

## Connex Implements STATISTICA Data Miner as Front-End Tool for Data Visualization and Analysis

**BACKGROUND.** Connex, the leader of mobile telecommunications in Romania, utilizes a large number of IT tools for their various specific applications. The IT-Infrastructure Department at Connex is responsible for the long-term monitoring of major business-critical IT systems and applications, as well as for estimating the performance of these systems and applications on the basis of expected business workloads. Connex focused on IT performance monitoring and capacity planning as an approach for reducing its costs and increasing the availability and quality of its services.

**CHALLENGE.** A number of solutions were developed in-house for automated acquisition of data from a variety of sources (specialized monitoring tools, systems and application logs, application databases, business reports, etc); these data were stored in SQL-SERVER databases, Oracle Databases, and sometimes Excel spreadsheets or text files (csv). Connex searched for an appropriate tool for the analysis of their various input data.

**THE DECISION TO USE STATISTICA DATA MINER.** For their complex applications, Connex chose to implement *STATISTICA Data Miner* based on its versatility and flexibility. *STATISTICA Data Miner* offers a comprehensive selection of complete data mining algorithms and solutions, including a variety of graphical tools. Connex also found the software's time series extrapolations essential for their applications.

**SOLUTION.** Using *STATISTICA Data Miner's* in-place database processing technology, Connex periodically analyzes various parameters in their data collections as follows:

- ✓ General visualization of the evolution of the parameters, distribution of values, for various "slices" of data, identification of monthly/weekly/daily/hourly patterns. For the visualization tasks various *STATISTICA* Analysis Macros were developed to automatically generate a whole set of charts and views on the analyzed data.
- ✓ Forecasting the future evolution of some parameters (Time-Series Forecasting, Spectrum (Fourier) Analysis, ARIMA/Interrupted Time Series Analysis, Exponential Smoothing, Neural Networks Modeling).
- ✓ Identifying correlations between business workload parameters and perceived performance parameters, and developing models in order to "explain" perceived performance as a function of observed past workloads (using linear and non-linear regression models, as well as Neural Networks Modeling).
- ✓ Using a combination of these methods in order to estimate the future behavior of their systems.

**RESULTS.** Connex has been using *STATISTICA Data Miner* for nearly two years as a front-end tool for the data visualization and analysis of operational and performance data, pattern and base-line identification, "out-of-ordinary" evolution signaling, and medium and long-term forecasting. In order to estimate the expected various quality parameters as a function of the expected workloads, a number of linear and non-linear regression and neural network models have been developed, as well as time series extrapolations. Both the results of the daily analysis as well as medium and long-term analysis have enabled Connex to more accurately and efficiently tune its systems and forecast their future behavior.



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