Optimization is the mathematical process of finding the best decision for a given business problem within a defined set of constraints—and it can be the difference between success and failure in today’s highly competitive marketplace. FICO® Xpress Optimization products and services allow businesses to quickly and easily apply optimization techniques to solve their business problems, faster.

Our deep portfolio of optimization options enables users to easily build, deploy and use optimization solutions that meet their needs. Standard capabilities include scalable high-performance solvers and algorithms, flexible modeling environments, rapid application development, comparative scenario analysis and reporting capabilities, for on-premises and cloud installations.

With FICO® Xpress Optimization:

- **An airline** saved $49 million a year in costs
- **An energy company** reduced CO$_2$ emissions by 20–50 million metric tons a year
- **A bank** increased new sales by 29%, amounting to $41 million in revenue the first year
- **An auto finance company** helped 10,000 customers a year avoid delinquency

**Known**
Variable values discovered by descriptive & diagnostic analytics

**Unknown**
Variable values forecasted by predictive analytics

**Captured**
In business rules created & edited by business experts

**Variables**
e.g., cost per unit, profit per item, attrition risk, throughput per hour

**Objectives**
e.g., minimize cost, maximize profit, minimize downtime

**Constraints**
e.g., HR policies, campaign exclusions, regulations

**Optimize**
Find best solutions (variable values) that maximize the objective while honoring the constraints

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Designed for Every Level of User

FICO® Xpress Optimization products and services are both deep and wide and provide a framework for all types of users. They generally serve five main groups and their key requirements are:

<table>
<thead>
<tr>
<th>BUSINESS USER</th>
<th>BUSINESS ANALYST</th>
<th>SOLUTION DEVELOPERS</th>
<th>DATA SCIENTISTS</th>
<th>OPERATIONS RESEARCH PROFESSIONALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intuitive scenario creation</td>
<td>Design and configuration of decision impact models</td>
<td>Build web applications/optimization solutions</td>
<td>Build mathematical models to reflect business problems</td>
<td>Design, develop and configure models, services and solutions</td>
</tr>
<tr>
<td>Collaborative visualization and reporting of results</td>
<td>Define key metric calculations</td>
<td>Enable business users and analysts to control aspects of the model through a user-friendly interface</td>
<td>Create overall analysis and visualizations</td>
<td>Access broad solver and algorithm choices</td>
</tr>
<tr>
<td>Comparative &quot;what-if?&quot; analysis</td>
<td>Detailed decision analysis</td>
<td></td>
<td>Utilize robust and flexible modeling languages</td>
<td>Model and metric customization</td>
</tr>
</tbody>
</table>

FICO offers products, solutions and services that allow every level of user to successfully utilize optimization to solve business problems.

Key Building Blocks for Successful Optimization

**Industry-Leading Optimization Algorithms and Solvers**

FICO offers powerful and versatile solvers to help you model with greater accuracy and solve highly complex, real-world problems. We provide a wide array of sophisticated optimization algorithms for solving large-scale linear and mixed integer problems, as well as non-linear problems.

**Detailed Scenario Configuration, Analysis and Reporting**

The true power of optimization to solve business problems comes from running comparative scenarios that show where you are today, and identifying the potential opportunities that exist. FICO’s optimization solutions provide a wide array of simulation and optimization techniques that allow you to modify constraints and explore trade-offs in order to identify the optimal strategy that best meets your goals and constraints.

The scenario output provides tremendous insight into more profitable decisions and the impact of different combinations of business objectives, factors and constraints, across different segments and sub-populations.

**Ability to Model the Business Problem**

Prescriptive analytics is about much more than the technology. It is vital to understand how to construct the problem and to validate the results very carefully, whether developing a mathematical model or configuring a framework that allows you to bring together:

- Decision variables, constraints and objectives
- Profit model of the decision
- Predictive and action-effect models
- Business expertise

**Interactive Visualizations**

Users can explore various optimization scenarios and do side-by-side comparisons to determine the effectiveness of each strategy. Engaging visualization features help the user easily navigate the model and key in on important information.

**Ease of Deployment**

FICO optimization solutions have extensive capabilities aimed at streamlining the process for creating, managing and deploying optimized decisions into production, either through optimization solutions that directly manage production systems (batch, near real-time or real-time) or by converting decisions into decision rules or decision trees that can be used in production decision management solutions.
### FICO Optimization Products and Services

FICO has a wide range of tools, solutions and services within its optimization portfolio.

| FICO® Xpress Optimization | Xpress Insight | • Extensible software application for deploying optimization models as solutions  
• Scenario management, execution, file management  
• Visualization and data analysis |
|--------------------------|----------------|-------------------------------------------------------------------|
|                          | Xpress Executor | • Optimization execution services  
• Executes Xpress Mosel models using the Xpress optimization engines  
• Provides SOAP and REST interfaces for FICO or external applications |
|                          | Xpress Solver   | • Widest breadth of industry-leading optimization algorithms and technologies  
• Includes Continuous Solvers, Mixed Integer/Quadratic Solvers, Non-Linear Solvers, Constraint Programming and Xpress Tuner |
|                          | Xpress Workbench| • Integrated Development Environment (IDE) for developing models, services and solutions  
• Includes Xpress Mosel, an algebraic modeling & procedural program language  
• Directly supports Python, Matlab, Xpress BCL |

### FICO Xpress Optimization Solutions

Point-and-click applications designed for use by business users and analysts to run and analyze optimization scenarios in highly intuitive and visual user interfaces.

<table>
<thead>
<tr>
<th>FICO® Xpress Optimization Solutions</th>
<th>Use cases:</th>
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</tr>
</thead>
</table>
| - Logistics and Supply Chain Planning  
- Vehicle Route Planning  
- Personnel Planning  
- Scheduling  
- Production Planning  
- Retail Space Planning  
- Maintenance Planning  
- Logistics and Supply Chain Planning  
- Marketing Channel and Offer Management  
- Collection Optimization  
- Deposit Pricing  
- Mortgage Pricing  
- Alternative Deal Structure Pricing  
- Credit Limit Management  
- Transaction Authorization | • Fraud Referral  
• Account Originations  
• Social Networks  
• Ad Placement  
• Merchandising  
• Consumer Packaged Goods  
• Hospitality Pricing  
• Natural Resource Extraction  
• Pricing and Revenue Management  
• Call Center Management  
• Health Management and Resource Planning  
• Process Industry Optimization  
• Utilities Generation and Distribution |
|  | Industries: |  |
| - Banking and Financial Services  
- Transportation and Logistics  
- Energy and Utilities  
- Manufacturing  
- Telecommunications  
- Retail  
- Consumer Goods  
- Technology  
- Healthcare (Biotech, Medical, Pharmaceutical)  
- Education  
- Defense  
- National and Local Government |

FICO can help you develop a custom FICO optimization solution for just about any business problem.

### FICO Xpress Optimization Services

Best-in-class optimization solution services

| FICO® Xpress Optimization Services | Work with FICO experts to tailor solutions, services and training to meet your needs | • Outsourced Solution Creation  
• Partnership Development Projects  
• Methodology Knowledge Transfer  
• Standard Methodology and Frameworks  
• OR and Business Domain Experts  
• Predictive and Prescriptive Analytics |

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With more than 30 years of experience in modeling and optimization, FICO brings a wealth of knowledge to help our clients apply optimization to all their complex decisions, whether through our tools, solutions or custom development services. FICO’s suite of optimization products, solutions and services can help you develop better decisions that are more profitable, more manageable and meet your business goals and constraints.

For more information and to learn how to try our software or get a demo, visit www.fico.com/optimization.

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