

## **Commercializing MEMS: A View from the Trenches**

MEMS has gone through a major transition within the last 4 years. For the first time, companies such as Robert Bosch, Knowles Acoustics, Avago, and ST Micro have announced cumulative shipments of over a billion units. This year, MEMS shipments are scheduled to total about 4% of the semiconductor industry; 25 years ago, this ratio was only 1%. The mobile market has caused MEMS yearly shipments to literally explode into the billions of units. The medical and healthcare markets are primed to accelerate MEMS shipments even further. Today, there are active discussions and conferences on "The Trillion Sensor Universe", which would be mostly MEMS devices. Within the past 4 years, the momentum behind MEMS has increased by an order of magnitude. At the same time, traditional venture funding of hardware start-ups, including MEMS, is at an all time low. How can we continue to ride the MEMS momentum in this atmosphere? We will talk about these and other issues regarding the commercialization of MEMS technologies.

### **Kurt Peterson**

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Kurt Petersen received his BS degree cum laude in EE from UC Berkeley in 1970. In 1975, he received a PhD in EE from the Massachusetts Institute of Technology. Dr. Petersen established a micromachining research group at IBM from 1975 to 1982, during which he wrote the review paper "Silicon as a Mechanical Material," published in the IEEE Proceedings (May 1982). This paper is still the most frequently referenced work in the field of micromachining and micro-electro-mechanical systems (MEMS). Since 1982, Dr. Petersen has co-founded six successful companies in MEMS technology, Transensory Devices Inc. in 1982, NovaSensor in 1985 (now owned by GE), Cepheid in 1996 (now a public company on NASDAQ: CPHD), SiTime in 2004 (still private), Profusa in 2008 (still private), and Verreon in 2009 (acquired by Qualcomm). All of these companies have become technical and commercial leaders in the field of MEMS devices and applications. In 2011, Dr. Petersen joined the Band of Angels in Silicon Valley. The Band is an angel investment group which mentors and invests in early stage, high-tech, start-up companies. Today, he spends most of his time helping and mentoring such companies. Dr. Petersen has published over 100 papers, and has been granted over 35 patents in the field of MEMS. In 2001 he was awarded the IEEE Simon Ramo Medal for his contributions to MEMS. Dr. Petersen is a member of the National Academy of Engineering and is a Fellow of the IEEE in recognition of his contributions to "the commercialization of MEMS technology".