



FICO Xpress Optimization Newsletter June 2018

Introducing the FICO Xpress Mosel 101 Tutorial Series

Due to overwhelming demand for our [FICO Xpress Community license](#), we are pleased to announce a new 18-part video tutorial series on [FICO Xpress Mosel](#). Xpress Mosel is the market-leading analytic orchestration, optimization modeling, and programming language and it is available FREE to anyone for any purpose. The Xpress Community license provides unlimited use for Xpress Mosel with no problem size restrictions. [Watch the short videos today!](#)

[FICO® Xpress Mosel #1: How Xpress Mosel Fits into FICO® Xpress Optimization](#)

[FICO® Xpress Mosel #2: Introduction to the FICO Xpress IVE Development Environment](#)

[FICO® Xpress Mosel #3: Introduction to FICO® Xpress Workbench Development Environment](#)

[FICO® Xpress Mosel #4: Publishing Applications to FICO® Xpress Insight](#)

[FICO® Xpress Mosel #5: Debugging in FICO® Xpress Workbench](#)

[FICO® Xpress Mosel #6: Arrays and Data Types](#)

[FICO® Xpress Mosel #7: Ingesting Data with Excel Spreadsheets](#)

[FICO® Xpress Mosel #8: Advanced Data Types](#)

[FICO® Xpress Mosel #9: Basic Programming Features](#)

[FICO® Xpress Mosel #10: Data Pre-Processing](#)

[FICO® Xpress Mosel #11: Functions and Procedures](#)

[FICO® Xpress Mosel #12: Predefined Functions and Procedures](#)

[FICO® Xpress Mosel #13: Linear Programming_\(LP\)](#)

[FICO® Xpress Mosel #14: Mixed Integer Programming_\(MIP\)](#)

[FICO® Xpress Mosel #15: Retrieving Solutions and Exporting Problem Matrices](#)

[FICO® Xpress Mosel #16: Mixed Integer Nonlinear Programming](#)

[FICO® Xpress Mosel #17: Constraint Programming](#)

[FICO® Xpress Mosel #18: Tuning Xpress Solver and Algorithms](#)

TIP: The videos are best viewed using Chrome or Firefox on a higher screen resolution,

such as 1920x1200. In addition, you will have a better viewing experience by setting the quality of your video to its best high definition (HD) setting - either 720p or 1080p.

Introducing FICO Xpress Optimization 8.5

[FICO Xpress Optimization](#) is comprised of four core components: [Xpress Insight](#), [Xpress Executor](#), [Xpress Solver](#) and [Xpress Workbench](#). Xpress Workbench includes [Xpress Mosel](#).

We've made the following updates to [FICO Xpress Optimization](#). You can access the latest features for Xpress Workbench and Xpress Solver in the latest Xpress Community License. [Download it today!](#)

Xpress Workbench 2.2

- Mosel to Python interface
 - Xpress Mosel can now connect natively to Python
 - Users can easily connect their machine learning models implemented in Python or any other type of Python code
 - Xpress Mosel users now have access to the entire R and Python ecosystems, and many others
- Enhanced developer experience for Xpress Mosel
 - Simple profiling and coverage
 - The profiling tool gives detailed execution times line by line to identify and address performance hotspots
 - The coverage feature enables developers to check if their test suite is complete
 - Support for non-native custom types
 - In addition to the existing linear programming and mixed integer programming support, Xpress Workbench now fully supports non-linear optimization, constraint programming, and robust optimization. Developers can now model and debug these 3 new variable types natively in Xpress Workbench.
 - Ability to browse and analyze large data arrays
 - Users can now display large data arrays in tables to facilitate the debugging process
 - The tables allow sorting and filtering, so users can look for specific values
 - Users can save the tables as files of comma separated values (.csv)
 - For additional details, please see the [Xpress Workbench Release Notes](#)

Xpress Solver 8.5

- MIP enhancements for MIPLIB 2010
 - FICO improved performance on the respective benchmarks by 15-27%
 - For additional detail, please review the [Xpress Solver Release Notes](#)

Xpress Insight 4.11

- Integration of FICO's decision tree module to enable the functionality in Xpress Insight Solutions. This new module includes data driven tree building capabilities using a CaRT algorithm, as well as a number of user interface and tree profiling enhancements.

- Support for Tableau 10.5
- [View the Xpress Insight Release Notes](#)

Announcing FICO Decision Optimizer 7.4

[FICO® Decision Optimizer](#) enables business analysts to discover optimized decision strategies that balance trade-offs between cost, risk and reward, while also factoring in economic and market conditions. It is a FICO Xpress Solution and it is built on FICO Xpress Insight.

We've made the following enhancements to Decision Optimizer ("DO"):

- Integrated Decision Tree Development Capabilities
 - Users can now develop data-driven decision trees within Decision Optimizer. There is no longer a need to use separate decision tree software alongside DO.
 - The primary use case is for the development of decision trees based on optimization scenario results. The treatment allocated by the optimization scenario is set as the tree development target, and a CaRT algorithm is used to build out a decision tree segmentation that best fits the target. This process allows business analysts to refine the optimization output into a consistent and explainable decision tree strategy that can easily be deployed in FICO applications.
 - It can also be used to support a range of requirements within DO such as: developing challenger decision tree strategies for use as inputs into Simulation Scenarios, creating new tree Decision Impact Model components, identifying and analyzing potential segments, and editing or refining trees created by tree aware optimization.
- Stress Testing Scenarios
 - Stress Testing Scenarios allow users to understand the impact of changes in assumptions on calculations and output metrics. For example, what if the bad rate is 5% higher than expected? This helps identify more robust decision strategies that will perform well in a range of competitive, economic or market conditions.
 - Both optimization and simulation scenarios now support Stress Testing scenario exploration.
 - A range of possible stressor values can be applied, as actual, additive or multiplicative values, with a sub-scenario created for each. This allows users to easily understand how changes in assumptions impact results.
- This release also includes a range of other usability enhancements focused on Treatment management, Validation Scenarios, Segmentation and Reporting.
- For additional detail, please see the [Decision Optimizer Release Notes](#).

FICO Xpress Optimization at FICO World 2018

FICO World 2018 was held at the Fontainebleau Hotel in Miami Beach from April 16th to April 19th, 2018. We had over a dozen packed sessions on Xpress Optimization. We'd like to thank our guest speakers from [Amazon](#), [Southwest Airlines](#), [National Australia Bank](#), [Shop Direct](#), [Harry-Brot](#), [Windfarm Designs](#), [Canadian Tire Bank](#), [Česká Spořitelna Bank](#) and more!

Here are a few key optimization news highlights from the event:

- [FICO Welcomes Amazon Web Services \(AWS\) to FICO World as Platinum Sponsor](#)
 - In addition to the sponsorship, Tim Jacobs, director of research science and planning technologies at Amazon, presented a session on how Amazon built its customer-centric strategy on FICO optimization technologies. He shared insights into how the company has standardized on FICO[®] Xpress Optimization and FICO[®] Xpress Insight for deployment of its advanced analytic applications. Tim discussed the difficulties of deploying analytic applications and why Amazon chose FICO's Xpress Insight to meet those challenges with incredibly tight timelines.
- [FICO Product Launch event highlights: the FICO Decision Optimizer Trial version is now available in the Cloud](#)
 - FICO[®] Decision Optimizer enables businesses to discover optimized decision strategies that balance tradeoffs between cost, risk and reward, while also factoring in economic and market conditions.
 - "FICO Decision Optimizer marries the best of optimization with the best of decisioning," said Koister. "With Decision Optimizer, enterprises can give domain experts and business users the control to simulate and optimize a wide range of decisions. This provides valuable insight into the impact of various scenarios, utilizing different goals and constraints, while applying stress tests, and allowing for uncertain events."
 - The [FICO Decision Optimizer 60-day Trial](#) is now available in the FICO Analytic Cloud and it will be generally available in a few months.
- [German Baker Harry-Brot Uses FICO to Optimize Baking Production and Reduce Costs](#)
 - Harry-Brot was recognized for its cutting-edge use of optimization technology in production and distribution operations with a FICO Decisions Award for AI, Machine Learning & Optimization.
 - They are one of the biggest German producers of bread and they have increased sales by close to 30 percent in the past 5 years.
 - Harry-Brot used FICO[®] Xpress Optimization to reduce costs by 3.57% for production and 1.81% for transportation, resulting in an overall cost savings of 3.4%, exceeding their investment by more than a 100x in the first year.

FICO Xpress Optimization at the INFORMS Conference

FICO was a Platinum sponsor of the [2018 INFORMS Business Analytics Conference](#) from April 15th to April 17th, 2018 in Baltimore, MD. At the event, FICO experts presented two very well attended workshops:

- Calling all OR Heroes: Learn how to model and deploy solutions in 75% less time with FICO[®] Xpress Insight
- Technology Tutorial: How to deploy your ML and optimization models to empower non-technical business users

In addition to the workshops, we were honored to sponsor the Edelman Awards Gala 2018 video - [O.R. & Analytics: Saving Lives, Saving Money, Solving Problems](#). It was an honor to speak with many of you at the event and we look forward to seeing you at 2018 INFORMS Annual Meeting in Phoenix, AZ from November 4th to November 7th, 2018.

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