Next Generation User Interface Technology for Consumer Electronics

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As the power and complexity of consumer electronic devices continues to increase, the potential for a more enthralling, visually exciting and compelling user experience also increases. The purpose of this panel is to investigate the application of existing tools and techniques from various disciplines within the SIGGRAPH community to the next generation of consumer devices.

Given the power of the CPUs and graphics engines being designed into the next generation of devices is it possible/meaningful/useful/appropriate to exploit such technologies as:

- OpenGL/DirectX
- Game Engines
- Parallel processing
- Haptic Devices
- Augmented Reality
- Story Telling Interactivity
- Scientific Visualization
- Animation

As we prepare to step into a new world of human interaction with electronics devices in our daily lives, we must find new ways to create an effective and enjoyable user experience. It is our belief that the SIGGRAPH community is uniquely positioned to influence the interaction between consumers and their home environments.

Background Information

John Card II

Position Statement

Over time, home entertainment systems have begun to act like client-server, graphically controlled, broadband-attached, multi-computer, networked systems. Consumer electronic (CE) devices from many different manufacturers may be assembled by the customer for the services delivered, not for total cost of operation. These CE devices will need to cooperate if consumers are going to be pleased by their choices; cooperate both in enabling the content experience, and in sharing user interface elements - screens, remote controls, keyboard, speakers, flashing lights, bells, whistles, and the machine that goes "ping".

Requirements for CE user interface designs both agree with and differ from those of traditional computer programs. On the one hand, the elegance of unperceived UI elements that "just work" is always appreciated. On the other hand, UI design is sometimes the only practical way to differentiate CE devices that deliver what are essentially identical services. In the end, customer ease-of-use should be the goal - when people want to watch TV, they truly just want to watch TV

Bio

John Card II has participated in the evolution of interactive TV and related technologies since the early 1990s. John is the iTV systems architect and home networking technology manager for EchoStar Technologies Corporation. He also has extensive experience in production engineering, user interface design, and remote sensing. John currently chairs several SDO and consortia technical working groups, and strives to identify common problems, develop elegant solutions, and implement real-world systems.

Glen Stone

Position Statement

Currently, User Interfaces's (UI's) for AV consumer devices rely on Remote Controls that are single purposed to a given device. Remote Controls as a primary UI for AV equipment have worked well in the past. Lately, CE devices are increasingly connected to form "Entertainment Clusters." The UI's however have failed to recognize this trend as witnessed by the explosion of remote controls in the consumer's "Entertainment Center." The requirement to control multiple devices using multiple remote controls has created consumer confusion and frustration. It can be said the CE industry is responsible for the uncontrolled breeding of Remote Controls.

As home networks become more popular the networks will also become more complex. How is the consumer going to select and control the mix of serving and rendering devices? Industry has been presented with "Use Cases" describing consumers selecting content from one location and sending it another location in the house all from a third location in the house. The technology for such connections exist, but how will the consumer do it? In order for home networking to be successful, the UI will be responsible for reducing complex network topologies and functionality to an intuitive operation model for the consumer.

Bio

Mr. Stone is currently directing projects related to Home Networking of Audio/Video devices. Technologies include IP Ethernet, IEEE1394, 802.11 wireless and Ultra Wideband wireless. Mr. Stone is active in various standards related to home networking. He is the Chairman of the Technical Committee in the Digital Home Working Group (dhwg.org) and Sony¹s representative in the UPnP steering committee. Within the Consumer Electronics Association (ce.org) he chairs the Wireless AV Networking subcommittee.

Previously, Mr. Stone¹s engineering group developed 1394 chips for Sony¹s popular VAIO portable PC line as well as AV hard disk drives. Mr. Stone¹s architecture group released Sony Electronics¹ first contribution to open source Linux. The software release, named TrueTime, is designed for embedded Linux

systems requiring guaranteed A/V processing capability using low cost general purpose hardware and software.

Prior to joining Sony, Mr. Stone spent 10 years at Apple Computer, in the Advanced Technology Group researching VLSI architectures for processing A/V algorithms and multiprocessing. Mr. Stone is the holder of more than 20 patents, and has published numerous papers related to communications and processing technologies.

Mr. Stone received his M.Sc and B.Sc from the University of Calgary, AB Canada

Evan Hirsch
Position Statement
The User Interface, whether it be a splash screen or a set of buttons on a menu/remote control are in most cases, the first time a consumer actually engages with a device that they have just purchased. While it is true, that many of today's consumers will have grown up with Gameboy's and PC's, over a very short span of time, the consumer electronics industry has raised its expectations of the consumer substantially. Only 10 years ago, the average consumer was incapable of getting their VCR's to stop flashing 12:00. They are now expected to navigate complex set-top boxes, mobile phones that can play games head to head, and portable GPS systems, provided they can get past the interfaces. The typical UI is an after thought to the core product and it is the rare occasion when the UI is thought of as a first impression, a First Act or a First Level.

All too often, due to poor design or planning, the technological issues win over usability or content related issues. An opportunity to increase a consumer's excitement level about a product is at best lost, or at worst, it interrupts the user's immersion into the very space or experience they spent money on. Games, the Web and mobile computing devices are converging as a principal entertainment sources for people the world over, especially as a portal to complex and rich CG environments. The next generation of game consoles will be the long awaited Trojan Horses that finally invade the living rooms of the western world and it will be where the UI needs to be treated with as much attention in terms of content relationships as it does from ergonomic and technology perspectives. In short, the UI now needs to be viewed as a product in and of itself.

Bio
Evan Hirsch was most recently the 3D Supervisor at Vanguard Animation where he oversaw the Modelling, Layout, Rigging and Tools departments on "Valiant", the first Studio backed, 3D Animated featured to be done in Europe. As the 3rd employee of Vanguard's European operation, he was responsible for establishing much of the CG organization for the company including development of the initial pipelines and workflows for the production as well as the recruitment and hiring of over 100 of Vanguard's employees.

Prior to joining Vanguard, he worked briefly at Cinesite Europe as Production Manager for their Digital FX facility. From 1996-2002, he worked at Electronic Arts in Vancouver and England, most recently as Head of Visual Development for EA's Worldwide Studios, during which time he worked with 11 EA studios across North America, Europe and Japan. His focus was primarily on the Art Direction and CG processes EA used to develop many of their franchise titles. He started his tenure with EA at their Vancouver Motion Capture Studio where he supervised Motion Capture shoots on 25 games that each sold over 1 million units. Before joining EA, he was a Partner at Acme Animotion Group, a small, design and CG consultancy that catered to Design and Advertising clients. He holds many design and mechanical patents, most significantly in Package Design for Child Resistant Closures that are senior friendly. He is a member of the British Academy of Film and Television Arts (BAFTA) and SIGGRAPH in addition to being a Contributing Editor to Computer Graphics World since 1990. He holds a BFA in Industrial Design from Rochester Institute of Technology.

Garry M. Paxinos

Bio
Garry Paxinos is a Senior Vice President and Chief Technologist at U.S. Digital Television with responsibility for the design and development of all devices and services used in a customer's home.

Mr. Paxinos previously was Vice President and Engineering Manager for Metro Link Inc., where he led the engineering team responsible for the design, vision and implementation of MediaWorks—convergence software for the digital television market. MediaWorks and other select Metro Link technology assets were recently acquired by USDTV.

Prior to Metro Link, Mr. Paxinos' experience includes the architectural design and implementation of plant-wide Supervisory Control and Data Aquistion (SCADA) systems based on UNIX, OS-9, and the X Window System. These systems are currently in place at various industrial sites, super tankers, and nuclear power stations around the world.

Mr. Paxinos also has extensive hardware-design experience in the industrial field and in medical imaging applications. His designs include a wide variety of data-acquisition boards, broad-band acoustic pulse generation, imaging frame stores, scan converters, high gain/bandwidth rf amplifiers, full duplex pulsed doppler blood flow measurement and analysis subsystems, and various microprocessor-based control systems.

Mr. Paxinos is actively involved on several international standards committees and conference program committees that help define DTV standards throughout the world. He is the chair of CEA R7.4 and is a member of the Board of Directors of Linux International. He recently served as the ACM SIGGRAPH Executive Committee as Treasurer.