# WIND RIVER

# Data Robotics Unveils Drobo™ the Storage Robot

## Automated Desktop Storage Array Developed Using Wind River's VxWorks

In today's digital world, more consumers and small businesses want a simple, safe way to store and protect their data. To make these digital assets accessible forever, Data Robotics (formerly Trusted Data Corp.) develops new storage technologies and products based on storage virtualization and cybernetics.

The company's first product, Drobo, is a desktop robotic product offering a new approach to digital storage. This fully automated solution is simple to use, expandable, and self-healing—designed to free users from the time-consuming chore of effective data management and protect digital assets for the long haul.

Drobo is a true plug-and-play storage product, requiring no host software, no understanding of RAID levels, no management consoles, and no user configuration. Drobo owners connect the storage unit to their PC or Mac like any other external USB 2.0 hard drive. Under the hood, Drobo accepts one, two, three, or four 3.5'' SATA hard drives that may be different capacities, brands, or speeds and may be added to Drobo at any moment without requiring tools, data migration, or downtime.

In an interview with *ByteandSwitch*, an online magazine, Data Robotics CEO Geoff Barrall, Ph.D., describes the product as "storage for regular people. My mother doesn't want to do split mirroring and RAID striping." This ease of use is a strong selling point for any user.

### VxWorks Provides Strong Gene Pool for Drobo

In July 2005, Drobo was just a twinkle in a startup team's eyes. They knew they wanted to develop an effortless, RAID-free storage solution, and they needed a robust real-time operating system (RTOS) to reach this goal. They wanted an off-the-shelf operating system (OS) much like the robot they had in mind: easy to use and completely dependable.

*"Wind River's strong debugging and diagnostics support had a huge impact on our development, greatly reducing costs and complexity."*
—*Mark Herbert, VP of Engineering, Data Robotics*

**Company Profile: Data Robotics, Inc**.
• Develops innovative storage technologies and products based on storage virtualization and cybernetics
• Headquarters in Mountain View, CA

**Industry**
• Computer storage products

**Solutions**
• Wind River Platform for Consumer Devices, VxWorks Edition
• Wind River Workbench, On-Chip Debugging Edition

**Results**
• Accelerated time-to-market
• Completed project on time and on budget
• Introduced a reliable, defect-free, high-quality product
• Reduced risk and complexity

"As a startup, we needed to rapidly prototype, and we didn't want to burn time getting to market," says Mark Herbert, Vice President of Engineering, Data Robotics. Herbert had used VxWorks at previous companies, and several Data Robotics engineers were familiar with Wind River's VxWorks platforms. The Data Robotics team briefly considered Linux, but wanted to avoid the General Public License (GPL) in order to keep the company's code proprietary.

## Wind River Platform for Consumer Devices

Wind River Platform for Consumer Devices, VxWorks Edition, provided Data Robotics with the fast-boot, small-footprint run-time environment the company needed. Because the platform is optimized for consumer devices and includes industry-specific, integrated run-time technologies, Data Robotics was able to decrease time-to-market and focus its engineering team on differentiating, value-add features.

Platform for Consumer Devices is tightly integrated with Wind River Workbench, an Eclipse-based device software development suite. Workbench provides Data Robotics with deep capabilities that support the entire development life cycle, from hardware bring-up to platform and application development.

### Processor Flexibility

One key benefit of Platform for Consumer Devices, according to Herbert, is that it offers multiple processor support and OS flexibility. This became critical, since Data Robotics began the design process by rapidly prototyping using off-the-shelf Pentium-based PCs, then converted to PowerPC, and now uses an ARM-based processor.

"We were able to switch over pretty easily," Herbert says. "So, we now have an open book in terms of which processor to use to meet our objectives. We're not tied to a particular platform."

### Visualization Tool

The Data Robotics team finds special value in Wind River System Viewer, a visualization tool that enables developers to view the dynamic operation of their embedded system.

"System Viewer shows the key events that occur in the system, and how the threads interact over time; basically how the system really operates," says Jason O'Broin, Senior Software Engineer at Data Robotics. "This enables us to intimately understand the behavior of the system and fine-tune the performance of Drobo."

In addition to using System Viewer, the Data Robotics development team employs Wind River ProfileScope, a statistical profiling tool, for performance tuning.

### Debugging Tools

Data Robotics also uses the on-chip debugging tool subset of Wind River Workbench. These advanced, standards-based tools simplify the hardware development process and seamlessly integrate hardware, firmware, and software debugging.

"Wind River's strong debugging and diagnostics support had a huge impact on our development, greatly reducing costs and complexity," Herbert says.

According to Herbert and O'Broin, two on-chip debugging tools—Wind River ICE and Wind River Probe—have been critical to Data Robotics. ICE, a JTAG debugging tool, provides debug capabilities that accelerate the company's hardware and software development process. Probe is a JTAG debugging solution with a USB connector, performing common source-level debugging in seconds. Both ICE and Probe apply the same technology used in development to the test and manufacturing cycle.

This end-to-end debugging and diagnostics support has enabled Data Robotics to lower the risk, effort, and cost of developing reliable, defect-free, high-quality products.

> "The Wind River solution is an essential part of our future success, because it will continue to give us a competitive advantage and help us get quality products to market quickly."
> —Mark Herbert, VP of Engineering, Data Robotics

### World-Class Support

Another benefit, according to Herbert, is that Platform for Consumer Devices is backed by 24/7 global technical support and specialized professional services.

"Wind River provides not only the tools, but also the support and expertise we need," he says. "Our calls are escalated when needed, and in many cases we get a call back within five or 10 minutes."

### Successful Results

Data Robotics launched Drobo, a fully automated desktop storage robot for personal media collectors and creative professionals that is easy to use, expandable, and self-healing. By adopting Platform for Consumer Devices and Workbench, the company reduced risk and complexity and ultimately introduced a reliable product—on time and on budget.

"As we develop our product family, we plan to use Platform for Consumer Devices," Herbert says. "I feel the Wind River solution is an essential part of our future success, because it will continue to give us a competitive advantage and help us get quality products to market quickly."

### Learn More

## data robotics, inc.

For additional information about the products mentioned in this case study, please visit:

www.windriver.com
www.datarobotics.com

## WIND RIVER

Wind River is the global leader in Device Software Optimization (DSO). We enable companies to develop, run, and manage device software faster, better, at lower cost, and more reliably. www.windriver.com