

## **Optimization of the packing of boxes dispatched to retail stores**

### **Problem proposed by Catherine Gingras (RedPrairie-JDA)**

The goal of packing optimization is to provide a foundation for decisions related to inventory allocation as the merchandise is brought to the warehouses and then dispatched. The major retail chains must fulfill the requests of hundreds (even thousands) of stores by dispatching to them the items stored in their warehouses. In the fashion industry, one must dispatch to each store an assortment of clothes of varied colours and sizes, in such a way that the demand of the store clients be satisfied. The demand for clothing items may vary to a considerable extent from one store to the next. To take this fact into account, the warehouse must pack "boxes" containing different mixes of clothing items. The number of distinct box types has a major impact on the operating costs. If one allows the use of many box types, it will be possible to satisfy the demand of the stores in a precise manner but the operating costs incurred at the warehouses will be high. On the other hand, if one allows a relatively small number of box types, the operating costs will be relatively low but the quality of service at the store will be comparatively poor. Thus the problem is to determine the number and contents of the box types, as well as the allocation of boxes to stores.