An Intermittent Demand Forecasting Tool
Research Team: Manuel Rossetti (PI), Ed Pohl (Co-PI), Hugh Medal, Vijith Varghese

Sponsor: CELDi Center Designated Project (2007)

Problem in context:
• Intermittent (sporadic) demand forecasting extremely difficult
• Choosing the best forecast technique to use is difficult

What can other members use?
• User-ready intermittent demand forecasting software
• Useful features
  • Compare techniques
  • Batch mode
  • Inventory analysis
Data-Driven Adaptive Forecasting and Inventory Control
Research Team: Kevin Taaffe (PI - Clemson), Aurelie Thiele (co-PI – Lehigh), graduate students at Clemson and Lehigh.

Sponsor: CELDi Center Designated Project (2008)

Problem in context: High-quality demand management requires approaches to forecasting and inventory control that are (i) data-driven, i.e., dynamically integrate the experimental measurements in the decision-making framework, and (ii) adaptive, i.e., exploit information revealed over time, to reduce part stock-outs.

What can other members use?
- Computer-based decision tool (with user-friendly interface) that can incorporate company demand, forecasts, and inventory in many forms
- Difference between error- vs. cost-minimal approaches: critical to manage costs.
- Importance of lead times in high-quality inventory management.
- Novel approach to revenue protection and risk management.
Automated Asset Locating System (AALS)
Research Team: Mooi Choo Chuah, John Spletzer & Emory W. Zimmers, Jr. Sean Kelly, Thomas Miller and David Stolfo

Sponsor: CELDi Center Designated Project (2008)

Problem in Context:
• Inventory and asset tracking in large-scale stores and warehouses is tedious and labor intensive.
• Enhance inventory management by developing a system merging robotics and RFID to automate asset tracking
• Outcome is more frequent inventory updates and enhanced asset tracking with minimal human interaction.

Deliverables
• AALS Wiki site established for CELDi members
• RFID software SDK completed and available online
• System technical specifications available online
Logistics Network Design for Less-than-Truckload Consolidation
Research Team: Wooseung Jang (PI), Jim Noble, Zhongwei Yu, Phichet Wutthisirisart

Sponsor: CELDi – Center Designated Project (2009)

Problem in context: Many manufacturing and retail companies operate large but sparse domestic distribution networks consisting of highly dispersed origins and destinations and varying levels of shipment volumes. The problem is to evaluate the existing LTL transportation network for possible shipment consolidation strategies, and optimize it to get the maximum transportation cost savings.

What can other members use?

- A modeling methodology and solution algorithm for large-scale but sparse logistics networks
- An Excel based evaluation version of the logistics network design software using a spreadsheet model which is easy to adapt
- A C/C++ based optimization version of the logistics network design software