

# FutureHorizons



The Global Semiconductor Industry Analysts

## FH MONDAY

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### Sensor Fusion Maps the Road to Full Autonomy

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### Apple Finally Joins The 5G Party

In its second round of announcements in less than a month, Apple introduced a new HomePod Mini smart speaker and its first lineup of 5G phones that range from the iPhone 12 mini to the iPhone 12 Pro Max. Breaking it down to the technology level, this included a new intercom app, new OLED displays, a lidar sensor, and the new A14 Bionic mobile SoC.

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### ADI Teams with Microsoft on ToF for 3D Imaging

Analog Devices (ADI) and Microsoft have teamed up to produce time-of-flight (ToF) 3D imaging solutions with the goal of providing greater accuracy regardless of scene conditions. ADI will leverage Microsoft's Azure Kinect 3D ToF technology and add its technical IC and system expertise to create solutions that would be easier to adopt.

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### TALK TO US



### Minimizing Electrolytic Capacitor Size with Tiny ICs

Power Integrations has announced its latest MinE-CAP solution for high power density AC-DC converters with universal input. MinE-CAP technology reduces the size of high-voltage electrolytic capacitors (bulk capacitors), also reducing the overall size of the adapter by up to 40%.

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### EVENTS

#### [Silicon Chip Industry Seminar](#)

-9 November 2020- London UK

#### [Industry Forecast Briefing](#)

- 12 January 2021- London UK

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### Applied Materials and BE Semiconductor Partner

Applied Materials and BE Semiconductor Industries announce that they are to develop the "industry's first complete and proven equipment solution for die-based hybrid bonding."

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## **Sensor Fusion Maps The Road To Full Autonomy**

Autonomous vehicles need sensors such as camera, radar, and LiDAR units to see their surroundings. AVs also need computing power and artificial intelligence to analyze multidimensional and sometimes multisource data streams to provide the vehicle with a holistic and unified view of the environment in real time. If sensor fusion maps the road to full autonomy, many technical challenges remain.

In a presentation at AutoSens Brussels 2020, Norbert Druml, concept engineer at Infineon Technologies Austria, shared the ambition of the €51 million European research project dubbed Prystine — Programmable Systems for Intelligence in Automobiles. Druml showcased some of the key results achieved so far in the fields of fail-operational sensing, control, and AI-controlled vehicle demonstrators beyond Level 3 autonomy.

## **Apple Finally Joins The 5G Party**

In its second round of announcements in less than a month, Apple introduced a new HomePod Mini smart speaker and its first lineup of 5G phones that range from the iPhone 12 mini to the iPhone 12 Pro Max. Breaking it down to the technology level, this included a new intercom app, new OLED displays, a lidar sensor, and the new A14 Bionic mobile SoC.

Being just another smart speaker in an overly crowded space, the announcement of the HomePod Mini was not overly exciting. It's a small sphere, has a fabric mesh cover, and uses Siri — enough said. Well, almost. Apple did integrate one new feature called “intercom” that allows the user to broadcast a message to other Apple devices. It also allows the recipients to respond. So, instead of yelling through the house, Apple users can now have Siri do it for them. Of course, if your teenager is wearing a non-Apple headset playing a game on her computer or game console, the intercom feature is just as ineffective as yelling.

## **ADI Teams with Microsoft on ToF for 3D Imaging**

Analog Devices (ADI) and Microsoft have teamed up to produce time-of-flight (ToF) 3D imaging solutions with the goal of providing greater accuracy regardless of scene conditions. ADI will leverage Microsoft's Azure Kinect 3D ToF technology and add its technical IC and system expertise to create solutions that would be easier to adopt. The goal is to reach a broad audience in sectors such as Industry 4.0, automotive, gaming, augmented reality, and computational photography and videography.

Industry market analysts estimate strong growth for 3D imaging systems used in challenging environments, and where cutting-edge applications such as human collaboration robots, room mapping, and inventory management systems are required to bring Industry 4.0 to life. ToF applications are also needed to create safer automotive driving environments with occupancy detection and driver monitoring capabilities.

## **Minimizing Electrolytic Capacitor Size with Tiny ICs**

Power Integrations has announced its latest MinE-CAP solution for high power density AC-DC converters with universal input. MinE-CAP technology reduces the size of high-voltage electrolytic capacitors (bulk capacitors), also reducing the overall size of the adapter by up to 40%. The MinE-CAP device also drastically reduces the inrush current, making NTC thermistors unnecessary, thus increasing system efficiency and decreasing heat dissipation.

Electrolytic capacitors take up a good amount of space in AC/DC power supplies, very often limiting the form factor of an overall battery charger. The goal of Power Integrations is to use low-voltage capacitors for much of the energy storage, thus reducing the volume of these components.

## **Applied Materials and BE Semiconductor Partner to Develop Chip Integration Technology**

As part of the agreement announced in late October, Applied Materials and BE Semiconductor will work together to develop the industry's first complete and proven equipment solution for die-based hybrid bonding, an emerging chip-to-chip interconnect technology that enables heterogeneous chip and subsystem designs for applications in artificial intelligence, 5G, and high-performance computing. The Applied Materials press release explains that the semiconductor industry is moving toward heterogeneous design and chip integration as traditional 2D scaling lags. This shift may be a way to improve performance, power, area/cost, and time-to-market.

It goes on to highlight how the California-based leader in materials engineering solutions has collaborated with BE Semiconductor to form the so-called Hybrid Bonding Center of Excellence (HBCE), which will focus exclusively on the next-generation chip-to-chip bonding technology.