



International Research Park at the 2010 NAB Show

There will be a new area at the NAB Show exhibition in Las Vegas this year – the International Research Park. This is intended to highlight research and development in leading-edge media technologies from the United States and around the world. Exhibits will feature advanced projects now under way in academic, government, and commercial research laboratories, including technologies and equipment not yet commercially available that push the envelope for content production, processing, distribution, broadcast, display and interaction with the consumer.

Lynn Claudy, NAB Senior Vice-President of NAB Science and Technology, said: "The International Research Park extends the scope of exhibits at the NAB Show to go beyond the range of commercial products that are available currently or in the immediate future. This technology-rich exhibit area will feature the work of start-ups, established companies and research organizations around the world as they work on innovations and fundamental technology breakthroughs that may have an impact on the media landscape over the next several decades. The wide range of exhibits includes topics as diverse as media services for the future, fundamental imaging and audio research, innovative use of broadcast spectrum, new technological innovations in transportable portable power generation and lighting, 3D research and advanced production technology for media services, among others."

The International Research Park is located at the east end of the South Lower Hall of the Las Vegas Convention Center. What you see there today may change the way the industry works tomorrow -don't miss it! A summary of the confirmed exhibitors and technologies, with information provided by the participants, is as follows.

2020 3D Media Research Project - Europe

Members from this consortium exhibiting at NAB will include JRS, Technicolor, University of Hasselt and Barcelona Media. They will present:

- Trifocal rig and a super high bandwidth video recorder from Technicolor,
- New spatial audio processor from Barcelona Media,
- Image processor from JRS to segment and extract features from stereoscopic sequences,
- Panoramic video tools from the University of Hasselt, including two panoramic super high resolution camera rigs.

Burton Inc, Japan

This project includes participants from Hamamatsu Photonics and the University of Keio. Most current 3D displays draw pseudo-3D images on 2D planes by utilizing the human binocular disparity. However, many problems occur, e.g., the limitation of the visual field, and the physiological displeasure due to the misidentification of virtual images. To overcome these problems, we have developed a "True 3D Display" which can produce a bright dot in the air so audience can see 3D images in true 3D space.

Our display device uses the plasma emission phenomenon near the focal point of focused laser light. By controlling the position of the focal point in the x, y, and z axes, it displays real 3D images constructed by dot arrays in the air.

Communications Research Center, Canada

CRC is the Canadian government's primary laboratory for research and development in advanced telecommunications. The broadcast technology R&D program encompasses advanced audio and video systems, audio/video perception and quality evaluation, digital television, 3D TV, digital radio broadcasting and multimedia broadcasting systems and applications. Demonstrations will comprise:

- Real-time 2D to 3D conversion technique for 3D-TV applications,
- Video frame rate conversion technology,
- CRC's audio software: SEAQ, TimeSync and Loudness Meter,
- Open Broadcast Platforms: a strategic tool for innovation and development of new broadcast applications; an open source software framework that enables broadcast transmission and reception on open handhelds based on Openmoko and Android.

CTB Group

CTB is addressing the growing demand for mobile broadband Internet and content delivery services by developing a nationwide broadband mobile content delivery network that bypasses existing carrier networks for downstream data. They use the new ATSC Mobile DTV standard to deliver broadband data, video and IP content on a broadcast basis via its proprietary Cellular Terrestrial Broadcasting technology.

The CTB network utilizes existing television spectrum and will be implemented using licensed UHF TV spectrum obtained through purchase, lease or direct application to the FCC. CTB's network works as a complement to any existing unicast cellular network and is compatible with any WiFi enabled devices, including cell phones, Smartphones, Netbooks, laptops and televisions.

Entertainment Technology Center, Carnegie Mellon University

The Entertainment Technology Center (ETC-Global) will be bringing three technologies to the show:

- Synthetic Interview - a software technology and design process that creates a humanlike interface with multimedia. Synthetic Interviews allow people to chat in natural language and the responses give the user the apparent experience of interacting with a live person. Synthetic Interviews have been created of celebrities such as sports figures, actors, and experts such as doctors. Historical figures have also been brought back to life, including Albert Einstein, Charles Darwin, Ben Franklin, and Abraham Lincoln.
- Digital Video Library Technology - a suite of computer technologies delivering speech, image, and natural digital video repositories, with strategies for improving the utility of metadata. Interfaces building from automatically generated metadata are presented with broadcast news and oral histories as examples, illustrating the use of video surrogates in multimedia information systems.
- Balli Plastici - a re-imagining of the 'plastic dance' created by Italian Futurist Fortunato Depero in 1918. The marionettes used in the dance encapsulate the Futurist ideal of machinery striving to break free of human control. Our goal is to digitize Depero's puppets and develop a toolkit anyone can use to create their own Futuristic-inspired ballets.

ETRI, Korea

The Electronics and Telecommunications Research Institute is Korea's largest government-funded research institute specializing in information and communications technology. Guided by its vision of "The World's Best Leader in Human Technology," ETRI strives to develop new technologies in this era of digital convergence wherein technologies, industries, services and networks are converged and combined so that mankind can lead a more pleasant, convenient and safer life. They will be showing two projects:

- Advanced T-DMB - since the commercial launch of Terrestrial Digital Media Broadcasting in 2005, more than 20 million T-DMB receive units have been sold in Korea. But T-DMB has a weak point in that it has less channel capacity compared with competing mobile TV services. Advanced T-DMB is backward compatible with T-DMB, still provides wide service coverage with low transmission power, and its increased channel capacity is at maximum up to twice the channel capacity of T-DMB. To make this possible, AT-DMB has adopted some technologies such as hierarchical modulation, turbo code and others.
- Additional data transmission for DTV using ATSC TxID technology. The applications for this technology include digital signage, NRT-like broadcasting service, emergency alerting and an optional small video broadcasting service.

Georgia Institute of Technology

The School of Electrical and Computer Engineering at Georgia Tech will showcase some of their media-related development work including:

- Touch-free and wireless human-TV interface enabled by hand gestures and a single webcam,
- Bandwidth-efficient multiscreen variable bit-rate HD/3D video streaming HD video quality enhancement via error concealment,
- Android set-top box and HDTV,
- Intelligent activity detection for video surveillance and telehealth applications, including suspicious activity detection and human fall detection, using a live HD video streaming system.

IT Innovation Centre at the University of Southampton, UK

This research organization will exhibit a range of state of the art digital media projects including:

- ANSWER – a new approach to the creative process of film and game production,
- IRMOS – Interactive Real Time Multimedia Applications on Service Oriented Infrastructures,
- AVATAR – a research and development project that has brought together experts in archiving, broadcast technology, data storage, algorithms and modeling, to develop a family of technologies that can dramatically improve the utility of digital file storage for A/V archiving,
- MUPPITS – a research and development project set up to address the ever increasing challenges faced by the post production industry today, caused by the adoption of increasingly complex processing requirements and the adoption of tapeless workflows,
- PrestoPrime – keeping audio visual contents alive.

NHK Science and Technology Research Laboratories, Japan

This major broadcast research laboratory will have exhibits providing information on current research projects including 3D TV, Internet services, next generation broadcasting, advanced production technologies and others. They will also show a roadmap for the introduction of Ultra HDTV and give guidance on the NHK technology transfer policy.

Rochester Institute of Technology

The School of Film and Animation at RIT will show two of its current projects.

- The tangiBook™, a tangible interface that allows natural interaction with virtual surfaces. The system is based on a laptop computer that incorporates an accelerometer and a webcam. Custom software allows the orientation of the screen and the position of the observer to be tracked in real-time. Using this information, realistic images of surfaces with complex textures and material properties illuminated by environment-mapped lighting, are rendered to the screen. Thus the tangiBook allows virtual surfaces to be observed and manipulated as naturally as real ones. We demonstrate the utility of the tangiBook in three application areas: material appearance research, softproofing of digital prints, and enhanced access to collections in digital libraries and museums.
- High resolution, high dynamic range display system for vision research. Conventional displays only produce moderate luminance levels and limited contrast ranges, constraining their utility as tools for exploring visual response. We have developed a high dynamic range display that can produce high resolution luminance levels and contrasts greater than 40,000:1 - on the order of those encountered in real world scenes. We are using the display for material perception studies, where high intensity specular reflections are important, and for low vision research, where deficits often appear at extreme luminance contrasts.

Ryerson University, Canada

Graduate students from the Rogers Communications Center at Ryerson University will show three projects.

- New Tools for Collaborative Design and Communication – this work originally focused on extending an open-source videoconferencing application to allow for high-definition visualization, as well as remote control of computing resources across geographic divides. We also set out to reduce cultural barriers to collaboration by developing a suite of tools that facilitate real-time captioning and translation. The final component of our project considers the business potential of the related technology, and the viability of enhancing our tools with Semantic Web Services.
- Educational Applications of Blu-ray DVD Technology – this project demonstrates an application that adapts Blu-ray's interactive capabilities, including BD Live, for use in the production of educational media. The project successfully proves that Blu-ray is a superior technology for producing learner-centered educational materials, an area that it was not initially designed for.

- Zero Latency HD Broadcast Double Enders Over IP - demonstrates the feasibility of using high-end HD video streaming technology to support live broadcasting or the transmittal of broadcast quality content on existing IP networks. We will be using ultra low-latency HD video streaming technology to transmit television interviews from remote locations, using standard IP and the ORION network. Applications will provide educational as well as broadcast networks a permanent and lower cost alternative to high cost satellite and fibre feeds.

Sandia National Laboratories

The consortium for this project includes Multiquip, Luxim, Altery Systems, and Stary Light Optical. The DoE Fuel Cell Technologies Program and Sandia seek to accelerate the commercialization and promote the early adoption of hydrogen and fuel cell technologies for the film and broadcast industries, including a Fuel Cell Mobile Light. Features include:

- Fuel Cell
 - High power density with low weight and volume
 - Fast start, excellent durability
 - Uses pure H₂ from storage system
 - Oxygen obtained from ambient air
 - 43% efficiency
 - No CO₂, NO_x or particulates emitted
 - No Moving parts, very quiet operation
- Lighting System
 - High efficiency –120 lumens/watt
 - 50,000 hour lifetime
 - Color rendering up to 96 CRI
 - Instant-on, dimmable to 20%
 - Rapid re-strike
 - Compact source (1/4"x1/4")
 - No audible noise or flicker
 - Programmable
 - Indoor and outdoor Use

SCTI

Speech Conversion Technologies Inc., partly funded by the NAB FASTROAD program, will be showing their advanced technology for highly accurate automatic speech recognition and conversion, for closed captioning and language translation applications.

Syncbak, Inc.

Syncbak is a media technology company that is creating a hybrid broadcast technology to enable local broadcasters to authenticate and connect with local viewers using the ATSC A/90 Data Broadcasting Standard. Once authenticated via return path (IP), broadcasters are then able to reach these viewers with new products and services, both over-the-air and over-the-web.

For more information about the 2010 NAB Show and for online registration, please see: www.nabshow.com/.

Media Technology Expert Shelly Palmer to Speak at NAB Show Technology Luncheon

Shelly Palmer, TV host, author and media technology commentator, will speak at the [Technology Luncheon](#) on Wednesday, April 14 in the Las Vegas Hilton. During the Luncheon, sponsored by LG Electronics, Palmer will discuss the sociological and technological forces that are reshaping the future of traditional media.

Palmer is the host of "Digital Life with Shelly Palmer," a weekly television show that airs on WNBC-TV New York, about living and working in a digital world. He also produces and hosts "MediaBytes," an online daily news show that features a unique take on the biggest stories in technology, media, and



entertainment. Known for his insightful commentary on the technology issues of today, Palmer's years of experience in the media industry include serving as the patented inventor of the underlying technology that created Enhanced Television for ABC, an application used in programming like "Who Wants to Be a Millionaire" and "Monday Night Football."

A renowned author and journalist, Palmer is a weekly columnist for the *Jack Myers Media Business Report*, *The Huffington Post*, and is a technology commentator for CNN.com. In 2008, Palmer released the updated version of his 2006 book, titled *Television Disrupted: The Transition from Network to Networked TV* (2nd Edition), a book that describes the technological, economic, and sociological forces that are changing the television industry.

The Luncheon is a celebratory event for technologists, engineers, technical managers and all technology fans that attend the NAB Show. As [previously announced](#), the Technology Luncheon will also feature the presentation of the NAB Engineering Achievement Awards, given this year to [Steve Church](#), founder and CEO of Telos Systems; and [Mark Richer](#), president of the Advanced Television Systems Committee (ATSC).

The Technology Innovation Awards, created in 2009, which recognize organizations that bring technology research exhibits and demonstrations of exceptional merit to the NAB Show will also be presented at the Technology Luncheon.

Finally, the new NAB Best Paper Award honors the author(s) of a paper of exceptional merit published in the NAB Broadcast Engineering Conference Proceedings. The Proceedings is a compendium of these technical papers, and an important archive of the leading edge of broadcast engineering issues. Being presented for the first time at the 2010 NAB Show, the recipient of the award will be honored at the NAB Technology Luncheon

Tickets are available with registration packages or can be individually ordered at www.nabshow.com.

2010 NAB Broadcast Engineering Conference Summary of Presentations

Check out the [papers](#) that will be presented at the 2010 NAB Broadcast Engineering Conference in Las Vegas, April 10 –15, 2010.

