Solve Your Problem Faster – by changing the model

Barbara M. Smith

School of Computing and Mathematics
University of Huddersfield, U.K.
b.m.smith@hud.ac.uk

Abstract. Suppose we are solving a finite domain constraint satisfaction or optimization problem with a constraint programming toolkit that provides as standard a systematic search algorithm combined with constraint propagation. Even with the solution method prescribed in this way, there are very many choices to be made, in representing the underlying problem as a CSP and in solving it. Changing from one (not obviously bad) set of choices to a better set can make orders of magnitude difference in the time to solve the problem.

In this talk I will consider several different aspects of modelling, including:
- symmetry breaking;
- choosing the variables;
- adding constraints;
- search strategies for optimization problems;

and give some general guidelines.