

# 7 Organizations Vie in Technology World Series

[ 2004-04-19 ]

Coincides with 50th Anniversary of MIT Operations Research Center

LINTHICUM, Md., April 19 /PRNewswire/ -- The Institute for Operations Research and the Management Sciences (INFORMS(R)) today announced seven finalists that will compete for the 2004 Franz Edelman Award for Achievement in Operations Research and the Management Sciences.

The competitors range widely in industry, origin, and orientation. They include three Fortune 500 companies; an entry from the growing fractional aircraft industry; a major Dutch electronic manufacturer; the largest terminal at the busiest container port in the world; and governmental agencies from the United States and Russia who are working together to control nuclear materials.

This year's competition is being held in conjunction with the Massachusetts Institute of Technology and immediately follows a 50th anniversary celebration of the founding of the MIT Operations Research Center.

The Edelman competition recognizes outstanding examples of projects that change people's lives. In 2002, for example, Continental Airlines and CALEB Technology were recognized for applying a disaster recovery system that showed exceptional resiliency on September 11. In the 1990's, a team from the city of New Haven and Yale won for preventing AIDS through an innovative needle exchange program.

The seven finalists for the 2004 INFORMS Edelman Award are:

Bombardier Flexjet: "Breakthrough Performance Improvement in Large Fractional Aircraft Ownership Operations with Simultaneous Aircraft and Crew Optimization."

Bombardier Flexjet is a key player in the fractional aircraft ownership field, the fastest-growing sector of the business aircraft industry. Using Operations Research, Bombardier teamed with AD OPT Technologies to optimize aircraft and crew deployment without compromising service levels to its customers. The result: Bombardier has reduced total operations costs substantially, decreasing crew levels by more than 20% while increasing density (live legs per available aircraft per day) by more than 10% per day. Service levels, defined by flawless flights, remain above 90%. The 3-module optimization solution developed for Bombardier is now the industry benchmark for optimization of large fractional aircraft ownership operations.

Hongkong International Terminals Limited: "Achieving Elastic Capacity Through Data-Intensive Decision Support System in a Container Terminal."

Hongkong International Terminals (HIT), the largest container terminal operator in the busiest container port in the world, needed to boost capacity to cope with the increasing China export trade without expanding its existing facilities. Utilizing Operations Research (OR) techniques to provide the core business logic, HIT embarked on an aggressive IT implementation of the Decision Support System (DSS) for daily terminal operations called 3P. HIT employed OR in four main areas: (1) an Automated Container Grounding Strategy to maximize container yard stacking density and vessel operation productivity while minimizing traffic congestion within the container terminal; (2) an intelligent Internal Truck Deployment System to identify the optimal container trucks allocated to serve each quay crane while minimizing traffic congestion and maximizing quay crane and internal truck utilization; (3) an External Truck Handling System, an interactive voice response system used in conjunction with automation at entry/exit gate areas to provide greater gate efficiency and faster truck turnaround; (4) a Movement Scheduler to synchronize container movements while balancing workload in the container yard.

The result: OR helped increase capacity by 50% with streamlined trucking, reduction in unproductive movement of equipment, and no increase in staff, translating into annual savings of over \$30 million. Furthermore, HIT avoided the costly environmental and financial burden of constructing new container berths which would have cost upwards of \$300 million.

John Deere: "Improving Asset Management and Order Fulfillment at John Deere's Commercial and Consumer Equipment (C&CE) Division."

Using Operations Research -- in this case, leveraging a Multi-stage Inventory Planning and Optimization (MIPO) application from SmartOps Corporation -- the \$3.5 billion Commercial and Consumer Equipment (C&CE) division of John Deere was able to develop Recommended Stocking Levels (RSLs) at their dealers, warehouses and plants for an array of commercial and consumer equipment in North America and Europe. The scale of this initiative (which included 2500 dealers and over 1500 configurations) makes it one of the largest and most complex examples of multi-echelon stochastic inventory theory applied in practice. Results were impressive: finished goods inventory was reduced by \$890 million and on-time shipments from the factories to the dealers increased from 63% to 92%. Due to the success of the model, John Deere is planning to apply the model to their international business and also to move the analysis up-stream to their work-in-progress inventories.

Motorola, Inc.: "Reinventing the Supplier Negotiation Process at Motorola."

As the telecommunications industry underwent a massive downturn in the early 2000s, Motorola, Inc., needed to drastically reduce costs and increase productivity. In Motorola's procurement community, the priority was to reduce the cost of direct and indirect materials purchased. Realizing that a radically different approach was needed, Motorola turned to Operations Research (OR) for guidance. Combining OR-aided methods such as innovative bidding, online negotiations and scenario-based optimization analysis,

Motorola launched a comprehensive system to support the company's sourcing process. Motorola's sourcing teams use the OR capabilities of optimization to identify the optimal award strategy under different scenarios while considering constraints such as parts qualification status, supplier count and capacity.

The results speak for themselves. Savings captured have exceeded \$600 million thus far, including nearly \$200 million (an extra 4-7%) attributed to the advanced collaboration, on-line negotiation, optimization and analysis system capabilities. Using the system not only changed the way negotiations are conducted, but has also served as a catalyst for moving Motorola from loosely coordinated efforts by individual sectors of the company to conducting truly global negotiations jointly across business units.

Philips: "Collaborative Planning at Philips Semiconductors and Philips Optical Storage"

The semiconductor industry environment is highly volatile and unpredictable. Building strategic relations with key customers for primary components is one of the ways to manage the uncertainty. To address this, Philips Electronics enlisted operations researchers to synchronize the supply chain of the supplier (Philips Semiconductors), end customer (Philips Optical Storage) and the Electronic Manufacturing Service (EMS) contractors in-between.

Using operations research (OR) to view the extended supply chain network as a stochastic dynamic problem resulted in an effective and efficient decision support system. A conservative estimate shows minimum yearly savings of \$4.85 million jointly for Philips Semiconductors and Philips Optical Storage measured against a turnover of \$300 million for the total supply chain under control, a substantial improvement to the bottom-line. Savings relate to increased sales through proactive planning of supplies, reduced obsolescence and inventory, and better use of capacity.

Waste Management, Inc.: "Routing Optimization for Waste Management."

Waste Management, Inc. (WMI) is North America's largest waste collection company, operating 26,000 vehicles and serving ten million homes and two million enterprises. After numerous mergers and acquisitions, WMI needed to reduce inefficiencies and boost bottom-line profits by optimizing vehicle routes. Utilizing operations research (OR) the Institute of Information Technology, Inc. delivered WasteRoute(TM), a comprehensive route management application that took into account the specific routing considerations of WMI: time windows, multiple vehicle disposal trips, and vehicles with varying capacities and service capabilities. The benefits of the system include reduced operating costs, improved customer service and appropriate pricing. The routing solutions of this system were gradually deployed across the nation beginning March 2003 with a net effect of 984 fewer routes at the end of 2003. Moreover, WMI anticipates \$44 million in annual savings in 2004 using WasteRoute(TM), thanks to its OR-driven system.

In addition, the US Department of Energy is a finalist for their submission "The Adoption of Multiattribute Utility Theory for the Evaluation of Plutonium Disposition Options in the United States and Russia."

#### About the Franz Edelman Competition

The competition is being held at an INFORMS conference, "Applying Science to the Art of Business," which takes place at the Hyatt Regency in Cambridge, Massachusetts from April 25 - 27. The winners will be announced on Tuesday, April 27.

Information about the conference is online at  
<http://www.informs.org/Conf/Practice04/>

All the finalist papers will be published in the January 2005 issue of the INFORMS publication Interfaces.

This is the 33rd year that the prestigious competition has been held. The award is jointly sponsored by INFORMS and CPMS, the Practice Section of INFORMS. The top finalist receives a \$10,000 first prize.

#### About INFORMS

The Institute for Operations Research and the Management Sciences (INFORMS(R)) is an international scientific society with 10,000 members, including Nobel Prize laureates, dedicated to applying scientific methods to help improve decision-making, management, and operations. Members of INFORMS work in business, government, and academia. They are represented in fields as diverse as airlines, health care, law enforcement, the military, the stock market, and telecommunications. The INFORMS website is at  
<http://www.informs.org>

Contact	
Barry List, INFORMS PR Director	Doug Russell or Jennifer Viera
410-691-7852	781-684-0770
443-794-5182 cell	617-875-7506 cell
<a href="mailto:barry.list@informs.org">barry.list@informs.org</a>	<a href="mailto:INFORMS@schwartz-pr.com">INFORMS@schwartz-pr.com</a>

SOURCE Institute for Operations Research and the Management Sciences  
-0- 04/19/2004  
/CONTACT: Barry List, INFORMS PR Director, +1-410-691-7852,  
[barry.list@informs.org](mailto:barry.list@informs.org), or Doug Russell or Jennifer Viera, +1-781-684-  
0770,  
[INFORMS@schwartz-pr.com](mailto:INFORMS@schwartz-pr.com) all for INFORMS/  
/Web site: <http://www.informs.org/>

CO: Institute for Operations Research and the Management Sciences  
(INFORMS (R))  
ST: Maryland, Massachusetts

IN: CPR FIN  
SU: AWD

EO-CP  
-- NEM027 --

5550 04/19/2004 11:35 EDT <http://www.prnewswire.com>