

St. Jude Medical sets the pace for medical device innovation.

Overview

■ **Business Challenge**

St. Jude Medical CRMD needed to develop a next-generation control device to empower doctors and to provide the foundation for a range of new capabilities down the road. St. Jude Medical realized it needed to focus its innovation efforts on its core implantable device business, while collaborating with the right partner in areas that were strategically key—yet outside of its core competencies.

■ **Solution**

St. Jude Medical worked closely with IBM Technology Collaboration Solutions to design its next-generation monitoring device.

■ **Key Benefits**

- *Improved ability to focus on go-to-market strategy*
- *Faster time to market*



St. Paul, Minn.-based St. Jude Medical (www.sjm.com) provides medical device technology and services designed to help cardiac, neurological and chronic pain patients worldwide. The company's five major focus areas include cardiac rhythm management, atrial fibrillation, cardiac surgery, cardiology and neuromodulation. St. Jude Medical employs approximately 11,000 people worldwide.

St. Jude Medical, Inc. has a clear vision—to give doctors the tools they need to help their patients in the areas of cardiac, neurological and chronic pain care. It does so by providing them with an array of surgically implantable medical devices whose key function is to control and modulate the body's most vital activities, the most basic of which is the heartbeat. In cases where the speed or regularity of a patient's heartbeat goes awry, St. Jude Medical's devices detect and correct the problem through precisely administered electrical stimulation.

“Through deep collaboration and truly complementary strengths, St. Jude Medical and IBM were able to develop a solution that meets the needs of our customers. For us, collaborative innovation is a formula for success.”

—Michael J. Coyle, president,
Cardiac Rhythm Management Division,
St. Jude Medical

Driving innovation through seamless collaboration

Business Benefits

- Improved ability to focus on go-to-market strategy
- Leveraging of IBM's proven design competency
- Modular, standardized design providing a clear evolutionary road map

Product-specific benefits

- Ability to penetrate competitive accounts that were previously inaccessible
- Stimulus to first-time use of St. Jude Medical® implantable devices by physicians
- Significant increase in market share
- Major increase in customer satisfaction

“We weren’t just looking to develop a new device for doctors to use. We were developing a platform that would fit into our vision of how the healthcare industry is evolving.”

– Michael J. Coyle

Under the constant watch of these devices, patients with potentially fatal or debilitating conditions, such as cardiac arrhythmia or sudden cardiac death, are able to carry on quality lives.

Helping doctors help patients

Although the devices are often highly sophisticated, a critical part of the equation is the skill with which they are implanted and programmed. The actual surgery required to implant the device is only the beginning. From there, doctors need to program the device to tell it what to do in different situations by inputting key parameters, such as the patient’s desired resting heart rate or the threshold that will trigger the device to activate to normalize the patient’s heart rhythm. Equally important is the information the device can convey to doctors, principally the nature, timing and frequency of cardiac events that the patient has experienced—information that can have a direct bearing on other kinds of treatments the patient may need to receive. In short, doctors need both a way to control devices and a way to compile and leverage the intelligence the devices contain. While the health of the patient is the most critical measure of this, the ease of device control also has important ramifications for the efficiency of clinical processes. Within a clinical setting, smooth workflow is critical. Anything that impinges on surgical workflow—including an inefficient interface to the device—can lead to less efficient procedures and less productive physicians.

For this reason, the focus of St. Jude Medical’s innovation efforts goes beyond its core competencies, to the technologies and applications that put more control and flexibility into the hands of the physicians and medical staff treating implant patients. With fierce competition in the implantable device market, St. Jude Medical’s management knows that continuous innovation is a must to keep up with and stand out from the crowd. To that end, it set out to develop a platform for its devices that would be powerful enough for today’s requirements, while being flexible enough to adapt to tomorrow’s healthcare environment. The challenge was in finding the best approach to designing it. Having designed the initial system, St. Jude Medical was acutely aware of how complex such an undertaking could be. The much higher functional demands expected of the new system—and the fact that it needed to be readily adaptable to future demands—would mean a quantum increase in project complexity, and would require an even broader and deeper level of technical expertise to bring it to fruition.

A new model to meet new demands

As St. Jude Medical's ideas about the new device crystallized, so did the perceived value of strategic collaboration with an experienced design partner. Its staff knew that the company's core strengths were in implantable devices, in the advanced telemetry technology to communicate with control devices from within the body and in the applications that leverage this link—and resolved to focus its innovation efforts on them. St. Jude Medical's staff also knew it needed more than a low-cost commodity device. For St. Jude Medical's applications to perform optimally, it was critical for the device's key components to be highly integrated, down to the circuit board level. The importance of tight integration in the device was even more important as the product followed an evolutionary road map, since a flawed or suboptimal design would adversely affect its functionality.

St. Jude Medical's staff recognized that the trend in the healthcare industry was for devices to become more networked, and for healthcare processes and workflows to reflect this trend. To position itself for its future product evolution, St. Jude Medical sought a partner with a range of strengths that would prove critical in this area, from the design considerations of networked devices to process transformations that will leverage the availability of networked clinical information.

The final and most basic requirement was the ability to meet extremely high-quality manufacturing specifications. Since all new devices require the approval of the U.S. Food and Drug Administration, any quality issues have a direct impact on the time required to get the product to market, explains Michael J. Coyle, president of the Cardiac Rhythm Management Division. "It was crucial for us to get it right the first time," says Coyle. Against these stringent criteria, IBM was seen as the clear choice. St. Jude Medical struck a multi-year collaborative development agreement with IBM Technology Collaboration Solutions (TCS) to design its next-generation programming device, known as the Merlin™ Patient Care System.

Among the Merlin™ Patient Care System's key improvements are a more powerful set of applications and a large touchscreen that makes it easier for doctors to use in the course of complex procedures. St. Jude Medical also cited IBM's thought leadership in the area of medical device networking and the stimulative impact it is expected to have on broader product development strategy.

Key Components

Services

- IBM Technology Collaboration Solutions
-

Why it matters

The ability for St. Jude Medical's new programmer device to communicate with the implanted device is critical to doctors and clinicians. However, since the implantable devices themselves are St. Jude Medical's core competency, they chose to team with IBM to design and develop the external device. This partnership helped bridge the gap necessary to bring the new state-of-the-art cardiac patient care system to market. This enabled St. Jude Medical to channel its innovative efforts on its core products.

Innovation where it matters

While the new device strengthens St. Jude Medical's position in the market and expands its strategic options, the real success story lies "outside the box"—in the new kind of relationship it forged with IBM Technology Collaboration Solutions. A market as demanding and dynamic as St. Jude Medical's requires not only constant innovation, but innovation in the right place. For St. Jude Medical, that means continually pushing the performance envelope with its core implantable devices and focusing on the evolving needs of healthcare providers. Under its collaborative innovation relationship with IBM, St. Jude Medical is better able to achieve this focus, while at the same time reaping the benefits of IBM's unparalleled design and research resources.

Another highlight of the relationship is the proximity with which IBM and St. Jude Medical staff worked to create a truly integrated solution. It's not uncommon that alliance relationships are touted as collaborative development but in reality represent a simple division of labor, or a parsing of tasks. In the case of St. Jude Medical and IBM, however, the depth of collaboration is evidenced by the shoulder-to-shoulder interaction of their respective teams—so much so, notes Coyle, that it was difficult to distinguish IBM TCS staff from St. Jude Medical staff. "We worked in a very collaborative way at all levels of the project, from electronics to software to mechanical design," says Coyle. "IBM's ability to work seamlessly with our own people led to the best possible result."

At the end of the day, the result that matters most for St. Jude Medical and its healthcare customers is the ability to provide better quality care to patients. With the new Merlin™ system, doctors can help their patients, and—by virtue of an innovative, easy-to-use interface—can do so more efficiently and smoothly. Indeed, Coyle believes that the innovation fostered by the IBM relationship will expand the effectiveness of its implantable devices and ultimately drive their broader use. "Through deep collaboration and truly complementary strengths, St. Jude Medical and IBM were able to develop a solution that meets the needs of our customers today while laying the groundwork for tomorrow's healthcare solutions," says Coyle. "For St. Jude Medical, collaborative innovation is a formula for success."

For more information

Please contact your IBM sales representative or IBM Business Partner.

Visit us at:

ibm.com/innovation



© Copyright IBM Corporation 2007

IBM Corporation
Global Solutions, Industry Marketing
294 Route 100
Somers, NY 10589
U.S.A.

Produced in the United States of America
2-07
All Rights Reserved

IBM, the IBM logo and ibm.com are trademarks of International Business Machines Corporation in the United States, other countries, or both.

Other company, product or service names may be trademarks or service marks of others.

This case study illustrates how one IBM customer uses IBM products. There is no guarantee of comparable results.

References in this publication to IBM products or services do not imply that IBM intends to make them available in all countries in which IBM operates.