



**Southeastern Michigan Section  
"Chapter IV" Speaker Series  
Mon, Apr. 6, 2009, 5:00 pm  
Appetizers and Networking at 4:30 pm  
Room #1005, EECS Bldg,  
North Campus, University of Michigan  
1301 Beal Ave, Ann Arbor, MI**



## **Heterogeneous Wireless Communication Devices – Present and Future**

**Vijay Nair**

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Distinguished Microwave Lecturer, IEEE MTT Society

**Abstract:** Convergence of communication and computing technologies is rapidly changing the requirement of wireless devices. While wireless wide area network (WWAN) based on cellular radios was evolving, a new set of wireless LAN networks which are fundamentally different from cellular networks emerged. Devices for applications in the wireless LAN networks (WLAN), wireless personal area networks (WPAN) and wireless metro area networks (WMAN) are being deployed in increasing numbers. Bluetooth and Ultra Wideband (UWB) technologies have been introduced for high-bandwidth wireless connectivity in personal area networks. Location identification technologies like GPS are getting integrated with wireless products as well. There is no doubt that tomorrow's network environment will be extremely heterogeneous.

However, network heterogeneity also brings with it enormous challenges, as devices will have to be extremely capable in order to intelligently roam around heterogeneous networks operating under a wide range of protocols. As network diversity increases the important challenges of the future communication devices will be coexistence, interoperability and seamless transfer among networks. The vision for ubiquitous computing sees a computational environment where a computer makes decisions and adapts its behavior without being explicitly asked to do so.

This talk will elaborate the vision, the attributes and technical challenges of heterogeneous wireless communication system. In particular advancements of RF component technologies from antennas to baseband ICs will be elucidated. The evolution of different standards and their impact on the mixed network communication will also be discussed.

**Speaker's Biography:** Vijay Nair joined Intel Corporation in September of 2003. His current research focus is in the integration of RF and digital subsystems and antennas in small form factors for portable mixed network platforms. Prior to this he led a team in innovative antenna designs for laptops and other portable devices. His research areas encompass RF and microwave devices, monolithic ICs, antennas and wireless subsystems. Before joining Intel, he was with Motorola Inc. where he held various positions including Research Manager and Fellow of Member Technical Staff. He was the technical manager of the RF Technologies Group that developed low power devices, high efficiency power amplifiers, and MMICs for communication applications. He was Motorola's technical lead for the collaborative research with the University of Florence, Italy, on the development of multifunctional quantum MMICs and he also led collaboration with Arizona State University in active integrated antenna research. His work at Motorola was highlighted by his receiving of Motorola's "Distinguished Innovator" award, Gold Quill award and "Product & Process Technology" award. He holds fifteen (15) US patents. He has published over hundred (100) papers in refereed journals and presented papers in many international conferences and workshops. He has written several chapters for technical books and has co-authored a book titled "RF and Microwave Circuit and Component Design for Wireless Systems".

Vijay was elected as an IEEE Fellow in 2000 in recognition of his work in the development of low power device and integrated circuits. He was elected by MTT society as "Distinguished Microwave Lecturer" for a three year term starting January 2007. He is currently the chairman of Inter-Society Committee of IEEE MTT Society's Administrative Committee. He was the chairman of the Meeting and Symposia committee of MTT society from 2005-2008. He is a member of the Advisory Board and Steering Committee of the RFIC symposium. He also serves as a member of the Technical Program Committee of the IEEE International Microwave Symposium (IMS). He is the chairman of the IEEE International Microwave Symposium to be held in 2015 in Phoenix, Arizona, USA. He holds a masters degree in Physics and in Electrical Engineering from University of Minnesota.

**Public Invited**

**Appetizers and Networking at 4:30 pm**