 direct participants**, headquartered both in and outside the EU. They are mostly industrial actors but also two research organisations, carrying out 40 closely interlinked sub-projects.

These direct participants will work in collaboration with a large number of partners, such as other research organisations or small and medium-sized enterprises (SMEs), also beyond the four Member States.

The microelectronics project

The project's overall objective is to enable research and develop innovative technologies and components (e.g. chips, integrated circuits, and sensors) that can be integrated in a large set of downstream applications. These include consumer devices, for example home appliances and automated vehicles, and commercial and industrial devices, for example the management systems for batteries used for electric mobility and energy storage.

In particular, the project is expected to stimulate additional downstream research and innovations in particular in relation to the broad area of the Internet of Things and to connected or driverless cars.

... to next page

Europe approves €1.75 billion public support in microelectronics



... from previous page

The project participants and their partners will focus their work on **five different technology areas**:

- (1) **Energy efficient chips**: developing new solutions to improve the energy efficiency of chips. These will, for example, reduce the overall energy consumption of electronic devices including those installed in cars;
- (2) **Power semiconductors**: developing new technologies of components for smart appliances as well as for electric and hybrid vehicles, to increase the reliability of final semiconductor devices.
- (3) **Smart sensors**: working on the development of new optical, motion or magnetic field sensors with improved performance and enhanced accuracy. Smart sensors will help improve car safety through more reliable and timely reaction to allow a car to change lanes or avoid an obstacle:
- (4) **Advanced optical equipment**: developing more effective technologies for future high-end chips; and
- (5) **Compound materials**: developing new compound materials (instead of silicon) and devices suitable for more advanced chips.

All five technology fields are complementary and interlinked – chips are not typically sold by themselves but are often supplied as part of an integrated system. Such systems require a combination of processes and technologies covered by the different fields of the project. For this reason, the project participants will be involved in over 100 collaborations across the different areas in the 40 closely interlinked sub-projects.

Funding beneficiaries and amounts

The IPCEI to support research and innovation in microelectronics involves 29 direct participants from the four Member States. The direct participants could receive by the respective national administrations a total of up to approximately €1.75 billion in funding. More specifically, France has sought approval to grant aid provide funding of up to €355 million, Germany up to €820 million, Italy up to €524 million and the UK up to €48 million.

The direct participants, the Member States supporting them and the different project areas are as follows:

Project management				
1 Energy efficient chips	2 Power semiconductors	3 Sensors	4 Advanced optical equipment	5 Compound materials
CEA-Leti	3-D Micromac	CEA-Leti	AMTC	AZUR Space Solar Power
Cologne Chip	AP&S International	CorTec	Carl Zeiss	CEA-Leti
Globalfoundries	CEA-Leti	Elmos Semiconductors		Integrated Compound Semiconductors
RacyICs	Elmos Semiconductors	Fondazione Bruno Kessler		IQE
Soitec	Infineon	Infineon		Newport Wafer Fab
ST Micro-electronics	MURATA	Robert Bosch		SPTS Technologies
X-FAB	Robert Bosch	ST Micro-electronics		OSRAM
	SEMIKRON	TDK-Micronas		Sofradir
	ST Micro-electronics	ULIS		Soitec
	X-FAB	X-FAB		ST Micro-electronics

Name in « *italic* » = SME

Editor Note (Daniel Dierickx, e2mos) - I would like to share a few observations, here are five:
[1] IMEC www.imec-int.com/en/home the World leader in nano research is not selected. **[2]** the selection is first done on countries, why not first on capabilities? **[3]** there are four UK co's listed (is Brexit solved?). **[4]** in the last box right, the Italian flag is missing (forgotten or ???). **[5]** I do not see something about the Euro HPC announced in Jan 2018 (2018) « EU launches €1B project to build fastest supercomputer in the world by 2023 »

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Europe approves €1.75 billion public support in microelectronics

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The Commission assessment

IPCEI framework - The Commission assessed the proposed project under EU State aid rules and, more specifically, under its 2014 Communication on Important Projects of Common European Interest (IPCEI Communication). Where private initiatives supporting innovation fail to materialise because of the significant risks such projects entail, the IPCEI Communication allows Member States to jointly fill the gap to overcome these market failures and boost the realisation of innovative projects that otherwise would not have taken off.

In order to qualify for support under the IPCEI Communication, a project must: (i) contribute to strategic EU objectives, (ii) involve several Member States, (iii) involve private financing by the beneficiaries, (iv) generate positive spillover effects across the EU that limit potential distortions to competition, and (v) be highly ambitious in terms of research and innovation.

Assessment of the microelectronics IPCEI - Following its assessment of the joint notification by France, Germany, Italy and the UK, the Commission has found that the IPCEI for research and innovation in microelectronics fulfils the conditions set out in its Communication.

In particular, the Commission notes that:

investment in research and innovation in microelectronics at this scale is a major transnational innovation project. It carries a considerable element of risk, and therefore public support is appropriate and necessary to incentivise companies to carry out these ambitious research, development and innovation activities. Microelectronics are considered by the Commission as a Key Enabling Technology, which are technologies that have applications in multiple industries and will help tackle societal challenges;

the results of the research project will be disseminated by participating companies benefiting from the public support. In this context, an annual conference on the project will be organised, and interested parties will be informed in a timely manner of the technological innovation and the new knowledge generated in this project via a dedicated website. Furthermore, companies will host a series of technical events on their respective sub-projects; and a governance structure composed of representatives from the participating Member States, businesses and the Commission will supervise the project and monitor in particular the progress of the individual participants and their partners as well as the sharing of research innovation results beyond the project participants.

On this basis, the Commission concluded that the IPCEI on microelectronics notified jointly by France, Germany, Italy and the UK is in line with EU State aid rules.

The IPCEI will enable research and development in a key economic sector of strategic importance across a number of Member States and is expected to unlock an additional €6 billion in private investments in the microelectronics sector. This is the first integrated IPCEI in the field of research, development and innovation approved by the Commission since the adoption of the Communication in 2014.

Background

In June 2014 the Commission adopted a Communication on Important Projects of Common European Interest (IPCEI), setting out criteria under which Member States can support transnational projects of strategic significance for the EU under Article 107(3)(b) of the Treaty on the Functioning of the European Union (TFEU). This framework aims to encourage Member States to support projects that make a clear contribution to economic growth, jobs and the competitiveness of Europe.

The IPCEI framework complements other State aid rules such as the General Block Exemption Regulation and the Research, Development and Innovation Framework, which allows supporting innovative projects whilst ensuring that potential competition distortions are limited.

The State Aid Scoreboard shows that more than 95% of new R&D&I measures for which expenditure has been reported for the first time were granted under the General Block Exemption Regulation and could be disbursed quicker. According to the latest available data, the total spending for R&D&I under the 2014 General Block Exemption Regulation continued to increase to reach about €5.7 billion.

The IPCEI rules support investments for R&D&I and first industrial deployment on condition that the projects receiving this funding are highly innovative and do not cover mass production or commercial activities. They also require extensive dissemination and spillover commitments of new knowledge throughout the EU and a detailed competition assessment to minimize any undue distortions in the internal market.

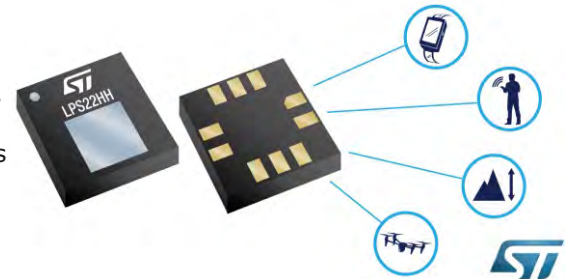
This is the first application of the 2014 Communication outside the field of infrastructure.

Microelectronics has been identified by the Commission as one of the six Key Enabling Technologies (KET), crucial for future industrial development. In this respect, on 23 May 2013, the Commission has launched the New European Strategy for micro- and nanoelectronic components and systems, which aims to increase their exploitation and stimulate growth and jobs.

The non-confidential version of the decision will be made available under the case numbers SA.46705 (France), SA.46578 (Germany), SA.46595 (Italy) and SA.46590 (United Kingdom) in the State Aid Register on the competition website once any confidentiality issues have been resolved. New publications of state aid decisions on the internet and in the Official Journal are listed in the State Aid Weekly e-News. (IP/18/6862) -- END --

Tiny MEMS Pressure Sensor from STMicroelectronics Enhances Measurement Accuracy and Avoids Time-Consuming Calibration

The STMicroelectronics **LPS22HH** MEMS piezoelectric absolute pressure sensor is so accurate and stable that manufacturers can eliminate one-point calibration (OPC) after soldering to increase throughput and efficiency. Tiny MEMS Pressure Sensor from STMicroelectronics Enhances Measurement Accuracy and Avoids Time-Consuming Calibration. With a pressure noise equivalent to 5cm, the LPS22HH enhances controls such as collision avoidance for drones or other unmanned vehicles. Its superior accuracy also enhances features of smartphones and sport watches, such as indoor navigation. [MORE](#)



STMicroelectronics Extends Amazon FreeRTOS Support with Bluetooth®, Ethernet, LTE Cat-M / NB-IoT Starter Kit

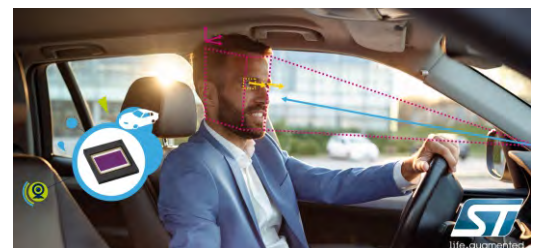
Amazon FreeRTOS availability for STM32 platform promotes highest quality and security for IoT nodes

STMicroelectronics (NYSE:STM), a global semiconductor leader serving customers across the spectrum of electronics applications, announced at AWS re:Invent 2018 extended support for **Amazon FreeRTOS with new starter kits for the STM32, one of the industry's most popular family of 32-bit Arm® Cortex®-M microcontrollers.** ST is leveraging AWS to boost designers' efforts to create easily connectable Internet of Things (IoT) nodes with the combination of ST's semiconductor building blocks and Amazon FreeRTOS, an operating system for microcontrollers that makes small, low-power edge devices easy to program, deploy, secure, connect, and manage. Based on the FreeRTOS kernel, Amazon FreeRTOS is a popular open-source operating system for microcontrollers that has been extended with software libraries that make it easy to securely connect your small, low-power devices to AWS cloud services like AWS IoT Core or to more powerful edge devices running AWS IoT Greengrass.

The B-L475E-IOT01A Discovery kit provides out-of-the box support for Amazon FreeRTOS and enables a variety of applications by using Wi-Fi, multiway sensing, and an Ultra-Low-Power ARM Cortex-M4 core-based STM32L475. Now, the same kit supports LTE Cat-M/NB-IoT connectivity using an X-Nucleo Expansion Board hosting an LTE Modem and ST SIM Card, coupled via the Arduino Uno V3 connector present on the board. [MORE](#)

STMicroelectronics' Advanced Image Sensors Enhance Driver Monitoring in Next-Generation Automotive Safety Systems

- Advanced image sensors (**VG5661** and **VG5761**) enhance driver and passenger monitoring for safety and comfort
- Automotive electronic global shutter technology ideally suited for automotive and industrial machine vision, with disruptive in-pixel linear high dynamic range
- Demonstration with Jungo at AutoSens and Electronica 2018 highlighted future opportunities for driver/passenger monitoring and autonomous driving [MORE](#)



STMicroelectronics' Compact STM8L001 Microcontroller Covers Essentials for Smart Devices, as it Cuts Power, Cost, and Footprint

The **STM8L001** ultra-low-power microcontroller from STMicroelectronics targets cost-conscious applications, by combining ST's highly efficient 8-bit core with essential and effective peripherals, in the compact, low-pin-count SO-8 outline. STMicroelectronics' Compact STM8L001 Microcontroller Covers Essentials for Smart Devices, as it Cuts Power, Cost, and Footprint. The microcontroller provides essential features for basic sensing, communication, and control, including two comparators, SPI, I2C, and UART interfaces, and one 8- and two 16-bit timers. 8Kbytes of Flash memory and 1.5Kbytes of RAM. [MORE](#)



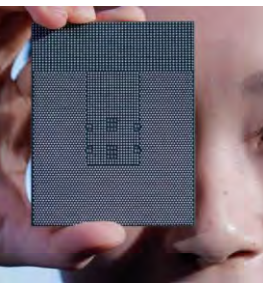
Huawei Unveils Industry's Highest-Performance ARM-based CPU



Bringing Global Computing Power to Next Level

Jan 07, 2019

Shenzhen, China, January 7, 2019] Today, Huawei announced the industry's highest-performance Advanced RISC Machine (ARM)-based CPU. Called Kunpeng 920, the new CPU is designed to boost the development of computing in big data, distributed storage, and ARM-native application scenarios. Huawei will join with industry players to advance the ARM industry and foster an open, collaborative, and win-win ecosystem, taking computing performance to new heights.



William Xu, Director of the Board and Chief Strategy Marketing Officer of Huawei, unveils industry's highest-performance ARM-based CPU called Kunpeng 920.

"Huawei has continuously innovated in the computing domain in order to create customer value. We believe that, with the advent of the intelligent society, the computing market will see continuous growth in the future. Currently, the diversity of applications and data is driving heterogeneous computing requirements. Huawei has long partnered with Intel to make great achievements. Together we have contributed to the development of the ICT industry. Huawei and Intel will continue our long-term strategic partnerships and continue to innovate together," said William Xu, Director of the Board and Chief Strategy Marketing Officer of Huawei.

"At the same time, the ARM industry is seeing a new development opportunity. The Kunpeng 920 CPU and TaiShan servers newly released by Huawei are primarily used in big data, distributed storage, and ARM-native applications. We will work with global partners in the spirit of openness, collaboration, and shared success to drive the development of the ARM ecosystem and expand the computing space, and embrace a diversified computing era."

The industry's highest-performance ARM-based CPU

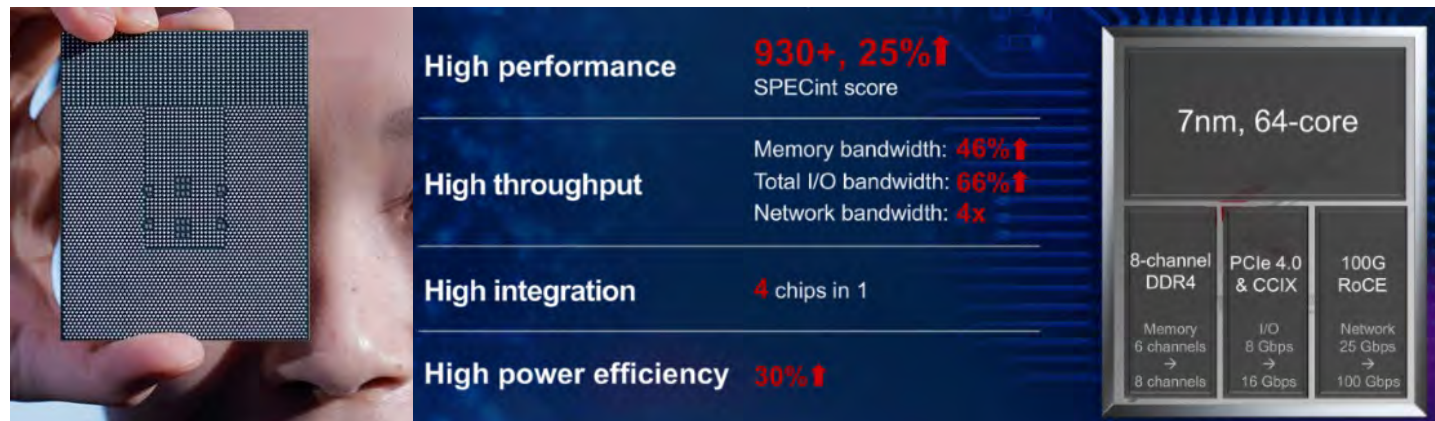
Kunpeng 920 is the industry's highest-performance ARM-based server CPU. Using the cutting-edge 7nm process, the CPU was independently designed by Huawei based on ARMv8 architecture license. It significantly improves processor performance by optimizing branch prediction algorithms, increasing the number of OP units, and improving the memory subsystem architecture. At typical frequency, the Kunpeng 920 CPU scores over 930 in the SPECint Benchmarks test, which is 25% higher than the industry benchmark. At the same time, power efficiency is 30% better than that offered by industry counterparts. Kunpeng 920 provides much higher computing performance for data centers while slashing power consumption.

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Huawei Unveils Industry's Highest-Performance ARM-based CPU

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Kunpeng 920 integrates 64 cores at a frequency of 2.6 GHz. This chipset integrates 8-channel DDR4, and memory bandwidth exceeds incumbent offerings by 46%. System integration is also increased significantly through the two 100G RoCE ports. Kunpeng 920 supports PCIe 4.0 and CCIX interfaces, and provides 640 Gbps total bandwidth. In addition, the single-slot speed is twice that of the incumbent offering, effectively improving the performance of storage and various accelerators.



Huawei TaiShan, ARM-based server with the industry's best performance

Huawei today also released its TaiShan series servers powered by Kunpeng 920, including three models: one with a focus on storage, another on high density, and a third focused on balancing both requirements. The TaiShan servers are built for big data, distributed storage, and ARM-native application scenarios. The ARM architecture is best suited for these scenarios with advantages in many-core and performance per watt.

TaiShan will enable computing platforms with high performance and low power consumption for enterprises. For example, in big data scenarios, the TaiShan servers are tuned for optimal many-core high concurrency and resource scheduling to deliver a 20% computing performance boost. Based on the TaiShan servers, Huawei Cloud also provides elastic cloud services, bare metal services, and cloud phone services.

Building an open and collaborative ARM ecosystem founded on shared success

Huawei continuously promotes industry cooperation in terms of hardware, basic software, and applications. Huawei has been working with industry organizations such as Green Computing Consortium (GCC), Linaro, and Open Edge and HPC Initiative (OEHI) to build an open, collaborative industry ecosystem, alongside partners such as Hortonworks, Microsoft, Oracle, SAP, SUSE, Ubuntu, and China Standard Software.

On the hardware side, Huawei is a core member of Linaro. On the basic software side, Huawei is a Platinum member of the OpenStack Foundation and a founding member of Cloud Native Computing Foundation (CNCF). With regard to applications, Huawei has joined the GCC. GCC has released the Green Computing Consortium Server Technical Standards Report, along with other efforts to build a green open source computing community. Huawei is also a member of the OEHI.

Huawei believes that an intelligent society with all things connected, sensing, and intelligent is underway, and this trend is picking up speeds. The development and convergence of ARM-based applications on smart terminals are accelerating, along with cloud-device collaboration. In addition, new applications in cloud computing are driving data diversity. For example, big data applications, distributed storage, and some edge computing scenarios have specific energy efficiency requirements for many-core high-performance computing. In such a context, ARM systems stand out with unique advantages in performance and power consumption.

Therefore, in view of the industry trends and application requirements, a new era of diversified computing is unfolding. Multiple data types and scenarios are driving computing architecture optimization. Combining multiple computing architectures for optimal performance becomes a must.

"With Kirin 980, Huawei has taken smartphones to a new level of intelligence. With products and services (e.g., Huawei Cloud) designed based on Ascend 310, Huawei enables inclusive AI for industries," William Xu noted. "Today, with Kunpeng 920, we are entering an era of diversified computing embodied by multiple cores and heterogeneity. Huawei has invested patiently and intensively in computing innovation to continuously make breakthroughs. We will work with our customers and partners to build a fully connected, intelligent world."




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Huawei Unveils Industry's Highest-Performance ARM-based CPU

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TaiShan New Servers Range using the highest-performance ARM-based CPU called Kunpeng 920 and equipped with up to 10,240 cores per rack from Huawei



TaiShan 2280 Balanced Server	TaiShan 5280/5290 Storage Server	TaiShan X6000 High-Density Server
		
For diversified workloads	10 PB per rack	10240 cores per rack
2U rack server	4U rack server	4U rack server
2-sockets	2-sockets	2-sockets
32*DDR4-2933 MHz	32*DDR4-2933 MHz	32*DDR4-2933 MHz
16*3.5" HDDs or 28*2.5" NVMe SSDs	40/72*3.5" HDDs	40/72*3.5" HDDs
CCIX, 8*PCIe 4.0	CCIX, 8*PCIe 4.0	CCIX, 8*PCIe 4.0
10GE / 25GE / 100GE	10GE / 25GE / 100GE	10GE / 25GE / 100GE

Huawei captured 28% share of the telecom equipment market

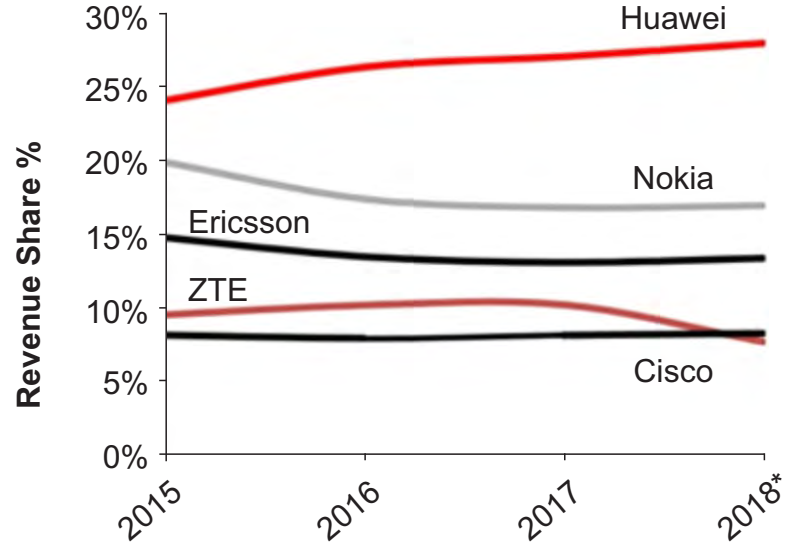
The Dell'Oro Group just issued a report, noting that "Huawei captured 28% share of the telecom equipment market, increasing its market share by 4 percentage points since 2015."

As Dell'Oro Group noted, Huawei's telecom equipment revenue is now "nearly as large as Nokia and Ericsson combined." Furthermore, "Huawei's revenue share gains over the past four years have been most pronounced in the Core, Router, and Optical Transport Markets."

<https://www.delloro.com/>

www.SemiUpdateWorld.com

Worldwide Service Providers Equipment Revenue Share**



Source: Dell'Oro Group
 *1Q18 to 3Q18
 **Broadband Access + Core + RAN + Router + Transport

Imec Belgium & CEA-Leti France join forces on Artificial Intelligence and Quantum Computing

LEUVEN (BELGIUM), November 19, 2018 — During the state visit of His Excellency Emmanuel Macron President of the French Republic, the Belgian research center imec and the French research institute CEA-Leti, two world-leading research and innovation hubs in nanotechnologies for industry, announced that they have signed a memorandum of understanding (MoU) that lays the foundation of a strategic partnership in the domains of Artificial Intelligence and quantum computing, two key strategic value chains for European industry, to strengthen European strategic and economic sovereignty. The joint efforts of imec and CEA-Leti underline Europe's ambition to take a leading role in the development of these technologies. The research centers' increased collaboration will focus on developing, testing and experimenting neuromorphic and quantum computing – and should result in the delivery of a digital hardware computing toolbox that can be used by European industry partners to innovate in a wide variety of application domains – from personalized healthcare and smart mobility to the new manufacturing industry and smart energy sectors.

Edge Artificial Intelligence (eAI) commonly refers to computer systems that display intelligent behavior locally on the hardware devices (e.g chips) . They analyze their environment and take the required actions to achieve specific goals. Edge AI is poised to become a key driver of economic development. And, even more importantly perhaps, it holds the promise of solving many societal challenges – from treating diseases that cannot yet be cured today, to minimizing the environmental impact of farming.

Decentralization from the cloud to the edge is a key challenge of AI technologies applied to large heterogeneous systems. This requires innovation in the components industry with powerful, energy-guzzling processors.

“The ability to develop technologies such as AI and quantum computing – and put them into industrial use across a wide spectrum of applications – is one of Europe's major challenges. Both quantum and neuromorphic computing (to enable artificial intelligence) are very promising areas of innovation, as they hold a huge industrialization potential. A stronger collaboration in these domains between imec and CEA-Leti, two of Europe's leading research centers, will undoubtedly help to speed up the technologies' development time: it will provide us with the critical mass that is required to create more – and faster – impact. and will result in plenty of new business opportunities for our European industry partners,” says Luc Van den hove, president and CEO of imec.

“Two European microelectronics pioneers today are joining forces to raise the game in both high-performance computing and trusted AI at the edge, and ultimately to fuel European industry success through innovations in aeronautics, defence, automobiles, Industry 4.0 and health care,” said Emmanuel Sabonnadière, CEA-Leti CEO said. “This collaboration with imec following earlier innovation-collaboration agreements with the Fraunhofer Group for Microelectronics of the Fraunhofer-Gesellschaft, the largest organization for applied research, will focus all three institutes to the task of keeping Europe at the forefront of new digital hardware for AI, HPC and Cyber-security applications.”

Imec and CEA-Leti are inviting partners from industry as well as academia to join them and benefit from access to the research centers' state-of-the-art technology with proven reproducibility – enabling a much higher degree of device complexity, reproducibility and material perfection while sharing the costs of precompetitive research.

About imec (Belgium)

Imec is the world-leading research and innovation hub in nanoelectronics and digital technologies. The combination of our widely acclaimed leadership in microchip technology and profound software and ICT expertise is what makes us unique. By leveraging our world-class infrastructure and local and global ecosystem of partners across a multitude of industries, we create groundbreaking innovation in application domains such as healthcare, smart cities and mobility, logistics and manufacturing, energy and education.

As a trusted partner for companies, start-ups and universities imec brings together more than 4,000 brilliant minds from over 85 nationalities. Imec is headquartered in Leuven, Belgium and has distributed R&D groups at a number of Flemish universities, in the Netherlands, Taiwan, USA, China, and offices in India and Japan. In 2017, imec's revenue (P&L) totaled 546 million euro. Further information on imec can be found at www.imec-int.com.

About Leti (France)

Leti, a technology research institute at CEA Tech, is a global leader in miniaturization technologies enabling smart, energy-efficient and secure solutions for industry. Founded in 1967, Leti pioneers micro- & nanotechnologies, tailoring differentiating applicative solutions for global companies, SMEs and startups. Leti tackles critical challenges in healthcare, energy and digital migration. From sensors to data processing and computing solutions, Leti's multidisciplinary teams deliver solid expertise, leveraging world-class pre-industrialization facilities. With a staff of more than 1,900, a portfolio of 2,700 patents, 91,500 sq. ft. of cleanroom space and a clear IP policy, the institute is based in Grenoble, France, and has offices in Silicon Valley and Tokyo. Leti has launched 60 startups and is a member of the Carnot Institutes network. This year, the institute celebrates its 50th anniversary. More: www.leti-cea.com.

CEA Tech is the technology research branch of the French Alternative Energies and Atomic Energy Commission (CEA), a key player in innovative R&D, defence & security, nuclear energy, technological research for industry and fundamental science, identified by Thomson Reuters as the second most innovative research organization in the world. CEA Tech leverages a unique innovation-driven culture and unrivalled expertise to develop and disseminate new technologies for industry, helping to create high-end products and provide a competitive edge.

NXP and Kalray Enter Partnership to Develop Platform for Safe, Reliable Autonomous Driving

Companies to combine technology and jointly market a Central Computing Platform

LAS VEGAS, Jan. 08, 2019 (GLOBE NEWSWIRE) -- NXP Semiconductors N.V. (NASDAQ: NXPI), a technology and market leader in next-generation automotive technologies, today announced a new strategic partnership with Kalray (Euronext Growth Paris – ALKAL), a pioneer in processors for new intelligent systems. The partnership will combine NXP's scalable portfolio of functional safety products for ADAS and Central Compute with Kalray's high-performance intelligent MPPA® (Massively Parallel Processor Array) processors. The new platform is significant because it addresses the performance, safety and near-term commercial needs of levels 2 and 3 driving with an eye to longer-term release in level 4 and 5 autonomous vehicles. The collaboration also aims to take on the safety shortcomings of today's pilots and experimental offerings in the autonomous development space.

The autonomous driving ecosystem faces technology challenges and concerns related to the safety of self-driving vehicles. Recent research indicates that while consumers are enthusiastic about an autonomous future, many hold deep reservations about whether self-driving vehicles will ever be safe. This perception has been reinforced by high-profile accidents involving prototypes and experimental vehicles. To overcome these technology and consumer confidence gaps, the autonomous ecosystem needs fail-safe automotive systems that enable a vehicle's central processing unit to protect drivers through a complex and heavily tested safety approach. NXP provides more than 25 years of expertise in the types of functional safety systems required to tackle autonomous driving.

NXP and Kalray have joined forces in a partnership to co-develop a central computing platform with safety as a foundation. NXP will offer the host processor of the platform, its high-performance S32 processor, with its safety critical ASIL D and ASIL B capabilities. This will help the platform tackle the requirements of automotive central computing and will target path planning functions. Kalray will deliver the world-class performance of its MPPA® processors to safely handle the machine learning aspects of perception.

The first example of this partnership will be the integration of Kalray's MPPA® processors into the NXP BlueBox, an embedded autonomous driving platform. This iteration will address autonomous challenges in power and safety with Arm®-based technology and will be designed to support open standards.

"We are happy to partner with Kalray to take on the safe performance challenges of increasingly autonomous driving," said Kamal Khouri, vice president & general manager, Advanced Driver Assistance, NXP. "Our platform offers the performance and functional safety needed for reliable autonomous driving as opposed to the risky and power-hungry consumer grade solutions that are currently being tested in vehicles."



The strategic partnership between NXP and Kalray will bring multiple benefits to the development and industrialization of autonomous vehicles in areas such as safety, software, open standards support, performance per watt, architecture flexibility, and scalability. The new solution will offer sophisticated safety technologies in a "Safety Co-Pilot" configuration that leverages the strengths of each company. In addition, the modularity and scalability of the combined architecture will offer the partners a roadmap with flexible opportunities for rapidly scaling performance.

"We are pleased to announce this strategic partnership with NXP, the leading supplier of semiconductors to the automotive industry," said Eric Baissus, CEO, Kalray. "Safety is unquestionably the single most pressing issue holding back the momentum of the autonomous vehicle movement globally, and we are confident that by leveraging the strengths of both companies we can overcome this critical industry challenge and provide a leading solution to the market." **DEMO at CES 2019: running prototype with Baidu's Apollo open automotive software solution.**

About NXP Semiconductors

NXP Semiconductors N.V. (NASDAQ:NXPI) enables secure connections and infrastructure for a smarter world, advancing solutions that make lives easier, better and safer. As the world leader in secure connectivity solutions for embedded applications, NXP is driving innovation in the secure connected vehicle, end-to-end security & privacy and smart connected solutions markets. Built on more than 60 years of combined experience and expertise, the company has over 30,000 employees in more than 30 countries with revenue of \$9.26 billion in 2017. **More:** www.nxp.com

About Kalray

Kalray (Euronext Growth Paris — FR0010722819 — ALKAL) is the pioneer in processors for new intelligent systems. As a real technological breakthrough, "intelligent" processors have the capability to analyze on the fly, and in an intelligent manner, a very large amount of information, and to make decisions and interact in real time with the outside world. These intelligent processors will be deployed extensively in fast-growing sectors, such as new-generation networks (intelligent data centers) and autonomous vehicles, as well as healthcare equipment, drones, and robots. Kalray's offering encompasses both processors and complete solutions (electronic boards and software). Created in 2008 as a spin-off of CEA ("Commissariat à l'énergie atomique et aux énergies alternatives", the French Alternative Energies and Atomic Energy Commission), Kalray serves customers such as server manufacturers, intelligent system integrators, and consumer product manufacturers, including car makers. **More:** www.kalrayinc.com



World's first TPM for cybersecurity In the connected car



Munich, Germany – 24 October 2018 – Infineon Technologies AG (FSE: IFX / OTCQX: IFNNY) is enabling a crucial step toward greater cybersecurity in the connected car. The Munich-based company is the world's first semiconductor manufacturer to put a Trusted Platform Module (TPM) specifically for automotive applications on the market. The new OPTIGA™ TPM 2.0 protects communication between the car manufacturer and the car which increasingly turns into a computer on wheels. A number of car manufacturers already designed in Infineon's OPTIGA TPM.

The TPM is a hardware-based security solution that has proven its worth in IT security. By using it, car manufacturers can incorporate sensitive security keys for assigning access rights, authentication and data encryption in the car in a protected way. The TPM can also be updated so that the level of security can be kept up to date throughout the vehicle's service life.

"As a computer on wheels, the connected car benefits from the experience of the IT industry," said Martin Brunner, expert for automotive security at Infineon. "In the complex interplay between software, network and cloud, security hardware creates the solid foundation for secured communication. Backed by Infineon's many years of expertise in the automotive and security areas, we have optimized the OPTIGA TPM for automotive applications. It is easy to integrate and substantially increases cybersecurity – from production to recycling of connected cars."



Infineon has decades of experience in automotive electronics and hardware-based security. With the new OPTIGA TPM 2.0 and its AURIX™ family of microcontrollers, Infineon provides a comprehensive portfolio of application-specific security solutions that address key challenges in the automotive industry. At the first Infineon Automotive Cybersecurity Forum in Munich on 25 October 2018, experts from the automotive as well as security industry will discuss how to apply the expertise gained in other areas to connected cars.

Secured communication throughout the vehicle's service life

Mobility of the future requires the exchange of huge volumes of data. Cars send real-time traffic information to the cloud or receive updates from the manufacturer "over the air", for example to update software quickly and in a cost effective manner. The senders and recipients of that data, whether car makers or individual components in the car, require cryptographic security keys to authenticate themselves. These critical keys are particularly protected against logical and physical attacks in the OPTIGA TPM as if they were in a safe.

Furthermore, incorporating the first or initial key into the vehicle is a particularly sensitive moment for car makers. When the TPM is used, this step can be carried out in Infineon's certified production environment. After that, the keys are protected against unauthorized access; there is no need for further special security precautions throughout the various stages of the – often globally distributed – value chain.

The TPM likewise generates, stores and administers further security keys for communication within the vehicle. And it is also used to detect faulty or manipulated software and components in the vehicle and initiate troubleshooting by the manufacturer in such a case.

Whereas a vehicle has an average service life time of 12 to 15 years, security features and algorithms keep on being developed and enhanced on a continuous basis. The TPM's firmware can be updated by remote access so the security it offers can be kept up-to-date – including the cryptographic mechanisms (cryptoagility).

Technical information and availability

The new OPTIGA TPM 2.0 SLI 9670 from Infineon is a plug & play solution for automotive applications. It is especially suited for use in a central gateway, the telematics unit or the infotainment system of the vehicle.

The SLI 9670 consists of an attack-resistant security chip and high-performance firmware developed in accordance with the latest security standard. The firmware enables immediate use of security features, such as encryption, decryption, signing and verification. The TPM can be integrated quickly and easily in the system thanks to the open source software stack (TSS stack) for the host processor, which is also provided by Infineon. It has an SPI interface, an extended temperature range from -40°C to 105°C and the advanced encryption algorithms RSA-2048, ECC-256 and SHA-256.

The new TPM complies with the internationally acknowledged Trusted Computing Group TPM 2.0 standard, is certified for security according to Common Criteria and is qualified in accordance with the automotive standard AEC-Q100. It is available now available and manufactured in security-certified production facilities of Infineon Germany and the Philippines. Further information is available at www.infineon.com/Auto-TPM

About Infineon

Infineon Technologies AG is a world leader in semiconductor solutions that make life easier, safer and greener. Microelectronics from Infineon is the key to a better future. In the 2017 fiscal year (ending 30 September), the Company reported sales of around €7.1 billion with about 37,500 employees worldwide. Infineon is listed on the Frankfurt Stock Exchange (ticker symbol: IFX) and in the USA on the over-the-counter market OTCQX International Premier (ticker symbol: IFNNY).

Bosch Sensortec

Ultra-low power accelerometer BMA400 from Bosch for IoT and wearables



Bosch Sensortec's BMA400, an ultra-low power MEMS acceleration sensor for IoT and wearable applications, is now available worldwide through distributors.

- No-compromise performance for smart homes and always-on wearables
- Ultra-low power consumption and intelligent power management
- Honored with CES 2018 Innovation Award
- Available worldwide through Bosch Sensortec's distributors



2 x 2 x 0,95 mm

Thanks to its low current consumption, embedded plug-and-play step counting and activity recognition features, the **BMA400** substantially extends battery lifetime of wearables such as smart watches and fitness trackers. It can wake up automatically when it detects motion and returns to sleep mode when the movement ends, thus avoiding waking the main application processor. This feature significantly reduces battery consumption to extend charging intervals.

For Internet of Things (IoT) applications like indoor climate systems and security systems in smart homes, the BMA400's continuous measurement capabilities and always-defined bandwidth make it an ideal choice for hassle-free usage. For example, it can avoid false alarms, by distinguishing between genuine alarms like broken glass and false signals coming from random vibrations. Its ultra-low power consumption means replacing batteries is a far less frequent chore for homeowners. These best-in-class qualities led to the BMA400 winning the prestigious CES 2018 Innovation Award in the category Embedded Technologies.

Ultra-low power plus high performance

Until recently, engineers specifying an accelerometer have had to choose between low power and high performance. Now, the BMA400 has changed that by combining ultra-low power consumption, outstanding performance and advanced features, such as a built-in step counter that uses only 4 μA . The BMA400 draws ten times less current than existing accelerometers. Hence, there is no longer any need for design compromises.

Additional product features

With its built-in voltage regulator, the BMA400 delivers stable performance over a wide supply voltage range. It offers flexible device tuning for power consumption, noise and ODR (output data rate) parameters. The BMA400 has a current consumption of 14 μA at highest performance, continuous measurement and a noise density of $180\mu\text{g}/\sqrt{\text{Hz}}$. This drops to just 1 μA and below in the device's ultra-low power self-wake-up mode. The compact size of only $2.0 \times 2.0 \times 0.95 \text{ mm}^3$ and the integrated plug-and-play step counter make the BMA400 easy to design into new types of wearables such as regular watches and jewelry.

Further information on the BMA400 can be found in the BMA400 video at the Bosch Sensortec YouTube channel.

