

Marshall



Making the Difference.



Marshall Aerospace and Defence Group
 Airport House The Airport Cambridge CB5 8RX UK
 T +44 (0) 1223 373737 marshalladg.com

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Making the Difference

A young soldier is injured by an improvised explosive device whilst on patrol in the Arghandab Valley. He is alive but bleeding badly from a gaping wound on his left side. He is quickly evacuated by helicopter to the nearest military field hospital. The initial assessment of his injuries highlights multiple unstable fractures to the femur, severe soft tissue and vascular injury, plus a cluster of shrapnel in his thigh. He lies on the gurney in the trauma bay, while doctors decide on the fate of his leg.

Fortunately for this soldier the medical facilities are state of the art in a purpose built military trauma hospital after many years of military operations in this region. Advanced diagnostic imagery is available and a CT scan is called for. Contrast is injected into the soldier's arteries and the scan quickly reveals that all the vessels are intact and the leg can be saved: a positive outcome brought about by some leading edge medical technology. Without it, the difficult decision of whether to save the limb may have gone the other way with life-changing consequences for the soldier.

Technological improvements in CT mean whole-body trauma scan can be performed in less than two minutes, and it can give vital information about injuries. Its use in civilian trauma facilities is now routine. However, until recently CT for military trauma has only been available later in the campaign once static medical facilities have been built – perhaps a number of years into the operation. Despite the obvious need, CT could not be considered in the early months of a military intervention, especially in the absence of static and well-developed campaign infrastructure or where the nature of the conflict required mobility and manoeuvre. That was until 2008.

In 2008, Marshall Land Systems, specialists in complex systems integration working with Philips Healthcare, leading industry experts in CT, developed the first deployable CT scanner for the Norwegian Defence Logistics Organisation (NDLO). It provides a fully deployable CT capability suitable for mobile operations in the most austere environments and can be set up ready to receive the first trauma casualty within 4 hours of arrival in location. Marshall's system engineers and Philips CT engineers worked long and hard to address the challenges they faced taking a highly sensitive, complex piece of medical equipment and integrating it into an environment that will see high levels of shock loadings, vibrations and extremes of climate that are inherent in modern military deployments.

This hard work paid dividends, resulting in a Marshall patented system that allows the CT gantry to remain fixed and in position whilst in transport. Deployment times are rapidly reduced by eliminating not only the physical movement of the hardware but also the need for deployment calibration.

From this initial system Marshall and Philips have continued to develop the system's overall capability, with slice increase, dose reduction, weight reduction, transportation and environmental control improvements.

The system has undergone months of testing to ensure that it will withstand all the rigours of any military deployment. Many weeks of on and off road mobility trials, over a month of climatic trials from -32°C to +55°C and rain and dust penetration trials were all successfully endured.

In 2012 we won a five year framework competition to provide NATO with deployable CT scanners, cementing our belief that we are truly market leaders and demonstrating that we offer a technically proven, low risk, quality product that meets the needs and demands of defence forces and humanitarian agencies across the world.

We look continuously at what the future holds and what the future needs, pushing our teams to ensure that we can offer the very best and very latest in medical technologies and advances, including the new capability of the Philips Ingenuity CT systems in 16, 32, 64 and 128 slice, to help more people survive injuries than ever before.

At Marshall we feel extremely proud that we are making a difference.

marshalladg.com/ctscanner

**Innovation and Excellence in
 Engineering and Support Solutions.**

Marshall



Marshall Land Systems, part of Cambridge-based Marshall Aerospace and Defence Group, was awarded the Queen's Award for Enterprise 2013 in the Innovation category for its pioneering work designing deployable CT scanner and forensic laboratory solutions.

PHILIPS