

Yet another way to improve Your business using the web



**Bay Miner**

*a new way to analyze  
data on the web*

Really easy - just upload your data file and download the results. No programming!

# *A new method for analysis on the web.*



You can analyse almost any data that is stored in a table or in database format. You do not need to know programming or understand statistical mathematics. In the service business sector BayMiner is ideal for market analysis, customer profiling and various satisfaction analysis tasks. In the industrial sector BayMiner is at its best in, for example, detecting abuse in warranty claims and spare parts consumption as well as in detecting hidden relations in process parameters and various types of test data.

BayMiner's visualization is much better than conventional bar charts and other similar representations. This extraordinary 3-D visualization is its most outstanding feature.

BayMiner is particularly well-suited to situations where the alternatives are outsourcing of the entire analysis work or the purchase of expensive specialized software and training of staff in their use. With BayMiner you can easily and quickly make a model of your data and analyse it yourself. BayMiner's performance is at its best when the data is scarce, in which case the use of techniques like neural networks is difficult. BayMiner can use data from spreadsheets, databases and other information systems.

*Bayes Information Technology Ltd. offers an online analysis service. So you can analyse your own data quickly and at low cost. BayMiner is a totally new method that produces reliable and illustrative results also from data sets that are usually considered too small.*

## **BayesIT in a nutshell**

Bayes Information Technology Ltd. develops and delivers analysis services and programs for various business areas.

The strengths of Bayes Information Technology Ltd. are in information and knowledge processing and management. Right from the start the company's business idea has been to utilize this knowledge in products and services that help its customers prosper - knowledge wins. During 1999 the company supplied the first BayMiner analysis services to the Finnish industry for test use.

# Don't worry – use BayMiner.

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## **What does BayMiner really do?**

BayMiner produces a knowledge model in three phases: First it analyses and classifies the data. Then it calculates a so-called Bayesian network model. In the third phase it represents the data in 3-D format using the proprietary B-Vis™ algorithm. The result can be analysed on the BayMiner homepages and the resulting visualization can be transferred to the user's PC for further analysis with a special, freely distributed viewer program.

## **Think big – START small.**

Experienced system professionals tell you that you should proceed in small steps, but still plan carefully and well ahead. BayMiner fits into this mindset.

## **Is the maintenance of a data model difficult?**

The maintenance process is so easy that you can update the basis for your decisions anytime you want. Besides data collection there is virtually nothing else to do: the whole process is automatic. So you can be sure that your employees never work with old data.

## **Easy to use?**

BayMiner's unique visual interface makes it easy to learn. You do not need to be an IT specialist, or know details of the BayMiner's advanced modelling technologies. If you know how to use a spreadsheet, you can quickly become a fluent and productive user of BayMiner.

*In today's tough markets everybody is facing razor-thin margins. BayMiner enables managers of small- and midsize companies with no statistical expertise to independently solve complex business problems using cutting edge analysis technologies.*

## **Predict to win.**

The essential advantage is BayMiner's prediction capability. It is expensive to gather data. BayMiner saves you data collection costs thanks to its unique prediction capability.

## **Seeing is believing.**

In conventional information representations the most interesting and important phenomena easily hide for example as noise in the height of a bar chart, and remain invisible. With BayMiner you can visually detect problem cases and see how they differ from the "rest of the pack". You can then eliminate the outliers and remodel rapidly.

## **Are you worried about security of sensitive data?**

You can use the protected data transfer (SSL) protocol if you so choose. The BayMiner service complies with all modern server security requirements.

# Getting started is easy.

Purchase a ready data model from our web site. The models use real-life data so you can use the results immediately. Select one that fits your business well and tailor it to suit your particular views on your own business. This gets you up to speed much faster and the need for initial preparation is minimal.

## And how to continue

Use existing data, or collect authentic data following the same format, and make a new model. BayesIT's unique modelling service on the Web yields fast yet excellent models. Your resource needs are minimal.

Take advantage of the easy process and start with a modest set of data, and immediately when you want to expand the model with a new variable, add it and make a new model. Soon you have a sophisticated business tool tailored to your specific needs. Updating the model 2-6 times/year will probably be enough.

## Superb visualization

In most applications BayMiner's unique B-Vis. visualization tool (pat. pend.) is capable of visualizing how the analysis proceeds. A hairline-cross in the visualization space indicates in real-time where the new case (e.g. a satisfied customer, a dissatisfied employee, or a device that has failed to pass a test) is currently located. When you feed in more information, the hairline-cross moves in the visualization space indicating to you how the new case's position changes in the space of existing cases, answer by answer.



## Validating data

BayMiner is capable of operating on small amounts of data, if the data is of reasonable good quality. The modelling service on the BayesIT's Web site runs various sanity checks on your data at arrival, but to save your time and efforts; try your data in small scale first.

## No manual modelling

Building predictive models requires a lot of experience, or a lot of experimentation, to find the most accurate and useful models. BayMiner creates the model automatically from your data. You personally, or your IS people, do not need to worry about the modelling – BayMiner does it for you. And there is no programming involved.

## Accessing data

BayMiner can use many different data formats. A spreadsheet's tab delimited text format is the easiest to start with. In most cases the outputs of your present databases, when exported in text format, can be used as well.

*On the Web site you can find sample data models for a number of business sectors and professions.*

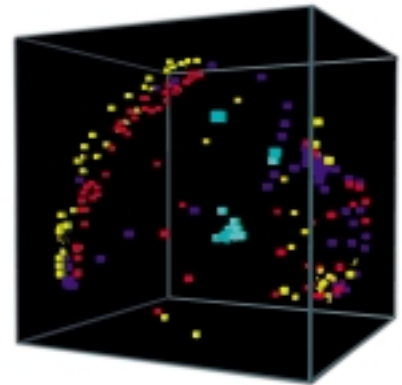
*Refine one using your own expertise, feed the results back – and in a few seconds you have your first own model at your service.*

# Service business applications

*Job motivation is decreasing, appraisal of employees from foreign cultures is difficult, the latest technology is being implemented with increasing speed. These and a number of other factors make management of a service business increasingly difficult.*

BayMiner lends itself extremely well to small-scale business development tasks such as analysis of customer and employee satisfaction, customer profiling and as decision support in e.g. the recruiting process. Likewise it is possible to rapidly

make analysis of profitability, risk and more sophisticated factors. With BayMiner service sector companies can get the benefits of corporate level Business Intelligence Software at an affordable price.



BayMiner's unique 3-D visualization enables busy managers to look at the analysis results in a format that suits their pressed time schedules. Yet they can "drill down" and look at the characteristics of each customer who, in the figure above, is represented by a coloured dot.

*Executive users should personally analyse the dynamic data model BayMiner Profiler produces as it inspires new business insights.*

## Do you want fast relief for your recruitment headache?

BayMiner Recruiter uses your company's recruitment experience to identify the most suitable applicants, or the non-suitable ones. You can see in real time how the applicant fits into your company's "recruiting history" as you feed in information about the applicant. With BayMiner Recruiter you can detect hidden knowledge about your applicant. Its predicting model can inform you of which of the applicant's aptitudes are the most significant. This enables you to rapidly focus on the essential applicants only. BayMiner's predicting feature saves recruiting costs.

### **BayMiner** Recruiter

answers such questions as:

- Will this applicant probably stay with us for a long time?
- In what respect is this applicant special?
- What is the accuracy of the predictions made?

### Is Recruiter for you?

BayMiner is designed for personnel managers who want to improve the recruitment process with the least possible effort using computer assisted recruiting. BayMiner suits recruiters but also foremen and area managers who carry out recruiting, since there is no need for time-consuming preparations.

## Do you know what your employees think?

BayMiner Profiler also constitutes an easy-to-use small-scale opinion survey service on the Web.

Besides identifying satisfied and dissatisfied employees it can also be used to carry out small customer satisfaction surveys and the results can be used to predict customer behaviour and thus improve customer retention.

### Superior surveys?

From a set of satisfaction survey data you first detect the clusters the participants constitute. Next you can analyse these clusters and find which characteristics are common to the analysed cluster. In this way you get a much better overview of the target than by looking at a matrix of factors or a sequence of bar charts.

### An example

Assume that the majority of the interviewees have either a clearly negative or a clearly positive attitude to life in general. This causes a bias in the results that misleads the user when planning actions. With BayMiner Profiler you can recognize opinion profiles (types of persons with similar opinions) and plan actions for each group separately making the action plan more realistic.

### Another example

Conventional surveys produce a number of factors that are given a score but not an interrelation, so the users are left with an interpretation problem – what does each

factor really mean? Talking about human characteristics, the keywords used are far from unambiguous.

BayMiner Profiler's clustering "bridges" the different linguistic concepts so you do not need to stare at each factor individually but a better-defined entity. This effect is strengthened if you purposely keep the number of questions relatively low, trying to detect entities (types of people) and not poor scores in a specific issue such as "commitment" or "customer orientation" that in service businesses are usually interrelated in a complex way.

### **BayMiner** Profiler

answers such questions as:

- Which different opinion groups exist?
- What characteristics are common for the various opinion groups?
- What is the accuracy of the analysis made?

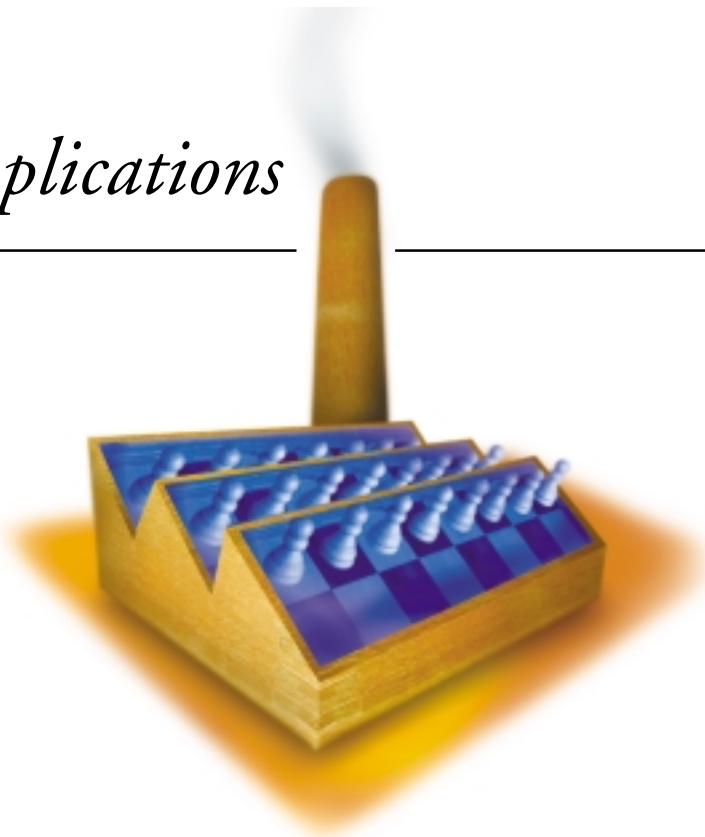
### Is Profiler for you?

BayMiner Profiler suits managers who want to improve their team's satisfaction level by carrying out development actions in a systematic way. To achieve the best possible results the process should start by gathering well-focused information. One should not try to collect all aspects in one survey. This leads to several survey steps, but this does not matter since with BayMiner Profiler each survey can be carried out with such little effort.

# Industrial applications

*BayMiner suits similar applications in the industrial sector as in the service sector.*

*In addition BayMiner lends itself well to such industrial analysis as checking warranty claims and spare parts as well as for process optimisation and test data correlation analysis.*



## For power users

BayMiner is designed for people who know their data but have not time to start programming. It is for data owners such as project and product managers, customer service managers etc. To achieve good results they do not need to know the details of the advanced modelling techniques, nor do they need to hire IT specialists or statisticians.

## Easy implementation

BayMiner enables you to instantly get more out of the existing company IT infrastructure, as you do not actually need to integrate on the system level at all. Since BayMiner does not require any investments and is so easy to use it suits any industrial company or organisation irrespective of trade or size.

## BayMiner is at it's best in creating knowledge, not reports!

All modules include templates that make implementation easy.  
All modules can be used separately as stand-alone tools or integrated into existing IT-infrastructure.

### Supply Chain Quality (SCQ)

The SCQ module includes a top level test process model that integrates data from the whole supply chain.

BayMiner automatically identifies telltale signs of process variations within manufacturing and assembly operations as well as R&D and after sales, allowing quality engineers to quickly zoom into the source of the problems.

### After Sales Efficiency (ASE)

The ASE module consists of three units:

- Warranty claim analysis
- Contract classifier
- Spare parts analysis

These units provide important information to increase revenues and detect inconsistencies.

### Human Resources (HR)

The HR module consists of three units:

- Satisfaction analysis
- Recruiting advisor
- Competence pooling

The satisfaction analysis unit is a rapid and easy to use browser-based automatic data collecting and modeling service.

The recruiting advisor unit utilizes the past recruitments to create a predicting model aiding the recruiter.

The competence pooling unit assists management in allocating engineers to customer projects in an optimal way.

All contribute to a systematic approach to manage and develop human resources over time.

### Sales & Marketing (SM)

The SM module consists of three units:

- Market segmentation tool
- Customer profiler
- Contract classifier

The Bayesian Networks technology gives BayMiner superior performance in segmentation.

The technology uses a predicting model, which makes it possible to analyze and verify the segmentation.

The customer profiler and contract classifier units check the individual cases against the predicting model built on the past projects, aiding the sales person to systematically judge risk and reward.

# Superior discovering performance?

*Bayesian network models are insensitive to the accuracy of the parameters, making maintenance of existing models easy.*



## Too many parameters?

Conventional decision-support products usually require a number of parameters to be set by the user, requiring deep understanding of the technology used. The use of numerous parameters is also an indication that the product is not optimal to solve the problem at hand, as it leaves the difficult issue of parameter selection for the user to decide. And even worse, the results are always degraded by these non-optimal parameter selections.

BayMiner functions fully automatically to ensure simplicity of use and fast results while the Bayesian Network technology ensures the best possible discovery performance.

## Why probabilistic modelling?

BayMiner's probabilistic models offer the following advantages:

### **The results are reliable.**

Probabilistic models are theoretically well founded. When the foundation is solid, the results are reliable.

### **The results are consistent.**

Thanks to the strong theoretical framework, Bayesian networks produce results that are reliable in most situations, not just with data that is similar to that was used to create the knowledge base.

### **The accuracy is known.**

BayMiner can calculate its own prediction accuracy for each case with high accuracy. Most modelling techniques do not use probabilistic models.

## Why Predicting Models?

BayMiner predicts the result based on the data you have available. Predictive models allow you to operate with incomplete and/or poor data and still reach good results. BayMiner's predictive models are also easy to validate since you can use data from the past and predict today's situation instantly.

## Too many bar charts?

Conventional decision support products present the results with various types of charts. To understand the overall information in tens of charts is virtually impossible. Usually you only see how the characteristics vary, what you do not see is which are the dominant characteristics or how they are related to each other. If relationships are detected, they are in most cases not correct as they are based on simplified assumptions of distributions.

BayMiner uses state-of-the-art Bayesian network modeling technology to correlate all variables simultaneously and B-Vis™ display technology to present all the results simultaneously in a compact visual manner.

# The BayMiner Suite of tools

*BayMiner helps your staff to decide more safely. Technically the BayMiner service concept consists of a number of program modules. From these the required service is assembled. BayesIT's responsibility can cover everything from producing the ready results to providing only the Bayesian Network calculation service.*

## **Bay Miner** Server

BayMiner Server is a modeling service on the Web. Data sent to the site is processed and a Bayesian Network is produced. You as the user see the result as a model of your business environment, which you can analyze in various ways.

## **Bay Miner** Viewer

With BayMiner Viewer you analyze the model produced by the BayMiner Server. You as the user do the analysis on your PC as it suits you, independently of Internet connections or server capacity.

## **Bay Miner** Former

BayMiner Former is a downloadable program to assist in making forms. From a datamodel it automatically creates either a paper or browser form. With datamodel is here ment the list of questions and answers the user want to appear on the form.

## **Bay Miner** Battery

The BayMiner Battery is a data collecting and storing facility operating on BayesIT's servers. The client collects data using the web and a browser thus avoiding to create an own process for the data collection.



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