

CASE STUDY



NetIDEAS was the enabler to Smith and Nephew's 2003 MDEA award

Smith & Nephew and NetIDEAS Team to Revolutionize Orthopaedic Deformity Correction

"Sales are way up over last year, approximately 60% growth over 2001...Our ROI was achieved in approximately nine months and it has surpassed our expectations"

Anthony James, Vice President of Product Development

Solution Overview

Company

Smith & Nephew
Memphis, TN
www.smith-nephew.com
Anthony James

Industry

Medical Device

NetIDEAS Solution

Intelligent Engineering Solutions
(IES)

"The web-based Spatial Frame software is the greatest innovation in orthopedics since the introduction of Ilizarov." Dror Paley, M.D., co-founder of the International Limb Lengthening Center, at the LLRS-ASAMI meeting June 2002.

This kind of feedback is exactly what medical device manufacturer Smith & Nephew (S&N) was hoping for when it partnered with NetIDEAS, Inc. to create the Taylor Spatial Frame (TSF) Web-Based Portal. The TSF is a device that consists of two rings connected by six telescopic struts extending from and to special universal joints located on the rings. The device fits around a patients' injured limb and is attached to bone with pins that extend from the rings through the skin and into the bone. By making daily adjustments to the lengths of the six struts, one ring can be repositioned with respect to the other, resulting in the ability to correct even the most complex bone deformities and fractures. The device employs special software that requires various orthopaedic measurements as input, yielding the proper strut adjustments to manipulate the device.



For the past 6 years, the TSF hardware and software had proven its benefits to patients when used appropriately. But, with its inherent complexity, S&N found that its adoption was limited in the surgeon community to a niche group of mathematically oriented doctors. "The deformity had to be defined accurately and the frame had to be placed very precisely in order to work. Many surgeons were unwilling to learn the technique or take the time in surgery to do this" says Anthony James, Vice President of Product Development at S&N. The market share for the device began to plateau and the hopes of broader appeal in the marketplace seemed remote.

Working with NetIDEAS, a web-based software application was deployed which provides surgeons the 'self service' power of real-time calculations, visual feedback of the 3-D device, and guidance relative to the trajectory required to straighten deformed bones. More importantly, the software application eliminated the need to be ultra precise in the measurement and mounting of the device. As the surgeon follows the simple to use wizard within the application, the use of the TSF is greatly simplified and the early feedback indicates that the stigma around the device might finally be overcome. "NetIDEAS ability to both build and host the application for our anticipated user base was a key driver in our decision to partner with them for this important project", said

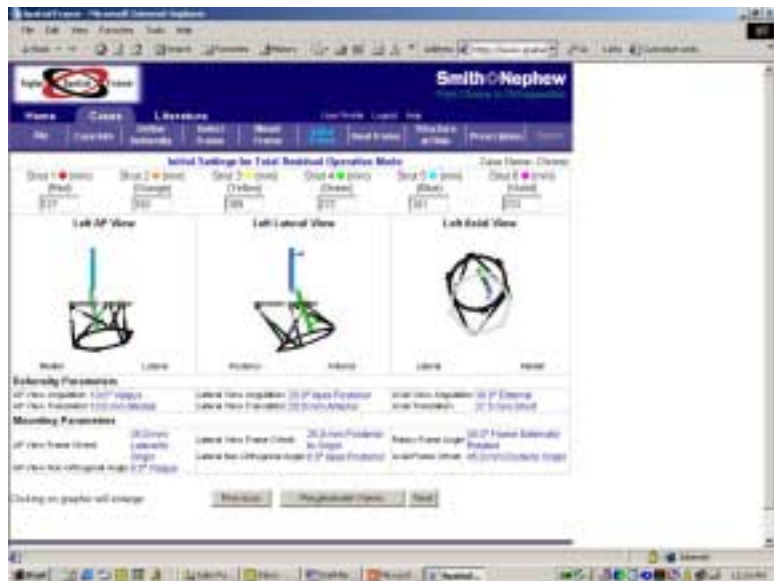
NETIDEAS CASE STUDY

James. “This is just the kind of jumpstart that the TSF needed in the marketplace, and the capabilities surgeons have been requesting.”

S&N previously offered a CD-Rom based analysis tool that provided the surgeons some nominal capability to manipulate the device but it was underpowered, required precise mounting of the device, and did not provide visual feedback to the doctors. During a procedure, the doctor takes an x-ray of the bone and measures various elements to quantify how much the bone is deviated from its proper orientation. He then mounts the frame on the bone and takes some additional measurements of the device relative to the bone fragments. These measurements are entered into the software and calculations provide guidance on adjusting the struts to align the bone. Due to the limitations of the CD based program, patients would frequently complete their treatment yet still have a slightly mal-aligned bone. This required new inputs to the software and additional time in the frame to complete the bone alignment. Internally, S&N found that administering the CD's as well as having staff on call to support doctors in the field when problems arose significantly eroded the profitability of the device.

The NetIDEAS design solution utilizes the power of Pro-Engineer CAD software and its Mechanism Extension to solve the 6-degree of freedom mathematical calculations and provide a graphical representation of the TSF's orientation at any setup combination. Since its economically

and logistically impractical to outfit hundreds of surgeons with the CAD software, NetIDEAS wraps the CAD/CAE application in a simple user interface and links the two with an API. The web application was built to deploy a wizard-based approach to solving the deformity correction. This makes the



application easily accessible and usable by any and all surgeons without the knowledge of CAD or the mathematical solvers. Having this ‘tool’ available is only the first half of the total solution. The next step and probably most crucial is the scalability of the solution such that hundreds or thousands of surgeons can be registered in the system and simultaneous use by a handful of surgeons still provides the critical feedback in an acceptable timeframe. NetIDEAS hosts the application as the ASP and deploys their “Arena” technology to handle the Internet traffic and performance criteria. NetIDEAS hosts and manages the TSF application from its Philadelphia based data center, and supports the service to surgeons via the Internet 24 x 7 x 365.

“The TSF Portal will solve the complexity issues for all surgeons, particularly surgeons unwilling to take the time to learn how to use the device. The web-based portal now makes the TSF just as easy to use as other external fixators the surgeons are already comfortable using.” James said. James further noted that “...the enhanced capabilities, coupled with the visual aspects of the site will allow us to expand the TSF usage not only in its present niche area of deformity correction, but also allows us to expand into acute trauma areas. This is a tremendous opportunity for the device.”



For More Information

For more information about NetIDEAS products or services, please visit our Web site or call us at (856) 914-9410 (US).

<http://www.netideasinc.com>

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Launched in April of 2002 to a small group of users, and expanded in September of 2002 to hundreds of additional users, the business impacts have already been realized. “The site is doing very well. Sales are way up over last year (approximately 60% growth over 2001) due in large part to the site's capabilities and our renewed focus on the product as a whole, and my engineering team spends less time supporting the product”, said James. “Our ROI was achieved in approximately nine months and has surpassed our expectations.”

Pre-Operative Planning Tools and Computer Assisted Surgery are becoming a reality with the power of today's technology. The TSF Portal is proving just that. Leveraging product know-how through web portals to facilitate the use, definition, design, or maintenance of your products significantly increases value to the surgeon while reducing the drain of resources to support the field. The possibilities are boundless - S&N and NetIDEAS are exploring other opportunities to further the impact of web-based tools in the Orthopedic Community.

“Forget everything I am about to show you about using the Taylor Spatial Frame because the new website changes everything”, Kevin Pugh M.D, Director, Division of Trauma, The Ohio State University, at the TSF Training Class in Memphis TN, April 2002.

Indeed it has!

About Smith & Nephew

Smith & Nephew Orthopaedics (<http://www.smith-nephew.com/orthopaedics>) is a leading provider of joint reconstruction, trauma and clinical therapy products. Based in Memphis, Tenn., the company strives to combine industry- leading technology with its history of clinically proven products to deliver simpler, less invasive and more cost-effective procedures to the orthopaedic community.

About NetIDEAS, Inc.

NetIDEAS, Inc. (www.netideasinc.com) is a leading provider of product development based solutions that expand engineering capabilities into business enabling weapons. Based in Mt. Laurel, NJ, the company designs, implements, hosts, and manages product development and project management applications via high powered websites.

