From Design to Support of Air New Zealand Rostering Systems

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Abstract

Air New Zealand rostering problems come in different shapes and sizes. To efficiently solve these problems complex mathematical models must be developed. In addition the implementation of these model is complicated and may take considerable time. The software produced must then be integrated into both the work environment and other existing systems. It must be tuned for speed and performance and then support must be provided. All these are challenges that face the operation research practitioner.

In this paper we will discuss our experiences, both the good and bad, from design through to support of one of Air New Zealand's rostering systems. We review the history of this system that has evolved from a single roster solver to a versatile multi-roster solver. The model we consider involves column generation technology and we take a close look at the inside of the column generator including state space, merging and rules. We look at various options and techniques that have been successfully used to speed up the software.