Scorto™

Credit Portfolio Analysis

Scoring Models Development

Models' Analysis and Maintenance

Scorto™ Model Maestro

Specialized Tools for Credit Scoring Models Development

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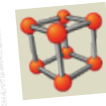
Purpose and Tasks to Be Solved



Scorto™ Model Maestro is a specialized analytical application for scoring models development. As the initial data for model development different information about previous consumers is used. Creditworthiness of future borrowers can be forecasted based on that data. Developed models can be used to build desicion-making strategies for each particular product. The performance result is as follows: borrower evaluation precision increases up to maximum, the risk of past due payment or default decreases, the number of rejections decreases but without any negative impact on the bank's credit portfolio.

Scorto™ Model Maestro has varied tools for:

- Credit portfolio study;
- Different types of scorecards development;
- Scoring model strategy evaluation and financial analysis.

The main result of Scorto™ Model Maestro performance is the model for borrower assesment which further can be used as a part of credit strategy or as a core component of decision-making system.

Scorto™ Model Maestro enables the following functions:

- Data analysis, grouping and preprocessing for scorecard development as well as for credit portfolio analysis based on scoring results;
- Identification of the key factors that impact the customers' creditworthiness;
- Fully automatic scoring model development and its performance evaluation;
- Export of scoring models directly to the server of the scoring system and their direct integration with the bank's decision-making module;
- Customer database analysis for borrowers differentiation into segments according to the corresponding risk indicators or other factors.

The data processing algorithms implemented in the Scorto™ Model Maestro application ensure effective performance when it is necessary to process mutually dependent or instable borrower data. Such type of data is very often in banks' retail credit portfolio.

The wide range of data analysis and modeling tools lets enables the user to extract maximum information from latent dependences and to develop an effective decision-making model for each task.

Scorto™ Model Maestro Can Be Applied to the Following Types of Scoring:

Application Scoring: scoring for credit granting

Scorto™ Model Maestro allows building analytical and expert models to forecast past due payments or borrowers' default in case the decision to grant a loan is made.

Behavioral Scoring

Scorto™ Model Maestro allows building models for borrower behavior evaluation, payments history analysis and account transactions tracking in order to estimate Probability of Default, increase effectiveness of credit limits for credit card accounts and for other tasks arising during the credit lifecycle.

Collection Scoring: define of the most effective approaches to past due credit payments

Using decision trees models as well as classification and probability evaluation mechanisms based on logistic regression, Scorto™ Model Maestro allows building the most effective business process for past due payments management.

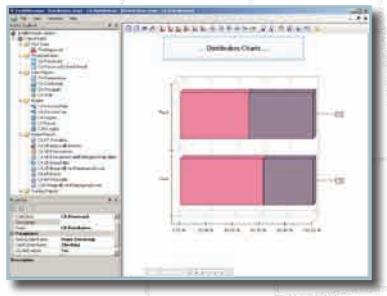
Fraud Scoring: fraud possibility evaluation

Together with Application scoring models Scorto™ Model Maestro makes possible development of the Fraud scoring models to evaluate possible fraudactions from the side of potential borrower. As soon as Application scoring models give a positive score, Fraud scoring models evaluate fraud probability for certain credit. The analytical mechanisms for fraud is similar to loan origination, but based on different borrower characteristics' assesment logic.

Scorto™ Model Maestro Functional Modules

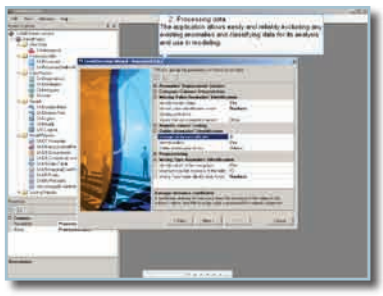
Scorto™ Model Maestro is a business tool for credit department experts and risk managers of financial institutions. One of ist key feature is business-user orientation.

Scorto™ Model Maestro contains three basic functional modules enabling all stages of scorecard development.



Statistical and Visual Credit Portfolio Analysis Module

This module includes the credit portfolio sampling generation and processing tools, tools for sampling visual study and borrower characteristics' statistical evaluation as well as their weight evaluation (charts and diagrams for analysis of dependence, distribution and associative relations). With the help of the Scorto™ Model Maestro tool set a user can make primary credit portfolio characteristics analysis, evaluate and generate the list of the most important predictive characteristics of the borrower.



Scoring Models Development Module

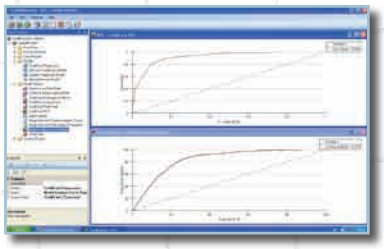
In scoring models development module a wide range of model development methods is available. Among them there are such methods as Logistic Regression, Decision Trees and Decision Rules, Neural Network, Expert scorecards.

Each of these methods has its distinctive features. For certain types of tasks the expert scorecards and logistic regression methods are more appropriate and for the other tasks the most suitable methods are decision trees and neuronal networks. That is why, Scorto™ Model Maestro provides all available methods that allow the bank's risk management develop and choose the most effective and precise scoring model depending on task, credit product and whole credit portfolio features, quality and quantity of the data available.

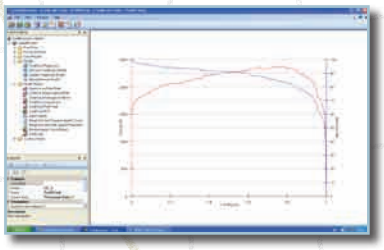
Evaluation, Analysis and Planning of Model Quality Module

This module contains the tools for evaluation and analysis of the scoring models according to three following areas:

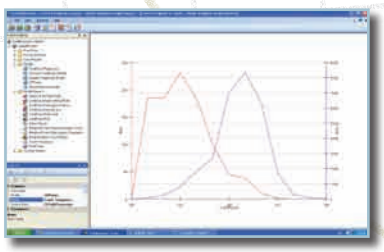
- Statistics,
- Financial and operational characteristics,
- Model performance quality on certain credit portfolio.



The statistical methods makes possible assesment of the model accuracy and its effectiveness for borrowers' distribution according to the groups of risk.



The second approach evaluates the quality of model performance from the point of view of such indexes as application level and borrower PD, average profit per customer and total portfolio profit.



The third approach allows detailed analysis of how effective model is in bad/good borrowers' classification and in what risk groups it can divide the portfolio for its optimization.

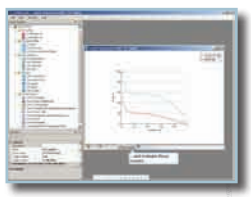
Scoring Models Development in Scorto™ Model Maestro

It's not always easy to develop a scoring model. In the most cases it is possible to get the model of average quality using general and standard approaches. From the other hand the competition on retail market becomes more demanding and requires the most effective and precise tools for the borrower evaluation.

Scorto™ Model Maestro provides a wide array of scoring model development capabilities that are based on the most popular scoring model development methods. This lets the bank to select for each project those methods that best suit the quality and amount of the available data and satisfy other important external conditions.

An important distinctive feature of Scorto™ Model Maestro is the possibility of further using a combination of several scoring models of different formats for so called model committees. In this case, several scoring models are used simultaneously and make a single, collective decision.

Scorto™ Model Maestro provides the credit institution with the following scoring development methods:



Logistic Regression

A model that is created using this method can be used to evaluate the likelihood of the borrower repaying the loan based on his or her characteristics. The advantage of this model format is quite demonstrable. Also the variables can be included to the model in series and it allows comparing the borrowers within the same characteristic (according to the credit history quality, for example) as well as comparing the weight of different characteristics in total borrower score. As compared to other methods the logistic regression is less sensitive for sempling volume and good/bad ratio in it.

Neural Networks

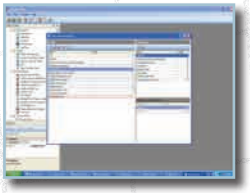
Neural Network is a mathematical structure with the capability of non-classified data generalization. The main difference of neural network from the other methods is that it does not require predefined model, but builds it itself based on the data provided. That is why, neural network is appropiate when the score can't be calculated easily.In such cases the constant work of qualified expert team is required. The other option is adaptive automatic system (neural network) .

Decision Trees

Decision Tree is a hierarchical structure of the conditions for decision-making. The decision tree method allows building nonlinear dependence between the borrower creditworthiness quantitative evaluation and borrowers characteristics, and it is also the most convenient method of decision logic visualization and interpretation. The main advantage of the decision tree method is a capability to find the rare events . Often it is used to exposure the fraud.

Decision Rules

Decision Rules is advanced method of Decision Trees. The treelike structure of the rules transforms to the list of the complex conditions. Further the list must be simplified to increase the generalization level. The resulting list works as a committee. It means that generalization of all forecasts corresponding to the borrower characteristics occures during the analysis. The result of the entire analysis is defined by "votes majority".



Expert Scoring Cards

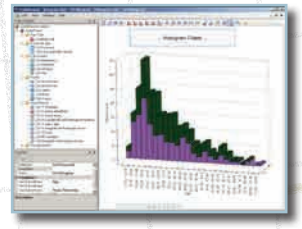
Often the first and basic problem of model development is sufficient information unavailability. In this case the most effective solution is expert model. The weight coefficients for the different characteristics of the borrower are determined by a credit expert/analyst. The score of the borrower is calculated as the total of his or her selected characteristics.

Tools for Scoring Model Effectiveness Evaluation

Scoring model effectiveness evaluation is the integral phase before its usage begins.

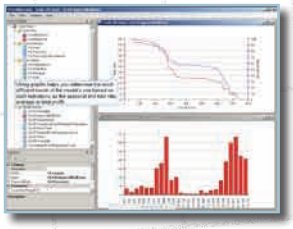
The capability of the bank to evaluate or predict the credit portfolio changes using the scoring models can give a strong advantages for bank general position on lending market as well as for its strategy planning.

Scorto™ Model Maestro provides feature-rich functionality for a comprehensive analysis and evaluation of the scoring models, created using the application: statistical evaluation for models' precision forecast; financial analysis for evaluation of portfolio profitability; quality evaluation for operational characteristics analysis of the model and forming loan portfolio.



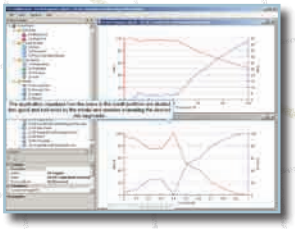
Statistical Evaluation

From statistical point of view the model performance analysis means special statistical indexes calculation for evaluation of the model predictive ability and its adequacy. For these purposes Scorto™ Model Maestro provides the toolset to build such well-known statistical indexes as ROC Curve, Lorence and Kolmogorov-Smirnov Curves, Gini coefficient.
With the help of these tools it is possible to evaluate the performance of a particular developed model as well as compare developed models to each other in order to identify the most effective one for certain clients segment or for the whole portfolio.



Financial and Operational Evaluation

Scorto™ Model Maestro allows evaluating the financial and operational efficiency of a scoring model and selecting the optimal cut-off point for it by analyzing such characteristics, as the level of credit requests' acceptance, the ratio between the total numbers of the loans and defaults in the portfolio, the average and total profit. For different products, different profit and loss levels can be set. The provided set of specialized reports on the characteristics allows assessing the quality of a model's performance for specific market segments based on the level of credit requests' acceptance for different borrower categories.



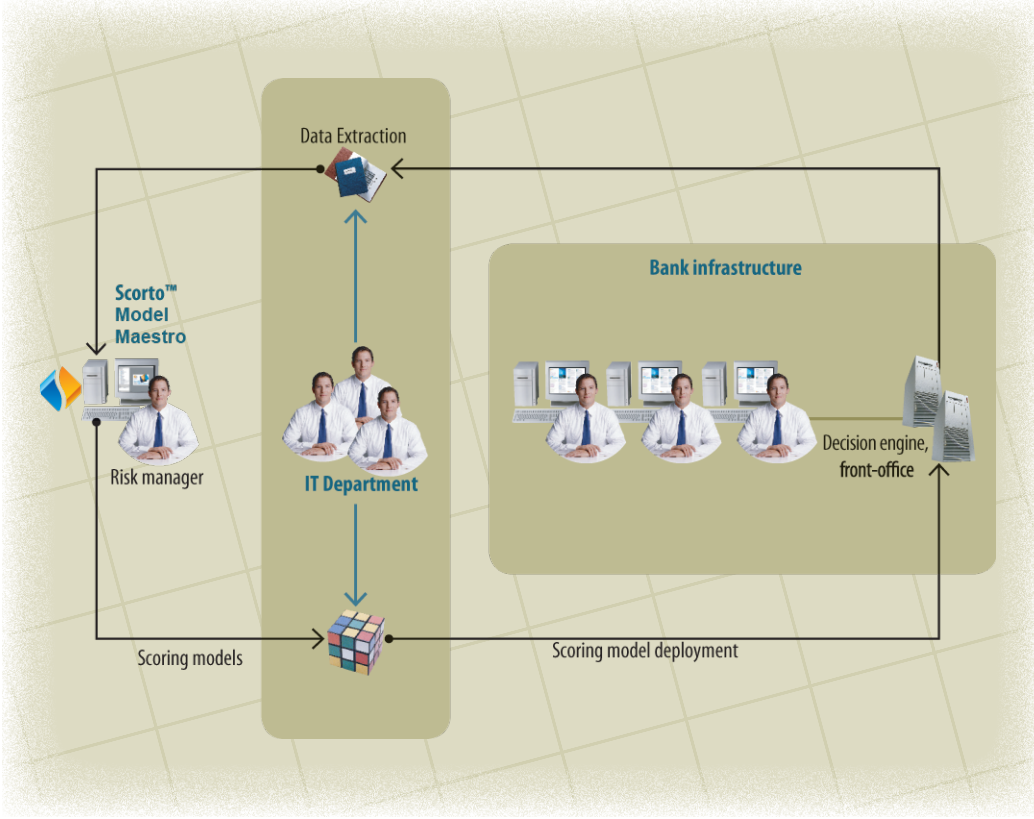
Quality Evaluation

Evaluation of a bank's or company's loan portfolio is the second main purpose of the Scorto™ Model Maestro software and the application provides top-quality functionality for the performance of this task. You can determine such factors, as the distribution of the borrowers in the portfolio, level of the "bad" borrowers' differentiation in a selected extract and risk level for the different score ranges. Based on the received information, you can work out a more flexible lending policy for groups with different risk levels, segment the portfolio into groups based on the delinquency level, optimize your communication with the customers, and use your financial resources more efficiently.

Scorto™ Model Maestro Integration Options

Scorto™ Model Maestro provides 3 main integration options. Each scheme has its distinguishing features and advantages.

Standalone Application

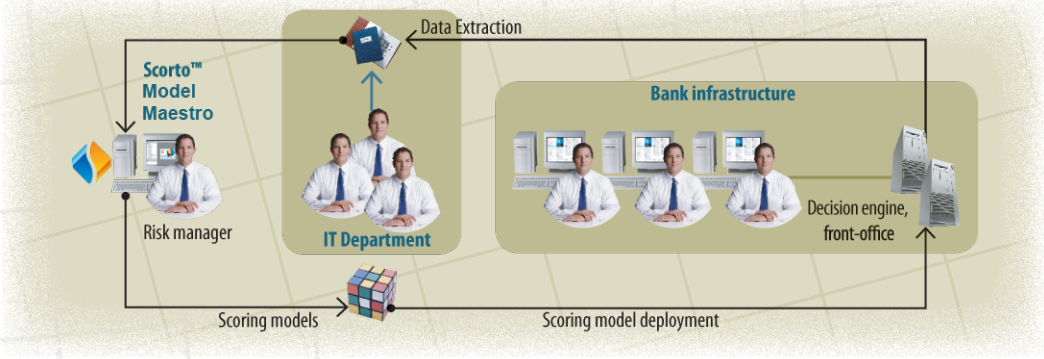


The software is installed at the workplace of a credit expert and is used as a standalone application.

The created scoring models are exported into your organization's infrastructure as XML files.

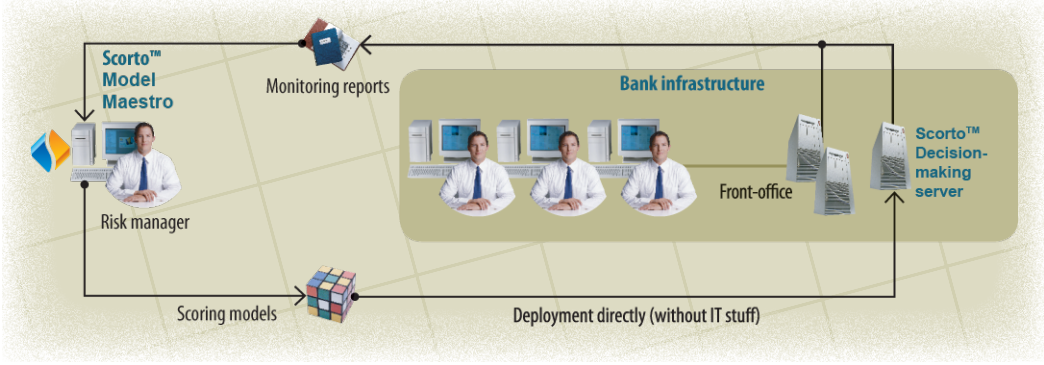
The advantages of this approach are no of need for any additional integration effort and, consequently, the ability to start the development of scoring models right after the application is installed.

Basic Integration into the Credit Institution Infrastructure



Scorto™ Model Maestro basic integration into the infrastructure of a banking institution. This kind of integration is handled by Scorto experts with the assistance of the bank's IT staff. A mechanism for the direct export of the developed scoring models into the bank's decision-making system is implemented. The advantage of this approach is that the bank's IT staff will not have to be involved in any further integration of the scoring models, as this task can be easily handled by scoring experts and risk managers.

Comprehensive Integration Solution



Scorto™ Model Maestro is delivered as part of a scoring infrastructure that is based on the main Scorto's server component.

Scorto™ decision-making server is the core of any Scorto™ solution. If this integration option is selected, Scorto™ server performs the function of the main evaluation and processing mechanism. In order to enable this process, a number of synchronization interfaces with Scorto™ Model Maestro are used.

The main advantage of this option is that both Scorto™ Model Maestro and Scorto™ server are parts of the same system. This allows handling the main tasks of the scoring process, such as the analysis of the quality of the loan portfolio, evaluation of the quality of a created model, and analysis of the banking institution's current retail activity (products, programs, market segments, models), with maximum efficiency. So the company can easily organize scoring model export to the decision server and import of the borrower data from the server for its further usage.

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