Electronic product development is complex. Some of the latest consumer electronic devices like mobile internet devices require a combination of clear market knowledge, creative interface design, system level modeling spanning hardware and software, complex SoC tape outs and innovative product packaging to succeed.

This tutorial aims to bring together speakers with expertise with the latest best practices in the industry in these areas to give a broad overview of cutting-edge technologies and design flows to the participants.

The tutorial will be for 3.5 hours.

### Program Overview

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Achieving Product Success in Electronic Product Development

Presented By IEEE Hyderabad Section
Supported By Sankhya Technologies

KEY SPEAKERS

Title of The Talk: Building Innovation Platforms for Consumer Electronic Product Development

Speaker: Gopi Kumar Bulusu

Bio: Gopi Kumar Bulusu is the founder member and CEO at Sankhya Technologies Private Limited. He is an acknowledged expert in the areas of distributed computing and embedded systems. He is a regular speaker at industry and academic events on a wide range of topics. Gopi is an active member of IEEE and presently serves as the SubSection chair for the IEEE Vizag-Bay SubSection. He is a member on the editorial advisory board, EETimes India. His key interests are in the area of creating innovative platforms that bring the power and efficiency of architectural model driven solutions to IT system designers and business users. He was a senior software engineer in the embedded software division of Mentor Graphics Corporation, where he was a member of a core team that created one of the industry's first C++ compilers for Motorola 68k processors. Gopi's work at Mentor resulted in 2 US patents. He holds 4 granted US patents in addition to several pending patent applications.

Abstract: Consumer electronic devices such as smart phones, mobile internet devices, smart television sets, home devices are driving convergence of computing, networking, storage, media and communications to deliver emerging requirements of the consumer in the areas of education, work, food and healthcare for hundreds of millions of consumers around the globe. Building new successful consumer electronic devices is complex, amongst the most challenging and rewarding of the industrial activities today.

How can an organization or development team transform their understanding of consumer behavior and consumer needs into cutting-edge solutions delivered to the market profitably and ahead of competition? How can an organization attain leadership in the market? This talk will focus on discussing the principles of system level design, application of system level design to consumer electronics and the use of system level design platforms like Teraptor for building design innovation platforms.

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Title of The Talk: Taping Out Complex SoC Designs

Speaker: Ramadas Rajagopal

Bio: Ramadas Rajagopal is a Sr. Account Technical Manager at Magma Design Automation India Ltd. He graduated from NIT, Calicut and currently heads digital application engineering team of Magma India. He has been in the industry for over 11 years and has worked on almost all domains of SOC design including synthesis, DFT, Timing analysis and is an expert in Physical Design. Before joining Magma in 2004, Ramadas was Sr. Design Engineer with Wipro Technologies.
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Title of The Talk: Innovative User Interface Design

Speaker: Dr. S. Ghosal

Bio: Dr. S. Ghosal currently heads NID’s International Collaborative R&D. From May 2010 till December 31 2010, Dr. Ghosal, was in his Professional Leave from NID and was a Visiting Professor, Research & Graduate Studies, Ontario College of Art & Design University, Toronto. During the Canadian University Presidents’ delegation to India (November 2010), Dr. Ghosal was OCADU’s Strategy Officer, Internationalization: India.

http://www.ocad.ca/about_ocad/articles/stories/20101109_aucc_india.html

After a stint of 16 years at NID’s Main Campus at Ahmedabad, Dr. Ghosal was entrusted with the task of setting up NID’s R&D Campus at Bangalore & in early 2002, he shifted his base from Ahmedabad to Bangalore & was instrumental in setting up the Campus in Bangalore which was inaugurated in early 2006. Since then, he headed the NID’s R&D Campus at Bangalore as its Research Group Head and subsequently as its Acting Dean; - where the mandate was to initiate specialized Post Graduate Programs in Design, research driven design developments for various sectors of the industry and economy including the rural sector, the upcoming technology sectors such IT and e-enabled products and process developments etc.

He joined NID in the year 1986 in the Faculty of Industrial Design and was instrumental in developing series of course modules in Ergonomics for a large number of design disciplines. In Education, he has been instrumental in taking students for Industry sponsored and real life projects. He was instrumental in developing four IT integrated Post Graduate Programs – namely, ‘Software & User Interface Design’, ‘Information & Digital Design’, ‘Design for Digital Experience’ and ‘Information & Interface Design’.

Simultaneous to teaching, during mid-1998 to mid-2000, he headed NID’s training activities as the Activity Vice Chairman (Training), Outreach Programs. During this time, apart from coordinating a large number of training programs for various industries he also coordinated three national workshops in Industrial Design for Electronic Products and Consumer Products and one international Conference on Product Safety. He was the first person at NID to introduce and initiate Certificate Programs for the Industry and Academia.

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Immediately after this, during mid-2000 to Jan.2002, he headed NID’s extension activities as the Activity Chairman of the Institute’s Outreach Programs. During this period he was also involved in a large number Institution building projects and design interventions in various socio-economic clusters ranging from electronic products, machine tools, handlooms & handicrafts sectors etc.

He has guided more than 75 projects on Interface Design and Product Development ranging from Consumer durables, Industrial Machines, Interface Design, Products for the Defense sector including simulators and aircraft interiors, cockpits etc.

Academically, Dr. Ghosal holds a Ph.D (specialization in Ergonomics) from the University of Calcutta and a Post Graduate Diploma in Management of Technology from the All India Management Association, New Delhi. He also has a Certificate in Community safety Promotion – which was offered through a fellowship from the World Health Organization, Karolinska University & the Ministry of Health, Govt of Thailand.

As academic, research and professional accolades, he has been the recipient of a number of International scholarships from the World Health Organization, Govt. of Sweden, International Council of Societies of Industrial Design, the British Council, Association of Overseas Training Scholarship, Japan.

His name is mentioned by APJ Abdul Kalam, the former President of India in his Convocation speech at NID’s 25th. Convocation.

Currently, Dr. Ghosal is a member of the Advisory Council to the Top Management of LG Electronics India Limited, Monad University, Edumedia & USID Foundation.

Dr. Ghosal’s areas of interest in education, research and consultancy range from User Interface Design, Management of R&D and Product Innovation, Strategic intervention of design in new business developments, process and systems development and technology integration in Design. He has also led large number of Innovation workshops for Companies, Organizations, Institutes at the Private sector and in the Govt. sector.

With these research areas at hand and with a number of publications and fellowships, he has also traveled though various Institutes and organizations in Japan, USA, Canada, UK, Hungary, Singapore, Thailand & Sweden.

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Abstract:

All the electronic products work as a ‘system’ on its own; whereby, the components of such a system works and interacts with each other to achieve the system’s objective. Such a system is an entity that exists to carry out some purpose. While there are various factors which contribute to the performance reliability of this system, the fact of the matter is that, any of such system interacts with some other system and / or with a human being – the operator or the user – creating a man-machine system. In such a scenario, a larger ‘system’ evolves which comprises humans, machines and other things that work & interact together to accomplish some goal which the same components cannot produce independently.

Now, analogically, a human being is also a system -wherein all the sub-systems work together in close coordination with each other to sustain, maintain the performance consistency of the whole system – i.e. the most optimum performance of a human being. While doing so, all the interactions of all the subcomponents of the human body go through a ‘positive – negative feedback cycle’ to retain the optimum balance. Such cybernetic principals are also applied in designing electronic products.

Now, while individual respects are to be given to the performance capabilities of an electronic components / products and a user, the question becomes ‘how much to depend on individual capabilities and how much to depend on each other. Here an understanding of ‘Allocation of Function’ becomes important.

At this stage, an understanding of ‘reliability – both at the component level and at the systems level’ comes important. To explain, if the component / product reliability is scored or valued at 0.8 and the reliability of the user / human being is valued at 0.8, the (interaction and performance) reliability of the Man – Product System becomes (.8 X .8 =) 0.64 – which is lower than individual reliability scores. Here comes the importance of understanding the fundamentals, the purpose and application methodologies of User Interface Design to ensure the best reliability in Human-Product Interaction – which ultimately leads to ‘satisfaction of product use’ and provides the user with ‘a better experience’.

The presentation and the tutorial workshop will deliberate on the above and will take the participants through the process of how to apply such principles and methodologies through crash assignments.

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