Franz Edelman Award

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The Franz Edelman Award

The *Franz Edelman Award for Achievement in Operations Research and Management Sciences* is an annual prize recognizing practical applications of optimization and operations research.

For more details, see [https://www.informs.org/Recognizing-Excellence/INFORMS-Prizes/Franz-Edelman-Award](https://www.informs.org/Recognizing-Excellence/INFORMS-Prizes/Franz-Edelman-Award)

(The citations below were taken from this website.)
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The FCC conducted the world’s first two-sided “Incentive Auction” to meet the **exploding demand for wireless services** by reclaiming valuable low-band electromagnetic spectrum from TV broadcasters.

By purchasing spectrum from TV broadcasters and reselling it to wireless providers, the auction repurposed 84 MHz of TV spectrum for mobile broadband, next-generation “5-G,” and other wireless uses, raised nearly $20 billion in revenue, and contributed over $7 billion to reduce the federal deficit.

In addition, operations research enabled many TV stations to remain on their original channels, saving an estimated $200 million in relocation costs.
Holiday Retirement & Prorize.

Revenue Management Provides Double-digit Revenue Lift for Holiday Retirement

With approximately $1 billion in annual revenue, Holiday Retirement is the largest private owner and operator of independent senior living communities in the United States.

The company partnered with Prorize LLC, an Atlanta-based revenue management firm that leveraged O.R. to develop its Senior Living Rent OptimizerTM (SLRO TM), the first revenue management system in the industry.

The SLRO system enables a consistent and proactive pricing process across Holiday, while simultaneously providing optimal pricing recommendations for each unit in every one of their communities.
2016: UPS.

UPS, the leading logistics provider in the world, and long known for its penchant for efficiency, embarked on a long journey to streamline and modernize its Pickup and Delivery Operations in 2003.

This journey resulted in a suite of systems that are collectively known as Package Flow technologies (PFT), and an advanced optimization system known as ORION (On Road Integrated Optimization and Navigation).

ORION uses the data foundation of PFT to provide an optimized manifest to its drivers so that they can meet the complex demands of providing service. Costing $250 million to build and deploy, ORION is expected to save UPS $300 to $400 million annually. By building efficient routes and reducing the miles driven, and fuel consumption, ORION also contributes to UPS’s sustainability efforts by reducing the CO2 emissions by 100,000 tons annually.

ORION provides the foundation for a new generation of advanced planning systems for UPS. Because of its sheer size and scope, it has...
2015: Syngenta.

Syngenta, a leading developer of crop varieties (seeds) that provide food for human and livestock consumption, is committed to bringing greater food security to an increasingly populous world by creating a transformational shift in farm productivity.

Syngenta Soybean Research and Development (R&D) is leading Syngenta’s corporate plant-breeding strategy by developing and implementing a new product development model that is enabling the creation of an efficient and effective soybean breeding strategy.

Key to the new strategy is the combination of advanced analytics and plant-breeding knowledge to find opportunities to increase crop productivity and optimize plant-breeding processes.

Syngenta uses discrete-event and Monte Carlo simulation models to codify Syngenta Soybean R&D best practices, and uses stochastic optimization to create the best soybean breeding plans and strategically align its research efforts.

As a result of using these new analytical tools, Syngenta estimates it will save more than $287 million between 2012 and 2016.
2014: U.S. Centers for Disease Control and Prevention (CDC).

In 2001, the CDC launched a collaboration with Kid Risk, Inc. to use a range of operations research and management science tools combined with the best available scientific evidence and field knowledge to develop integrated analytical models for the evaluation of the global risks, benefits, and costs of polio eradication policy choices. The team systematically developed each of the components required to support integrated analytic models. The analytical results from the collaboration significantly furthered polio eradication in many ways.

The collaboration estimated $40–50 billion of net benefits by 2035 associated with the global eradication of polio.
2013: Dutch Delta Program Commissioner.

Protection against flooding is a vital issue in the Netherlands because 55% of the country is susceptible to flood risk.

The Dutch Water Act sets down flood protection standards for the country’s dike ring areas. In 2008, the Second Delta Committee advised the government to increase the protection standard of all dike ring areas by a factor of 10.

To form a scientific basis, the company Deltares was asked to determine economically efficient flood protection standards. A cost-benefit model was developed to derive the optimal investment strategy for each dike ring area.

State-of-the-art mixed integer nonlinear programming techniques were used to find optimal strategies.

In conclusion, it was only necessary to increase protection standards for three regions. The O.R. approach resulted in a significant increase in protection for these regions, where two-thirds of all improvements were concentrated.
2012: TNT Express.

TNT Express is one of the world’s leading express delivery companies. The introduction of operations research (O.R.) at TNT Express during the past seven years has significantly improved decision-making quality and resulted in millions of Euros in cost savings.

The Global Optimization Program (GO) initiative has led to the development of an entire suite of optimization solutions and the GO Academy, TNT’s management development program for teaching the optimization principles.

The tools and available knowledge allow operating units to analyze performance, identify optimization opportunities and overcome operational challenges.

To date, the most significant savings originate from the network routing and scheduling solution (TRANS), the tactical route planning solution for pickups and deliveries (SHORTREC), and the supply chain solution (DELTA Supply Chain).
2011: MISO.

Over the past few years, the Midwest Independent Transmission System Operator, Inc. (MISO) has transformed the electric utility industry in 13 Midwestern US states through the development and implementation of energy and ancillary services markets.

MISO uses mixed-integer programming to determine when each power plant should be on or off.

Operations research methods set energy output levels and establish the prices at which energy trades.

These new markets increased the efficiency of the existing electric infrastructure (power plants and transmission lines) in the Midwest, improved the reliability of the grid, and reduced the need for future infrastructure investments.

These advances enabled the MISO region to realize between $2.1 billion and $3.0 billion in cumulative savings from 2007 through 2010. We expect additional savings of $6.1 billion to $8.1 billion through 2020.
2010: INDEVAL.

Indeval, the Mexican Central Securities Depository for all financial securities, manages Dalí, the securities settlement system (SSS) that settles securities operations averaging over $250 billion daily, more than 70% of the value settled in the Mexican payments system.

In 2005, Indeval and its partners began implementing Dalí, a safer, more reliable, and more efficient SSS.

The core of Dalí is an operations-research-based engine that is executed automatically and offers a continuous and secure operation, ensuring that settlement is irreversible.

Now many transactions that would remain pending if processed individually are settled together, thus reducing liquidity requirements dramatically – by 52% in cash and 26% in securities. Indeval’s SSS enhances and strengthens Mexico’s financial infrastructure.

HP Transforms Product Portfolio Management with Operations Research

HP offers a wide spectrum of innovative products to meet diverse customer needs. While this has helped the company achieve unparalleled market reach, it has come with significant costs and challenges.

HP developed two powerful OR-based solutions for product variety management that address the diverse needs of its businesses throughout their products’ lifecycles.

The first uses custom-built ROI calculators to evaluate each proposed new product before it is introduced.

The second, HP’s Revenue Coverage Optimization (RCO) tool, is used to manage product variety after it has been introduced. By identifying a core portfolio of products most important to order coverage, RCO enables HP businesses to increase operational focus on the most critical products in their offerings.