

Dynamic SHARK Controllers Pass the Nightside Test

A rigorous new software test suite developed by Nightside Test Design has successfully automated several months of laborious manual testing of Dynamic's new Shark powerchair controller into just two weeks.



Nightside's test suite, developed in parallel with a more powerful software code base, has helped Dynamic to reduce both the design costs and the time it takes to get products to market.

The Challenge

Typical powerchair drivers are disabled in a way that they rely almost totally on the software contained within the powerchair controller to provide safe and reliable performance. This is the same for every driver, no matter the ability, preference, or operating environment.

To meet the stringent new series of standards set by ISO for the Medical Industry (ISO13485), major medical component developer and exporter, Dynamic Controls, has to ensure and prove that its powerchair controllers are fail-safe.



Figure 1: Shark Powerchair

Designing and developing any new medical product – including powerchair controller upgrades - can take a number of months to reach the market. A good proportion of this time is spent manually testing, modifying and then retesting the product until the company is satisfied the product is working according to specifications, will comply with ISO standards, is safe and is reliable.

The Technology

To speed up product development for its new Shark Powerchair Controller, Dynamic reviewed the design of the original product that it was based upon and determined that a complete code overhaul was required. They started from the ground up by re-implementing the design of the original controller into a fresh software code base.

A team of ten engineers started writing the new product specifications in March 2001 and in September 2001 Nightside was recruited to develop a comprehensive test system in parallel with the writing of the new code.

“Working from detailed software specifications we developed a series of plans, procedures and automated tests, which enabled Dynamic to test the code very quickly,” said Peter Brown, Director of Nightside Test Design.

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“It took us a total of eight months to complete the detailed test development for over 3,000 test cases. The resulting document series, totalling some two hundred pages, now enables Dynamic direct traceability from their original software specification to the individual test case. It was a very complex and challenging project to complete,” said Mr Brown.

The Benefits

Investing in developing the test scripts was definitely worth it for Dynamic, as they can now make code improvements and cycle them in 2 weeks instead of up to several months.

“To develop the new test system ourselves, we would have had to recruit in the right skills and knowledge,” explained Ian Palmer, Director of Engineering at Dynamic. “Nightside provided the service and were clearly the best for the job. As an independent company they were able to provide a more comprehensive examination and review of the detailed test specifications than what we could have achieved in-house.”

“A major part of the SHARK project was to provide a detailed software specification that could be understood and passed on. Having Nightside on our team helped us to improve our intellectual property capture with highly detailed documentation,” said Mr Palmer.

He continued, “The other benefits we have experienced with Nightside include: better use of programmer’s time, lower design costs, faster product development time and greater confidence in product reliability.”

“The new test suite and base coding also produces a more competitive product, as it enables the company to be more innovative with product changes,” said Mr Palmer.

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