Modeling for the Real World

High-Level Modeling

The General Algebraic Modeling System (GAMS) is a high-level modeling system for mathematical programming problems. GAMS is tailored for complex, large-scale modeling applications, and allows you to build large maintainable models that can be adapted quickly to new situations. Models are fully portable from one computer platform to another.

Multiple Model Types

GAMS allows the formulation of models in many different problem classes, including

- Linear (LP) and Mixed Integer Linear (MIP)
- Nonlinear (NLP) and Mixed Integer Nonlinear (MINLP)
- Quadratically Constrained (QCP) and Mixed Integer QCP (MIQCP)
- Mixed Complementary (MCP)
- Programs with Equilibrium Constraints (MPEC)
- Stochastic Linear Programming (SP)

State-of-the-Art Solvers

GAMS incorporates all major commercial and academic state-of-the-art solution technologies for a broad range of problem types, including a range of global and quadratic programming solvers.

Branch-and-Cut With Heuristics

MIP problems can significantly benefit from user supplied routines that generate cutting planes and good integer feasible solutions.

The GAMS Branch-and-Cut & Heuristic (BCH) facility automates all major steps necessary to define, execute, and control the use of user defined routines within the framework of general purpose MIP codes. This allows GAMS users to apply complex solution strategies without having to have intimate knowledge about the inner workings of a specific MIP system.

BCH Unique Features

The main features of the BCH facilities are that the cut generator and heuristic

- are represented in terms of the original GAMS problem formulation
- are independent of the specific MIP solver
- can use any other modeltpe and solver available in GAMS (e.g. nonlinear global optimization)