

## **Use of the Roadmap (IRDS) Method to Overcome Industry Inflection Points**

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**Abstract:** In 1965 Gordon Moore, co-founder of Fairchild Semiconductors and also Intel Corporation, predicted that the number of transistors per die would double every year until 1975 if specific actions were taken to eliminate any inflection points. By 1975 data showed his predictions to be correct. He then predicted that the number of transistors would double every two years for the foreseeable future if appropriate actions were taken. Following Gordon Moore's demonstrated success of the roadmap methodology, the National Technology Roadmap for Semiconductors was formed in 1991; the roadmap became international (ITRS) in 1998. Following the ITRS recommendations the semiconductor industry introduced in a timely fashion High-K/Metal-Gate and FinFET into manufacturing. Beginning with 2016 the scope of the roadmap was extended to also include systems trends. New recommendations for actions to be taken in the next 15 years have been formulated.

**Bio:** Dr. Gargini was born in Florence, Italy and received a doctorate in Electrical Engineering in 1970 and a doctorate in Physics in 1975. He was a researcher at Stanford University and at Fairchild Camera and Instrument in Palo Alto in the early 70s. He joined Intel in 1978, responsible for MPU technology (e.g., 80286 and the 80386). In 1985, he headed the first submicron team. In 1996, he became Director of Technology Strategy, Intel Fellow; responsible for worldwide consortia research from 1993 to 2012; member of Sematech, SRC and SIA Boards, Chairman of the NRI. Dr. Gargini led the industry-wide conversion to 300mm wafers as Chairman of the I300I initiative. From 1998 to 2015, Dr. Gargini was Chairman of the ITRS sponsored by the WSC. Since 2016 he is the Chairman of the IRDS sponsored by IEEE. He is co-chairman of the EUVL Symposium. Dr. Gargini was inducted in the VLSI Research Hall of Fame in 2009, IEEE Fellow in 2009, IEEE Life-Fellow in 2020 and JSAP Fellow in 2014. He is a member of the Leadership Team of the International Network Generations Roadmap (INGR), an IEEE initiative.