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Tough Customers: 6 Rugged Systems for When Failure Isn't an Option

The harsh conditions of the open seas—and areas such as military combat, public safety and field service—are often too much for the typical laptop to handle. A new generation of Windows-based rugged mobile devices is making the jobs of those in extreme workplaces easier and safer.

By Jeffrey Schwartz

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About
the Author

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Source: Dell

SAMANTHA HARPER AND MAREK OMILIAN were among 700 people who took the past year off from their professions and left their personal and family lives to sail around the world. Along with everyone else setting out on the 40,000-nautical-mile, 11-month journey, Harper, a doctor from Canada, and Omilian, a technology investor from the U.K., had to leave their laptops behind.

That's because they weren't taking a luxury cruise on calm waters but rather embarking on competitive races under harsh conditions. Everything on the 70-foot yachts they sailed were frequently tossed around, dropped, and exposed to extreme temperatures and salt water that on past excursions obliterated laptops and just about anything else that wasn't bolted down.

It was a problem all too familiar to the organizer, Clipper Around the World, which in the past routinely had to replace the laptops used by the ships' crews for navigation. "It was a nightmare," said Alexandra Smith, Clipper's business development manager, during a port of call stop in New York. "We were throwing away laptops constantly."

Founded more than two decades ago by William Knox-Johnson, the British sailor who was the first to circumvent the globe unassisted back in

Samantha Harper puts a Dell Latitude rugged laptop to the test in extreme conditions to see how it performs in the real world.

1969, Clipper lets amateurs participate in races that are typically the purview of professionals. The men and women who took part in Clipper's 11th biannual expedition ranged in ages from 18 to 70. Prior to commencing their journey in August 2017 from Liverpool, England, the novices were all

required to undergo extensive training to become crew members, and each boat also had a captain.

Access to information is critical for navigation, tracking weather patterns, plotting race strategies and communications. While Clipper long ago could have used ruggedized Windows laptops,

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such offerings until recent years weren't always on par with their and consumer and commercial non-ruggedized counterparts. The release of Windows 10 three years ago has helped narrow that gap, and now many vendors offer Windows-based ruggedized, 2-in-1 convertible computers.

Tired of replacing laptops numerous times throughout the journeys, Clipper two years ago decided to seek partnerships with technology providers capable of supplying the 12 sailboats with rugged systems, hardware and services that would address their navigation, communications and other requirements. Clipper aligned with Dell, which looked to the crew to test the limits of its Latitude line of rugged clamshell and 2-in-1 convertibles.

The systems were available to the entire crew of each yacht, but Harper and Omilian, crew members on different boats, took on the role as ambassadors to Dell. As ambassadors, they shared their knowledge about the innards and capabilities of the rugged systems. During their weeklong New York stop in late June, they shared the experiences of their journey and assessment of the systems.

"It's certainly heavier than a regular laptop of similar size, but the tradeoff is peace of mind in knowing that if it does fall six feet from my bunk that it's going to still end up in one piece," said Harper, who added that the batteries typically

Dell rugged Latitude devices survived life aboard Clipper's yachts, overcoming extreme temperatures and being submerged in salt water.

lasted between 6-8 hours.

Dropping them from the bunk was the least of their worries. "We had it on the boat in freezing temperatures, but more important, extreme heat," Omilian said. "It got as hot as 120 degrees Fahrenheit with salt water and humidity everywhere. It was unbelievable how rugged they were."

These industrial-grade mobile computing devices have a long history of use in adverse

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conditions such as military combat, public safety and field service. But Dell saw partnering with Clipper as an opportunity to test the limits of its latest rugged devices. The extensive geography covered by Clipper's global route subjects the ships to wide variations in temperatures and oceanic conditions.

Clipper's need for more reliable computing capability after 20 years without it is hardly surprising. In today's always-connected era, people today can't, or won't, take a year off to go sailing if it means they must entirely cut themselves off from their work, their families or their social connections. Likewise, the captains and crews have come to rely on these systems to keep their ships on course and safe. Despite a growing market for Android-based rugged handhelds, Smith was among many customers who preferred a complete Windows-based computing device.

Mature but Expanding Market

Clipper's decision to seek rugged devices was hardly an epiphany, given the environmental conditions under which it operates. Various players such as Panasonic, Getac, Honeywell and Dell, among others, have a long history of iterating their families of rugged Windows-based laptops and, more recently, 2-in-1 convertibles. Some vendors have taken recent steps to broaden their reach in the mobile Windows systems market. Zebra, for

Source: Panasonic

A surveyor uses GSSI's ground-penetrating radar system, which uses a Panasonic Toughpad as its controller platform, to scan a roadway to determine the precise location of underground cables and pipes.

example, in July announced that it has agreed to acquire Xplore Technologies, whose semi-, fully- and ultra-rugged tablets and 2-in-1 laptops aim to complement Zebra's wide range of mobile devices and scanners.

Rugged systems represent a sliver of the overall PC market. In 2017, manufacturers collectively shipped just under 260 million traditional PCs, according to IDC, with only 1.7 million being ruggedized mobile systems, which include handheld computers with barcode scanners, according to IDC.

Both the traditional PC and rugged systems markets are relatively flat, but both markets are expected to pick up this year. IDC senior analyst Bryan Basset said revenues for rugged systems totaled approximately $2.4 billion last year, and the market is on pace to increase at a compounded annual growth rate (CAGR) of 4.6 percent over the next five years. "It's a fairly mature and stable market," Basset said.

Beyond the new form factors of rugged systems, support for the latest generations of processors, larger amounts of memory and solid-state drives

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that provide higher capacity levels are bringing rugged systems into different environments, according to Basset.

Windows Tablets for an Underground View

Support for enhanced graphics in Panasonic's Toughbook and Toughpad PCs and tablets has enabled Ground Survey Systems Inc. (GSSI) to provide a controller platform for its ground-penetrating radar systems to render more detailed information with its systems, used in construction to find underground gas lines and in search efforts after a disaster.

"The clearer and crisper the data is, the easier it is to read and interpret it," said Jami Harmon, marketing operations manager at GSSI. The Panasonic partner added the Windows 10-based Toughpad FZ-G1 and FZ-M1 tablets to modernize its underground detection systems. (Panasonic this month announced upgrades to the G1 and M1 Windows tablets. The company also rebranded the Toughpads with the Toughbook to associate them with Panasonic's better-known rugged laptops.)

"Quite frankly, I'm amazed by the speed," she said. "That's what we've been ingrained to expect in the radar industry."

Harmon said the need for the improved Windows tablet capability is the result of rising demand for its underground radar systems as GSSI customers become more involved in new local utility modernization efforts that require accurate surveys. The emergence of digital city initiatives is accelerating the installation of power and communications lines underground. "Every asset underground must be known and documented, and ground-penetrating radar is one of those ways that they can do it," she said.

The enhanced graphics and CPU capabilities have enabled the partner to integrate GPS functionality directly into the Panasonic devices, Harman added. "Before, we used to have an external box pretty much that would connect to the computer or the tablet and then connect to our system," she said. "It was incredibly expensive, very tedious, and you had to be almost an expert to use it."

New Uses for Rugged 2-in-1's

An increased selection of rugged, Windows 10-based, convertible 2-in-1 tablet PCs has opened the opportunity for partners to modernize how they're used in current environments. The growing popularity of traditional 2-in-1 convertible PC-laptops has created demand for them in the rugged sector as well.

Panasonic last year released its Toughbook 33, which sports a detachable keyboard for those who want to use it in tablet mode. It is offered alongside the prior version, the Toughbook 31, which is the company's flagship rugged PC.

"The new form factor has changed how the devices are being used," said Anthony Mungiello, Panasonic's senior product manager for laptops. For example, many police departments that have the Toughbook 31 see the new Toughbook 33 as an option for officers who would like to detach the display and bring it with them when getting out of

Source: Panasonic

For those whose jobs sometimes require even more portability than a laptop provides, the Panasonic Toughbook 33's detachable keyboard enables them to use the device as a tablet.

the car after pulling someone over.

"No one wants to take the Toughbook 31 out of their car because it's an 8-pound device and not conducive to being used in front of the person you pulled over," Mungiello said. "You have now the detachable screen that [police officers] could take out and use as a tablet when they pull a person over. They could take the driver's license information, put the barcode reader on the device, they could scan that and populate the field. They can shift their workflow around."

Law enforcement is just one of the common use cases for rugged 2-in-1 convertibles; they're being used in many environments. "That is a significant market, but it really is much more than that," said Craig Brandt, Dell's product marketing director for rugged systems.

One vertical market that is increasingly counting on rugged 2-in-1 convertibles is the oil industry, as oilfield technicians are using them when performing maintenance in the field. "It's really important that they be able to read that screen in the sunlight, or maybe it's raining," Brandt said. "The touch functionality still has to work when they are out in the rain maybe wearing gloves."

Another growing use of rugged 2-in-1 convertibles is to help operations managers in factories who walk the floor perform scheduling, monitoring and maintenance, according to Brandt. "When they hand that tablet off to the second shift manager, they need to be able to keep going," he said. "They need to be able to hot swap those batteries and stay productive on the manufacturing floor."

Bay Delta Maritime, a tugboat company responsible for guiding large oil tankers and cargo ships in and out of San Francisco Bay, which is a very environmentally sensitive area, also requires rugged convertibles. "They're dealing with salt, moisture and unpredictable conditions," Brandt said, noting that it has many characteristics of Clipper's environment.

Clipper's implementation is one of the harshest tests Dell's rugged systems have experienced, according to Brandt, who described it during the New York gathering. "From our perspective, it's a great test of our product, under the harshest conditions imaginable," he said. "It's a great place for our products to be, and we'd like to support what it is they are doing."

It appears the Clipper crews and ambassadors gave Dell what it was looking for. Harper said she put Dell's rugged convertible through every extreme condition possible. "I dumped it in salt water, dropped it in various places. I really tried to push it more, because there's the official rating and there's the real world," she said.

Clipper's Smith said as part of its partnership with Dell, their job was to try to break the vendor's rugged laptops. "Dell takes them into these testing chambers and does crazy stuff with them to try to break them, but it's not quite like us using them," she said. "They told us to take them out to see what we could do, put them through the conditions that we go through, and try to break them."

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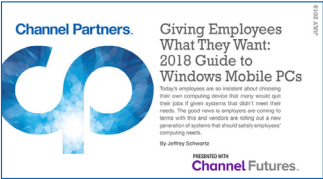
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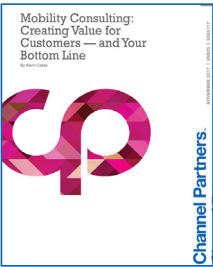
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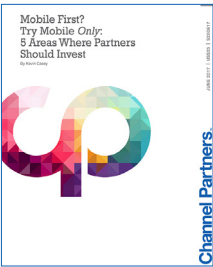
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