



WHERE ENTERTAINMENT, TECHNOLOGY
AND BUSINESS CONVERGE

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ET1: Emerging CE Technology- A Preview of the IEEE ICCE's Most Interesting Technologies



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Conference Program



2009 International CES® JANUARY 8-11



CESweb.org



Outline

- About the IEEE and CESoc
- About the ICCE
- Summary presentations previewing key technology trends covered at ICCE

Thomas Coughlin Coughlin and Associates	Topic Area: Storage systems in CE and Audio/Video recording
Uwe Kraus University of Wuppertal	Topic Area: Digital Receivers and Wireless Technologies
Scott Linfott De Montfort University	Topic Area: Video and Image Processing and Distribution
Atul Batra Marvell Semiconductors, Inc.	Topic Area: Display systems and Human-Computer Interaction
Stuart Lipoff IP Action Partners	Topic Area: Telecom and Other Emerging Technologies

- **Moderated Q&A will follow the presentations**



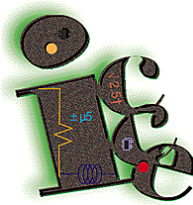
About the IEEE

- The non-profit Institute of Electrical and Electronics Engineers, Inc (IEEE) is the world's leading professional association for the advancement of technology.
 - >375,000 members including nearly 80,000 student members in more than 160 countries
 - 38 societies and 7 technical councils representing the wide range of technical interests
 - Nearly 1,300 standards and projects under development
 - More than 1.7 million documents in the IEEE/IET Electronic Library
 - Publishes a total of 144 transactions, journals and magazines
 - Sponsors more than 850 conferences annually
- The IEEE Consumer Electronics Society is one of the 38 IEEE societies with global representation by 3,500 members from Asia, Europe, North America, and R.O.W.
 - Publishes the IEEE Transactions on Consumer Electronics
 - The IEEE Consumer Electronics Society Newsletter
 - Sponsors two major consumer electronics conferences: ICCE and ISCE
 - Represents IEEE interests on standards committees including the Advanced Television Systems Committee (ATSC)



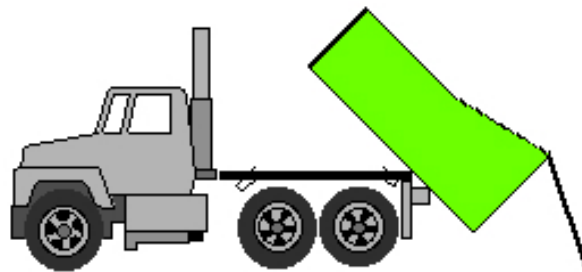
About the ICCE

- For over a quarter century The Institute of Electrical and Electronic Engineers (IEEE) Consumer Electronics Society has hosted the scientists and engineers from the world's leading consumer electronics companies at The International Conference on Consumer Electronics (ICCE).
 - 35 conference sessions Starting Monday through Wednesday
 - 4 poster sessions
 - 4 Keynote presentations
 - 4 tutorial sessions starting Sat Afternoon and All day Sunday
 - Human Interface Design
 - The 3D Graphics Pipeline from an OpenGL ES Perspective
 - Architecture Trade-Offs for Embedded Audio/Video Processing
 - Optical Storage
 - The Connected DVR
 - Vibrant Picture Quality Enhancement for Display Systems
- The ICCE looks at trends, technologies, and product developments that are typically 5 years or more from the marketplace and is an excellent venue providing a peak of the future of consumer electronics



ICCE 2009 Theme

This year's theme of Software Configured Devices is represented within both regular sessions as well as in a special session



**Firmware
Updates**

**Applications
Software**

Music

Maps

**New
Features
Ringtones**

**User
Interface**





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Digital Storage in Consumer Electronics



Tom Coughlin
Coughlin Associates
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Trends in CE Storage at the ICCE (1)

- Storage capacities continue to grow for HDDs, flash memory and optical discs
- Content stored on more devices in and around the home requires synchronization and management
- Common consumer recording functions are being built into more and more applications as well as network access of content
- Limit of performance and greater integration of functions on electronics will be explored at the ICCE



Trends in CE Storage at the ICCE (2)

- Some papers/posters at ICCE discuss life log devices (used to record user activities during the day) and their use which could drive significant growth in personal content
- The creation of metadata (information about recorded content) and the ability to automatically find content based upon analysis of images, audio and other sensory input are becoming critical with the growth of content, particularly user generated content
- Set top boxes are evolving to become critical network elements for content in the home, and file system architectures will be described at ICCE to help navigate and enjoy this content



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Digital Receivers and Wireless Technologies

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Digital Receivers

- Digital TV Receivers for Single Carrier Systems (ATSC) and Multicarrier Systems, OFDM (e.g. DVB)
- Multistandard Receivers for Worldwide Reception
- Digital Receivers for Mobile Reception (Diversity)
- Problems Discussed: Multipath Propagation, Interferences, Synchronization, Costs Reduction

4 Sessions on Digital TV Receivers



Wireless Technologies

- Mobile ZIGBEE Systems for Healthcare
- Wireless Videoservices over WIMAX Networks
- Inhouse Networks
- MIMO Broadband Wireless Networks for Video Applications

3 Sessions on Wireless Services and Networks



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Video/Image Processing and Distribution



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Video/Image Processing

- Transcoding
 - MPEG-2 to H.264
 - 2-D to 3-D
 - Frame rate conversion
- Lossless Image compression
- Video noise reduction



Media Distribution

- Automatic Content Description
 - Personalised EPG
 - Audio/Video Recommendation systems
- Content security
- Ultra-high Definition distribution
- HDTV over wireless networks



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Display Systems & Human-Computer Interaction



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Emerging Trends in Display Systems

- 3D Displays
- 4K x2K display for U-HDTV
- Flexible, Lighter, thinner, brighter, & faster displays for supporting Anywhere, Anytime and Anysize displays systems
- Frame Rate Conversion (50/60Hz, 100/120Hz, 200/240Hz)
- LED /Laser based lighting to support green initiative and wide color gamut
- Compact programmable network portable projectors
- Information terminals with Touch Screen displays to display and receive the information at the same time



Emerging Trends in Human-Computer Interaction

- Usable user interfaces
- Adaptive User Interfaces for Interactive systems
- Audio enhancements with GUI for handheld devices
- Universal systems with Global User Interface for all
- Useful technologies for health care, automobile and aerospace industries
- Novel input devices for interactive systems to address search strategies
- New techniques to display lot of information on small screens for mobile phones and handheld device
- New approaches to ensure privacy and security



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Emerging Technologies & Telecom



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IPaP
IP Action Partners

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Emerging Technologies

- Scope of CE expanding well beyond A/V
- Sessions include: Personal healthcare (2), Digital video networks (1), Human Computer interaction (1), Video content analysis (1), Reconfigurable CE devices (1), Secure programable systems (1), Automotive AV & networking, 3D/Gaming (1)



Telecom

- In addition to wireless, poster sessions include various non-wireless telecom topics
- Lawful intercept for law enforcement
- Internet appliance packet filtering
- End to end QoS in IMS networks



Q&A TIME

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- **Moderated Q&A now follows the presentations**