Predictive Analytics Software Suite

Angoss
Predict. Act. Perform.™

Who Can Predict What Will Happen Next?

In the face of a complex business environment, the key to success for organizations today is their ability to effectively leverage their vast customer and business data stores to formulate effective strategies and predict business outcomes.

Focused on accelerating revenues, increasing profitability, optimizing operations and managing risk, organizations require proven data mining and predictive analytical tools to uncover opportunities and avoid or mitigate risk. The agility to answer complex questions quickly enables optimal and well-calibrated business decisions.

Data Mining and Predictive Analytics Software

Angoss provides leading data mining and predictive analytics software and industry solutions to many of the world's foremost financial services, telecom, information communication and technology, retail and life sciences organizations.

Angoss' software empowers companies to grow revenues, improve sales productivity and marketing efficacy while reducing risk and operational costs. It helps companies discover valuable insight and intelligence from their data while providing clear and detailed recommendations on the best and most profitable opportunities to pursue to improve sales, marketing and risk performance.

Companies are now able to create actionable, predictive rules that drive continuous business performance improvements by discovering the patterns in customer and business data, predicting the impacts of alternative business strategies—and acting on these insights.

KnowledgeSEEKER® and **KnowledgeSTUDIO®** with the standard StrategyBUILDER™ module, combined with big data capabilities, comprise an optimal combination of powerful and flexible analytical tools.

KnowledgeREADER™ is an integrated customer intelligence application that combines visual text discovery and sentiment analysis with the power of predictive analytics. It delivers unparalled voice of the customer insights to support customer experience management by building upon the data mining and predictive analytics capabilities in KnowledgeSEEKER.

KnowledgeEXCELERATOR™ is a visual data discovery and prediction tool for business analysts and knowledge workers who commonly use Microsoft® Excel. These users can quickly import large data sets directly from Excel or any database to segment, classify and visualize their data—and uncover the predictive power of their data.

Sales and Marketing	Risk Management
• Customer Segmentation & Profiling • Campaign Optimization • Lead & Opportunity Scoring • Customer Acquisition • CRM Analytics • Response Modeling • Next Offer / Best Offer • Customer Retention	• Credit Scoring • Credit Scorecards • Compliance • Fraud and Abuse Detection • Collections and Delinquency • Origination • Revenue and Loss Forecasting • Operational Risk • Revenue and Loss Forecasting

Angoss predictive analytics software is used by customer, marketing and credit risk professionals at leading global corporations—including 9 of the top 15 global financial institutions.

Companies that compete with analytics are looking for advanced analytical technologies that accelerate decision making and identify profitable opportunities they can act on. Angoss is committed to democratizing the use of advanced analytics with products designed to enable both knowledge workers and data analysts to rapidly solve their most pressing business problems.

Predictive Analytics in Action

Business users, quantitative experts, data analysts and statisticians alike are able to rapidly generate predictive insights to support decision making at all levels of the organization.

By employing analytics, these users help to optimize sales, marketing and risk management operations to create significant business value across critical business areas.

Marketing and Customer Analytics

Angoss analytics are fundamental to the development and execution of marketing, customer relationship management (CRM) and loyalty programs for many global organizations.

Angoss provides flexible, easy to use and economical tools for performing propensity modeling applied to customer lifetime value for:

- Customer segmentation and targeting
- Customer acquisition
- Cross-sell and upsell
- Churn and loyalty analysis
- Next best offer, product recommendation
- Customer lifetime value

Credit Risk Scoring

Financial services institutions, lending organizations and credit departments use Angoss analytics in the development of credit scorecards to screen and monitor customers throughout their credit life cycle.

Collections and Debt Recovery

Collections departments around the world have come to rely on the strength of Angoss' analytics, which help to optimize collections processes by identifying clients likely to pay back, estimating amounts to be recovered and evaluating debt portfolios.

> **“ We use Angoss daily for developing strategies to identify fraud trends and mitigate impacts to the customer experience. This has been extremely helpful in building strategies quickly, as fraud trends change daily.”**
>
> - Top 5 US Bank

Fraud Abuse and Detection

Insurance companies, government agencies, online merchants, and credit card issuers commonly use Angoss' analytics to develop models that score transactions for the likelihood of fraud and money laundering — avoiding significant financial losses.

Other Applications

Analytics from Angoss are used in a wide variety of industries for various applications including: human resources (such as employee turnover, promotions, and loyalty); channel analytics; tax compliance; medical research; and customer lifetime value analysis.

The Business Value of Angoss Analytics Software

Angoss predictive analytics software delivers significant value at 3 tiers of corporate decision-making including strategic, tactical and operational—by providing the right tools, to the right people, to optimize business performance.

Strategic Value

Segment-based, data-driven marketing, risk and collection analytics generate millions of dollars in incremental revenues, cost reduction and loss mitigation.

Tactical Value

Efficient and intuitive workflows generate faster time-to-results for data discovery, strategy development, validation and deployment.

Operational Value

Rapid learning curve, as well as easy and efficient software installation, results in low-cost, fast and actionable data insight.

The Angoss Advantages

Recognized by leading technology analyst firms Forrester, Gartner and Hurwitz & Associates as a leader in customer analytics, predictive analytics and data mining, Angoss delivers market-leading predictive analytics software with rich functionality, ease-of-use and seamless integration into existing processes and technologies.

What differentiates Angoss is its broad user acceptance, commitment to open standards, rapid deployment, flexibility, ease of use and affordability—with advanced analytical capabilities.

Whether it's comprehensive modeling, best-in-class patented Decision Trees, strategy design or automatic code generation, Angoss is recognized worldwide for offering an advanced analytics workbench—catering to a wide community of users and skill sets including the business analyst.

Business Manager Benefits

- Rapid learning and faster time to actionable results
- Flexible, lower cost of resourcing
- Optimizes every stage of the credit and customer life cycle: acquisition/origination, development, retention and collections

> **“ From all the vendors we evaluated over a period of five months, Angoss was demonstrably superior in addressing our needs. ”**
>
> - Capital Card Services

Analyst Benefits

- Rapid learning curve with highly intuitive and wizard-driven interface
- Enhanced visualization and efficient workflows
- Innovative segmentation and strategy design
- Fast report generation and export to MS Office
- Non-programming skills environment
- Combines multiple, advanced predictive analytics and modeling techniques
- Export to other analytics environments: SQL Server; SAS; SPSS and more

IT Benefits

- Easy and fast installation and configuration
- Low support requirements
- Integration with existing analytics and database environments
- High privacy and security standards: SSL encryption and secure license system
- Flexible licensing
- Free installation support
- No server down-time during installation

Building an Analytics Foundation

Offered in desktop, client-server and in-database configurations, KnowledgeSEEKER, KnowledgeREADER and KnowledgeSTUDIO provide world-class capabilities for data profiling and visualization, Decision Tree analysis, predictive modeling, and scoring and strategy building.

Angoss' predictive analytics software suite is distinctly easy to use, agile and visual — making predictive analytics uniquely accessible to quantitative/data analysts and business analysts alike. Fast to deploy, rapid to learn and a flexible, easy to use and wizard-driven interface bring advanced analytics to the business user.

Decision Trees, models and strategies can be easily deployed into your organization with automatic code generation eliminating the need to write code. Angoss models can be automatically converted into a wide range of the most common code formats, including: SQL, SAS, SPSS, XML, PMML, and Java.

Hadoop Integration

Hadoop can be used with KnowledgeSTUDIO for data import and as a deployment platform for models created in KnowledgeSTUDIO.

Hive, a data warehouse system for Hadoop, facilitates easy data summarization, ad-hoc queries, and the analysis of large datasets stored in Hadoop compatible file systems. By using the MapR Hive ODBC Driver, data can be imported into KnowledgeSTUDIO through its ODBC import functionality. Once the data has been imported into KnowledgeSTUDIO, it can be analyzed and used to create predictive models. After models are created, analysts can quickly generate model scoring code in the Java language that can be used in any Hadoop Map/Reduce job to leverage the Cloud Hadoop clusters for efficient use of resources and scoring of massive datasets.

	Data Preparation	Data Discovery	Text Analytics	Predictive Modeling			Model Validation	Model Deployment
				Basic Modeling	Advanced Modeling	Unsupervised Learning		
KnowledgeEXCELERATOR™ Visual data discovery and prediction tool with guided workflow for business analysts		• Univariate charts • Multivariate segmentation • Multivariate tabulation		• Decision Trees				
KnowledgeSEEKER® Intuitive, graphical data mining and predictive analytics tool for data miners and data analysts	• Joining, appending & aggregating data sets • Deduplication • Variable creation • Partitioning	• Univariate charts • Multivariate segmentation • Multivariate tabulation • Multivariate correlation		• Decision Trees • Strategy Trees			• Model evaluation and lift charts • Validation reporting	• Model scoring • Code generation
KnowledgeREADER™ Visual text discovery, sentiment analysis and predictive analytics tool for marketers and customer intelligence professionals.	• Joining, appending & aggregating text files and data sets • Deduplication • Variable creation • Partitioning	• Dashboard • Univariate charts • Multivariate segmentation • Multivariate tabulation	• Sentiment analysis and markup • Entity, topic and theme extraction • Comparison and trend analysis	• Decision Trees • Strategy Trees	• Association Discovery		• Model evaluation and lift charts • Validation reporting	• Model scoring • Code generation
KnowledgeSTUDIO® Advanced modeling and predictive analytics tool for high-performance data scientists and quantitative analysts	• Joining, appending & aggregating data sets • Deduplication • Variable creation • Partitioning	• Univariate charts • Multivariate segmentation • Multivariate tabulation • Multivariate correlation	• Sentiment analysis and markup • Entity, topic and theme extraction • Comparison and trend analysis *Optional	• Decision Trees • Strategy Trees	• Scorecards • Regression • Neural networks • Market Basket Analysis	• Principal Component Analysis • Cluster Analysis	• Model evaluation and lift charts • Validation reporting	• Model scoring • Code generation

KnowledgeSEEKER

Widely used for customer, marketing and risk analytics, KnowledgeSEEKER is a powerful data mining solution which offers data preparation, profiling, data visualization, Decision Tree, Strategy Tree and model performance evaluation capabilities.

Business and expert users alike are empowered to perform segmentation and classification analysis, determine relationships among business data variables, and build strategies. In-database analytics allows calculations to be performed from within the data warehouse, which significantly optimizes efficiency and performance.

Data import is made simpler through the use of shortcut menu-driven options and wizards. File preview and field transformation features allow users to preview the data being imported, choose the column layout, determine the titles, fields, precision and more.

KnowledgeSEEKER handles very large data sets required for analyses. All data sources are supported including files and databases through import drivers for Hadoop, R, SAS, SPSS, Text and Excel files—as well as ODBC.

Data Preparation

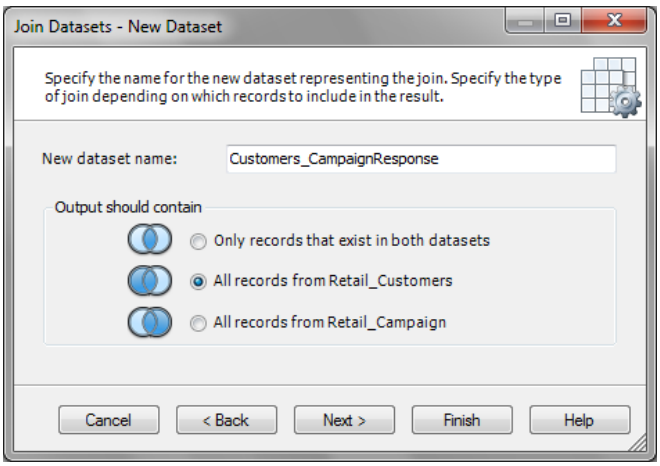
KnowledgeSEEKER offers advanced, automated data preparation capabilities with sampling options. Data preparation capabilities allow users to easily extract, manipulate and transform data to prepare it for modeling. Data preparation wizards increase productivity and efficiency and eliminate the need to write code.

Dataset-level and row-level manipulations can be performed using the Data menu wizards to join, append, and aggregate datasets—and remove duplicate records

Users can quickly and conveniently perform data transformations by creating new derived fields – containing high value information from existing baseline data – without moving back to the data sources.

Advanced users can manually input SQL expressions to calculate new columns, while others can use wizards for the automatic generation of most commonly used expressions:

- Binning of discrete and continuous variables
- Logarithmic transformations
- Optimal binning using Weight of Evidence aided by decision tree interface
- Substitution of missing values
- Calculation of weights for balanced samples
- Generation of dummy variables

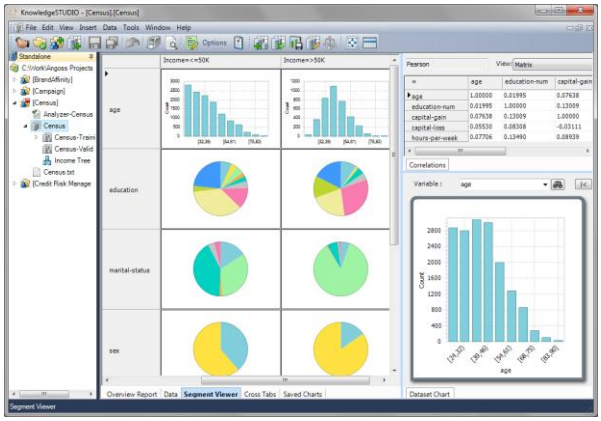


Advanced Visualization for Data Profiling

KnowledgeSEEKER has an extensive array of tools for data exploration and visualization, and generates graphs and charts that are easily understood and can be exported into Microsoft Office® applications.

When potentially thousands of variables are involved, data profiling charts and reports can provide an excellent starting point for further analysis.

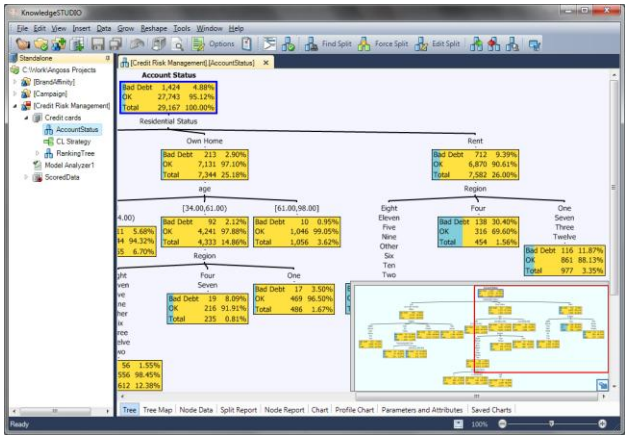
- Overview Report provides univariate statistics such as min/max, mean, standard deviation, sum, variance, number of missing values, etc.
- Univariate and multivariate distributions are visualized by Dataset Chart, Segment Viewer, and Cross Tabs charts
- Correlation View shows the degree of linear association between pairs of variables
- Graphs and charts are easily managed using the Chart Library to save and organize your data exploration and prediction results.



Best-in-Class Decision Trees

KnowledgeSEEKER delivers market-leading innovation through interactive and intuitive Decision Trees. Marketing, sales and risk analysts and business users alike use Decision Trees to understand the causal relationships and key drivers of outcomes in their business data.

Modelers use KnowledgeSEEKER to accelerate model creation. Advanced users can use the segmentation and analysis capabilities to select the most predictive variables for their modeling tasks, and quickly perform coarse classing of variables, with optimal cut-off points for score models, and discovery of key sub-populations that branch into separate predictive models.



Using a point-and-click interface, trees can be grown manually by creating custom splits or automatically using segmentation algorithms, or using a combination of both methods. This visual, real-time exploration aided by many usability features such as pan and zoom, variable search, and copying and pasting splits saves time for significant productivity and efficiency gains.

As predictive models, Decision Trees can be validated and scored and their performance can be assessed and compared using lift, cumulative lift, ROC, bias, error, and other model evaluation charts.

Cumulative Lift and Lift Reports can be created in order to provide a summary of these comparisons. This allows users to provide management with estimated response rates and lift for each individual model.

Moreover, users are able to keep track of all analytical activities conducted for a project using the Process Map. This serves as a point of reference allowing users and stakeholders to keep a record of the workflow applied to each project.

KnowledgeSTUDIO

KnowledgeSTUDIO builds upon the capabilities provided in KnowledgeSEEKER as an advanced data mining and predictive analytics solution for all phases of model development and the deployment cycle in a high-performance visual environment that provides data analysts with a powerful and scalable data mining and predictive analytics solution. Users can add all of the text analysis capabilities in KnowledgeREADER as an optional add-on.

Predictive Modeling and Unsupervised Learning

KnowledgeSTUDIO provides comprehensive and advanced data mining and predictive analytics capabilities. It offers Decision Trees, linear and logistic regression, neural networks, cluster analysis, Market Basket Analysis and principal component analysis.

Wizard-driven interfaces help users of all levels build effective models, while fine-tuning of model parameters is available for advanced users.

Scorecards

Reducing the expense of third-party consultants, or the reliance on generic industry scores, KnowledgeSTUDIO puts the power of scorecard creation in the hands of your staff. Whether for credit risk or for businesses looking to apply the scorecard principles in non-credit risk domains, KnowledgeSTUDIO offers the capabilities to create predictive scorecards that span all customer business processes—from acquisition through to collection.

Users can apply Reject Inference methods to improve the quality of their credit application scorecards. This reduces selection bias and increases the business value and accuracy of the models by identifying new, low risk customers among previously rejected applicants.

Market Basket Analysis

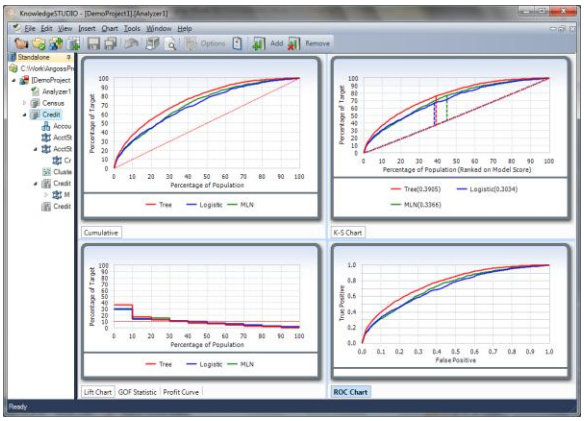
Extending support for marketing and sales analytics, KnowledgeSTUDIO includes Market Basket Analysis - which can be used to build strategies for product promotions, placement and cross sell.

Aside from discovering association rules, Market Basket Analysis helps you visualize the degree of attraction or repellence between items, view charts representing item associations, rank association rules and apply them to new data to produce recommendations.

Automatic generation of SQL code for association rules makes it possible to easily deploy them within database environments.

Model Validation and Deployment

KnowledgeSTUDIO provides a comprehensive set of capabilities for the assessment and validation of predictive models with an integrated set of scoring and deployment tools.



Intuitive sampling and validation features include: wizard-driven partitioning and hold-out options; lift, cumulative lift, KS and ROC charts; goodness of fit statistics and profit curves; bias, accuracy and error charts; and scatter plots.

Models developed in KnowledgeSTUDIO can be deployed directly within the application or automatically translated to SAS, SQL, and PMML code for deployment in other analytics environments or databases.

Hadoop can also be used as a deployment platform for models created in KnowledgeSTUDIO via Java code generation.

StrategyBUILDER

As a standard module in KnowledgeSEEKER and KnowledgeSTUDIO, StrategyBUILDER provides the capabilities to design, validate and deploy the necessary predictive and business rules to execute customer, marketing and risk strategies.

Strategy Trees

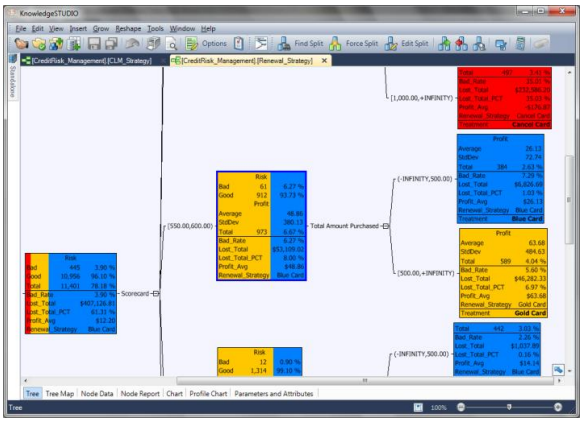
StrategyBUILDER provides a familiar tree structure to develop customer segments. For richer segmentation, Strategy Trees allow for the use of multiple target variables and provide more feedback and control with key performance metric calculations (KPIs) for each node or segment.

Once segments are developed and KPIs calculated, the strategy development is completed by assigning treatments or actions to the appropriate segments based on business rules and how they relate to your KPIs. These treatments can be activities such as varying credit limits, collections strategy options, or marketing campaign options.

Strategy Deployment

Analysts can combine data mining models and customer scores with user-defined strategies and treatments to produce highly targeted lists in support of direct and database marketing, as well as credit and collections processes.

Smarter lists contribute to increased revenues, reduced costs, and lower risk profiles by helping to improve customer account management, before and after delinquency, while proactively helping to detect and reduce incidents of fraud and abuse.



Strategies can be deployed directly by generating treatment lists for target datasets, or by automatically converting strategy trees to SAS, SQL or SPSS program code to be run in an external analytics environment or database.

> **“ Overall, the 18 month savings related to using KnowledgeSTUDIO in our collections area is $8 Million.”**
>
> - Global Financial Institution

Big Data Analytics

Angoss In-Database Analytics driver allows analysts to connect directly to a parallelized and optimized data warehouse to perform data preparation, data profiling, data visualization, decision tree analysis, and strategy development taking advantage of significant analytical performance improvements.

The driver supports Teradata®, Microsoft® SQL Server, Oracle® and Netezza™ databases.

Both model creation and model execution are supported in the In-Database Analytics mode, which enables complete analytics workflow within the database - from data preparation to model development, to model deployment.

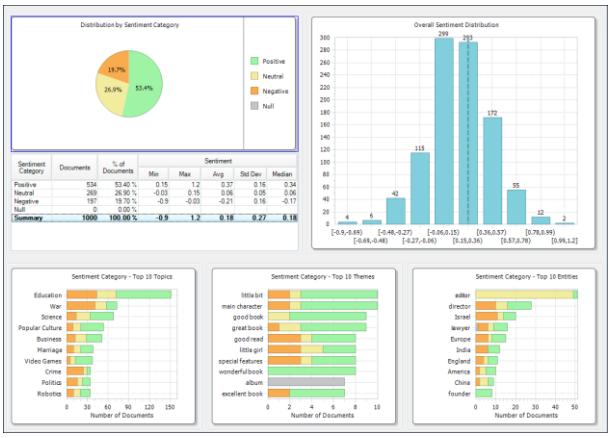
KnowledgeREADER™

KnowledgeREADER is an industry-first application that brings a new age of integrated customer intelligence by combining visual text discovery and sentiment analysis with the power of predictive analytics. It delivers unparalled voice of the customer insights to support customer experience management.

Unlike pure play text analytics text analytics and software as a service (SaaS) offerings, KnowledgeREADER breaks down silos to merge unstructured with structured data; and sentiment and text analysis with data mining and predictive analytics—for integrated customer intelligence.

Customer intelligence professionals and marketers can easily understand and model customer feedback without relying on data analysts. Advanced users can merge unstructured and structured data to perform data mining and predictive analytics with additional predictive variables for improved accuracy and exploratory power. KnowledgeREADER uniquely offers:

- Dashboard for sentiment and text analysis
- Comparison, trend and association analysis
- Document exploration with sentiment markup
- Entity, theme and topic extraction
- Categorization by query and concept topics
- Profiling, segmentation and predictive modeling using Decision Trees and Strategy Trees
- Data preparation tools to merge text analysis data sets with structured data
- Includes in-database analytics and supports data and file import from Database, Excel, CSV, HTML, Word, PDF and Outlook PST files
- Multiple language support



Comparison Analysis

KnowledgeREADER allows users to compare sentiment between text analysis data sets. This provides the ability to detect differences in sentiment between two different data sets, or data from the same source at different points in time.

Trend Analysis

Trend analysis allows users to track sentiment and important terms over a defined period of time. This provides the ability to detect changes in sentiment or customer interests on a daily, weekly, monthly or annual basis.

Association Discovery

KnowledgeREADER automatically generates a visual representation of the relationship among terms, allowing users to identify the context in which trending subjects are discussed.

Document Exploration

Document drill-down capabilities allow users to isolate a specific term and view a list of all the documents that contain that term. Sentiment markup highlights all terms of interest and color codes them based on sentiment.

Predictive Analytics

KnowledgeREADER builds upon the market-leading data mining, Decision Tree and predictive analytics capabilities provided in Angoss KnowledgeSEEKER. It includes Angoss best-in-class Decision Trees and patent-pending Strategy Trees to design and deploy predictive strategies.

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KnowledgeEXCELERATOR™

Marketers, managers and business intelligence users are tasked with sifting through massive amounts of data for insights to improve revenue performance and make actionable decisions.

KnowledgeEXCELERATOR is ideal for organizations wanting to empower line of business users with data mining and predictive analytics for making informed business decisions. It is a powerful, affordable visual data discovery and prediction tool for business users with minimal data mining and predictive analytics know-how who need to understand their business data and make informed business decisions.

Discover Hidden Insights

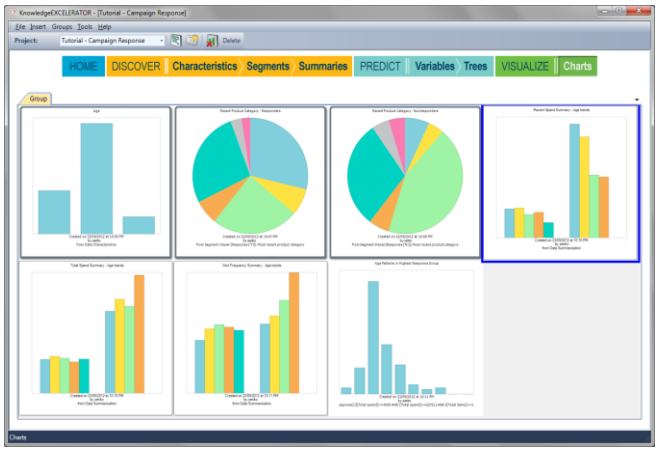
View the basic characteristics of your data, find interesting patterns, segments, and calculate summary statistics. After importing a spreadsheet or database file, you are guided through a series of questions and steps to visually understand, segment and summarize your business data

Predict Next Best Actions

Identify the main variables of interest in your data and discover which variables can be used to predict outcomes. Angoss' powerful data mining and predictive analytics engine powers the sophisticated and advanced data discovery and prediction.

Visualize Your Data

Illustrate your data discovery and prediction with interactive charts that you can customize, edit, organize and save for sharing and use in reporting—and present to stakeholders for decision making.



Feature Highlights

- Import large data files directly from Excel or connect directly to any database through ODBC with one click.
- Step by step guided workflow for business users without data mining and predictive analytics working knowledge or expertise.
- Intuitive, simple and visual user interface that eliminates the need for programming skills.
- Uncover the predictive power of your data without specialized training or relying on data scientists.
- Angoss Decision Trees provide visual understanding of the relationships between data variables.
- Visual data discovery allows you to edit, save and organize charts, and manage saved charts in the Chart Library for reporting use.

About Angoss Software

As a global leader in predictive analytics, Angoss helps businesses increase sales and profitability, and reduce risk. Angoss helps businesses discover valuable insight and intelligence from their data while providing clear and detailed recommendations on the best and most profitable opportunities to pursue to improve sales, marketing and risk performance.

Our suite of desktop, client-server and big data analytics software products and Cloud solutions make predictive analytics accessible and easy to use for technical and business users. Many of the world's leading organizations use Angoss software products and solutions to grow revenue, increase sales productivity and improve marketing effectiveness while reducing risk and cost.

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