## 3D Optical Sensing Ready for Prime Time

The 3D optical sensing market is seeing a vibrant renovation triggered by Apple. Which will be the next end products enhanced by this technology? How other market segments will approach and eventually use this technology? Who in the supply chain benefits more and who has more chance to succeed?

**Author:** Manuel Tagliavini, IHS Markit

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## Battle of the User Interface

Digital devices have pervaded our daily lives. From smart speakers, smartphones and wearables to smart security systems, TV remotes, VR goggles and AR eyewear, we rely increasingly on intelligent electronic products. With voice, touch and gesture all possible user interfaces at our disposal, what’s the best way to interact with them and who will win the user interface wars of 2019 and beyond?

**Author:** Vesper

**First Draft Due:** In revision at Vesper

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## What MEMS & Sensors Suppliers Need to Know about FPHE

Wouldn’t it be great to leverage FPHE to get MEMS devices to market faster and at lower cost? Traditional MEMS and sensors suppliers who want to profit from FPHE must navigate carefully before jumping in. What are the top 5 things that MEMS & sensors suppliers need to know about FPHE to start on the best path forward?

**Author:** Mary Ann Maher, SoftMEMS with Chip Spangler, Aspen Microsystems

**First Draft Due:** In discussions with Mary Ann

**Publication Date:** TBD

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## Feeding the World One Sensor at a Time

While the world’s major food-producing nations produce enough food to feed everyone on the planet, the human race needs to overcome significant hurdles to achieve this lofty goal. Leaving the significant geo-political barriers aside for a moment, let’s look at the sensing technology that is already in use to improve agricultural production as well as food storage and safety. Environmental sensors monitor temperature, humidity, soil, water quality, food toxins and bacterial disease. Combine these with sensors used for asset-tracking and sensors used for navigation in varied environments/conditions and we have the key sensing technologies in place to make a real difference. What are some of the use cases that define this new potential reality for addressing human hunger?

**Author:** Open

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## Smart Textiles Coming to a Body Near You

Your shirt may one day know more about you than your doctor. What was your average heart rate when you exercised and how long did it take you to return to baseline? You’re allergic to shellfish and peanuts; does any of the Thai take-out your co-workers ordered for lunch contain any? Forest fires are generating smoky conditions near you; are there toxins in the smoke that could make you sick?

Of the new environmental sensors now coming to market, which are finding their way into smart textiles and other wearables — and how will they alter the fabric of our future?

**Author:** Feeding the World One Sensor at a Time

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## Can Sensors Save Humanity from the Zombie Apocalypse?

The truth is that the apocalypse might not be caused by zombies. It might be caused by a global pandemic, cyberattack-catalyzed war or even unchecked global warming. Even if you’re not a Sci Fi fan, chances are that large-scale life-threatening events will have an impact on human (and animal) life over the next 40 years. What can sensor suppliers do to mitigate the gravest threats to human and animal life on Planet Earth?

**Author:** Maria Vetrano, Vetrano Communications

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**Publication Date:** TBD

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## Standardizing MEMS Manufacturing Processes

Thousands of different MEMS devices populate hundreds of millions of consumer, automotive, medical, industrial and agricultural electronic systems. It’s incredible that we’ve achieved this level of success when MEMS manufacturing is anything but standardized. But we still have a long way to go. If we can figure out the manufacturing conundrum, MEMS might one day rival semiconductors in diversity of type and volume. How can suppliers leave the old one-product, one-process paradigm behind for standardized MEMS manufacturing processes?

**Author:** Christine Dufour, Jack Lapidus, Coventor

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## Taking Biomedical to the Next Level: What Suppliers Need to Know to Succeed

From tiny insulin pumps and heart monitors to miniature implantable deep brain stimulation (DBS) devices used to treat movement and major psychiatric disorders, MEMS and sensors are dramatically improving our experience with biomedical devices. What do suppliers need to know to tap this potentially lucrative high-value market?

**Author:** TBD

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<tr>
<td>The Future of Sight, Sound and Smell</td>
<td>MEMS &amp; Sensors are emulating and improving upon human sensing capabilities. Whether in an autonomous car or implanted in our retinas, imaging and light sensors help us to “see” the world around us. Better acoustic sensors help us to “hear” better as they improve our ability to process sound, even restoring hearing to those born without that ability. Electronic noses (e-noses) help us to “smell” what’s in our environment, potentially detecting explosive materials or illegal drugs. What can consumers expect from sensors that see, hear and smell in 2019 and beyond?</td>
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<td>Environmental Sensors for Indoor/Outdoor Navigation</td>
<td>From office buildings to urban canyons, how are sensors (pressure, ultrasonic and others) advancing the way drones, cars and robots navigate pathways with greater precision and efficiency?</td>
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<td>MEMS and Microfluidics for Drug Testing &amp; Delivery</td>
<td>Researchers are using MEMS and microfluidics to mimic human organs and tissues for drug testing and medication delivery. What are the potential advantages of such technologies and what resources are required to move from R&amp;D to commercialization?</td>
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<td>Let’s Get Chemical</td>
<td>What are the latest advancements in the chemical sensors that monitor our air and water quality? While some companies are deploying standalone devices, what will it take to integrate chemical sensors into consumer products such as smartphones or wearables?</td>
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<td>VR Gets Real</td>
<td>While tech entrepreneurs and established companies are making great strides in VR, VR is still far from a mainstream success. What can MEMS/sensors suppliers do to make VR a must-have rather than a nice-to-have system? How can our industry address VR’s barriers to more widespread adoption, e.g., physical discomfort, tethered gameplay, lack of realism, and cost?</td>
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