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**TOPIC:**

System Scaling for Smart, Wearable, IOT and Medical Electronics; A Unique Opportunity for India

**ABSTRACT:**

Semiconductor and systems landscape is changing dramatically. ICs, on one hand, for the most part, are becoming commodities, providing much lower profit margins than ever before, leading to industry consolidation to less than five companies within the next decade, worldwide. In addition, the cost and complexity of transistor scaling is growing exponentially. The driving engines for electronic systems, on the other hand, are also changing dramatically to smart, wearable, wireless healthcare and wireless networks, requiring an entirely different vision and strategy than transistor scaling alone during the last 60 years. These systems must perform dozens of functions that include Wireless Electronics, Healthcare Electronics, Wearable Electronics, Sensor Electronics, Camera Electronics, 5G and mm-wave Electronics, Digital Electronics, MEMS Electronics, Photonics, Analog Electronics, Power Electronics, and many others, all in a thickness of 6000 microns.

This is more than Moore's Law, lot More than Moore's Law (MTM). It is System-Level Moore's Law (SLM); ready for exploration and commercialization with a market size as big as all the electronics to date.

This is a unique and unparalleled opportunity for India's science, technology, manufacturing and markets.

**PROFILE:**

Prof. Rao Tummala is a Distinguished and Endowed Chair Professor and Founding Director of 3D Systems Research Center, an NSF National Engineering Research center at Georgia Tech. He is well known as an industrial technologist, technology pioneer, and educator. Prior to joining Georgia Tech, he was an IBM Fellow, pioneering such major technologies as the industry's first plasma display and the first and next three generations of 100 chip integration electronics. At Georgia Tech, he is pioneering entire System-On-a-single-Package (SOP) compared to System-On-Chip (SOC) by the IC industry.

Prof. Tummala has published 500 journal and conference papers, holds 90 US patents, authored the first modern packaging reference book—Microelectronics Packaging Handbook (Van Nostrand, 1988), the first undergrad textbook—Fundamentals of Microsystems Packaging (McGraw Hill, 2001) and the first graduate textbook introducing System-On-Package technology. He is a Fellow of IEEE, IMAPS, and a member of the National Academy of Engineering in the U.S. and in India. Prof. Tummala was the President of both IEEE-CPMT and the IMAPS Societies. Prof Tummala is a distinguished Alumni of Indian Institute of Science, Bangalore.