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A Peek Behind the Curtain



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MEDTRONIC SHARES ITS EXPERIENCES AS AN EARLY **SAP HANA ADOPTER**

by **David Hannon**, Features Editor

“Customer satisfaction” takes on a much more urgent meaning when physicians use your organization’s products to treat patients with chronic diseases. At medical technology company Medtronic, no customer complaint is ever taken lightly. Throughout its production of medical technologies that help millions of people live better and longer, Medtronic strives to record and track every byte of customer feedback it encounters — be it a formal U.S. Food and Drug Administration report or an informal conversation that a Medtronic employee happens to overhear.

For example, if a Medtronic worker attends a dinner party where another guest states that a family member experienced some discomfort after having a pacemaker implanted, that employee is obligated to input that information into a central complaint registration system.

At a Glance

Medtronic

Headquarters: Minneapolis, Minnesota

Industry: Medical device manufacturing

Revenues: \$15.9 billion (FY 2011)

Employees: 40,000

Company details:

- Co-founded by Earl Bakken and his brother-in-law Palmer Hermundslie in 1949. Bakken was an electrical engineer who used medical technology to help a cardiologist keep his open-heart surgery patients alive. Ever since, Medtronic has been creating life-changing therapies that help people with chronic diseases by alleviating pain, restoring health, and extending lives. Medtronic therapies make it possible for millions of people to resume everyday activities, return to work, and live better, longer.
- Business units include: Cardiac Rhythm Disease Management, Spinal and Biologics, CardioVascular, Neuromodulation, Diabetes, and Surgical Technologies
- SAP ERP user since 2003
- Business Objects user since 1990

SAP solutions:

- SAP ERP 6.0
- SAP NetWeaver BW 7.01
- SAP CRM 7.0
- SAP HANA 1.0
- SAP BusinessObjects BI 4.0

And while Medtronic is gaining valuable customer-related insights from data-intensive initiatives like this one, its data volumes and data types are expanding rapidly. The business's data warehouse has doubled in size in the past three years and that pace of growth is expected to continue for at least the next few years, with an increasing percentage of that volume coming in the form of unstructured data — text-based inputs that contain valuable information about its products and customers.

Not surprisingly, Medtronic began experiencing non-patient-related IT performance issues within its data warehouse as a result of the growing data volumes. In addition, new requirements necessitating merging even larger amounts of data from multiple sources would soon compound these problems. Medtronic began actively looking for a solution that would improve its reporting performance while still providing the business with the freedom to expand its data collection in all directions.

“Application users at Medtronic have very high performance and quality expectations, and we are focused on trying to achieve a single source of truth solution for reporting,” says Steve Teichman, IT Director for Business Intelligence at Medtronic. “Additionally, Medtronic has a lot of data we haven't yet utilized to its full effectiveness. Tools like the coming analytics products — some from SAP and some from others — will help us to better utilize this data.”

Medtronic turned over every possible stone in its search for an answer to its reporting challenges, and it found a solution with the arrival of SAP HANA. “We believe this solution will create enough of a performance benefit that we will have that single source in a single repository that can be used globally,” Teichman says. “Even though we were already headed down this path, we probably couldn't get there as quickly without something like SAP HANA to provide that leap in performance.”

As an existing SAP customer and an early adopter of SAP HANA, the company's experience in building the use case for the in-memory appliance, and its work on the implementation project can provide invaluable insight for the myriad of SAP customers who are eager to learn more about how in-memory computing can improve their reporting environments.

Expanding BI Landscape Drives New Requirements

Like most companies, Medtronic's IT landscape is expanding, and its SAP footprint is growing significantly, particularly in the area of business intelligence (BI). An SAP ERP customer since 2003, the business is gradually migrating off of its last few legacy systems to a single instance of SAP ERP 6.0. It is also migrating from a legacy data warehouse and adopting SAP NetWeaver Business Warehouse (SAP NetWeaver BW) as the platform for its reporting applications. Medtronic recently went live on SAP BusinessObjects BI 4.0 and has standardized on SAP BusinessObjects solutions for reporting.

One driver to improve its data analysis capabilities is Medtronic's global complaint handling initiative, which is a project to ensure all complaints and feedback about the company's products are captured in SAP Customer Relationship Management (SAP CRM) — currently, the company is migrating all of its business units onto SAP CRM for complaint management as part of this initiative.

“Medtronic holds itself to a very high standard in terms of what we classify as a complaint,” says Teichman. “Being able to report off that data as well as correlate it across different systems is very important to us.”

Once all the complaints — which come from multiple sources as both structured and unstructured data — are in SAP CRM, more consistent reporting will be possible. The ultimate goal is to be able to compare complaints to each product's registration data, which is housed in a non-SAP CRM system, and to sales data from SAP ERP.

Implementing SAP HANA

But using that complaint data for reporting required the ability to search through text fields in SAP CRM and compare that data against both the device registration data and the sales data. That text-based reporting coupled with multi-source data acquired from SAP and non-SAP systems was proving a challenge for Medtronic's existing reporting environment.

With a major expansion of the complaint-handling initiative scheduled and the move to SAP BusinessObjects BI 4.0 in ramp-up, Medtronic began looking for a solution to

streamline its reporting. As Teichman explains, Medtronic was aware of SAP HANA as early as fall of 2010 and was intrigued by its advertised benefits, but it wasn't until early 2011 that the company began seriously considering SAP HANA as the solution to its reporting performance issues.

Installed as a software appliance, SAP HANA captures and stores data in-memory and dramatically speeds response times for reports on large volumes of data, including unstructured data. As one of the solution's first adopters, Medtronic has worked very closely with SAP executives and experts to understand the appliance and how it can benefit Medtronic specifically. After all, there aren't a lot of best practices and project plans available for early adopters.

The first step was forming an executive steering committee that included executives from both Medtronic and SAP. The implementation team consisted primarily of SAP consultants and internal resources to ensure that SAP HANA was deployed most efficiently. Based on SAP's guidelines and recommendations, Medtronic chose to run SAP HANA on the UCS platform by Cisco. (Refer to the sidebar at the end of the article for more information about Medtronic's decision to select Cisco hardware.)

"We wanted to ensure this was the right use case for this solution and that SAP thought we could benefit from it as well," Teichman recalls. "We wanted to understand the challenges as well as what each organization needed to do to make this project successful and move faster — so we made sure we had strong connections back into SAP's organization."

Structuring the Data in SAP HANA

The project team began data modeling in the QA environment with the goal of having SAP HANA live for the expansion of the global complaint-handling system. But as the team started working on perfecting the processes that future users would need to implement, it began experimenting with exactly what sources and models worked best to bring the data into SAP HANA.

"The biggest internal debates so far have been around where we source the data from and how we do integrated data modeling," says Brian Raver, IT Manager of BI Strategy and Systems Architecture at

Medtronic. "Even though SAP HANA is a high-performance appliance, you still have to think about the optimal way to model the data."

There are many questions to answer: Should you drop the data into SAP HANA as is, or should you structure it differently? Do you replicate the data directly from the source SAP system? Do you flow the data into SAP NetWeaver BW through transformation layers and then use data services to move it into SAP HANA? Do you have to bring the non-SAP data through a custom data integration layer?

Of course, in the IT world, questions like these often incite much excitement and action, and Medtronic's BI architects and designers have risen to the occasion, according to Teichman. "They're working on something very new that is really changing the industry," he says. "And being in on the ground floor of something like that and figuring out how to use it has motivated them."

The Future of Analytics at Medtronic

Even as an early adopter, Medtronic has a vision of some early benefits that SAP HANA will bring to the business. For starters, the performance improvements are expected to greatly streamline Medtronic's move to a single data repository.

In addition to the complaint-handling initiative, Medtronic is also standardizing its sales reporting processes globally with the goal of improving reporting performance and expects SAP HANA to play an important role in that initiative. "We want to have information in the hands of our sales reps as quickly as possible so that they can focus on their customers," says Raver.

According to Teichman, Medtronic has very aggressive requirements around how fast sales reports should come — basically, a 15-second response time for most reports. "We were seeing one-to-two minutes on most reports and up to 10 minutes on some reports, and that's time our salespeople could be spending in front of our customers," he says. "In order to allow our sales force to be most effective, we need to achieve that performance requirement."

Medtronic is working with SAP on developing an application for text-based analytics to better leverage the wealth of unstructured data on which the global

Advice for Early Adopters

Becoming an early adopter has its rewards but also its challenges. As Medtronic's Steve Teichman points out, "When we evaluate new technologies, we evaluate the challenges and ask if this is something that's worth taking a chance to be an early adopter on, or is it something that we can wait on and benefit from in a year or so."

Following are some general guidelines for becoming an early adopter:

- **Be confident in the use case:** Don't be an early adopter just to be an early adopter. Become one if the solution is something that your organization will uniquely benefit from implementing sooner rather than later.
- **Get vendor buy-in:** New solutions and product strategies come and go, so before you take on the challenges of becoming an early adopter, make sure your vendor is fully committed to the solution and your use case. Question them extensively to make sure they understand how you expect the solution to improve your business.
- **Get executive sponsorship:** Executive sponsorship will help align the initiative with the business goals and provide a champion to get the project funded and completed.
- **Promote the early wins:** With a new technology, there will be skeptics. Promote those early wins and emphasize that by being an early adopter of the new technology, you have taken the lead in front of your competitors.

Medtronic Chooses the UCS Platform by to Run SAP HANA

As an innovator in the communications and information technology industry, Cisco and its network-centric platform are changing the nature of work and the way we live. Medical technology leader Medtronic chose Cisco's Unified Communications System (UCS) platform on which to run its SAP HANA in-memory computing appliance — and for ongoing broader usage as its network hardware provider — because it was the best strategic fit with Medtronic's existing infrastructure out of the four certified vendors considered.

Cisco's approach to scale out (versus scale up) aligned well with how Medtronic intended to grow the SAP HANA platform in its IT environment. Medtronic expects the in-memory computing appliance to be a game-changer in regards to reporting performance and describes the UCS platform as a key component of delivering on that promise.

Medtronic also commended the Cisco team's efforts, claiming the team responded extremely well to the hectic schedule and urgent requests and delivered the infrastructure ahead of schedule at every turn. In fact, the production system is running over two months before the scheduled go-live date.

In addition to allowing the business to meet its financial targets for the SAP HANA project by providing a cost savings over the alternatives, the UCS platform also carried with it a host of network integration benefits such as:

- Medtronic IT could confirm basic link connectivity before operating system/device drivers were loaded, which led to quicker problem resolution.
- The Cisco Integrated Management Controller (CIMC) configuration options for redundant connectivity fit Medtronic's data-center networking standards very well.

For more information about the UCS platform, visit www.cisco.com.

What Is SAP HANA?

SAP HANA appliance software is a data-source agnostic, in-memory appliance that lets users analyze large volumes of transactional and analytical data as it develops from virtually any data source in real time. How does it work? Data is captured in-memory as business happens, and flexible views expose analytic information rapidly. External data can be added to analytic models to expand analysis across the entire organization.

Synchronizing key transactional tables in near-real time in-memory makes these tables easily accessible for analysis and lookup. Once data is available in-memory, users can instantly look up individual line items from massive lists with no impact on the operational system.

complaint-handling system relies, such as free-text fields where a lot of notes are taken.

“We think there's a lot of information available in this data that we don't see — kind of a situation where we don't know what we don't know — because we don't have a way to capture everything we would like to capture,” says Raver.

Early Innovators

Medtronic's decision to become one of the first adopters of SAP HANA is not one that the company took lightly, but one that the company was confident about because of the work it did to define the business case and evaluate the benefits and challenges of being an early adopter.

“Medtronic as a whole has a very innovative culture and history — but at the same time, quality is an absolute fundamental to us, and we're not going to make any decisions that could risk our product quality in any way,” says Teichman. “We aren't an early adopter in every area, but we do it in areas where we can really make an impact. From an IT perspective, we're most interested in innovative solutions that we think can benefit patients.” ■