SPSS

Predictive Analytics from SPSS Inc.

Solutions for Managing the Future

Achieve Your Goals with Predictive Analytics

To meet your goals, your organization must develop sound strategies and then set comprehensive performance objectives. To do this, you must consider a wide variety of factors—factors such as the state of your current operations, past performance, and a number of external forces. Predictive analytics solutions help you do this as no other software solution can.

Reporting and business intelligence solutions are valuable for understanding past and current conditions. However, predictive analytics solutions enable you to anticipate future developments, so your entire organization can be proactive, rather than reactive.

Predictive analytics solutions apply sophisticated statistical and machine-learning techniques to your organization's data. You can use predictive analytics to uncover hidden patterns and trends in data residing in transactional or ERP systems, structured databases, and flat files. You can even analyze Web logs and textual data, such as notes fields from sales force automation and call center applications, and open-ended survey responses.

Your organization can automatically deploy the results of predictive analytics both to individuals and to operational systems to guide customer interactions and strategic decision making. The result is improved performance and sustained success.

There are many ways to apply predictive analytics:

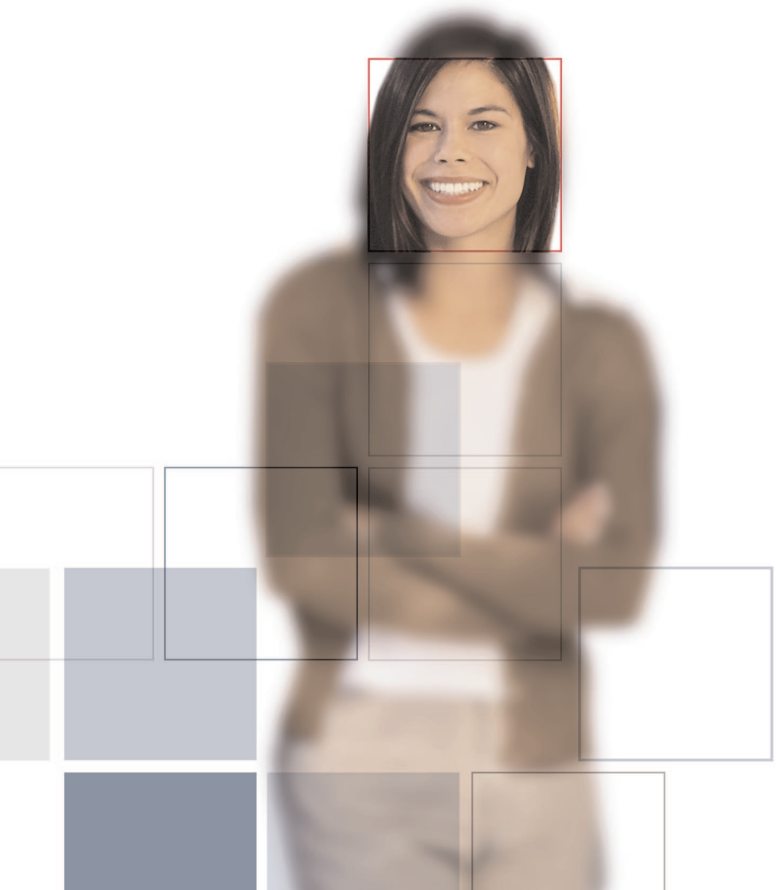
- Business organizations use predictive analytics to increase revenues and profits while reducing expenses and losses.

  They use these techniques to:
  - Deepen their understanding of customer attitudes and behavior, enabling them to increase sales, strengthen customer loyalty, and minimize customer attrition
  - Improve their utilization of their Web channel by better understanding customers' propensity to purchase
  - Identify changes in the marketplace, including competitor activities that might impact performance
  - Streamline business processes
  - Better manage risk and minimize the impact of fraud
- Government agencies reduce costs while improving the allocation of goods and services and increasing user satisfaction. With predictive analytics, they can:
  - More efficiently protect public safety and security
  - Improve regulatory compliance
  - Reduce fraud, waste, and abuse
- Educational institutions and not-for-profit organizations use predictive analytics to help them achieve their particular missions. They use these technologies to:
  - Design and administer appropriate programs more efficiently
  - Increase their understanding of their "customers," leading to more effective communication
  - Improve their management of resources and budgets

  - Plan fund-raising and marketing more systematically, and implement programs more cost effectively
- Scientific and medical researchers apply predictive analytics to their research and development efforts. By doing so, they can:
  - Quickly identify patterns and trends, even in extremely large, complex data sets
  - Test a variety of hypotheses faster and more efficiently
  - Develop products and therapies more quickly and cost effectively

SPSS predictive analytics solutions integrate with your organization's existing technology infrastructure. You can even embed them in your operational systems.

Although the processes surrounding predictive analytics are complex, implementing an SPSS predictive analytics solution is not. SPSS has built 35 years worth of analytical experience into our software, resulting in products that make these sophisticated, complex processes easy.



Prediction Makes a Difference

IDC recently published a follow-up report to its extensive study of the business use of analytic technologies. For this study, IDC surveyed more than 40 North American and European companies. All of them had used an analytic application for at least six months.

The study included organizations using predictive business analytics—defined as either data mining technologies or packaged applications incorporating these technologies—and organizations using non-predictive technologies—defined as business intelligence solutions such as end-user query, reporting, and analytic tools. In this report, IDC examined the differences between applications of predictive and non-predictive solutions.
Key findings included:

- The benefits of predictive analytics projects centered on business process enhancement, that is, using information to drive optimal decision making
- Predictive analytics projects required higher investment levels and yielded significantly higher overall returns over five years, implying that these projects tackled problems of greater scope and complexity
- While non-predictive projects yielded a median return on investment (ROI) of 89 percent, predictive projects resulted in a median ROI of 145 percent

Source: IDC, *Predictive Analytics and ROI: Lessons from IDC's Financial Impact Study, 2003*. September 2003, document number #30080.

Meet Your Toughest Challenges

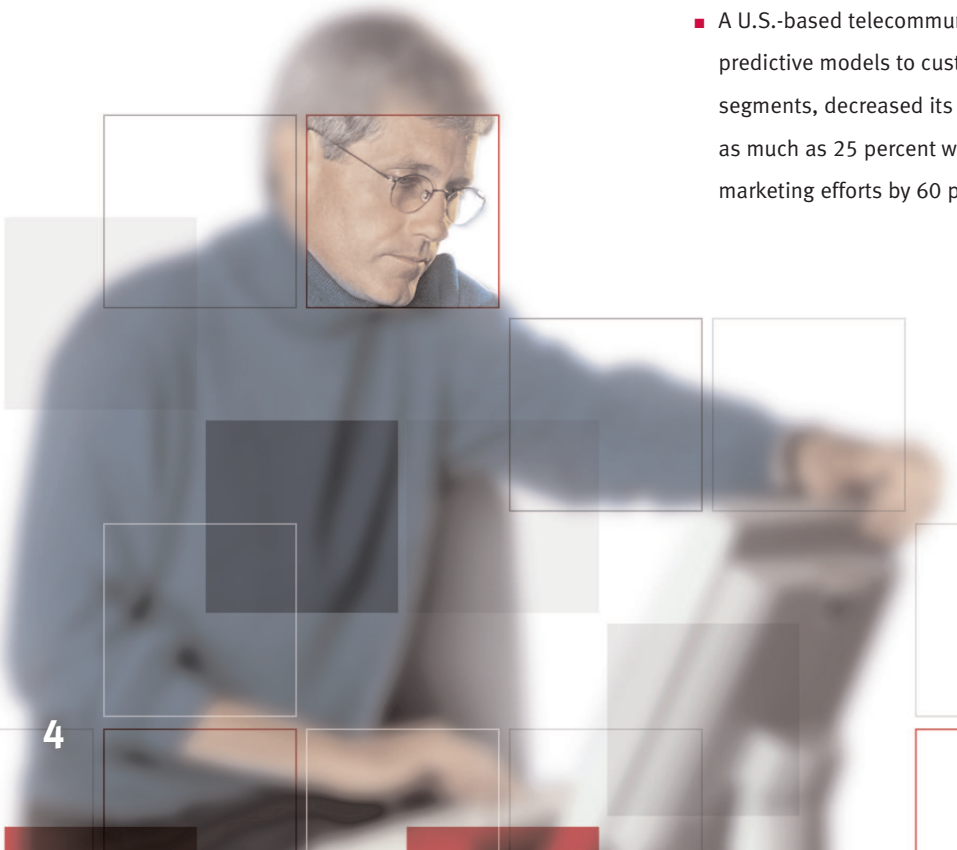
There's a reason that 95 of the Fortune® 100 choose predictive analytics solutions from SPSS Inc. They've found that being able to accurately anticipate change gives them a greater ability to plan appropriate strategies and tactics, and successfully overcome both current and future challenges. Government agencies, educational institutions, and research organizations face many of the same challenges that businesses do—trying to accomplish more with fewer resources, for example. Many of them use SPSS predictive analytics solutions to meet these challenges.

SPSS predictive analytics solutions allow analysts to draw from a variety of data sources and incorporate your organization's existing knowledge to develop predictive models that address your toughest challenges. Then these models can be shared with those who need them—with people in your own organization or your clients', or among your vendors, distributors, and other business partners. Everyone gains new, useful insights, regardless of their familiarity with the underlying predictive technologies.

Understanding "people data"

When organizations use predictive analytics to increase their understanding of the attitudes and behavior of the people they serve, they see significant, quantifiable results. Business organizations have found that they can attract customers, strengthen their loyalty, and reduce customer attrition or "churn" more cost effectively through predictive analytics. And public sector organizations can achieve similar goals.

- A regional banking organization develops predictive customer profiles that have improved the "lift" of marketing campaigns by 10 to 20 percent
- A global consumer products marketer uses predictive analytics to monitor customer loyalty and improve product placement in retail stores
- A U.S.-based telecommunications provider, by using predictive models to customize its offers for customer segments, decreased its average monthly churn rate by as much as 25 percent while reducing the cost of its marketing efforts by 60 percent



- A government agency, by identifying the people most likely to respond to its job offers, enables its staff to target the most likely candidates from among hundreds of leads, thus achieving desired results in less time, and at lower cost

Companies can also better understand lifetime customer value through predictive analytics. Segmenting customers by demographic, attitudinal, and behavioral characteristics enables companies to build an in-depth understanding that can guide them in making a wide range of decisions.

For example:

- A European financial institution builds propensity models to discover customers' principal reasons for purchasing a particular product. In some targeted mailings, the organization has achieved nine times greater response rates, compared to a control group.
- A Tokyo-based personal computer and software reseller uses predictive analytics to build a recommendation engine that suggests appropriate products to its Web site visitors, based on their personal profiles. This has resulted in a 67 percent increase in average monthly page views, an 18 percent growth in sales, and a 200 percent gain in profits.

Businesses with extensive operations measure their gains from applying predictive analytics to these challenges in tens, even hundreds, of millions of dollars. But other organizations benefit in equally important ways.

- A community college serving 15,000 undergraduate students uses data mining to better understand student needs. This helps the college offer relevant classes at convenient times, provide appropriate counseling and financial aid packages, and improve its student retention rate. It also enables the college to market its services to current and prospective students more cost effectively.
- Predictive technologies alert government agencies to anomalies in the reported number of cases of a particular illness. As a result, medical personnel in the affected area can be notified in a timely fashion.
- Data mining also analyzes the millions of pieces of data generated by microarray experiments that study the genetic factors underlying malignant brain tumors in children. The researchers' goal is to discover the most effective therapies for these tumors, thereby extending or saving children's lives.

Improving processes

Better processes help people throughout your organization make better decisions every day. SPSS predictive analytics, by enabling your organization to automate the flow of information to match your existing business practices, helps you deliver the insights gained through these technologies to people who can apply them in their daily work. This boosts employee productivity and job satisfaction. And there are other benefits as well.

For example, by deploying the results of predictive analytics to decision makers, companies can minimize risk. Information about the credit-worthiness of potential customers can be provided to systems accessed by customer contact staff. Predictive analytics can also be used to detect fraud and waste, and improve the success rate of collections efforts. It can even be used to identify patterns in behavior that indicate likely criminal activities.

- A leading provider of payment processing and fraud detection solutions for Internet merchants incorporates predictive analytics technologies in a fraud detection solution that has decreased charge-backs to its customers by 700 percent. At the same time, the company has reduced its customers' average cost of manually reviewing transactions by 40 percent.

- A government agency develops predictive scores to determine which types of delinquent taxpayers are most likely to pay what they owe. By focusing on these groups, it achieves a higher success rate in its collection efforts.
- Analysts at a U.S. metropolitan police department review and analyze crime data, identify trends and patterns, and develop predictive models that are made available to operational personnel through an intranet. This improves public safety because the department can evaluate real-time conditions and send police units where they are most likely to be needed.

Applying predictive analytics to Web and textual data

Predictive analytics, when applied to information about visits to your organization's Web site, provides a deeper understanding of visitor behavior than standard reports do. This understanding can lead to more effective site design, the successful introduction of personalization and recommendation capabilities, and increased revenues and profits. For example:

- A European company with offices in more than 60 countries maintains an intranet to enable employees to complete certain business processes online. The company analyzes employee use of this intranet, and can modify the site to make it even more useful.
- A U.S.-based media organization monitors the activity on various portions of its Web site and, by doing so, is better able to identify the content with the greatest appeal to visitors. By offering improved site navigation and better promotion of specific content areas, the company has tripled its customer retention rate, and provides better service to its customers.

Organizations also gain insight from textual data through SPSS predictive analytics technologies. Organizations have vast amounts of information considered "unstructured" because it is not currently stored in structured databases. One of the strengths of the SPSS solution is its ability to "structure" text so that predictive techniques such as clustering, scoring, and modeling can be used to detect previously unsuspected patterns.

Early adopters of this technology include a wide variety of organizations. Some use it to more accurately measure the value of the content they offer online. Others use it to improve their competitive intelligence, or gain a more detailed understanding of customer attitudes and behavior.

- A U.S. company uses text mining to sort and route customer comments from a national network of service centers to the appropriate individuals in the organization, providing valuable information to its product developers while increasing customer satisfaction
- A major European manufacturer uses text mining to systematically survey competitors' Web sites and develop more detailed competitive intelligence
- A global pharmaceutical organization uses text mining to aid researchers in discovering relationships in chemical and biomedical research databases, significantly shortening its product development cycle time and trimming costs

Text from call center and sales force automation applications, and open-ended responses to market research surveys, can also be efficiently analyzed using predictive technologies. This automates processes, saving time and money, and provides business users and others with a more intuitive, visual interface for sorting and exploring this information.

Expertise in Predictive Analytics

SPSS Inc. has led the way in developing sophisticated predictive technologies. Our predictive analytics solutions are now used by hundreds of organizations worldwide.

Among the lessons learned from years of implementing predictive analytics solutions, three are particularly important:

- Solutions with an open architecture enable organizations to “plug in” predictive technologies to existing systems, and achieve results faster
- A repeatable process to support predictive analytics initiatives significantly improves their success rate
- Efficiently delivering the results of predictive analytics to decision makers is essential

To address the first issue, SPSS designed all of our predictive solutions to work with virtually any type of database or flat file, on any platform. To address the second, we formed a consortium of more than 200 organizations involved in data mining, which in 1999 developed the CRoss-Industry Standard Process for Data Mining (CRISP–DM), a process now widely adopted in the industry. This process can be used to guide Web mining, text mining, and other predictive analytics efforts. And to address the third, SPSS developed delivery solutions that enable organizations to provide the results of predictive analytics, in easily understandable formats, to decision makers throughout your organization.

SPSS has seen how critical predictive analytics can be to organizations, and we are dedicated to helping you obtain the greatest value from these advanced technologies.

Can You See Clearly Now?

With predictive analytics, you can explore your data in entirely new ways. All your data, across all channels. You can uncover patterns and trends leading to new insights, enabling your organization to take timely and appropriate action, whether that involves further data exploration or an immediate change of tactics. This makes your organization more agile in response to change, yet clearly focused on achieving your goals.

SPSS solutions offer unmatched breadth and depth in predictive analytics techniques; flexible, built-in visualization features; and an open technology architecture. By combining our open solution with full process support, we help organizations efficiently gain an understanding that leads to results—rapidly.

An important factor in achieving these results is our consulting services staff. Offering a variety of services, SPSS consultants use their business and technical expertise to guide your staff and transfer our knowledge for your benefit. This helps your organization realize an even faster return on your investment in predictive analytics solutions. In addition, SPSS offers a full range of training options, including convenient, Web-based training. We also provide responsive customer support, worldwide.

For additional information about SPSS predictive analytics solutions, call (toll-free within the U.S.) 1.800.259.1028 or 1.312.261.6565, or visit **www.spss.com**.

About SPSS Inc.

SPSS Inc. (Nasdaq: SPSS) headquartered in Chicago, IL, USA, is a multinational computer software company providing technology that transforms data into insight through the use of predictive analytics and other data mining techniques. The company's solutions and products enable organizations to manage the future by learning from the past, understanding the present and predicting potential problems and opportunities. For more information, visit **www.spss.com**.