

## 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 proactively 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 StrategyBUILDER™ module (standard) as well as an In-Database Analytics driver and Text Analytics Add-on for KnowledgeSTUDIO, comprise an optimal combination of powerful and flexible analytical tools.

Angoss predictive analytics software is used by sales, marketing and credit risk professionals at leading global corporations—including 7 of the top 10 global financial institutions.

Companies that compete with analytics are looking for advanced analytical technologies that accelerate decision making and identify 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.

Sales and Marketing	Risk Management
<ul style="list-style-type: none"><li>• Customer Segmentation &amp; Profiling</li><li>• Campaign Optimization</li><li>• Lead &amp; Opportunity Scoring</li><li>• Customer Acquisition</li><li>• CRM Analytics</li><li>• Response Modeling</li><li>• Next Offer / Best Offer</li><li>• Customer Retention</li></ul>	<ul style="list-style-type: none"><li>• Credit Scoring</li><li>• Credit Scorecards</li><li>• Compliance</li><li>• Fraud and Abuse Detection</li><li>• Collections and Delinquency</li><li>• Origination</li><li>• Revenue and Loss Forecasting</li><li>• Operational Risk</li><li>• Revenue and Loss Forecasting</li></ul>

## 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 Relationship Management

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 such as banks and credit card companies use Angoss analytics in the development of credit scorecards to screen and monitor clients over their entire 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.

### 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); B2B channel operations; tax compliance; medical research; and customer lifetime value analysis.

**“ 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

## 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 overall 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 strategy development, validation and implementation.

## Operational Value

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

## The Angoss Advantages

Recognized by leading technology analyst firms Gartner, Forrester and Hurwitz & Associates as a leader in 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 technology platforms.

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

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

## 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

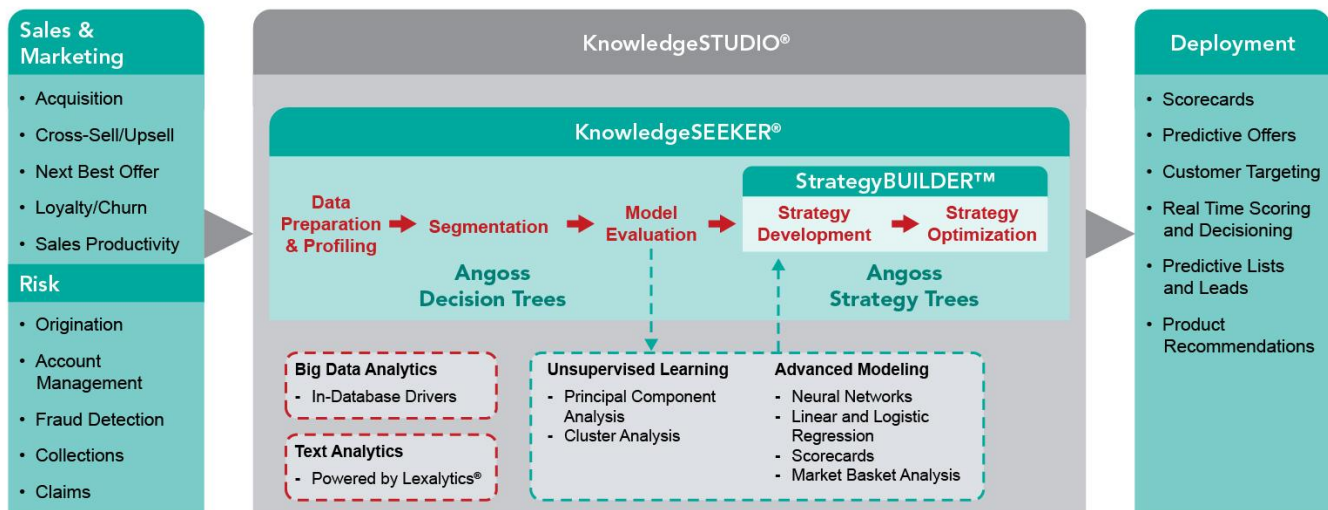
- Easy and fast installation and configuration
- Low support requirements
- Integration with existing analytics and database environments
- High privacy and security standards: SSL encryption and secure license system
- Flexible licensing
- Free installation support
- No server down-time during installation

## Building an Analytics Foundation

Offered in desktop, client-server and in-database configurations, KnowledgeSEEKER 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.



## KnowledgeSEEKER

Widely used for marketing, sales and risk analytics, KnowledgeSEEKER is a powerful data mining solution which offers data preparation, profiling, advanced 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 between 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.

KnowledgeSEEKER offers advanced, automated data import capabilities with sampling options. Data import is made simpler through the use of wizards, supports all data sources –files and databases through import drivers for SAS, SPSS, Text, and Excel files, as well as ODBC – and handles very large data sets required for analysis. 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.

### Data Preparation

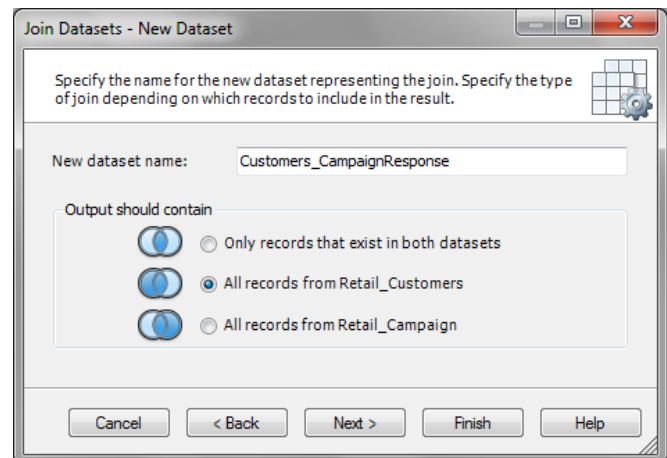
KnowledgeSEEKER offers advanced, automated data import and data preparation capabilities with sampling options. Data import is made simpler through the use of shortcut menu-driven options and wizards. File preview and field transformation features allow users to preview the data being imported, choose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

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

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:

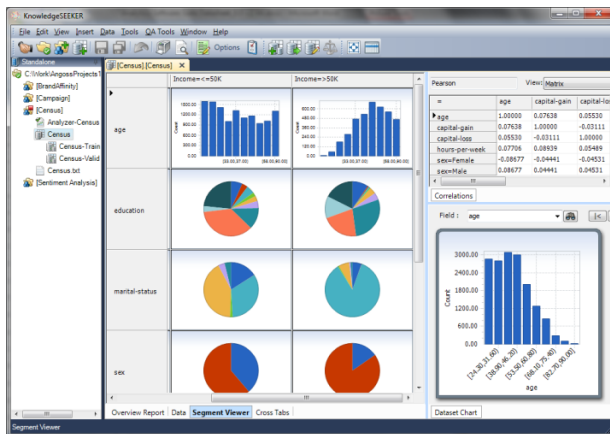
- Binning of discrete and continuous variables
- Logarithmic transformations
- Optimal binning using Weight of Evidence aided by decision tree interface
- Substitution of missing values
- Calculation of weights for balanced samples
- Generation of dummy variables

## 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.

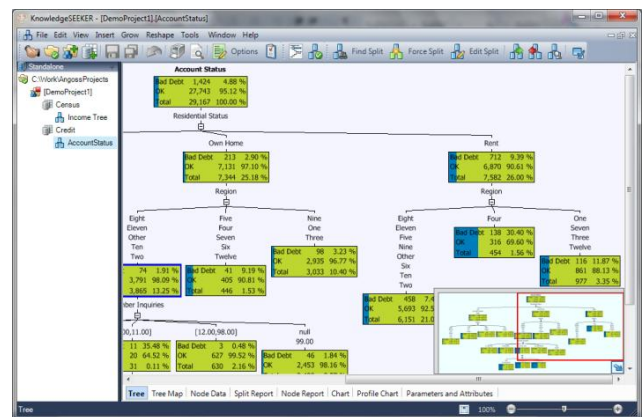
- Overview Report provides univariate statistics such as min/max, mean, standard deviation, sum, variance, number of missing values, etc.
- Univariate and multivariate distributions are visualized by Dataset Chart, Segment Viewer, and Cross Tabs charts
- Correlation View shows the degree of linear association between pairs of variables



## 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.

## 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 – data preparation, profiling, exploration, segmentation, modeling, scoring, validation, monitoring and building scorecards—in a high-performance visual environment that provides business users and expert analysts with a powerful and scalable data mining and predictive analytics solution.

### Predictive Modeling and Unsupervised Learning

KnowledgeSTUDIO provides comprehensive and advanced data mining and predictive analytics capabilities. Designed for business analysts – with advanced control features for experts – KnowledgeSTUDIO offers Decision Trees, linear and logistic regression, neural networks, cluster 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 internal staff. Whether for credit risk or businesses looking to apply the scorecard principles in non-credit risk domains, KnowledgeSTUDIO offers the capabilities to create predictive scorecards that span all customer-centric business processes – from acquisition through to collection.

### 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.

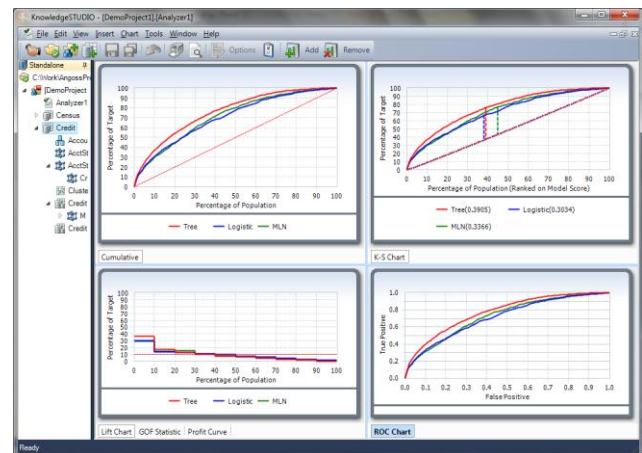
Aside from discovering association rules, Market Basket Analysis helps you visualize the degree of attraction or repulsion between items, view charts representing item associations, rank association rules and apply them to new data to produce recommendations.

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.



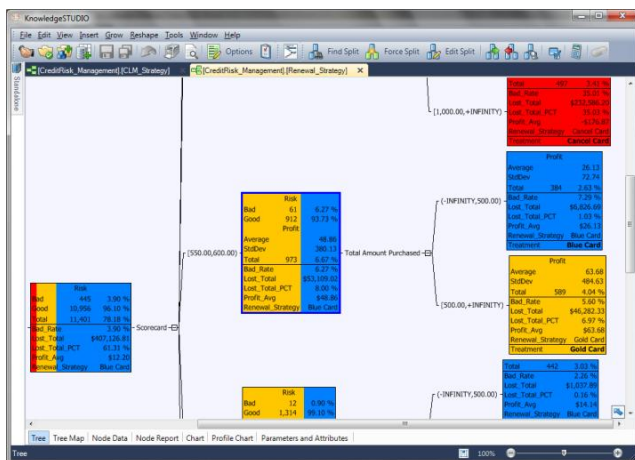
Models developed in KnowledgeSTUDIO can be deployed directly within the application or automatically translated to SAS, SQL, and PMML code for deployment in other analytics environments or databases.

## StrategyBUILDER

As a standard module in KnowledgeSEEKER and KnowledgeSTUDIO, StrategyBUILDER provides the capabilities to design, verify and deploy the necessary predictive and business rules to execute sales, 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 the 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.

“ Overall, the 18 month savings related to using KnowledgeSTUDIO in our collections area is \$8 Million.”

- Global Financial Institution

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.

## In-Database 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.

## Text Analytics

Angoss offers a Text Analytics add-on that provides text and sentiment analysis—powered by Lexalytics™, the leading text and sentiment analysis engine provider

Organizations have historically used predictive analytics to analyze and model based on their proprietary, structured data (like transactional data, CRM data etc.). The text analytics add-on allows organizations to expand the types and volume of data used for advanced analytics to include unstructured or text-based data—whether proprietary (like email communications, CRM notes, claims) or from the Web (like social media from Tweets, blogs, forums).

The addition of more data types (and volume) allows for more accurate modeling resulting from additional predictive variables. Models enhanced by the output of text analysis are more likely to have higher predictive and exploratory power—for greater ROI.

Moreover, organizations are looking to tap into the vast and growing source of Big Data to improve decision making and gain competitive advantage. Text analytics advances their ability to do just that

Text analysis features include text acquisition from databases, entity and theme extraction, document summarization, sentiment analysis, and automated creation of an analysis dataset for modeling based on the text analysis results.

Models enhanced by the output of text analysis are more likely to have higher predictive and exploratory power. The results of the text analysis can be combined with other KnowledgeSTUDIO capabilities to gain greater insight into your unstructured data—in combination with your structured data.

Angoss' Text Analytics add-on is available for use on Windows and Red Hat Linux platforms.

The results of the text analysis can be leveraged for greater insight by means of intuitive and wizard-driven data preparation and data modeling tools in KnowledgeSTUDIO:

- Automated creation of a single mining view for predictive modeling based on the text analysis results. This is powered by data preparation wizards used to join, aggregate, and append datasets, as well as remove duplicates
- Exploration and visualization of associations between the extracted entities and themes using Market Basket Analysis
- Finding similarities between groups of documents using Cluster Analysis
- Segmentation and modeling based on the sentiment analysis results using Angoss' interactive, best-in-class Decision Trees
- Applying Model Analyzer to visualize the improved performance of models that include text analysis results

## 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 in-database 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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