



# ➤ OPTIMIZATION

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# GAMS

## 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.

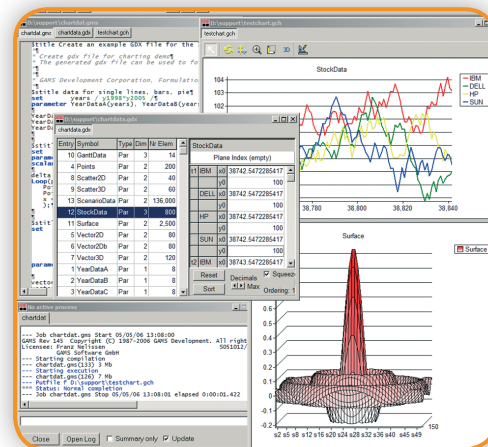
## State-of-the-Art Solvers

GAMS incorporates all major commercial and academic state-of-the-art solution technologies for a broad range of problem types.

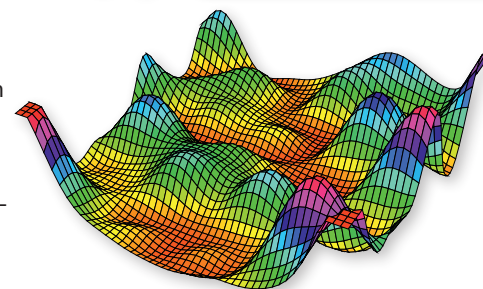
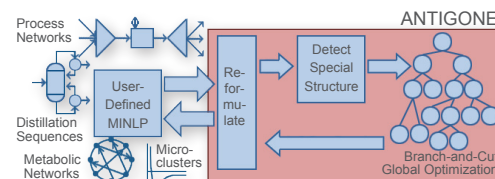
## MINLP and Global Solvers in GAMS

The area of Mixed Integer Nonlinear Programming (MINLP) and Global Optimization has experienced significant growth in industry and academia over the last years. More and more general purpose solution algorithms have been implemented and have matured into reliable solution systems:

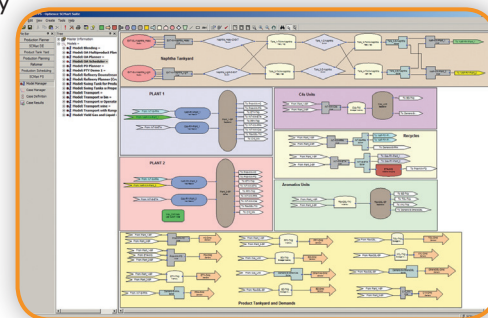
- AlphaECP: Extended cutting plane method from Åbo Akademi University, Finland
- ANTIGONE: Algorithms for coNTinuous / Integer Global optimization of Nonlinear Equations, a general mixed-integer nonlinear global optimization framework from Princeton University
- Baron: Branch-And-Reduce Optimization Navigator for proven global solutions from the Optimization Firm
- Bonmin: Hybrid outer-approximation based branch-and-cut algorithm jointly developed by a collaboration between Carnegie Mellon University and the IBM Corporation and distributed from COIN-OR
- Couenne: Convex over and under envelopes nonlinear estimation algorithm jointly developed by a collaboration between Carnegie Mellon University and the IBM Corporation and distributed from COIN-OR
- Dicopt: Outer approximation framework from Carnegie Mellon University
- GloMIQO: Branch-and-bound global optimization for mixed-integer quadratic models from Princeton University
- LGO: A global-local nonlinear optimization solver suite from Pintér Consulting Services, Inc.
- KNITRO: Interior point approach from Ziena Optimization, Inc.
- LINDOGlobal: A branch-and-bound solver for proven global solutions from Lindo Systems, Inc.
- MSNLP/OQNLP: Multi-start method for global optimization from Optimal Methods, Inc.
- SBB: Branch-and-Bound algorithm from ARKI Consulting & Development A/S
- SCIP: A spatial branch-and-bound algorithm using convex relaxations from the Konrad-Zuse-Zentrum für Informationstechnik Berlin (ZIB)



GAMS Integrated Developer Environment for editing, debugging, solving models, and viewing data.



Surface of a function with multiple local optima. Contributed by János D. Pintér



Screenshot from SCMart Suite deploying MINLP models from Optience Corp.

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