Artelys | OPTIMIZATION SOLUTIONS

FICO® Xpress

Optimization

A complete range of modeling and numerical optimization tools

Xpress Mosel: An easy-to-learn programming language that provides a robust way to interact with Xpress solver engines.

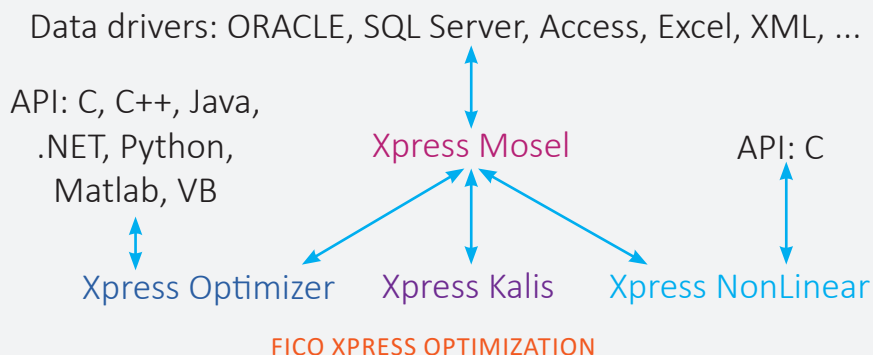Xpress Optimizer: High performance linear, quadratic and mixed integer programming solver.

Xpress Kalis: Constraint programming solver for large combinatorial problems.

Xpress NonLinear: Robust and comprehensive solver for nonlinear and mixed integer nonlinear problems.

Integrate high performance optimization technology ...

... and make smarter decisions, faster!

FICO® Xpress Optimization includes the world's foremost mathematical modeling/programming language and a full range of powerful optimization engines. It helps organizations solve bigger problems, design applications faster and make even better decisions in virtually any business scenario.

Data drivers: ORACLE, SQL Server, Access, Excel, XML, ...

API: C, C++, Java, .NET, Python, Matlab, VB

Xpress Mosel

API: C

Xpress Optimizer   Xpress Kalis   Xpress NonLinear

Windows   Linux   macOS

FICO XPRESS OPTIMIZATION

OPERATING SYSTEMS

Xpress Optimizer

- Global solution for all linear and quadratic problems, whether they are continuous, in integer numbers or in mix variables.
- Dual simplex, primal simplex and barrier methods run in parallel.
- Deterministic and multi-threaded branch-and-cut, multiple default heuristics, cutting planes, and symmetry detection.
- Extensive range of user-configurable parameters for advanced control of the optimization process.
- Object Oriented Interface to formulate quickly your problems in C/C++, Java, .NET, Python, Matlab and Visual Basic.

Solves: LP, MIP, QP, MIQP, QCQP, MIQCQP, SOCP, MISOCP.

Xpress Mosel

- Extremely synthetic language close to the mathematical problem expression (aggregation and arithmetic operators, sets and arrays).
- Modern programming language features (lists, if-then-else statements, loops, functions, overloading, packages...).
- Integrated Visual Environment (Debugger, Profiler, Model Explorer).
- Data drivers to access data from external sources.
- Combine Mosel with FICO® Xpress Insight to transform optimization models into powerful applications.

Interact with all Xpress solver engines.

Xpress Kalis

- An interactive and user-friendly hybrid MIP/CP framework for large combinatorial problems.
- Includes a comprehensive library of constraints and search heuristics.
- Provides specialized modeling objects, constraints and search heuristics for scheduling and resource allocation problems.
- Automatic generation of LP or MIP relaxations for faster optimization runs.
- Multi-threaded optimization for multi-core architectures.

Solves: Large combinatorial problems (process planning, scheduling, resource allocation, crew rostering, vehicle routing and supply chain design).

Xpress NonLinear

- Combined first-order (SLP) and second-order (Artelys Knitro) methods algorithms to address all nonlinear and mixed integer nonlinear problems.
- Symbolic, automatic and numeric differentiators.
- Sub-gradient support for selected non-differentiable functions.
- Smart initial point creation and nonlinear presolver.
- Automatic solver selection based on the problem characteristics.

Solves: NLP (including non-convex), MINLP, LP, QP, QCQP, SOCP.

Try FICO® Xpress for free:
www.artelys.com/en/optimization-tools/fico-xpress

Artelys distributes and supports FICO® Xpress worldwide.