

Center for Engineering Logistics and Distribution (CELDi)

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Networking Merchandise Logistics



Research at the Center for Engineering Logistics and Distribution (CELDi) has enabled Wal-Mart to identify opportunities to streamline some of the company's processes. Center researchers collected data and conducted an in-depth analysis in areas the company could not otherwise accomplish. The work provided an opportunity to rethink how it uses some of the job activities and personnel hours in its stores and to enhance store productivity.

Last year, CELDi helped the company do a logistics analysis that caused the network designers to rethink how logistics networks (all the systems relate to moving merchandise from vendor/supplier to the store) will be organized in the future. Currently, center researchers are working on a project that will change how the company maintains inventory accuracy. In a store that has such a large flow of freight it is critical to maintain accuracy of inventory records to avoid over- or under-inventorying items in the store. Center efforts have led also to the publication of research papers on these subjects. Last year, the network analysis was published in the literature, and the company anticipates that this year's inventory analysis will lead to another paper.

Economic Impact: Research results suggest that applying scheduled and opportunity count frequently is quite beneficial for slower moving high cost items. The estimated savings for a store for low demanded items and for high demanded items are \$2,972,500 and \$234,200 respectively.

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These results are based on simplified representation of the retail environment so that they may not reflect actual savings. Even with that caveat, based on the risk analysis and the process simulation modeling, there is strong evidence to suggest that significant savings can be obtained by adopting the recommended approach.

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UPS Integrad™ Training System for Generation Y Delivery Drivers

In 2006, the Department of Labor awarded funding to United Parcel Service (UPS) to address training issues and to develop a state-of-the-art training system that would serve the needs of diverse drivers, including Generation Y drivers. Safety for UPS Delivery Service Providers (DSPs) was given a greater focus in the development of this training system than was used in previous training efforts. UPS wanted to focus on some of the most common and costly injuries. The UPS Integrad Training System uses computer-based training that utilizes agent-based and interactive learning presented through animation coded in CGI as well as kinetic learning modules. UPS collaborated with researchers from the Center for Engineering Logistics & Distribution (CELDi) the system to enhance and support training, and ultimately to support workers' well-being and quality of life.



Newly hired UPS Delivery Service Providers enter a building for their first day of training in what is called the UPS Integrad system. They typically expect to spend most of their day listening to lectures on how to

deliver packages efficiently and safely. For most of them it is hard to learn that way; they would rather do more hands-on activities. Most prefer to use computers, but only if the learning can be done in a way that is exciting—like the video games that many are used to playing.

The training site looks just like any UPS site where packages are loaded and package cars prepare to leave to begin their deliveries. Most are pleasantly surprised to see package cars made of plexiglass so they can observe their “peers” practicing how to lift and position packages safely. They walk into a room full of computer workstations, surrounded by eye-catching posters with motivational safety messages, and information. This training feels more like entering the job, though much like an interactive video games. Most trainees do “about-faces” in attitude. They are actually excited about employment training.

Economic Impact: Evaluations of the training system by UPS’s Stephen Jones have documented a 79.3% greater reduction in injuries for UPS Delivery Service Providers who were trained with the Integrad compared to those receiving traditional training. There was a concurrent 61% greater reduction in accidents for the Integrad group. This system results in dramatic and earlier driver service provider competence improvements in safety and job performance. The innovative design of the system integrates inclusive learning; procedural and motor learning; active, peer-assisted and just-in-time training and assessment; training tool usability and iterative design. This system holds users’ safety as the paramount design responsibility.

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