

# CARLSON CONSULTING ENTERPRISE

*A newsletter of the Carlson School Enterprises*

CARLSON  
SCHOOL OF MANAGEMENT  
UNIVERSITY OF MINNESOTA

## Inventory Improvement

Student consultants team with faculty to create innovative solutions.

“Medtronic’s Carlson Consulting Enterprise project was a great success,” said Ronald A. Frisbie, vice president of Medtronic’s CRM device manufacturing and supply chain. In 2004 Medtronic posed a challenge to student consultants: address the medical device industry bullwhip phenomenon within their vertically integrated suppliers. The consultants were asked to reduce shortages, expedites, obsolete inventory, excessive inventory, and safety stock at item level.

Frisbie said, “We were looking for new, innovative concepts to address an industry-wide problem. The team successfully delivered valuable insights and recommendations for our division, which exceeded our expectations.”

The student consultants leveraged new faculty research, applying Professor Arthur Hill’s Smart Pull System of stock-level analysis. (See page 3 for more information).

The consultants performed an inventory sensitivity analysis, evaluating the equations that Medtronic had used to determine safety stock, actual inventory, and service levels. They found the Smart Pull System to be more effective. It allowed management to be more proactive in responses to industry phenomena such as phase in/out, as well as monthly and quarterly spikes.

The student consultants recommended a new safety stock equation

that dynamically calculated the required inventory and safety stock at the item level to meet required service levels. The consultants were also able to recommend new equations and definitions for minimum and maximum inventory levels. This identifies the appropriate targets that align with the

identified key activities for execution and successful implementation.

“We found the student consultants to be highly talented and motivated individuals who were dedicated to the success of our project,” said Frisbie. Their approach—backing the students with experienced professionals and

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– Ronald A. Frisbie, vice president of CRM device manufacturing and supply chain, Medtronic

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service level objectives.

The results were striking. The inventory and financial analysis indicated that by using the Smart Pull System, a 12.2 percent savings in inventory investment (versus actual dollar inventory investment across items in scope) would be possible. A 23 percent improvement in service levels (versus actual unit shorts) could also be achieved.

As further recommendations, the student consultants redefined key performance metrics, an order-up-to approach, and key inventory targets that aligned with Medtronic’s objectives and service level requirements. Finally, the students developed a road map that

leveraging the intellectual capital of the University—makes for a powerful delivery model. I would recommend them to any company that is looking for innovative, viable solutions.”



**Medtronic**  
*When Life Depends on Medical Technology*

# Meet the Consultants

The Carlson Consulting Enterprise student consultants are an impressive group. These talented, committed, and intelligent students come from a diverse array of backgrounds, both personal and professional.

## Average years work experience: 5

## Functional background experience:

- > Strategy
- > Operations
- > Finance
- > Marketing

## Past industry experience:

- > Advertising
- > Agriculture
- > Airlines
- > Construction
- > Consulting
- > Consumer Products
- > Defense
- > Electronics
- > Financial Services
- > Government
- > Healthcare
- > Hospitality
- > Insurance
- > Internet
- > Manufacturing
- > Medical Device
- > Research
- > Retail
- > Telecommunications

## Countries of origin:

- > China
- > Colombia
- > Dominica
- > India
- > Korea
- > Mexico
- > Norway
- > Taiwan
- > Thailand
- > Uruguay
- > United States
- > Yugoslavia

# International Alum

“Business is all about relationships, and the Carlson Consulting Enterprise is a good place to learn that,” says Noémie Thomas, MBA '03. Now a principal logistics and supply chain analyst at Medtronic, Thomas was among the first group of students in the Carlson Consulting Enterprise. The students were involved in examining the Carlson School’s established enterprises to determine how theirs would be different.



Thomas led a team of student consultants on a business analysis of Northwest Airlines Cargo. The company had found a planned expansion into Asian markets to be more challenging than anticipated. Thomas and the other student consultants worked to unify information that had once been scattered across Northwest Airlines Cargo.

“You need to build trust,” says Thomas, who made a point of establishing and maintaining relationships during her time on-site at Northwest Airlines Cargo. Over time, these relationships ensured that people shared the information so important to the work of a consultant.

The student consultants carefully analyzed the market to generate their proposal, which contained insights into the benefits of using an Asia-based agent instead of an agent based in the United States.

“You can’t do business if you’re just thinking locally,” says Thomas. A native of the French village of Grèzes, Thomas spent a year in Japan and a year in Australia to gain experience of other cultures. She completed her undergraduate work in Asian languages and business, as well as European business and international management.

Soon after graduation, Thomas transformed the supply chain of the French fiberoptic company ICTL, where rapid expansion meant new relationships with suppliers. Thomas was able to put her knowledge of Asian business to the test when she successfully negotiated new deals with Korean suppliers.

While earning her MBA at the Carlson School, Thomas also completed a masters degree in strategic management at Jean-Moulin Lyon-3, a French university. The experience allowed her to compare the differences in European and American approaches to incorporating supply chain management into a company’s strategic vision.

Although she hasn’t pursued a career in consulting, Thomas recalls her time with the Enterprise as valuable. She said, “My time in the Carlson Consulting Enterprise was definitely worthwhile.”

# Letter from the Directors

Carlson Consulting Enterprise is a unique, high-level consultancy that is also an academic program. Staffing the Enterprise are Carlson School MBA candidates, guided by professionals with formidable real-world experience.

The Carlson Consulting Enterprise partners with its clients to gain a holistic view of each business, and the consultants combine a disciplined, fact-based approach and data-driven analysis to develop recommendations for strategic and operational improvements that drive measurable results.

Recruiters and students alike know that the Carlson Consulting Enterprise gives students an edge in the job market. Clients see it as a vehicle for companies to generate valuable results.

We continue to seek ways to grow our program. We've extended our engagements into the summer months, allowing us to provide year-round service. We have expanded our service offerings in the strategy and operations area.

We have diversified into new industries, including manufacturing/industrial, retail, consumer goods, healthcare, financial services, medical devices, and transportation/hospitality.

Not least of our expansion is the inauguration of our bi-annual newsletter. You'll find a description of a recent client project: the Carlson Consulting Enterprise's work with Medtronic to improve inventory strategies. We share some "news you can use" on recent faculty research. You'll meet an alum, and you'll learn about this year's student consultants.

More, you'll have the chance to gain insight into one of the prestigious Carlson School's flagship enterprise programs. We hope you find the work done by the Carlson Consulting Enterprise as fascinating and rewarding as we do.

Best wishes,

*Laura TerWisscha and Curtis Moore*



## News You Can Use

### *The Smart Pull System*

Too often, top management lacks the "control mechanisms" that would allow them to manage inventories. The result? Too many of some items, and not enough of others. The Smart Pull System provides significant benefits by simultaneously reducing inventory investment (to make the CFO happy) and improving service levels (to make the marketing and sales people happy, as well as the customers).

For maximum efficiency, an inventory management system must be simple; able to handle phase-in, phase-out, and end-of-quarter spikes in demand; and be able to create exception notices to help companies proactively manage inventory.

The Smart Pull System was developed by Carlson School Professor Arthur V. Hill, holder of the John and Nancy Lindahl Professorship for Excellence in Business Education. The Smart Pull System sets targets to achieve a user-specified unit fill rate to meet identified service levels, versus keeping a

day or week of supply on hand, as many companies do. It also uses a dynamic approach that updates inventory targets based on the variability of the demand during the replenishment lead-time and on forecast information. The system recommends using demand filters and tracking signals when forecast errors have exceptional conditions.

An important part of improving the supply chain is ensuring that managers receive the right incentives. Running out of inventory is much more significant than having a little too much. However, both cost money. The Smart Pull System allows supply chain and inventory managers to better align performance incentives by using dynamic inventory targets.

*For more information on the Smart Pull System, including the equations used by the consultants on the Medtronic project, visit our website at <http://www.carlsonschool.umn.edu/consulting>*

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## CARLSON CONSULTING ENTERPRISE

# A unique solution to your business challenges

Using cutting-edge research and access to thought leadership, Carlson Consulting Enterprise students partner with a team of experienced professionals to deliver bottom-line results . . . at a tremendous value.

We deliver a disciplined, fact-based approach within:

### Strategy

Competitive Analysis  
Cost Reduction  
Performance Management  
Business/Strategic Planning  
Industry Analysis

### Operations

Process Improvement  
Logistics  
Manufacturing Processes  
Supply Chain Management  
Inventory Management

We partner with some of the world's leading organizations including:



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