Technology
A BEHIND-THE-SCENES VIEW

BY SANDRA GUY, SWE CONTRIBUTOR

Technology is perhaps nowhere more "visible" than at theme parks and in the many make-believe worlds sprouting online and in worldwide outposts. The result is a decided mix of technological prowess and improved access to the world's wonders.

Rachel Hutter, P.E., a SWE member and influential Disney engineer, helped create the Animal Kingdom® Theme Park, chockfull of thrilling experiences. She sees the park from a more intriguing viewpoint — behind the scenes — than do visitors.

Engineers and technology experts work behind the scenes both online and at the theme park, said Hutter, director of engineering services at Disney's Animal Kingdom Region and a member of the SWE Central Florida Section. Hutter received her B.S. in electrical engineering with a minor in theater from Michigan State University. She received the SWE Emerging Leader Award for Quality in 2005 and was nominated by the Central Florida SWE Section for the Engineer of the Year Award in 2004 and 2006. In 2006, she was named Engineer of the Year among all the central Florida professional engineering societies.

"I am responsible for everything you can touch in Animal Kingdom® Park, including the attractions and the facilities — the All-Star Resort, the Coronado Springs

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Rachel Hutter, P.E., director of engineering services at Disney's Animal Kingdom Region, leads the teams responsible for maintaining the attractions, vehicles, facilities, and systems as well as various rooms, buildings, and grounds at Disney resorts.

Thrills:

From theme parks to games, movie-going, and virtual reality, technology drives new ways to experience leisure time.

Resort and Convention Center, and Animal Kingdom Lodge, a lodge-style resort with a 33-acre wildlife preserve," she said.

The park is the largest animal-themed park in the world, with more than 1,500 animals from 300 species sprawled across 500 acres.

Hutter, 37, has a photo on her desk of herself at age 3 at Walt Disney World®. "I wanted to work for Disney all my life," she said. "I loved Mickey Mouse®." Hutter was part of the team that built Animal Kingdom, which opened in April 1998.

She joined Disney in 1997 as part of the Imagineering® team that built Animal Kingdom, and then moved to the Animal Kingdom engineering services team as the park reliability engineer. She was promoted to the manager of park systems and transportation, where she led the park systems team, which maintained the data and audio communications networks and the stand-alone PC show equipment, as well as the transportation team that maintained trains, boats, and safari vehicles.

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Handheld devices allow maintenance technicians at Disney's Animal Kingdom Park to see the status of their work in real time, while Rachel Hutter tracks it.

Hutter eventually moved to Walt Disney World Technical Services, where she managed a team that supported radio, video, electronic access, PC and peripherals, point of sale, and alarm system needs. She also worked as director of attractions engineering services and quality assurance for Walt Disney World. Throughout her move up the career ladder, Hutter worked in controls, becoming fluent in computers, drives, communications networks, and programmable logic controllers.

Computers enable Hutter, who oversees a 400-person team, to see the real-time status of the park rides' vehicle maintenance from her desktop. "It used to be an administrative nightmare to keep track of that paperwork," she said. "Now, the maintenance technicians do their work on handheld devices (and see the status of their work in real time)." Software designed and patented at Disney ensures that each technician is properly certified to check rides, and that each vehicle ride is checked daily and on required intervals.

"Some of these jobs are very complex, and we have many people working on them," Hutter said.

Each morning, technicians see a red Mickey Mouse thumb pointed down, requiring that a maintenance check be made in order to turn the thumb green and pointing thumbs up. Automatic monitoring systems check everything from complex ride systems to whether the theme park's motorized characters, such as gigantic dinosaurs at DinoLand USA®, are leaking hydraulic fluid and, if so, alert the maintenance team.

"Unlike in the manufacturing industry, everything here is unique and on such a large scale," Hutter explained, noting that each dinosaur operates on 3,000 pounds per square inch of hydraulic pressure.

From the outside in

Disney works to make its parks accessible to people with disabilities. Its engineers have created a wireless handheld device that lets people with hearing disabilities receive captioning, and guests with visual disabilities get audio descriptions of rides and attractions.

"When we couldn't find an off-the-shelf solution, we developed our own technology," said Greg Hale, chief safety officer and vice president of worldwide safety and accessibility for Walt Disney Parks and Resorts. The handheld devices fit in one's palm and receive location and synchronization signals throughout a ride to automatically provide captioning and audio descriptions as the ride moves from scene to scene.

Would-be visitors intent on getting their money's worth expect to use technology to get detailed previews of their getaway plans, including at theme parks, said Cliff Warner, principal and CEO of Thinkwell Design & Production, a Pasadena, Calif.-based design and production company. "The ability to tour resort properties online, to experience theme parks virtually first, helps people decide whether to make the trip and to plan for the visit," Warner said.

Online visitors can even change other visitors' real-life experiences. Players online can activate targets on a real-life Buzz Lightyear® ride at Disneyland®, enabling the riders to earn extra points by hitting the online-enabled targets in their fight against the Evil Emperor Zurg®.

Visitors who use Verizon Wireless phones can get real-time views of their own. They can access the availability of an attraction in real time; receive messages from characters; and locate shows, restaurants, and Disney characters inside the parks.

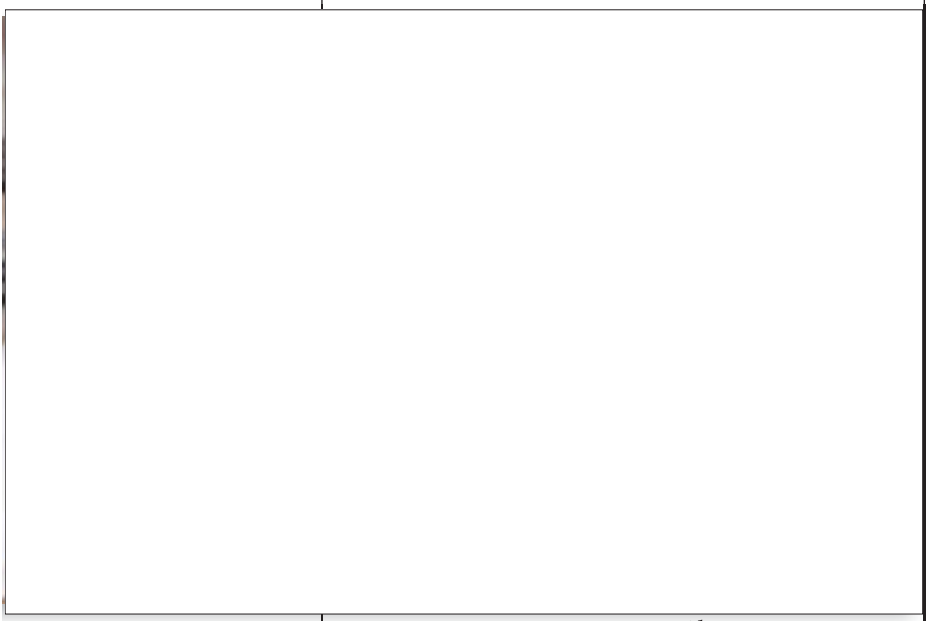
Disney theme parks are now making 3-foot-tall mobile animatronic versions of WALL-E®, the robot whose movie won this year's Oscar® for Best Animated Feature Film.

"Technology is becoming part of everyone's everyday experience," Warner said. "We're just scratching the surface of where this kind of interactivity will head in the next decade."

A decided ambivalence

Susan Toler Carr, P.E., civil engineer, is a senior project manager at Thinkwell Project Management, a division of Burbank, Calif.-based Thinkwell Design and Production, who laments the loss of artistry that some of the technological advancements have wrought at the same time that she feels great pride in her work and the technological advancements it involves.

"To increase production, we use super-duper computer programs instead of hand drawings" of construction projects, said Carr, who earned a bachelor's degree in civil engineering from the University of Southern California. She worked for Southern California Gas Co., Walt Disney Imagineering, Universal Studios, and for various general contractors on retail-commercial development. Carr oversees special projects at Thinkwell while waiting for the design of a major motion-picture company's theme park in Abu Dhabi, UAE.



Susan Toler Carr, P.E., right, consults with Leland Rorex on a Walt Disney Imagineering site. A civil engineer, Carr has also worked for clients such as Universal Studios, and for general contractors on retail-commercial development projects. A senior project manager at Thinkwell Project Management, she is currently waiting for the design of a new theme park slated for construction in the Middle East.

"You hit a button [on the computer] and it can project the elevation and determine conflicts with mechanical, electrical, and plumbing systems," Carr said. "But it's harder to look at a straight line and get the creative intent without including the show set design [mostly hand-drawn or with sophisticated CAD programs] in the background."

Carr prefers old-fashioned theme parks. She recently visited Knott's Berry Farm in Buena Park, outside of Los Angeles, and decided to look back at home movies of the park in the 1970s. The park 30 years ago featured waterways, groves of trees, natural vistas, and farm animals. The home movies showed families and older adults were the majority of visitors.

"Now it's a concrete jungle," Carr said. Huge metal structures support high-speed roller-coasters that attract mostly teen-age visitors. The nostalgic western buildings of the bygone era, including a schoolhouse, jail, and blacksmith shop, sit largely idle as guests dash from ride to ride and get in line for the latest thrill rides, she said.

Yet Carr has thrown herself into her projects, earning the nickname "Swamp Queen" after she donned hip waders and mosquito nets to explore wetlands, swamps, and endangered species in order to get the necessary environmental permits to build what would become Disney's Animal Kingdom in Orlando, Fla. "My co-workers called me 'Swamp Thing,' but I said, 'No, I'm the Swamp Queen,'" she said, recalling the water moccasins and big spiders that she sought to avoid.

Carr also worked as a project engineer on Disney's Blizzard Beach® water park, on the Indiana Jones® Adventure at Disneyland, and on Epcot® and Disney's MGM Studio Tour projects. She oversaw the design and building of Universal's Islands of Adventure® Park, Jurassic Park®, in Orlando. When Carr turned to commercial development, she led the remodeling of Tiffany's on Rodeo Drive, built a new Yves Saint Laurent in Beverly Hills and a Crate and Barrel store at the Grove, a Los Angeles shopping and entertainment complex.

All the while, she brought her now 12-year-old son, Justin, to job sites, showing him plans and before-and-after developments. Justin wants to be an architect and seeks out the designs of theme parks and their attractions. "I'm taking him to Florida for spring break to look at the designs of hotels and attractions," she said.

A Wider Context

Though Disney is the best-known creator of theme parks, virtual-reality and high-tech companies have been eager to join the lineup. Sega Enterprises, best known as the challenger to Nintendo® in video games with its Sonic the Hedgehog® character, aims to reinvent the amusement park by building small theme parks and equipping them with the latest in computer simulations known as virtual reality.

The idea is to give visitors simulated experiences, such as sitting in a compartment that shakes and moves in sync with what appears on a computer screen so they feel as though they're in a space battle, for example. The key is that virtual reality attractions could be updated by changing the software, and would be interactive so that people could control some of the action.

Technology promises to change the movie-going experience, too. Are you willing to put on 3D glasses in the theater again — especially if today's glasses are way cooler than those red-and-blue-tinted ones, and the animation comes from the maker of Shrek®, Madagascar™, and Kung Fu Panda®?

Jeffrey Katzenberg, CEO of DreamWorks Animation SKG, unveiled the new glasses and scenes from the studio's 3D movie, "Monsters vs. Aliens." The movie is the first computer-generated animation story with a female lead.

Katzenberg believes 3D is the third great revolution of movies, akin to the introduction of talkies in the 1920s and color in the 1930s. The technology has the ability to make movies "a singular, exceptional experience," he said. The 3D film technique is no longer a gimmick, Katzenberg said. The preview revealed how "Monsters vs. Aliens" tells the story of homegrown monsters trying to thwart an alien invasion of Earth by seeming to place moviegoers inside the scenes.

Katzenberg, a former board chairman for Disney Studios and former president of Paramount Studios, is touting the benefits of today's 3D: Glasses look like Ray-Ban® sunglasses and cost 85 cents each to manufacture and deliver to theaters; that DreamWorks and other studios' investments in 3D will pan out; and that distributors will initially pay the $800 difference in the cost of a film print and a digital print to jumpstart the 3D rollout. The cost of installing a digital projector and rewiring an existing movie theater is $75,000 per screen. To redo all the theaters worldwide would cost $10 billion.

"In my opinion, in five, six, or seven years, all movies will be made in 3D," Katzenberg said in an interview with this writer for the *Chicago Sun-Times*. Only 1,500 screens in the United States now show 3D. That number is expected to reach 7,500 by summer 2010 when the next "Shrek" movie is released.

Theater owners must be persuaded to reconfigure at least a few of their screens for 3D movie showings, and to get people to cough up another $5 for the glasses or to buy their own 3D glasses at retail. Katzenberg is working with Luxottica Group to create a transition lens so theatergoers' glasses could transition for the 3D theater.

The 3D glasses no longer have a blue-tinted eye and a red-tinted eye; the latest technology enables the glasses to have polarized lenses, and look and feel like Ray-Bans. The technology would initially thwart copying by moviegoers using camcorders to try to make a pirated copy. Movie distributors have agreed to finance a 3D rollout to help ease the costly transition for movie exhibitors. The 3D technology could be applied within several years to in-home products. Katzenberg said, "I believe people will want to have their own glasses."

MONSTERS VS. ALIENS ™ & © 2008 DREAMWORKS ANIMATION L.L.C.

An invading alien pursues Susan Murphy (Reese Witherspoon) — a.k.a. Ginormica, having been clobbered with a meteor full of outer space gunk and growing to 49-feet-11-inches tall — in DreamWorks Animation's "Monsters vs. Aliens," which reinvents the classic 1950s monster movie into an irreverent modern day action comedy.

Ever-more-personal technology

Technology is becoming a uniquely personal media, too, as witnessed by the popularity of Facebook®, MySpace®, iPods®, and the ability to view only the headlines one prefers. Indeed, a report in the March 9 *Wall Street Journal* revealed that enthusiasts are working to bring jetpacks like the one worn by Buck Rogers® of comic-book fame to reality. And artists, entrepreneurs, and established companies are comfortable announcing news in virtual worlds, pushing their messages onto iPhones, and asking for feedback to the CEOs' blogs.

One of the better-known virtual online worlds is Second Life®, where people create avatars — doll-like representations of themselves or what they'd like to look like — that walk, fly, and maneuver around islands created in a make-believe world. Such virtual worlds are popping up for kids and young adults, too. They include sites such as Club Penguin™, Gaia Online®, Habbo®, and Zwinky™.

Why delve into something so new and unusual? It's tougher than ever to get a meaningful message across as people are bombarded with e-mail, Facebook and MySpace messages, YouTube® videos, and text messages.

"In today's environment, more than ever before, companies need to examine a wide variety of media to achieve their business objectives," said Joni West, president of This Second Marketing. "The most powerful solutions that I've seen in marketing and advertising are being done by companies that integrate media ranging from live experiences to broadcasting, to Web sites, to blogs, to digital social media and more," said West, who is also a fine artist. West's clients who've found success in marketing in Second

WORLD BANK GROUP INTERNATIONAL FINANCE CORPORATION

Last fall, when the World Bank Group used Second Life to unveil a report, avatars "met" to hear Dahlia Khalifa, center avatar, deliver the presentation, followed by questions and mingling in the World Cafe.

Life include Colgate, IMAX, Nestlé, 1-800-FLOWERS, CareerBuilder and the World Bank Group.

The World Bank Group attracted 1,000 avatars last fall to the Second Life unveiling of its annual report ranking countries from least to best environments for doing business. The report critiqued countries based on 10 aspects of a business' life cycle, ranging from starting a business to hiring employees to paying taxes to obtaining credit. "It was the first time any World Bank entity had used Second Life as a platform," said Dahlia Khalifa, senior strategy adviser for the World Bank Group International Finance Corporation, which hosted the event.

Khalifa created her first avatar, worked with a sponsoring agency to advertise the event, and ended up spending three hours in Second Life — one hour making the presentation, another hour taking questions, and attending a cocktail event where she talked one-on-one with interested avatars.

"People asked questions about why one region of the world differed from the others in their results, how two neighboring countries could have such different results, and how the methodology could be applied to doing business in Second Life," Khalifa said.

The experience proved to Khalifa that Second Life is an equalizer. "Anyone can go online and be in Second Life. Hopefully, as more people get connected online, it will be a new medium where people can participate on an equal footing," she said.

Yet such online worlds face a contraction as financing dries up in today's financial crisis.

Barry Gilbert, vice president and research director for Strategy Analytics, an analyst firm specializing in new media and technology, said dozens of the kids' virtual worlds face consolidation or extinction because venture capital is so scarce. The virtual worlds are losing advertising revenue along with other media, but their shopping revenues are growing to a projected $1.7 billion this year globally from $1.2 billion in 2008. Companies are developing new kinds of prepaid cards to make it easier for teens and tweens to purchase clothes to outfit their avatars along with décor and furniture for their virtual rooms.

"The virtual worlds are going through a vetting process to try to identify how to optimize the monetization process," Gilbert said. "No one has it 100 percent yet." The next step will be for avatars to get together in a virtual world and watch a movie together. "Many developers are looking at how to more effectively cross the barriers between real and virtual worlds," Gilbert said.

Virtual worlds are proving to be viable outlets of commerce and communication, but they will go through the same periods of trial by fire as any upstart industry. They are expected to grow in popularity as people increasingly do business and interact socially online. ■

Considerations for parents

As technology pushes the envelope further, the spectrum and intensity of entertainment options increases, bringing some concerns, especially for parents. For example, developers realize that the tween market — children ages 9 to 15 — is 27 million strong and influences $170 billion in yearly sales. Experts say that parents must be aware of and fight the materialism that comes with such a focus on consumption and theatricality, and detachment from the realities and responsibilities of daily life.

In a national survey of 540 parents and 996 tweens, researchers at Penn State's Smeal College of Business found that kids who scored the highest on the materialism scale were the most susceptible to advertising and most interested in new products, and that they didn't perform as well in school as the least materialistic kids.

Lan Nguyen Chaplin, Ph.D., assistant professor of marketing at the University of Arizona at Tucson, said her studies with co-author Deborah Roedder John, Ph.D., chair of marketing at the University of Minnesota Carlson School of Management, have found that self-esteem is a driver of materialism in children and adolescents ages 8 to 18.

Chaplin and John have co-written two studies on children's consumer behavior, "Growing Up in a Material World: Age Differences in Materialism in Children and Adolescents," and "The Emergence of Self-Brand Connections in Children and Adolescents."

"Those who have lower self-esteem tend to be the ones who are more materialistic," Chaplin said. "They seem to attach themselves to material things as if to make them feel better about who they are, given the positive symbolic images of products and brands."

The people around children can help the children build and maintain a positive view of themselves to thwart the importance of material goods, she said. "If children have higher self-esteem, they tend to focus on people, achievements, and activities in their lives, as opposed to acquiring things."