

# Adler Planetarium soars to new heights with NEC's ultra-narrow LCD displays

## Quick Facts

**Facility:** Adler Planetarium & Astronomy Museum

**Location:** Chicago, IL

**Challenge:** Engage visitors by creating an interactive video wall showing recent images of the moon within hands-on "Shoot for the Moon" exhibition

**Solution:** 46" NEC MultiSync® X461UN

**Date:** July 2009

As the 40th anniversary of Neil Armstrong's historic walk on the moon approached, the Adler Planetarium & Astronomy Museum wanted to expand upon its "Shoot for the Moon" exhibition with a new, hands-on technology that would engage, entertain and educate visitors of all ages.

The Adler Planetarium, America's First Planetarium, was founded in 1930 by Chicago business leader Max Adler. Following its 75th anniversary, the Adler began a transformation to become the world's leading space science center and inspire the next generation of explorers by sharing the personal stories of human space exploration and America's space heroes. The Adler is a recognized leader in science education, with a focus on inspiring young people to pursue careers in science.

## The Challenge

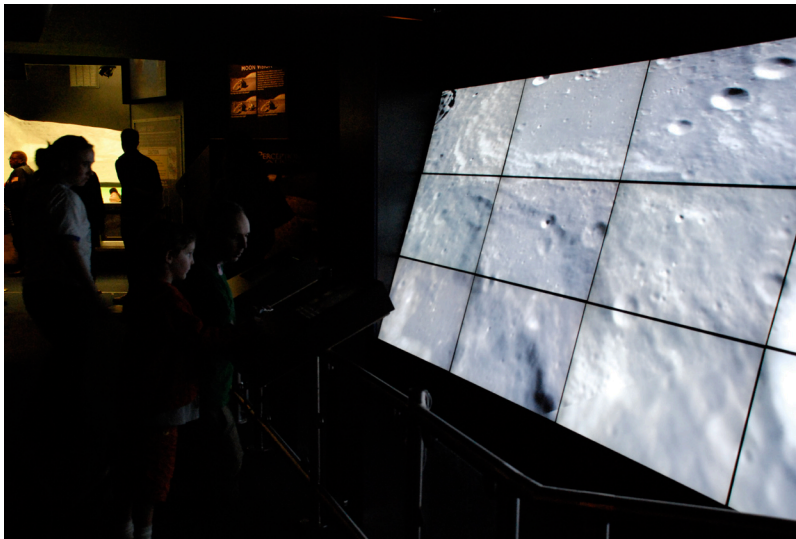
In November 2006, the Adler opened a new permanent exhibition titled "Shoot for the Moon," which highlights the exciting stories of space exploration and America's bold plans to return to the moon. Visitors begin in "A

Journey with Jim Lovell," a gallery based on the life and historic moments of astronaut and Adler trustee James A. Lovell's career. As they walk past a number of Lovell's personal space artifacts and the fully restored Gemini 12 spacecraft, they make their way to the second gallery, "Mission: Moon." It's here where young visitors explore the thrill of being in space with a variety of hands-on activities such as the gravity-defying "Lunar Leap," depth perception game "Moon Vision" and animated multimedia "Lunar Dangers Lab."

When production began for "Shoot for the Moon," Senior Director of Digital Technologies Doug Roberts, Ph.D., suggested they include hardware within "Mission: Moon" that would simulate flying through its craters and hills. Roberts' team began researching display providers and monitor specifications in order to determine their best route in creating the new activity.

Initially, the Adler purchased six 30" displays and installed them in a 3x2 portrait-mode matrix creating the initial version of the "Moon Wall." After deploying the project, Roberts was disappointed to see how the high dot pitch was wasted given the rather large viewing distance. Additionally, the small physical size and large bezels took away from the sense of engagement the team desired. They needed to try something else that would immerse visitors in the activity and realistically simulate flying over the moon.

"I saw a flyer for NEC's new ultra-thin bezel display and was immediately interested, especially since it was recommended to us by our friends at the University of Illinois at Chicago (UIC)," said Roberts. "We worked with Robert Kooima, who



Adler Planetarium's "Shoot for the Moon" exhibit has been enhanced with a video wall comprised of 12 NEC MultiSync X461UN ultra-narrow LCD displays. The Moon Wall measures 14 feet diagonally, creating an out-of-this-world simulation.

was a computer science graduate student at UIC and is now at Louisiana State University's Center for Computation and Technology (CCT), to create a computer application for this alternate setup. By doing so, we saw that using larger screens would deal with the resolution and immersive issues we had with the smaller monitors. This configuration allowed us to remotely control the video wall and have accessibility for future imagery updates."

Once Roberts' team and Kooima from the CCT configured the display setup, they needed to work with NASA to obtain a base map for the Moon Wall's imagery. To start, the Adler used a base map from spacecraft Clementine, which orbited the moon in 1995. The map, along with a 3-D height dataset called the Unified Lunar Control Network, combined to show the moon in fine detail, including the depth of the moon's craters and height of its hills. The simulation would allow visitors to fly above the moon between 50 and 100 km in altitude. The Moon Wall needed to be updated with data from NASA's next lunar mission, Lunar Reconnaissance Orbiter (LRO). The updates would include a new base image after several months, as well as daily updates of small high-resolution targeted images, allowing the view of the moon to improve as new data is collected.

Another challenge was mounting the video wall so that visitors would not lean on or touch the displays. With its kid-friendly appeal, the Adler knew it needed to protect its new technology from potential damages.

### The Solution

The Adler worked with NEC and reseller CDW to negotiate affordable pricing and purchased 12 46" NEC MultiSync X461UN units. Roberts' team installed them in a 3x4 matrix, creating a truly



The X461UN's professional-grade panel, which features amazing contrast ratios, is able to display the moon in fine detail — whether Adler visitors are flying high above it or exploring its many craters.

realistic 14-foot-diagonal canvas for moon simulation.

In order to protect the Moon Wall, Roberts tilted the video wall on a 20-degree angle and installed a stainless steel railing to prohibit visitors from accessing the monitors directly, instead encouraging them to use the exhibit's simulators.

"Using NEC's ultra-narrow displays for our Moon Wall is the best thing we could have done with the space we had for the project," said Roberts. "It's a huge hit with kids, because it's so seamless that they're immediately drawn to it. It's not like a window, where you're looking out at something in the distance; this video wall makes it look real, like you're actually there, flying this spacecraft. The images are beautiful and the displays show them in amazing brilliance."

The Moon Wall functions from three separate visitor stations. The "Navigator" station incorporates a joystick and touchscreen for visitors to move about places of interest such as mankind's first moon

landing and the moon's poles. Soon the team will be deploying two additional "Investigator" stations that allow young explorers to operate a camera probe and take pictures for a digital scrapbook.

"Ultimately, we want visitors to be able to explore the nearby space surrounding the moon," said Roberts. "We are working to obtain new data from NASA's LRO spacecraft, which will provide updated images and height maps from the LROC and LOLA instruments aboard LRO. We are also working to upgrade our bandwidth, which will allow us to use imagery taken from the spacecrafts one day prior, enhancing the exciting interactive experience with high-definition images and giving visitors a unique way to appreciate the beauty of the moon. We're excited to expand upon the successful 'Shoot for the Moon' exhibition and are honored to be deploying such groundbreaking technology in the process."

# MGM MIRAGE elevates the Las Vegas visitor experience with NEC digital signage

## Quick Facts

**Facility:** MGM MIRAGE Properties

**Location:** Las Vegas, Nevada

**Challenge:** Help guests navigate with digital wayfinding and "wow" them with entertainment options

**Solution:** 32" NEC MultiSync® LCD3215, 40" P401, 40" MultiSync LCD4020, 46" P461, 46" MultiSync LCD4620, 52" MultiSync LCD5220, 57" MultiSync LCD5710, 65" MultiSync LCD6520 and 82" MultiSync LCD8205

**Date:** 2008 (ongoing)

Hotel management spends a lot of time thinking about the guest experience and how to maximize enjoyment during conventions and meetings. One of the key elements of success revolves around communication – presenting the right information to guests at the right time in a format that catches their attention. In Las Vegas, there are many things competing for attention, and capturing viewers' interests can't be effectively accomplished with static posters or flyers at the front desk. The MGM MIRAGE properties are a great example of "too much good stuff," where guests rarely learn of all the entertainment choices they have at their disposal. Therefore, improving the guest experience is largely a matter of helping them find just the right activities and hidden gems.

MGM MIRAGE owns and operates the most prestigious and well-known hotels and casinos in Las Vegas, including The Mirage, Bellagio, Monte Carlo, New York – New York, Excalibur, Luxor, Mandalay Bay, MGM Grand, Circus Circus, and

the new and unique CityCenter. MGM MIRAGE employs a staff of 60,000 and serves millions of guests every year. The company has significant holdings in gaming, hospitality and entertainment, owns and operates 16 properties located in Nevada, Mississippi and Michigan, and has investments in other properties in Nevada, New Jersey, Illinois and Macau. CityCenter, an unprecedented urban metropolis on the Las Vegas Strip, is a joint venture between MGM MIRAGE and Infinity World Development Corp.

## The Challenge

In years past, MGM MIRAGE relied on static signs, and formats ranged widely from paper posters to etched metal plates. This was less than optimal because of printing costs, lead time, paper waste and personnel required to update static posters. As communication needs increased, adding static signs presented a cluttered look. Furthermore, advertising with static signs wasn't flexible and didn't allow for rotating ads or changing content based on time of day. Wayfinding was also a challenge due to the size and unique floor plans of the properties.

In addressing these issues, management wanted to provide guests with on-the-spot directions and suggestions for a potentially bewildering array of dining options, entertainment and meeting rooms. All of that information had to be delivered when and where it was needed, on systems that matched the luxurious décor.

Randy Dearborn, VP of multimedia for MGM MIRAGE, has played an instrumental role in the development of multimedia technology for the company. As Dearborn sought to identify the properties' communications challenges, he studied guest patterns and conducted pilot tests of new communications concepts. He looked at utilization



Visitors in MGM MIRAGE's many hotel properties can use NEC touchscreen displays to quickly and easily peruse restaurant menus and entertainment schedules and make reservations.

of hotel amenities and clubs, and studied guest awareness of promotions and nightly entertainment.

“One of the top challenges we wanted to address was making it easy for guests to view dinner options, peruse menus and even make reservations. As guests stroll through the lobbies, this needs to be a simple process that is both inviting and appealing,” said Dearborn.

Facing many competing entertainment options, MGM MIRAGE and Dearborn also saw the need to promote in-house clubs, bars and shows using live video and custom content, to best portray the choices and convey the fun atmosphere of those destinations.

“Static posters weren’t giving guests the feeling that our clubs were alive and full of action,” said Dearborn. “We wanted to use video clips to set high expectations and show each venue’s unique flavor to help guests pick the club they would enjoy most.”

MGM MIRAGE also does big business with conventions and needed to set itself apart from the city’s increasing number of venues for ballrooms, events and meetings. Even with good convention space design, there are still challenges for conference attendees to find the next speaker or session. Wayfinding assistance is critical, and because of the continually changing roster of events, static signs were not a good option because guests needed to go the extra step of correlating static maps with printed schedules.

### The Solution

MGM MIRAGE addressed many of its communications challenges



Professional-grade NEC displays, ranging in size from 32" to 82" can be found in various areas of MGM MIRAGE's hotels, including gift shops (top), snack bars (bottom), box office counters, sports books, general walkways and more.

by installing a digital signage network, using flat panel LCD displays from NEC Display Solutions. Dearborn and his team had familiarity with a variety of display manufacturers, and from experience, chose NEC because of its high reliability, high quality and commercial-grade designs. In all, there are more than 400 large-format LCD displays in the MGM MIRAGE properties, primarily in 32", 40", 46", 52", 57", 65" and 82" screen sizes. This allows flexible content to be scheduled throughout the hotel with riveting live video in colors bold enough to hold viewer interest. The in-house Multimedia Services team is responsible for planning the digital signage deployments, installing hardware and software, and managing day-to-day content creation and scheduling. The team relies on Apple hardware and software, including the Mac Mini for players connected to the displays, and a special Mac version of Four Winds software to schedule content on the network of displays.

Menuboards were one of the high-value applications for NEC digital signage, and currently MGM MIRAGE has 20 restaurant touchscreens at six properties. NEC products, such as the 40" MultiSync LCD4020, are fitted with touch overlays for the hotel by Richardson Electronics. Restaurant staff is also able to change specials and line items on the menu in real-time through a simple Microsoft Excel spreadsheet, which then automatically updates the signs without needing to engage the content management team. The next project in the implementation is to allow reservations to be made right on the screen, which becomes very helpful to guests in the mornings, for example when dinner restaurants are not yet open. This capability allows guests to review the menu, examine pictures of the interior and decide in the moment to dine there.

In the casinos, NEC digital signage was installed at the end-caps of rows of slot machines, visible to guests who are following the curving carpet walkways to their rooms. These screens promote in-house attractions and run advertising, as well as show the increasing jackpot values on progressive slot machines. Enclosures for the displays were carefully considered to give the right appearance, fit and finish. At the entrances to the hotels' nightclubs are NEC's 40" MultiSync LCD4020, 46" MultiSync LCD4620 and 57" MultiSync LCD5710 displays. These show video of the club experience to help guests think about the night ahead and pick the ambiance that best suits their tastes. These screens run 24/7 in many cases, so commercial-grade equipment is a critical consideration.

"I love NEC products because they're rock solid, reliable and have great image quality," said Dearborn. "I've had trouble with other vendors due to poor video scaling and burn-in issues. With NEC, it's nice to buy something and not have to worry about it."

As an example, when the new "Lion King" show signage was installed, some of the design team initially specified another brand, but Dearborn took the designers on a tour of other hotels to show them the problems, such as burn-in, that can occur. As a result, they selected NEC again. As part of the focus on quality, the NEC displays are driven by digital DVI interfaces to create sharp, high-definition (HD) images. As newer NEC displays, such as the 40" P401 and 46" P461, became available, MGM MIRAGE began installing them throughout its properties.

Another project MGM MIRAGE has undertaken is to dynamically change wayfinding information based on time of day so the hotels can highlight activities at the appropriate times, such as the dolphin show during the day and clubs or shows in the evenings.

Within the convention facilities, NEC digital signage also provides wayfinding content in several of the properties. Bellagio, Luxor and other properties have convention wayfinding LCD systems with touchscreen access to help attendees find meeting rooms or navigate the facility. Now, attendees simply touch the screen where they see the words, "Map it!" to get custom directions to their events. Content is constantly being updated to tell conference attendees where the next session is located



With MGM MIRAGE's plethora of attractions and meeting rooms, wayfinding displays are extremely useful to visitors.

and how to get there. The internal Multimedia Services team accomplished this objective by writing custom software to pull meeting details directly from the Daylight software system, which is used by MGM MIRAGE to run its facilities. Now, even meeting room doors feature 17" displays that describe the meeting in process and what is scheduled next.

"In our original pilot tests with digital wayfinding, kids loved it and seniors were less engaged. But in recent months, we have noticed the comfort level has increased dramatically, and more people of all ages are using the touchscreens and enjoying the convenience of our wayfinding systems," said Dearborn.

At the exciting new CityCenter, more than 95 displays, ranging from 17" to 46", are used for interactive wayfinding, such as in the Aria hotel's convention facility and in the Crystals retail promenade. Displays throughout CityCenter include the 32" MultiSync LCD3215, 40" P401 and 46" P461, which show advertising to highlight the shows and entertainment.

Recently, the Multimedia Services team installed several of NEC's massive 82" MultiSync LCD8205 displays in the Monte Carlo, visible from the escalator as guests enter from the garage. Four of these panels are side-by-side in portrait orientation to promote in-house attractions, such as the Monte Carlo Brew Pub. For example, one display shows a full beer, the next shows a half beer, and the third display shows an empty beer, with the phrase, "Going, Going, Gone!"

Turning his attention to the back-of-the-house logistics, Dearborn has implemented a digital signage system specifically for the hotel staff that delivers employee information, such as health benefits, 401K program details, employee discounts, and upcoming employee events like blood drives and book fairs. It

is known as ME-TV, or MGM MIRAGE Employee Television, and includes live data streams to show traffic reports and other useful information.

Looking toward the future, digital signage may be used to help the event staff in the employee-access areas, with diagrams and pictures on the screens showing room setup for specific meetings. MGM MIRAGE plans additional NEC digital signage throughout its properties this coming year and continues to test new uses for the medium.