

DISNEY DEVICE DELIGHTS

Guest assistive services based on HP iPAQ PDA



“Disney engineers have worked for years to make the magic of Disney come alive for guests with hearing and/or visual disabilities. The HP iPAQ PDA was clearly the right platform for the assistive device we wanted to build. Collaborating with HP and Softeq made our vision a spectacularly successful reality.”

—Greg Hale, Worldwide Safety and Accessibility, WALT DISNEY Parks and Resorts



Objective:

Provide lightweight, durable, full-featured assistive device for guests with hearing and visual disabilities

Approach:

Collaborate with HP and Softeq Development Corporation to build DURATEQ assistive device on HP iPAQ PDA platform that integrates Disney’s proprietary communication technology and assistive device needs into a single rugged device

IT improvements:

- Combine multiple assistive devices into one
- Reduce first-generation weight and bulk significantly
- Simplify assistive-device infrastructure and maintenance
- Deploy cost-efficient extensible platform

Business benefits:

- Bring Disney magic to all guests
- Delight customers with easy-to-use, convenient device
- Cut assistive technology development and maintenance costs
- Create platform with multiple industry and business applications

You’re aboard the JUNGLE CRUISE boat Volta Val gliding past elephants, hyenas and hippos. You’re about to meet Trader Sam the shrunken-head salesman. But what if you have a visual disability? How could you be included in the parts of this experience that depend on visual information? Or what if you’re deaf or hard of hearing and can’t hear what the skipper is saying? That is something Disney engineers have been thinking about for a long time. They wanted to develop an assistive device for guests to use at Disney Parks that was easy to carry, could withstand rain and falls onto concrete, and ran all day without the battery running out.

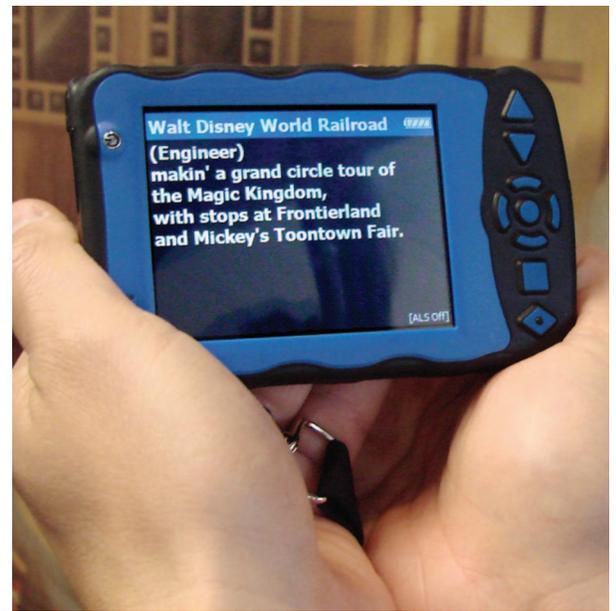
HP customer case study: HP, Disney, Softeq collaboration builds award-winning DURATEQ assistive device on HP iPAQ PDA platform

Industry: Media, arts and entertainment



“Disney had the original vision and it defined the requirements. Softeq handled product development and design, tooling, testing, software development, and overall project management. Holding it all together were the superb features and quality of the HP iPAQ PDA platform. The resulting DURATEQ handheld serves the needs of a wide range of accessibility.”

Chris Howard, CEO, Softeq Development Corporation, Houston, Texas



Thanks to collaboration between Disney, HP and the system integrator Softeq Development Corporation, that device exists today. It's the award-winning DURATEQ, a customized version of the HP iPAQ PDA.

“We had been looking many years for a way to deliver captions in narrative attractions where fixed captioning systems weren't an option,” says Greg Hale, Chief Safety Officer and Vice President of Worldwide Safety and Accessibility for WALT DISNEY Parks and Resorts. “In the HP iPAQ PDA, we not only found a solution but a platform for building handheld captioning, video-captioning activation, assistive listening and audio description into a single lightweight, durable device that is simple to use and easy to maintain.”

Award-winning design and engineering

Disney's Handheld Devices are available at Guest Relations at WALT DISNEY WORLD Resort and DISNEYLAND Resort. It's offered at no additional cost, weighs just 7.2 ounces and fits in the palm of your hand; once you have the device simply go and enjoy your day; the DURATEQ knows what to do. Utilizing Disney's patented location and synchronization technology, it receives data from infrared signals—invisible beams of light—from overhead transmitters located throughout the park. These signals automatically trigger event-synchronized audio and screen displays, with no buttons to push except volume control.¹ After testing a new audio service, “Attraction

Description”, one guest commented that the device provides something that people with visual disabilities almost never get in real life: “a full description of our surroundings.” In fact, Disney's recognition for achievements in accessibility includes the da Vinci Award for Assistive Technology and the National Association of the Deaf Access Award.

“Disney has a passion for accessibility,” Hale says. “The DURATEQ HP iPAQ device lets people with disabilities fully enjoy the magic of the Disney experience.”

Hale and his team of Disney engineers had debuted an early, limited-feature version of this assistive device in December 2001, at the “Walt Disney: One Man's Dream” exhibit in honor of what would have been the founder's 100th birthday. The device was innovative but cumbersome.

“We'd built the original prototype on an HP platform,” Hale recalls, “but after some initial testing we wanted to look at how to extend the battery life, and develop a more rugged device—that would hold up in a theme park environment. We surveyed the market for a new platform, and the HP iPAQ PDA was the clear winner. Its screen was easy to read both indoors and outdoors, it had a long battery life, and it offered the expansion capability we needed. It lacked the rugged features and some other technologies, but HP and Softeq delivered those in a customized device—with a Disney logo to boot! ”

Customer solution at a glance

Primary applications

Handheld captioning, video-captioning activation, amplified audio and audio description for theme park guests with hearing and visual disabilities

Primary hardware

- HP iPAQ PDA

Primary software

- Custom-built software for Assistive Technology, GPS and extended battery life

The DURATEQ is thin and lightweight. HP iPAQ mobile handheld devices come in a variety of Smartphone, GPS and PDA models for home and business use. The base platform of the DURATEQ is an HP iPAQ PDA with a 3.5-inch screen, genuine Windows® Mobile 5.0 Premium Edition operating system, and Wi-Fi (802.11 b/g),² Bluetooth®, and Serial IR wireless technology.³ This model's re-engineering into the DURATEQ is a case study in creative collaboration.

A powerful collaboration: Disney, HP, Softeq

HP and Disney have been collaborating in technology since 1938, when HP founders Bill Hewlett and Dave Packard provided equipment used in the first known version of surround sound, for the movie *Fantasia*. For the Disney project, HP brought in a partner of its own, Softeq Development, a system integrator and product developer based in Houston. Disney engineers presented Softeq a list of requirements: The assistive device had to withstand a four-foot drop to concrete and daily handling by sunscreen-smearing hands. It had to both receive and transmit infrared signals, and receive FM. It had to be lightweight, splash-proof and run at least 10 hours before the battery ran out. It had to offer amplified audio and low-vision features such as high-contrast, tactile buttons. It had to vibrate, so users would know when to put on their headphones or check the screen. Disney also wanted a five-unit docking station, so multiple units could be charged simultaneously.

"Disney had the original vision, and it defined the requirements," recalls Softeq CEO Chris Howard. "After that, it was a back-and-forth collaborative development engagement. HP provided hardware and some technical support. In terms of project management, product design, tooling, validation & quality testing, and software development, making Disney's vision a reality was Softeq's responsibility."

Softeq modified the HP iPAQ PDA internals with an audio amplifier, signal processors, vibration motor and GPS software. Softeq worked with Disney on synchronizing show content with captioning and audio using Disney's patented technology. Softeq also replaced the original casing with a durable plastic and rubber overmolding, stacking the electronics within securely so they wouldn't budge when dropped. Finally, Softeq wrote an application called ALICE (the Assistive Listening and Captioning Engine) to drive all of the assistive technology, synchronize content, and maximize battery life. Then, Voila! The DURATEQ debuted as a re-engineered, custom-featured handheld with HP iPAQ electronics.

"It could not have worked out better," says Disney's Hale. "HP brought us to Softeq, a custom integrator and product development house, and the company came through beautifully, built a great device. After the years of work we'd put into it, to have an outcome like this was more than gratifying."

The outcome for end users—confirmed through usability testing with disability groups—is full-featured accessibility and ease of use. The outcome for Disney is excellence in meeting a deeply respected customer need. "We've eliminated clutter and the need for guests to carry three or four devices," Hale says.

"The HP iPAQ PDA offered the screen size, indoor and outdoor usability, battery life and form factor that we could design our assistive device around. It was the perfect platform for making our vision of accessibility a reality."

Greg Hale, Chief Safety Officer and Vice President, Worldwide Safety and Accessibility, WALT DISNEY Parks and Resorts

The DURATEQ also saves Disney significant time and money. When assistive devices were separate, Disney had to deploy and support multiple platforms. Now it's all integrated, making it much easier to maintain the equipment and add new locations and features. "Now we can use the same signal for all services," Hale says. "That replaces a lot of old technology and makes it much less expensive than putting in new, separate systems. It's a much more cost-effective way to go."

The innovative technology has enabled Disney to introduce new Audio Description services for guests who are blind or with low vision. Attraction description provides Audio Description in an attraction, inserted within the natural pauses in the show, providing narrated information about key visual elements such as actions, settings, costumes, gestures, and scene changes. Disney is piloting descriptive narration, which provides Audio Description in outdoor areas using GPS. The technology could also support language translation and live interactive capabilities. Disney's Handheld Device services are expanding from WALT DISNEY WORLD Resort in Florida to DISNEYLAND Resort in California.

A wealth of emerging applications

The DURATEQ has also been deployed in Atlanta's New World of Coca-Cola and the New England Patriots new museum.

Potential industrial, retail and commercial applications are unlimited. DURATEQ fills a market niche between commercial handhelds and military-spec versions, which are bulky and expensive—anywhere from 40 percent to 300 percent costlier than the HP iPAQ PDA, Disney learned in a survey. Because the DURATEQ runs on a Microsoft® Windows Mobile platform, it comes with mobile handheld versions of Microsoft Outlook, Word, Excel and Internet Explorer. Its built-in Wi-Fi and Bluetooth protocols support wireless communications, while secured SD and CF card slots prevent tampering. Optional accessories include a magnetic stripe reader, bar code scanner, RFID module, multi-unit charging dock, and GPS module.⁴ All this opens the device to numerous applications in guest services, hospitality, field operations, warehouse management, and entertainment.

“Museums, movie theaters, stage shows, tours—the DURATEQ extends accessibility where it previously was impractical, such as attractions that send guests through multiple show scenes or outdoor environments,” Hale says. “In addition, its durability and expansion capabilities open up non-assistive applications such as point-of-sale, warehouse management, and its GPS functionality is currently being used in forestry logging. The DURATEQ is a robust and lightweight industrial handheld PC.”

Disney and HP share a passion for accessibility. Like Disney, HP is committed to improving access to



information and technology for all users. Such a commitment involves more than product delivery, but an understanding of the complex and changing challenges people with disabilities and age-related limitations face every day. Thinking about Disney’s journey from striving for accessible solutions to the development of a potent new multi-purpose tool, Hale adds: “We had to invent a technology to provide a service we wanted for our guests. With the superb support of Softeq and HP, we developed a device that can do well in many, many settings. We don’t want to keep this to ourselves.”

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¹Listening to personal stereo equipment at full volume for long periods can damage the user’s hearing. In order to reduce the risk of damage to hearing, lower the volume and amount of time listening at full volume.

²A standard WLAN infrastructure, other bluetooth enabled devices, separately purchased equipment, and a service contract with a wireless airtime provider may be required for applicable wireless communication. Wireless Internet use requires a separately purchased service contract. Check with service provider for availability and coverage in your area. Not all web content available.

³Daylight-usable serial IR provided by custom hardware in the DURATEQ

⁴Sold separately or as an add-on feature.

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