



Technical Analysis Software

By Wayne A. Thorp

The days of using chart books and hand-plotted charts to track price movement are long gone. Basic technical charts and indicators are provided by virtually all investment-related Web sites. If your charting activities are confined to a quick study of a stock's historical bar chart and the application of a few basic indicators, your needs should be met by Web-based tools. However, if you wish to explore various chart types, experiment with a full range of indicators, test and optimize a trading strategy, and screen using technical factors, then software should be considered.

Investors interested in technical analysis software will find a wide range of programs from which to choose. There are hundreds of technical analysis programs on the market today, ranging from simple charting software to programs that base buy and sell signals on astrological cycles. Faced with countless choices, it is important to identify what type of analysis you wish to accomplish with software. From there, it is a good idea to familiarize yourself with the features and functionality of a given software package to see if it meets your investment and analysis needs.

The goal of this comparison article is to introduce you to some of the more popular technical analysis programs currently on the market. The programs included here all analyze stocks, provide some level of charting, and contain technical indicators. All of these programs can be used for end-of-day analysis, while some also handle intraday (delayed or real-time) data.

The comparison grid on pages 14-17 examines the features and functions that many of these programs have in common. It is a list of features that a comprehensive, robust technical analysis program should provide. Furthermore, Table 1 on pages 10 and 11 outlines some of the more popular

technical indicators and drawing tools that each program offers. Reviews of individual programs begin on page 13, and ratings are presented on pages 22 and 23.

Data

Many people take for granted the role data plays in the technical analysis process. Without it, any technical analysis program you purchase is virtually useless. Furthermore, if the data you use is incorrect, you could be making investment decisions you would not have otherwise made with correct data. For these reasons, it is important to consider your data source in conjunction with your technical analysis program. The following are some data issues to consider when purchasing a technical analysis program.

Data Types Used

The data types used by a program can be broken down into two categories: the timing of the data and the information provided for a security or index. Depending on your investing time horizon, you will probably require different time intervals for your data. There are two main types of data timing—intraday and end-of-day. End-of-day data summarizes trading activity during the course of the day by revealing the opening (first trade) price, the range of trading with the lowest and highest transaction price, the closing price, and the volume. Investors with a longer-term investment horizon are typically satisfied with end-of-day data. Intraday data, on the other hand, is updated throughout the day—either in real-time or on a delayed basis. More active investors or traders probably will need to have access to this more timely data to monitor movements in the markets.

Beyond handling price and volume data—the cornerstone of technical analysis, some programs recognize the

role fundamental analysis plays in investment analysis and may provide additional data such as earnings and sales data, growth rates, and financial ratios and multiples.

End-of-day technical analysis programs will offer a historical database, with the depth of the data—number of years of price and volume data—varying from program to program. Real-time programs should also provide a database to plot historical charts. Furthermore, programs that offer trading systems and the functionality of backtesting these systems rely on a historical database to run tests. Programs that do not offer a historical database require you to seek a third-party source of data in order to develop a suitable database for backtesting.

Data Vendors

Many technical analysis programs use data from third-party data providers, which means you must also select a data provider in order to use your program. Programs vary in their support of vendors. MetaStock End of Day allows for direct downloading from three different data providers while the Professional version is compatible with two real-time data vendors.

A growing trend in technical analysis software is to offer a completely self-contained package that includes data. These programs are only compatible with their company's own proprietary feed. Examples of this trend include TC2000, VectorVest ProGraphics, TradeStation, and Trading Expert Pro.

Programs offering compatibility with more than one data provider allow you to compare services to find the one that best suits your needs and pocketbook. Having only one data choice is not necessarily a negative, since a self-contained program can save you time researching and selecting a data vendor. However, it does

Table 1.
Technical Analysis Indicators

	Behold!	Insider TA/ Insider TA Pro	Investor/RT	MetaStock End of Day/ MetaStock Professional	OmniTrader	Personal Analyst <i>(info may not be current)</i>	Personal Hotline <i>(info may not be current)</i>	Pro Analyst <i>(info may not be current)</i>	ProTA/ProTA Gold	SMARTrader	TC2000.com	TradeStation	Trading Expert Pro	VectorVest ProGraphics/ProTrader
Moving Averages														
Simple	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Exponential	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Weighted	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Charting & Drawing Tools														
Andrew's Pitchfork	✓		✓	✓		✓	✓	✓		✓			✓	
Bollinger Bands	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cycle Rules	✓			✓		✓	✓		✓			✓		
Fibonacci Analysis	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Gann Analysis			✓	✓		✓	✓	✓				✓	✓	✓
Horizontal Lines	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Linear Regression Lines	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
Moving Average Bands	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Open Interest	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	
Parallel Lines	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓		✓
Tick Volume	✓		✓	✓	✓			✓		✓		✓		✓
Trendlines, Automatic			✓		✓	✓	✓	✓				✓		✓
Trendlines, Manual	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vertical Lines	✓		✓	✓		✓	✓	✓	✓	✓		✓		✓
Volume	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Built-In Indicators														
Absolute Breadth Index											✓	✓	✓	
Accumulation/Distribution (Chaikin)	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Accumulation Swing Index				✓		✓				✓		✓		
Advance/Decline			✓			✓	✓		✓	✓	✓	✓	✓	✓
Arms Index (TRIN)			✓	✓		✓	✓	✓	✓	✓		✓	✓	
Average True Range	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
Call-Put Ratios						✓	✓	✓	✓				✓	
Chaikin Oscillator	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Commodity Channel Index	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
Commodity Selection Index	✓			✓		✓	✓		✓	✓		✓		
Daily Volume Indicator	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Directional Movement	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
Ease of Movement		✓	✓	✓					✓			✓	✓	

tie you to the data they provide and the quality, or lack thereof, as well as their fee structure. The comparison grid indicates which data vendors are used by each program.

Auto Downloading

Some programs give you the flexibility to retrieve data on a fixed sched-

ule without having to manually initiate the download process. You specify when and how often you wish to perform the updates, and the program will log onto the data provider, download the data, and then log off.

Data Import & Export

If you are looking to upgrade an

existing technical analysis program, you may want to keep in mind the data formats that can be imported into the new program. You may be able to transfer any existing data you have for use with the new program. You can save yourself time and money if you are able to reuse the data and are not forced to start completely from

Table 1.
Technical Analysis Indicators (continued)

	Behold!	Insider TA/ Insider TA Pro	Investor/RT	MetaStock End of Day/ MetaStock Professional	OmniTrader	Personal Analyst <i>(info may not be current)</i>	Personal Hotline <i>(info may not be current)</i>	Pro Analyst <i>(info may not be current)</i>	ProTA/ProTA Gold	SMARTrader	TC2000.com	TradeStation	Trading Expert Pro	VectorVest ProGraphics/ProTrader
Built-In Indicators (con't)														
Herrick Payoff Index	✓			✓									✓	
MACD	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Market Facilitation Index	✓			✓		✓	✓	✓	✓	✓		✓		
Mass Index				✓		✓	✓	✓				✓		
McClellan Oscillator			✓	✓		✓	✓		✓	✓	✓	✓	✓	
McClellan Summation Index			✓	✓		✓	✓		✓	✓	✓		✓	
Median Price	✓		✓	✓			✓	✓	✓	✓				
Momentum	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Money Flow	✓		✓	✓	✓	✓	✓		✓	✓		✓	✓	✓
Negative Volume Index			✓	✓		✓	✓		✓	✓		✓	✓	✓
New Highs, New Lows	✓		✓			✓	✓	✓	✓		✓	✓	✓	✓
On-Balance Volume (OBV)	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Parabolic SAR	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
Percent Retracement			✓	✓		✓	✓	✓		✓		✓		
Positive Volume Index				✓		✓	✓	✓	✓			✓	✓	
Rate of Change	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Relative Strength			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Speed Resistance				✓		✓	✓	✓		✓		✓	✓	✓
Standard Deviation	✓		✓	✓		✓	✓	✓	✓	✓		✓		✓
Stochastics	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Swing Index				✓					✓	✓		✓		✓
Trade Volume Index				✓		✓	✓	✓				✓		✓
TRIX	✓		✓		✓	✓	✓	✓	✓	✓		✓		✓
Typical Price	✓		✓	✓		✓	✓		✓	✓		✓		
Ultimate Oscillator	✓		✓	✓		✓	✓	✓		✓		✓		
Volatility (Chaikin)			✓	✓	✓	✓	✓	✓	✓				✓	✓
Volatility (Wilder)			✓	✓		✓	✓		✓	✓		✓		
Volume Oscillator	✓		✓	✓		✓	✓		✓			✓	✓	✓
Weighted Spreads	✓		✓	✓		✓	✓							
Wilder's RSI	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Williams' %R	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
Proprietary Indicators	10	1	0	0	5	2	2	2	0	12	3	0		12
Total Number of Indicators (Not All Listed)	50	5	120+	120+	120	50	50	30+	50+	101	37	132	60	32

scratch with new data.

The ability to export data means you may be able to use your data with other programs such as financial planning software and portfolio management software. Refer to the comparison grid to see which particular import/export formats each program supports.

Merging

Data merging involves bringing together two or more securities to create a custom "index."

As one example of this, you could merge the prices of Gateway, Dell, Micron, and Apple to create your own custom stock index of computer companies.

Chart Types

The most common chart types are bar and line, and most of the programs highlighted here provide these chart types. Line charts normally plot the close over time, while bar charts show the open, high, low, and closing prices for a given period. Some of the other charts you may come across in-

clude candlestick, equivolume, and point & figure. These tend to be featured in the more advanced programs. Be sure that the program you select supports the chart types you use in your analysis.

For a more in-depth discussion on basic chart types, refer to the Feature article in the March/April 1998 issue of *Computerized Investing*, entitled “An Intro to Technical Analysis: Basic Chart Types.” It is available at our Web site (www.aaii.com) in the Computerized Investing archives.

Templates

A chart template or layout allows you to specify the characteristics of a chart, including the time period displayed, the periodicity of the data (daily, weekly, quarterly, etc.), chart type, and any indicators or drawing tools you wish to display. Programs that allow you to create custom templates generally also allow you to save them for future use.

Templates are especially useful if you view multiple securities in the same manner. All you need to do is specify the security and the template automatically displays it in the desired manner.

Indicators

A technical indicator is the mathematical manipulation of price and/or volume displayed in a graphical manner. Indicators can fall into two categories—industry standard and proprietary. Industry standard indicators are those you will find in many of the programs on the market today, such as stochastics and moving average convergence/divergence (MACD). Proprietary indicators are those developed and marketed by individual software manufacturers. Examples of these include Trendsetter Strength from Trendsetter Software and Worden Brothers’ Balance of Power.

The number and type of indicators built into a program are important factors to consider when selecting a program. The emphasis should be on ensuring that the program includes

the indicators important to your analysis, not just the raw number of indicators. Do not automatically write off a program just because it seems to lack a large number of technical indicators. Programs such as InsiderTA provide a small number of unique, proprietary indicators that you may find useful. It is helpful to take a moment to consider your needs when assessing the number and types of indicators you will require in a program. The more you wish to experiment with different trading strategies, the greater your need for a program with a more extensive list of technical indicators.

Beyond a set of predefined indicators, the ability to modify indicators to fit your individual trading needs is a useful feature. Modifications allow you to adjust factors such as the number of time periods used in a calculation. For example, the Wilder’s RSI (relative strength index) is usually constructed using 14 periods, but the period may need to be varied depending on the security or market condition.

Savvy technicians may follow technical indicators that they have created themselves. In addition, trade publications such as *Technical Analysis of Stocks and Commodities* regularly publish new indicators or variations on existing indicators. Some of the more advanced programs allow for custom indicators. While the methodology differs between programs, in general you either enter the formula in a spreadsheet, for example, or use a “wizard” that walks you through the process.

Table 1 details the popular indicators each program offers as well as the overall number of indicators supplied by each program.

Screening & Alerts

Screening is the method of taking a large universe of securities and narrowing it down to a few securities with similar characteristics. Technical screening involves locating securities that exhibit certain technical properties, such as price and volume behavior, moving average breakouts, or

overbought or oversold conditions based on indicators. Users are typically able to specify both the universe of stocks they wish to screen and the criteria they wish to base the screen on, and the program will generate a list of those securities that match the criteria. Depending on the program, you may also have the ability to perform screens using fundamental elements as well.

Another useful feature is the ability to receive alerts when certain “technical” events occur. Programs may give you the option of selecting a group of stocks to watch—such as those held in a portfolio—and then alert you when any of the prices move a certain percentage or if predefined price levels are met. These alerts can take the form of on-screen pop-up windows, E-mail alerts, or even a message sent to a pager.

Trading Systems

Ultimately, most investors will use technical analysis to help decide when to buy and sell a security. Trading systems apply a set of buy and sell rules and automatically indicate when these rules have been triggered. The trading rules can be a single indicator or group of indicators matched to specific conditions. Generally, you will tend to find trading systems only on the high-end technical analysis programs.

Backtesting a system involves applying it to historical data in order to test its performance, measuring factors such as the rate of return and identifying each buy and sell. This allows you to see which transactions would have been made based on the system as well as how successful and risky the strategy would have been over a given timeframe. However, backtesting only provides a glimpse of how the system would have performed. There is no guarantee that the trading system can duplicate this performance going forward.

As with indicators, some programs allow you to modify existing trading systems to better suit your needs. In addition, a few packages allow you to

build systems from the top down using proprietary programming languages or wizards that walk you through the process.

The ability to rank and compare trading system performance is a valuable tool. You can see how different systems perform in different market conditions. Another useful feature programs offer is performance reports. Once you have completed backtesting a trading system, the program will generate a report that includes information such as the total number of trades, the number of profitable trades, and the number of losing trades.

The more “real” the trading system is, the better. To add realism to a trading system, programs allow you to account for such items as slippage (the amount a stock may move between the time a signal is generated and the time an order is placed and executed) and broker commissions. Other items to consider are stop/loss methods, user-defined entry and exit signals, and whether you want to trade on long positions, short positions, or both. For more information on trading systems, consult the article “Building and Testing a Trading System” in the July/August 2000 issue of *Computerized Investing*.

Technical Analysis Programs



Behold!

Behold! may be just the program for Mac users looking to go beyond simple charting and who require a program for system development, testing, and optimization. Windows users should note that the Behold! CD includes a freeware Mac emulator, Basilisk II, which allows the program to run on a Windows-based PC.

The program is centered around a trading model, which allows users to create, test, and graph trading strategies. Each trading model consists of three parts—the worksheet, rules, and chart. The worksheet contains the data files for a given security as well as the values of the indicators used in the

system (e.g., moving average values). The worksheet allows you to modify indicators—for example, changing the number of periods used in the calculation. In all, Behold! contains 50 built-in indicators. The rules, as one might expect, outline the entry and exit strategies for a given system, such as buy when moving average A crosses above moving average B. Finally, the chart graphs the price data and indicators contained in the worksheet. When testing a system, the generated buy and sell signals also appear on the chart.

The autorun function of the program scans the data and generates a report that tells you what your current position should be and suggests stop methods for active trades. These reports can then be screened to show only those securities with an open position, those that require a new position, or where you should exit a trade.

Behold! comes with 14 pre-installed trading systems and offers users the functionality to create their own. Furthermore, Behold! can test trading systems on individual securities or on a portfolio of securities. A unique element of the testing process is the ability to use different systems on differ-

ent portions of a portfolio instead of testing a single system on the entire portfolio.

Behold! also offers a unique perspective when it comes to optimizing a trading system. The program’s “optigraph” offers a visual representation of how ranges of variables affect the trading results of a system. This differs from most other programs that list the results of a system optimization. With optigraph, you can see how slight changes in the market can affect the results of a trading system.

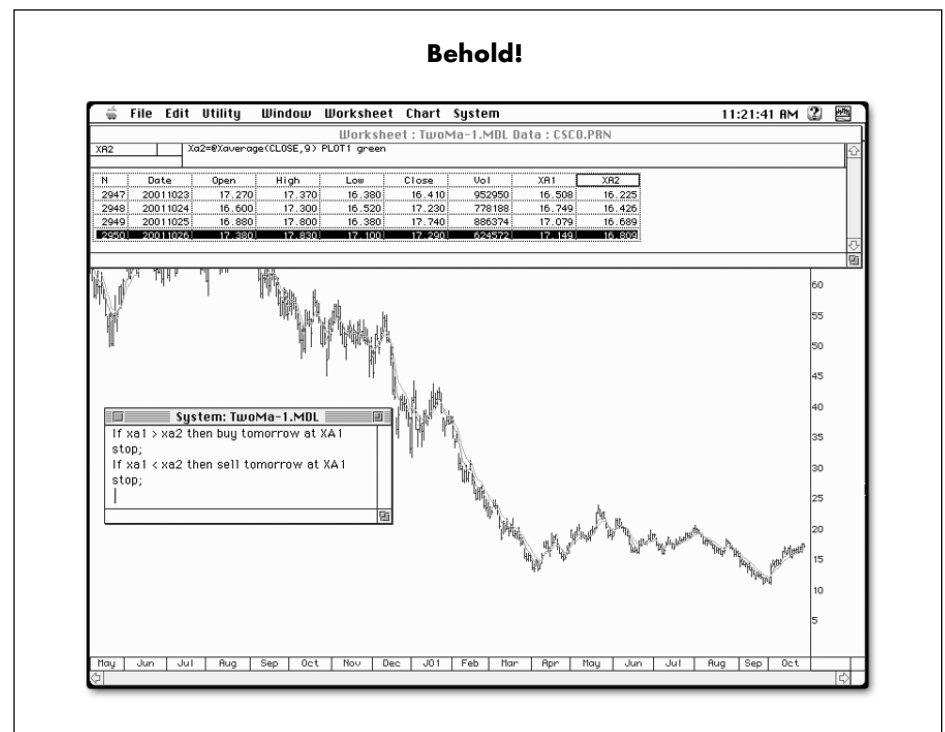
The program places system development and testing first and is not suited for investors concentrating on sophisticated charting. However, Behold! also ships with a freeware program, SpiffyCharts, that offers bar charting and a library of over 20 indicators. SpiffyCharts also handles daily downloading from Dial/Data, CSI, and MJK, and has data management capabilities that are not directly available in Behold! (www.spiffycharts.com).



Insider TA Standard & Pro

Most of the technical analysis programs on the market

(continued on page 18)



PRODUCT COMPARISON: TECHNICAL ANALYSIS SOFTWARE

		Behold!	Insider TA Standard & Professional	Investor/RT
Platform		Mac	Windows 95+	Windows 95+, Mac OS
Company		Investors Technical Services	Stock Blocks, Inc.	Linn Software, Inc.
Telephone		(512) 347-8472	(800) 697-1617	(800) 546-6842
Web Site		www.bhld.com	www.stockblocks.com	www.linnsoft.com
Software Cost		\$795, or 8 payments of \$105	\$129 (Standard), \$229 (Professional)	\$495 (end-of-day), \$1,000 (real-time), qrtly/yr leases
Demo Available			✓	✓
AAII Discount				10% (end-of-day)
Markets Followed		stocks, currencies, futures, mutual funds, bonds, indexes	stocks, indexes, sectors/indus	stocks, currencies, futures, mutual funds, bonds, sectors/indus, options
Data	Data type used	real-time, intraday, end-of-day, fundamental, historical	end-of-day, historical	real-time, intraday, end-of-day, fundamental, historical
	Historical database included			✓
	Sources of data download	CSI, Dial/Data, MJK	na	Dial/Data, eSignal, market data, DTN-Interquote, Quot
	Data downloader provided	✓		✓
	Unattended data downloading			✓
	Data import formats	ASCII, Behold!, Trendsetter, Futures Truth, Pro TA	ASCII, MetaStock version 4.0+ (Pro), TC2000 version 3.0+ (Pro), QuotesPlus (Pro)	ASCII, MetaStock
	Data export formats	ASCII	ASCII	ASCII
	Automatic split/distribution adjustment	✓		✓
Security merge feature	✓	✓		
Charts	Chart types	bar, candle, line	candle, candlevolume, equivolume, point & figure	bar, candle, line, point & figure
	Predefined chart templates (number)		✓ (4)	
	User-defined chart templates	✓		✓
	Scaling (linear, manual, semi-log)	linear, manual, semi-log	linear, manual, semi-log	linear, manual, semi-log
	Zoom/unzoom charts	✓	✓	✓
	Print charts	✓	✓	✓
Indicators	Number of predefined indicators	50	5	120+
	Customize/modify existing indicators	✓	✓	✓
	Create new indicators	✓		✓
	Show indicator values on charts	✓	✓	✓
Filter	Ranking based on	na	drawing tool	drawing tool, indicator
	Screening based on	indicator/study, technical system, fundamental data	indicator/study, technical system (Pro only)	technical system, fundamental data, drawing tool, indicator
	Alerts based on	indicator/study, technical system, fundamental data	indicator/study, technical system	technical system, fundamental data, drawing tool, indicator
Trading Systems	Number of systems	14	5	1
	Securities tested	stocks, futures, mutual funds	stocks	stocks, futures, mutual funds, options
	Customize/modify existing systems	✓	✓	✓
	Create new systems	✓	✓	✓
	Rank/compare multiple systems	✓		✓
	System backtesting	✓	✓	✓
	System optimization	✓	✓	
	System performance reports	✓	✓	✓
	System signals plotted on charts	✓	✓	✓
	System stop methods	trailing, max-loss, breakeven, profit target, inactivity	trailing, profit target (Pro only)	trailing, max-loss, breakeven, profit target
Accounts for slippage/commissions	✓	✓	✓	
Help	Tutorial	✓	✓	✓
	On-line help		✓	✓
	Phone/E-mail support	✓	✓	✓ (fee for phone support)

	MetaStock End of Day & MetaStock Professional	OmniTrader	Personal Analyst <i>(info may not be current)</i>	Personal Hotline <i>(info may not be current)</i>
OS 10.1+	Windows 98+	Windows 95+	Mac OS 7.5+	Mac OS 7.5+
	Equis International (800) 508-9180 www.metastock.com	Nirvana Systems (800) 880-0338 www.omnitrader.com	Trendsetter Software (800) 825-1852 www.trendsoft.com	Trendsetter Software (800) 825-1852 www.trendsoft.com
1,495 (real-time available)	\$449 (End of Day), \$1,695 (Pro)	\$495 (stocks), \$695 (futures), \$995 (real-time)	\$329	\$595
	10%	✓ \$100	✓	
futures, indexes, stocks	stocks, currencies, futures, mutual funds, bonds, indexes, sectors/indus, options	stocks, futures, mutual funds, bonds, indexes, sectors/indus, options	stocks, currencies, futures, mutual funds, bonds, indexes, sectors/indus, options	stocks, currencies, futures, mutual funds, bonds, indexes, sectors/indus, options
end-of-day, real-time	end-of-day, historical, fundamental, real-time & intraday (Pro)	real-time, intraday, end-of-day, historical	intraday, end-of-day	intraday, end-of-day
nyTrack, DTN, Quote.com	✓ Reuters, Dial/Data, Telescan (End of Day); eSignal, Quote.com (Pro)	✓ eSignal, Interquote, Quote.com	✓ Dial/Data	✓ Dial/Data
	✓	✓	✓	✓
	✓ AIQ, ASCII, Excel, FutureLink, Quattro, Lotus 1-2-3, TC2000	✓ MetaStock, CSI, AIQ, TC2000 (Worden)	✓ ASCII	✓ ASCII
	DIF, Excel, Quattro, Lotus 1-2-3	na	ASCII	ASCII
	✓	✓	✓	✓
	✓		✓	✓
point & figure	bar, candle, candlevolume, equivolume, line, point & figure	bar, candle, line	bar, candle, line, point & figure	bar, candle, line, point & figure
	✓ (14)		✓	✓
	✓		✓	✓
log	linear, manual, semi-log	linear, manual, semi-log	linear, manual, semi-log	linear, manual, semi-log
	✓	✓	✓	✓
	✓	✓	✓	✓
	120+	120	50	50
	✓	✓	✓	✓
	✓	✓	✓	✓
	✓	✓	✓	✓
indicator/study, fundamental data	drawing tool, indicator/study, technical system, fundamental data	indicator/study, technical system	indicator/study, technical system	indicator/study, technical system
indicator/study, fundamental data	indicator/study, technical system	drawing tool, indicator/study, technical system	indicator/study, technical system	indicator/study, technical system
indicator/study, fundamental data	drawing tool, indicator/study, technical system	drawing tool, indicator/study, technical system	na	indicator/study, technical system
	35	120	na	6
	stocks, futures	stocks, futures,	na	stocks, futures, options
	mutual funds, options	mutual funds, options	na	
	✓	✓	na	✓
	✓	✓	na	✓
	✓	✓	na	✓
	✓	✓	na	✓
	✓	✓	na	✓
	✓	✓	na	✓
break-even,	trailing, max-loss, breakeven, profit target, inactivity	profit target	na	trailing, profit target
	✓	✓	na	✓
	✓	✓	✓	✓
report)	✓	✓	✓	✓

PRODUCT COMPARISON: TECHNICAL ANALYSIS SOFTWARE

		Pro Analyst <i>(info may not be current)</i>	ProTA & ProTA Gold	SMARTrader
Platform		Mac OS 7.5+	Mac OS 7, 8, 9, X	Windows 9x+
Company		Trendsetter Software	BeeSoft	Stratagem Software International
Telephone		(800) 825-1852	(800) 840-3588	(504) 885-7353
Web Site		www.trendsoft.com	www.beesoft.net	www.stratagem1.com
Software Cost		\$399	\$59 (\$199 for Gold)	\$299
Demo Available			✓	✓
AAll Discount				\$50
Markets Followed		stocks, currencies, futures, indexes, bonds, sectors/indus, options	stocks, currencies, futures, mutual funds, bonds, indexes, sectors/indus, options	stocks, currencies, futures, mutual funds, bonds, indexes, sectors/indus, options
Data	Data type used	real-time, intraday, end-of-day, fundamental, historical	end-of-day, historical	end-of-day, historical
	Historical database included	✓	✓	
	Sources of data download	Track Data	Dial/Data, AOL, BeeSoft, Quote.com	na
	Data downloader provided	✓	✓	
	Unattended data downloading	✓	✓	
	Data import formats	ASCII	ASCII, MetaStock	ASCII, MetaStock
	Data export formats	ASCII	ASCII, MetaStock, Excel	ASCII
	Automatic split/distribution adjustment	✓		
	Security merge feature	✓		
Charts	Chart types	bar, candle, line	bar, candle, line, point & figure	bar, candle, line
	Predefined chart templates (number)	✓	✓ (4)	✓
	User-defined chart templates	✓	✓	✓
	Scaling (linear, manual, semi-log)	linear, manual	linear, manual, semi-log	linear
	Zoom/unzoom charts	✓	✓	✓
	Print charts	✓	✓	✓
Indicators	Number of predefined indicators	30+	50+	101
	Customize/modify existing indicators	✓	✓	✓
	Create new indicators		Pro	✓
	Show indicator values on charts	✓	✓	✓
Filter	Ranking based on	indicator/study, fundamental data	indicator/study, technical system (Pro)	na
	Screening based on	indicator/study, technical system	indicator/study (Pro), technical system (Pro)	drawing tool, technical system
	Alerts based on	indicator/study, technical system	na	drawing tool, indicator/study, technical system
Trading Systems	Number of systems	na	4 (Trading Systems Pro Only)	23
	Securities tested	na	stocks, futures, mutual funds, options	stocks, futures, mutual funds, options
	Customize/modify existing systems	na	✓	✓
	Create new systems	na	✓	✓
	Rank/compare multiple systems	na	✓	
	System backtesting	na	✓	✓
	System optimization	na	✓	✓
	System performance reports	na	✓	✓
	System signals plotted on charts	na	✓	✓
System stop methods	na	trailing, max-loss, breakeven, profit target, inactivity	trailing, max-loss	
	Accounts for slippage/commissions	na	✓	✓
Help	Tutorial	✓		✓
	On-line help	✓	✓	✓
	Phone/E-mail support	✓	✓	✓

TC2000.com	TradeStation	Trading Expert Pro	VectorVest ProGraphics & ProTrader
Windows 95+ Worden Brothers, Inc. (800) 776-4940 www.tc2000.com free ✓	Windows 98+ TradeStation Securities (800) 556-2022 www.tradestation.com free w/brokerage account; \$795/mo. ✓	Windows 95+ AIQ Systems (800) 332-2999 www.aiqsystems.com \$695 (end-of-day), \$1,295 (real-time); monthly plans also available	Windows 95+ VectorVest, Inc. (888) 658-7638 www.vectorvest.com \$9.95 for 5 wk trial; \$49/mo for daily updates, \$39/mo for weekly updates
stocks, indexes, sectors/indus	stocks, currencies, futures, mutual funds, bonds, indexes, sectors/indus, options	stocks, currencies, futures, mutual funds, bonds, indexes, sectors/indus	stocks, indexes, sectors/indus
end-of-day, fundamental, historical ✓ TC2000 (Worden Brothers) ✓	real-time, intraday, end-of-day, fundamental, historical ✓ TradeStation	real-time, intraday, end-of-day, fundamental, historical ✓ myTrack	end-of-day, fundamantal, historical ✓ VectorVest
TC2000 (Worden Brothers) ✓	na	ASCII, TC2000, Excel ✓ ✓	ASCII, Excel, Lotus ✓ ✓
ASCII, MetaStock, TC2000 v3.0 ✓	na ✓	ASCII, TC2000 ✓ ✓	ASCII, Excel, Lotus 1-2-3 ✓ ✓
bar, candle, line ✓ (12) ✓ linear, manual, semi-log ✓ ✓	bar, candle, line, point & figure ✓ (6) ✓ linear, manual, semi-log ✓ ✓	bar, candle, line, point & figure ✓ (2) linear, semi-log ✓ ✓	candle, line ✓ ✓ linear, manual ✓ ✓
37 ✓	132 ✓ ✓ ✓	60 ✓ ✓	32 ✓ (moving averages) ✓
indicator/study, technical system, fundamental data indicator/study, technical system, fundamental data na	drawing tool, indicator/study, technical system na drawing tool, indicator/study, technical system	drawing tool, indicator/study, technical system, fundamental data drawing tool, indicator/study, technical system, fundamental data drawing tool, indicator/study, technical system, fundamental data	drawing tool, indicator/study, technical system, fundamental data indicator/study, technical system, fundamental data na
na na na na na na na na na	98 stocks, futures, mutual funds, options ✓ ✓ ✓ ✓ ✓ ✓ ✓	200 stocks, futures, mutual funds ✓ ✓ ✓ ✓ ✓ ✓	30+ stocks ✓ ✓ ✓
na na	trailing, max-loss, breakeven, profit target, inactivity ✓	trailing, max-loss, breakeven, profit target, inactivity ✓	trailing ✓ (commissions)
✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓

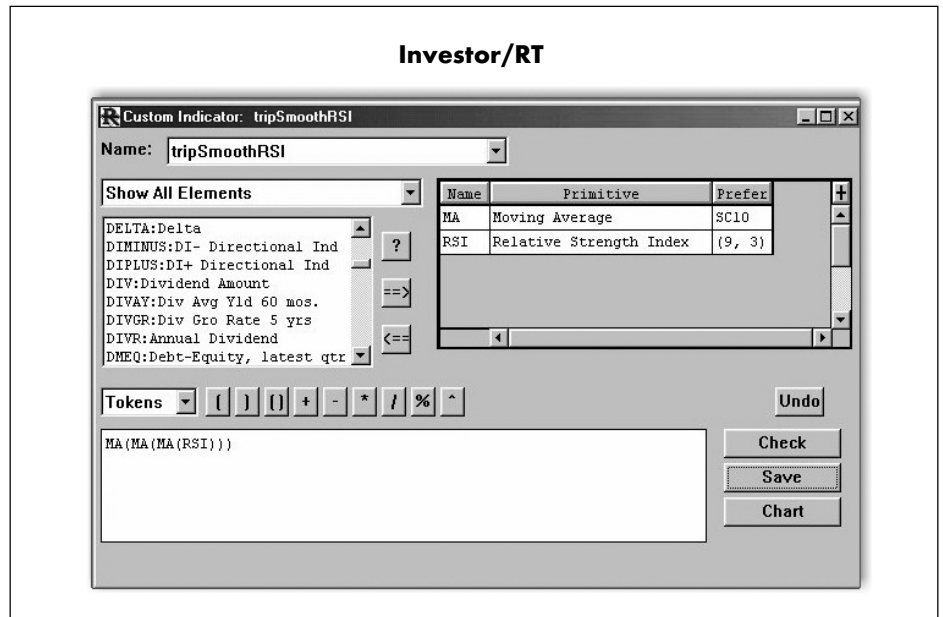
(continued from page 13)

today offer users a range of analysis techniques. However, there are some that focus on one area of analysis, such as Insider TA from Stock Blocks. The bulk of the analysis performed by the program revolves around volume, more specifically equivolume, or box charting and analysis. This type of charting places price and volume on equal footing in the form of two-dimensional boxes. For these boxes, the vertical height of a given box is the price range for the period, while the horizontal x-axis is a sequence of periods that grows wider as volume increases and narrower as volume decreases. The program also offers candlestick charts along with newly added point & figure and candlevolume charts.

For volume analysis, Insider TA offers four tools—consolidation mapping, box analyzer (BA), volume analyzer (VA), and VA rank. The box analyzer is based on ease of movement principles and determines the trend in price by analyzing box shapes and their relation to price movement. Based on this interaction and the identified trends, the box analyzer function generates buy and sell signals that indicate where a reverse in price trend may be taking place and plots these signals on the chart being analyzed. Furthermore, the program gives you a performance summary of how, based on the buy and sell tags, the trades would have performed.

Insider TA's volume analyzer is a derivation of on-balance volume and attempts to measure the demand for a stock. Volume analyzer is plotted as a line—a rising line indicates that there is more buying interest in the stock than selling interest, and vice versa. Building on the volume analyzer function, the VA rank function measures the relationship between a stock's price and its volume analyzer level. Extremes in the VA rank line indicate potential entry and exit points.

In equivolume charting, a consolidation period is marked by a range of boxes of similar price or height. Oftentimes, when prices break out of



this consolidation period, the price undergoes rapid movement (either up or down). Studies have shown that when this breakout takes place, selling volume approximates the buying volume that took place during the consolidation period as investors take profits or cut losses. Therefore, the horizontal distance of the consolidation (the volume traded during the period) will be roughly equal to the distance following the breakout. Using the consolidation mapping tool in Insider TA, users can get a feel for how long (but not how big) the price move will be.

Insider TA Pro offers additional features beyond the standard release, such as stop-loss and trailing-stop signaling, MetaStock, TC2000, and QuotesPlus data compatibility (Standard version handles only ASCII text files), and a file scan utility where you can scan portfolios of stocks to find those that meet your individual criteria. The stop-loss and trailing-stop signals attempt to protect you in the event of an unexpected turn in a stock's price.



Investor/RT

The programmers at Linn Software are probably some of the industry's busiest. While it is common to see technical analysis

programs updated every year if not more often, Investor/RT undergoes changes on an almost monthly basis. By constantly adding to and refining the program, Investor/RT has become one of the most versatile technical analysis programs available today.

Some of the more significant changes to the program over the last couple of years include custom profile charts that allow users to specify a group of securities, perform a variety of mathematical calculations on the underlying data of these securities, filter and sort the results, and display them as a bar graph. Recently added schedules automate user-specified actions such as running scans, backtesting trading systems, or performing various database management functions. The program now contains "paint bar" studies that highlight individual bars or groups of bars based on user-defined logic. For example, you can specify that a bar is green when the close is above the 20-day simple moving average. Lastly, Investor/RT now has a Web resource feature that allows users to create links to various Web pages.

Investor/RT is one of the few technical analysis programs available that can be used on both Mac and Windows systems. It offers practically everything an active technical trader could ask for—end-of-day or intraday

analysis, charting, custom indicator and trading system creation, system testing, and portfolio management functions.

If you don't want to get pigeonholed into using one or two data providers, Investor/RT supports a wide variety of end-of-day and real-time data feeds. It also offers an impressive array of chart types—bar, candlestick, point & figure, line, market profile, and volume profile and boasts a library of over 120 technical indicators.

Using the scan function in Investor/RT, you have the ability to identify trading signals being generated. Scans can be based on technical indicators, fundamental data, and current and historical prices and can be run using tick or minute data as well as daily, weekly, and monthly data. Once the program finishes a scan, the results are presented in a quote page that can be sorted on a number of data elements. The program ships with predefined scans and users can create custom scans using Investor/RT's real-time language (RTL). This programming language can also be used to create custom indicators, trading signals, and trading systems.

For easy viewing of several charts, the program's slide show feature allows you to set the viewing time for each chart, sit back, and let the program do the rest. Investor/RT also provides candlestick pattern recognition. Select from any of the over 30 predefined patterns and the program will mark each pattern's occurrence on the display—even on an intraday basis.

For any trader, it is important to track open positions. Having portfolio management capabilities within your analysis package is an added convenience. Investor/RT can track long or short positions, and gains and losses on stock, mutual funds, futures, and equity/index options. The system also tracks transactions such as cash, dividends, commissions, and interest in order to calculate the annualized rate of return for each open position. However, it does not pro-

vide year-end tax reporting.



MetaStock End of Day & MetaStock Professional

Equis International has long been known as a leader in the field of technical analysis programs and its MetaStock End of Day and Professional programs are among the most complete programs of their kind on the market today.

MetaStock is arguably one of the most easy-to-use technical analysis programs around. By fully utilizing Window's object-oriented programming, even technical analysis novices should have no trouble using the program right out of the box. Object-oriented programming means that every price plot, indicator, and drawing tool can be clicked on and manipulated. Right clicking on an object brings up a short-cut menu or pop-up window with the items that users can modify.

Both versions of MetaStock come with over 120 technical indicators and line studies. Should you choose to create your own indicators, the program's indicator builder offers over 200 mathematical, statistical, and technical operators to choose from. Furthermore, you are able to reference existing custom indicators when creating new ones. Unlike other programs that use rather complicated programming rules for creating custom indicators and trading systems, MetaStock uses syntax similar to that used in writing formulas in Microsoft Excel.

MetaStock offers an extensive collection of charting styles and unparalleled charting capabilities. Nine different charting styles are available—bar, candlestick, equivolume, Kagi, Renko, line, point & figure, three-line break, and candlevolume.

The Explorer function that comes with the program allows you to find, compare, filter, rank, search, and list multiple indicator values for multiple securities, including stocks and futures. You can view a list of securities that are generating either buy or sell signals or that have broken some pre-

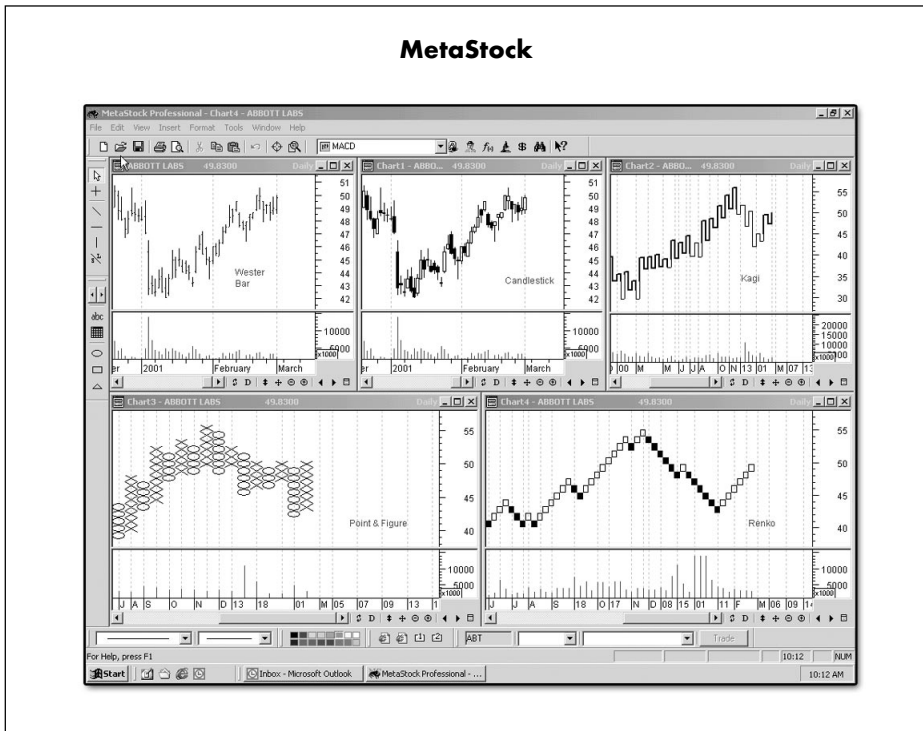
defined barrier in terms of price or technical indicator. MetaStock ships with a set of predefined scans, and users can also create their own.

MetaStock offers Internet links to a variety of additional information such as analyst recommendations, discussion groups, financial news, financial statements, and ratio comparisons. Users can also create their own links to Web resources.

A useful educational tool for novices and experts alike is MetaStock's expert advisors. There are now over 50 of these advisors that help users get a handle on what a technical indicator is telling them. They offer commentary based on the current technical condition of a given security. When you open an expert advisor, buy and sell signals are plotted on the chart in question. You can also create your own market advisors using an indicator builder. In MetaStock Professional, alerts based on expert advisors can be sent your pager, E-mail, or cell phone.

Equis continues to add to the library of trading systems in MetaStock, which now stands at 35. The program also allows you to create your own systems, all of which can be backtested and optimized with the system tester. One drawback with the system testing module is that it does not handle multiple positions. MetaStock can also optimize trading systems to help determine which parameters work best for a given trading system and compare systems to see which would be more profitable.

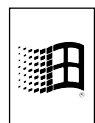
Users can purchase MetaStock and a subscription to Reuters DataLink data service for \$59 a month or they can purchase the program along with The Downloader software. This data collection program automatically collects price updates, tests data for accuracy, checks for data errors, adjusts for stock splits, and reinvests mutual fund dividends. A single-vendor version of the Downloader is free and can directly download end-of-day data from Dial/Data, Reuters, or Telescan. For \$99, you can purchase The Downloader that accesses all three of these services—as long as you sub-



scribe to them.

Of the top contenders in the real-time analysis forum, MetaStock Professional is a leader in value. All of the features outlined here are found on both the End of Day and Professional versions. However, Professional provides you with tick-by-tick analysis capability, whereas MetaStock End of Day offers analysis on an end-of-day basis. The Professional version is compatible with QCharts from Quote.com and eSignal.

Equis has also started licensing with third-party vendors to produce “plugins” for MetaStock. These include The Bollinger Band System, John Murphy’s Chart Pattern Recognition, Dynamic Trading Tools, and MetaStock Performance Systems Plus. All of these add-ons are purchased separately from MetaStock and are available at the MetaStock Web site.



OmniTrader

The focus of OmniTrader is to analyze markets and stocks and generate buy and sell signals. To that end, it ships with 120 pre-installed trading systems (60 end-of-day and 60 real-time). It is unique among technical analysis pro-

grams in that it does not allow users to create their own trading systems. Therefore, it is geared toward traders who want a good selection of systems to choose from and who are not interested in creating their own trading strategies. There are three versions of the program. The Stocks edition handles stocks, mutual funds, and options on an end-of-day basis, while the Futures edition adds the ability to track futures, also on an end-of-day basis. The Real-Time version of OmniTrader combines all the functionality of both the Stocks and Futures editions and adds real-time analysis.

Automation is a driving force behind many of the features of OmniTrader. Users can specify which symbols they want the program to analyze and the program collects the most recent data and then tests the 120 built-in trading systems. As OmniTrader tests these systems, it selects those that have performed best over the backtesting period. The program then “votes” on the signals generated by these top systems. The results are shown in the vote line, which represents the consensus of the signals. Since the vote line is based on

those systems that are performing the best at a given point in time, OmniTrader can adjust to the current behavior of a symbol.

To help users interpret the trading signals of the various systems and the strength of these signals, OmniTrader offers a trading advisor and an advisor rating. By clicking on a signal on the vote line, the trading advisor will tell you which trading systems generated the vote line signal. Within the trading advisor window, there is also an advisor rating, which helps to illustrate the strength of the signal. There are also chart assistants that show key technical patterns such as trendlines, support and resistance levels, and candlestick patterns.

For those who would like to practice trading without committing actual investment capital, OmniTrader has the “game mode.” When using the game mode, OmniTrader randomly selects a symbol and displays the chart and all the associated trendlines, candlestick patterns, and trading systems the program has found most useful in analyzing that security. To avoid any bias on your part, however, it does not reveal the security to you. Once you start the game, you can place trades and watch the value of your account over time. The game mode allows users to familiarize themselves with the program and learn lessons in money management. The other training module in OmniTrader is the lab mode. It is similar to the game mode; however, lab mode allows you to trade a portfolio of securities.

The Futures edition automates the analysis process for futures. It will roll over to the next contract automatically, build continuous contracts, and provide alerts to first notice days. Lastly, you receive seasonality graphs that show the seasonal tendencies of contracts.

The real-time version of OmniTrader can be used with intraday delayed and real-time data services. It offers all of the features and capabilities of both the Stocks and Futures editions in real-time.



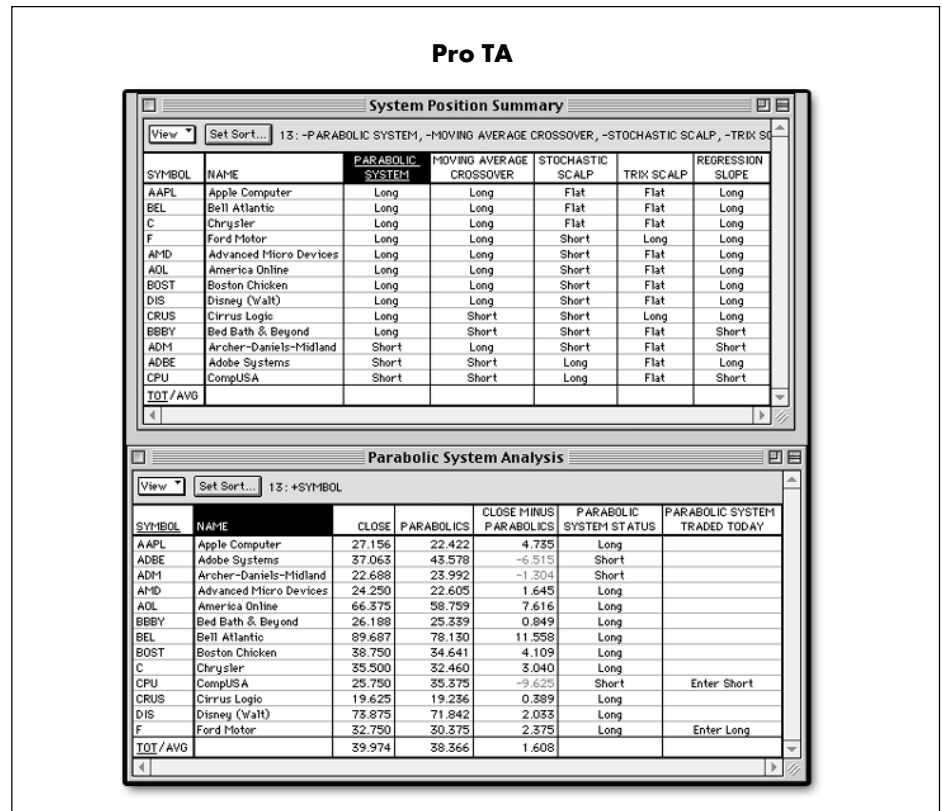
Personal Analyst, Personal Hotline, & Pro Analyst

Catering to the varying needs and levels of expertise among investors, Trendsetter Software offers three Mac-based programs—Personal Analyst, Personal Hotline, and Pro Analyst. All three programs offer basically the same core functionality and features, but as you advance through the product line, the number of features offered increases, as does the complexity of the program.

Trendsetter has eliminated MacChart from its lineup and has made Personal Analyst its introductory offering. Personal Analyst and Personal Hotline, Trendsetter's most advanced program, allow you to create line, bar, and candlestick charts on a daily, weekly, or monthly basis. They also offer 50 technical indicators and studies. Beyond plotting candlesticks, the programs can also recognize popular patterns.

Both Personal Analyst and Personal Hotline offer technical screening. You specify the criteria you are interested in and the program scans its database for stocks that meet all of the rules.

Personal Analyst and Personal



Hotline both offer point & figure charting as well as three unique chart templates—equiview, multiview, and general market. The equiview template displays two years of price data,

which is useful for viewing seasonal tendencies. Multiview displays two separate securities on the same chart for easy comparison. Lastly, the general market template displays the advance/decline line, up volume versus down volume, the TRIN, McClellan oscillator, and summation index. These programs also contain a master analysis report, which summarizes the day from a technical aspect. This report shows how your securities performed for the day, whether any new candlestick patterns formed, and the result of the analyst's ratings systems.

Personal Hotline offers all the features available with Personal Analyst along with five additional high-end features. With the personal trade tracking function, Personal Hotline summarizes your open positions on a daily basis and analyzes your trading results. If you need powerful trade analysis, Personal Hotline provides an expert trading model. The program scans a security's price data and, by using different combinations of buy, sell, and stop-loss levels, produces a summary of the historical trading re-



sults. In addition, it can track theoretical performance and allows you to view past trading results such as winners versus losers, average gain and loss, net profit after commissions, and maximum drawdown. The day trader system gives daily recommendations for commodities and stocks. Lastly, candle pattern alerts inform you when new candlestick patterns form and personal system alerts let you define buy and sell alerts based on 30 technical elements.

Pro Analyst is Trendsetter's sole real-time program. It does not offer as many technical indicators, but since it handles real-time data, it does offer data elements Personal Analyst and

Personal Hotline do not: tick data, trade volume and size, bid and ask prices and size, time and sales, streaming news headlines, and a personalized ticker tape. It also offers the same candlestick pattern recognition as its sister programs. It is, however, lacking some of the more useful features offered by the other two programs, namely point and figure charts, semi-log scaling, equiview, and technical screening. It is also lacking a day trader system, even though it is a real-time platform.



ProTA & ProTA Gold

ProTA and ProTA Gold from BeeSoft appear to oper-

ate under the radar screen of the technical analysis industry, with neither one garnering as much attention as many of its competitors. However, they are rapidly becoming two of the most complete technical analysis packages available for the Mac, in addition to the most reasonably priced.

Both ProTA and ProTA Gold allow for direct data downloading from Dial/Data. In addition, the programs come with a Universal Text Importer and can recognize and import data files in a number of different formats, including MetaStock, Excel, and ASCII. With this utility, you simply drag a data file onto the ProTA icon

Table 2.
Technical Analysis Software Ratings

Criteria are rated on a scale of one to five, with five denoting the best score. Charting and Indicators ratings are based on the number of charts each program or service offers, the number of indicators provided, and the ability to edit or create new indicators; ratings of Trading Systems reflect the software's ability to apply indicators to a security to generate buy/sell signals, the number of systems the program or service provides, the ability to edit existing systems or create new systems, and the ability to backtest and optimize a system; Screening rates the ability to scan a universe of securities for those that match specified criteria, edit existing screens, or create new screens; Documentation rates the quality of printed materials, on-line help, and manufacturer support; and Ease of Use rates how simple the program is to install, learn, and operate.

		Charting & Indicators	Trading Systems	Screening	Documentation	Ease of Use	Software Cost (All Discount)	Pros	Cons
Behold!		3	5	4	3	3	\$795 or 8 payments of \$105	+System optimization +Powerful system development & testing	-Lacking in chart tools -No screening mechanism
Insider TA Standard		2	NA	NA	4	3	\$129	+Unique volume analysis tools +Consolidation mapping tool	-No direct download function -Primary focus is volume analy -No screening mechanism
Insider TA Professional		2	2	2	4	3	\$229	+Unique volume analysis tools +Consolidation mapping tool +File scan isolates securities meeting specified criteria	-No direct download function -Primary focus is volume analy
Investor/RT		5	4	5	5	5	\$495—end-of-day; \$1,495—real-time (10%—end-of-day)	+Frequent program upgrades +Extensive portfolio mgmt +Highly regarded tech support	-Only 1 pre-installed trading system
MetaStock End of Day & MetaStock Professional		5	5	4	5	5	\$449—end-of-day; \$1,695—Pro (10%)	+Explorer scanning tool +Object-oriented programming +Expert advisor +Easy to create indicators	-Can't add multiple positions for system testing -OptionScope for basic options analysis only
OmniTrader		4	4	4	4	4	\$495—stocks; \$695—futures; \$995—real-time (\$100)	+Modes to test trading ideas +Web-based commentary +Trading assistants show & describe technical patterns	-Can't create indicators or trading systems
Personal Analyst		4	NA	4	3	4	\$329	+Automatic trendlines +Slide show of charts +Candle pattern recognition	-Expensive for system not offering trading systems or custom indicators
Personal Hotline		4	3	4	3	4	\$595	+Automatic trendlines +Candlestick pattern recognition +Trading recommendation models	-Can't create custom indicators

and it will be converted for use in the program. The only major data issues to keep in mind are that neither program automatically handles stocks splits, mutual fund distributions, or futures contract rollovers.

ProTA has the entire roster of popular chart types—close, bar, point & figure, and candlestick. In addition, it offers over 50 fully customizable technical indicators and line studies. With the program's object-oriented interface, you can click on an item and modify it to fit your needs.

With the portfolio tracker module, you can enter buy or sell trades and display, analyze, and rank them in a number of ways. The program gener-

ates such statistics as cost basis, return on investment, profit/loss, and more. You can track technical information such as moving average values and volume activity, as well as enter trade entries and exits, and track overall performance.









ProTA Gold has all of the same functions as ProTA, as well as some advanced features found in high-end technical analysis packages with much higher price tags. If you are not satisfied with the existing library of technical indicators, ProTA Gold gives you the added flexibility of creating an unlimited number of your own custom indicators. You can also download and install custom indicators

from the BeeSoft Web site or post your own creations there.

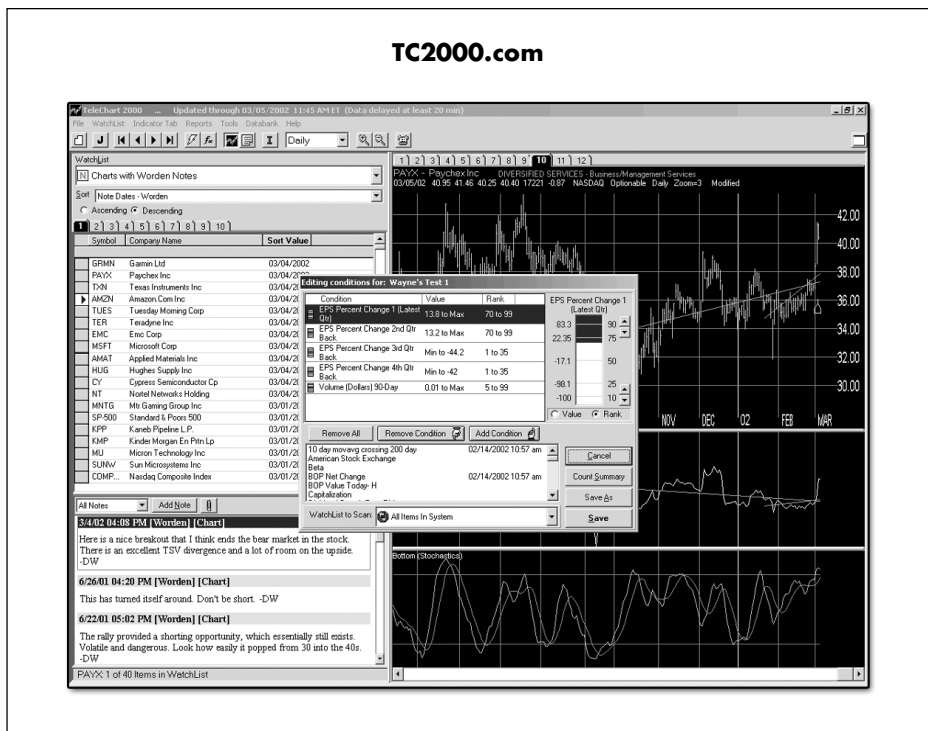
For those who are interested in creating trading systems, ProTA Gold offers that functionality. You can specify trading rules for entering and exiting both long and short trades. Once you have created your trading systems, you can plot buy/sell points on a chart, generate trade lists and summary statistics, and optimize the system.

ProTA Gold will scan for securities that meet your criteria. You can specify one or several technical or performance-based values or the program scans the database or a portfolio to find securities that fit the parameters.

Table 2.
Technical Analysis Software Ratings (con't)

		Charting & Indicators	Trading Systems	Screening	Documentation	Ease of Use	Software Cost (All Discount)	Pros	Cons
Pro Analyst www.trendsoft.com		3	NA	4	3	4	\$399	+Extensive historical database +Automatic trendlines +Pivot points automatically calculated	-Can't customize ticker tape -Can't save quote screens -Lacking DayTrader module in Trendsetter end-of-day -No screening mechanism
ProTA www.beesoft.net		4	NA	NA	4	5	\$59	+Quality charts & wide variety of indicators at a low cost +Universal text importer for auto recognition & import of data	-Can't print charts in color
ProTA Gold www.beesoft.net		5	5	3	4	5	\$199	+Customized indicators, system develop, test, & optimize at a reasonable price +Universal text importer for auto recognition & import of data	-Can't print charts in color
SMARTrader www.stratagem1.com		3	4	3	3	2	\$299 (\$50)	+Customized searches +Spreadsheet-like programming of indicators & systems	-No screening mechanism -Chart creation not intuitive -No portfolio reports
TC2000.com www.tc2000.com		3	NA	5	4	5	Free	+Educational Worden notes +Data useable in many progr +Techn'l & fundam'l screen	-Fixed amount of data -No user-defined indicators
TradeStation www.tradestation.com		5	5	NA	4	4	\$795/mo. w/o account	+Direct-access trading +Show-me & paint bars highlight bars meeting criteria	-Trading not fully automated -Insufficient data to test tick -No screening mechanism
Trading Expert Pro www.aiqsystems.com		4	5	5	4	4	\$695—end-of-day; \$1,295—real-time	+Expert ratings for up/down potential of issue +Compares correlations betw stocks, groups, & user lists +Product education & analysis techniques	-Programming language takes time to master -System performance report lags competition -Can't create chart templates
VectorVest ProGraphics & VectorVest ProTrader www.vectorvest.com		4	2	4	5	4	\$9.95 for 5wk trial; \$49/mo—daily; \$39/mo—weekly	+Daily buy/hold/sell ratings +Sector & industry rankings +Views provide market & stock commentary +Pattern recognition w/ProTrader	-Offers only line & bar charts -Can't optimize trade systems

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Securities that pass the screen are then placed in a portfolio sheet where you can view or rank the results.



SMARTrader

SMARTrader is a platform for charting, technical analysis, and trading system testing. It is built around what is called a "specsheat" (short for specification sheet), which is divided into the definition window and the spreadsheet. The definition window is where you specify the information you wish the spreadsheet to calculate—such as data files, indicators, and entry and exit rules. The spreadsheet is where the actual raw data, studies, formulae, and profit results are calculated and displayed. In addition, a specsheat can have a "ChartFamily," where spreadsheet values are displayed in graphical form. This methodology makes creating a chart a bit awkward. Furthermore, the charts and items contained within them are not object-oriented. For more advanced charting, SMARTrader also ships with the QuickCharts freeware program.

SMARTrader allows you to automate tasks using SmartSearch and SmartView. With SmartSearch, the

program will search the database to find securities that meet user-defined criteria. Securities that meet the criteria are placed on a "hot list" and SMARTrader will draw price charts for these securities with any indicators you specify. The SmartView function allows you to draw charts for any security or your entire database and view them. The "browse" mode cycles through the charts automatically using a time interval of your choice.

Some of the other features that come with SMARTrader include a formula builder for creating custom technical variables, a profit testing system that tracks all open and closed positions, and a portfolio manager that tracks all open positions of a trade.



TC2000.com

TC2000.com from Worden Brothers is an unassuming technical analysis program offering ease-of-use, solid charting and technical analysis capabilities, as well as collection of features that make it one of the most popular technical analysis programs in use today.

First, the program itself is free. Worden, besides offering TC2000.com, also provides a highly

acclaimed data service that is compatible with numerous technical analysis programs. By offering the program for free, which is only compatible with the Worden datafeed, the company hopes to entice users into subscribing to the data service at the cost of \$29.75 a month. When you become a data subscriber, you also receive several free update CDs through the course of the year with historical data going back to 1984.

TC2000 comes with 37 indicators, including some proprietary indicators: balance of power, moneystream, and time-segmented volume. The balance of power indicator provides insight into the underlying action of a security's price movement. It depicts a trend of systematic buying or selling of a security. Moneystream is a price/volume indicator, resembling the on-balance volume indicator. Bullish and bearish messages are signaled by divergences in the indicator.

To help in the analysis process, TC2000 provides you with "Worden Notes." These notes are based upon the trading ideas of Don and Peter Worden. You can view the charts they used and learn from their indicator choices and analysis ideas. The notes are delivered to you throughout the trading day, as well as at the end of the day.

Using an easyscan feature in TC2000, you are able to locate those symbols that meet your custom criteria. Simultaneously you can scan for long-term technical and/or fundamental conditions, as well as intraday conditions. In all, you have eight pre-installed scans from which to choose, although you are also able to build your own.



TradeStation

TradeStation has seen its company go through as many changes as the program itself has over the last few years. Omega Research, the company that used to market TradeStation, has since changed its name to TradeStation Group and finally to TradeStation Securities in the course of the past

two years. In doing so, the company has also refined both its product line and the programs themselves. First, the mid-range program SuperCharts was dropped when then-Omega Research bought out competitor WindowOnWallStreet and its on-line technical analysis program and data feed WindowOnWallStreet.com. Then the newly named TradeStation Group dropped this service as it moved to integrate the datafeed into TradeStation, replacing the nightmarish Global Server that was used in TradeStation 2000i. Finally, TradeStation emerged to offer perhaps the most complete technical analysis and trading platform available today.

TradeStation is not for the casual technician or investor. With a price tag of \$795 a month for the program and data (TradeStation is not compatible with any third-party data provider), it is by far the most expensive program shown here. However, for those with \$30,000 and who place at least 20 trades a month, you can open a brokerage account with TradeStation Securities and receive the program and data for free.

What makes TradeStation unique is that it is the only technical analysis platform that has integrated direct-access trade execution. Once you have set up a brokerage account through TradeStation Securities, you can place trades directly through TradeStation.

TradeStation offers strong system development and backtesting capabilities. Using TradeStation's proprietary programming language, EasyLanguage, you can create your own trading strategies and then test them before risking your own investment capital.

While it does take some getting used to and is not as intuitive as one might think, EasyLanguage is an industry standard, so it is not uncommon to run across systems written in EasyLanguage described in popular investment publications. If you are uncomfortable with the idea of writing your own systems and studies, TradeStation provides the EasyLanguage wizard that allows you to

create trading systems, indicators, show-me studies, and paint bar studies by simply "picking and clicking."

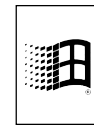
The program also provides a System Performance Report, consisting of 11 different tabs and over 20 graphs, that allows you to analyze the results on a trade-by-trade basis. Furthermore, you can automate the execution of equity trading systems in real time. However, the process is still not fully automated. The engine will provide an alert when a trading signal is generated, but you still need to confirm the trade before an order is actually placed.

The account manager in TradeStation tracks stocks, stock options, and futures options positions on a real-time basis. Information contained within the account manager includes today's orders; open, filled, and cancelled orders; account statistics; duration; ticket number; and net profit/loss.

TradeStation offers a variety of real-time tools. Users have access to streaming real-time data for U.S. stocks and options and U.S.-based futures exchanges. The quotes window allows you to follow the movement of securities in real-time and set

up alerts for any of the data contained within the window. Level II quotes, time and sales data, and streaming news are also provided.

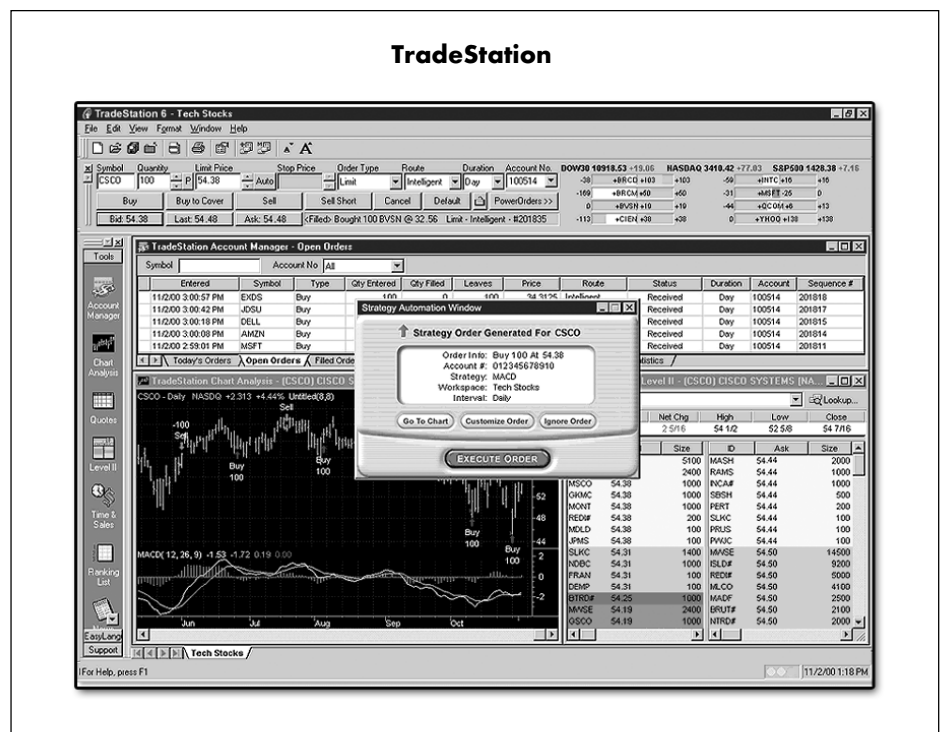
Finally, TradeStation offers nine different chart types and over 130 indicators. There are the popular show-me and paint bar studies (with 22 and 17, respectively, reinstalled) and the ability to create new indicators.



Trading Expert Pro

TradingExpert Pro from AIQ Systems, a leader in artificial intelligence-based stock market trading systems, is a market timing and stock screening application that combines charting, technical analysis, system design and testing, as well as portfolio management into a single package.

For market timing, TradingExpert offers its expert rating, which signals possible changes in the market direction. The market timing model compares the Dow to the activity of the broad market, which is represented by the New York Stock Exchange market breadth and the number of NYSE stocks reaching new highs and lows. Each chart you create with the program will have, among other



things, a daily expert rating. Ratings range from 0 to 100, with values greater than 95 considered a strong signal that the market may be changing direction.

The expert design studio module that comes with TradingExpert Pro allows you to design, backtest, and optimize your own trading systems, as well as create custom indicators. Creating custom systems is made easier with a rule builder, which has a built-in wizard. Once you click on the trading ideas that interest you, the rule builder will write the language for you. The rule builder handles fundamental data elements as well as industry group performance. For system reporting, the expert design studio has a summary report and a trade-by-trade positions report.

A new portfolio simulator function allows you to establish entry and exit strategies along with the initial investment. The program then runs a day-by-day simulation of the trading system and tracks the value of the investment over the course of the simulation.

Trading Expert Pro offers one of the most comprehensive collections of reports, over 200 in all. These reports list securities, sectors, futures, indexes, and mutual funds that passed the screening process. Reports include a group and sector report (determines leading and lagging sectors or groups) and a mutual fund report (allows for the tracking of mutual fund performance).

Other unique features of Trading

Expert Pro include a matchmaker, which allows you to create groups of stocks that emulate sector funds. However, these groups of stocks have trading volume, which mutual funds do not. In this way, you can use Trading Expert's volume indicators and screening reports to analyze these groups. For sector and group rotation, there is a sector rotation report that graphically displays each sector, and a group analysis report that shows which industry groups are currently moving in and out of favor.



VectorVest ProGraphics & ProTrader

VectorVest ProGraphics provides a combination of fundamental and technical analysis as well as unique indicators based on a stock's value, safety, and timing. This stock analysis and graphics system allows you to analyze, sort, screen, search, rank and graph stocks, industry groups and sectors by any of 29 investment parameters—including pre-installed indicators of safety, timing and value.

The bulk of VectorVest's analysis revolves around a company's value, safety, and timing. By analyzing a company's earnings, earnings growth, dividends, and profitability, the program attempts to determine a relative value figure for that company. This denotes the growth potential of the stock price. A company's safety is determined by whether or not the growth potential of the stock price justifies the risk involved in investing

in the company. Lastly, timing involves when to buy, sell, or hold a given stock. After calculating these individual variables, VectorVest ProGraphics combines them into a master indicator called the VST-Vector. This provides a common denominator to compare stocks—those with a high VST-Vector have the best combination of value, safety and timing as determined by VectorVest.

Each stock followed by ProGraphics is given a daily buy, sell or hold recommendation. Any stock whose price rises above the stop price gets a buy or hold rating. Stocks whose prices fall below their stop prices get a sell rating. The VectorVest Views are weekly newsletters that are updated every Friday and contain commentary from Bart A. DiLiddo, the founder of VectorVest. They also offer opinions on current market valuation and its overall trends.

The ProTrader module provides charting capabilities and over 40 technical indicators. It offers predefined searches that identify various price patterns such as crossovers, reversals, breakouts, and gaps. Additional searches can be performed with strategies. There are over 30 of these screens in the following groupings—aggressive, candlestick, conservative, price & volume, prudent, special searches, and speculative. Users can also create their own searches.

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