



# Technical Analysis Software

By Wayne A. Thorp

Not too long ago, most individual investors relying on technical analysis plotted charts by hand using daily stock quotes from the Wall Street Journal. Some investors took advantage of subscription services providing historical chart books that were generally updated on a monthly or weekly basis with price and volume bar charts coupled with a few basic indicators for a fairly narrow range of stocks. William O'Neil published daily graphs that were geared toward the institutional investor. Only the most sophisticated individual investors or professional traders had access to computerized tools that automated the process or offered intraday analysis of the markets. With the advent of powerful personal computers tied to inexpensive or free data services, however, all investors have the opportunity to perform computer-aided technical analysis either via the Internet or by using software.

Perhaps no other type of investment-related software offers individual investors such a wide selection as technical analysis. There are literally hundreds of technical analysis packages on the market, ranging from simple bar charting to the study of astrological cycles. Before you purchase any type of investment-related software, it is always a good idea to familiarize yourself with the features and functionality of the programs available. More importantly, you should identify what it is you wish to accomplish with the software.

The aim of this comparison is to demystify the topic of technical analysis software. The comparison looks at programs that can be used to analyze stocks. All of these programs can be used for end-of-day analysis, while some also provide intraday (delayed or real-time) data.

The comparison grid on pages 12–16 examines the features and functions that many of these programs have in common. It is a list of features that an overall robust technical analysis program

should provide. Additionally, Table 1 on pages 10–11 outlines some of the more popular technical indicators and charting features that each program offers. This list is not intended to be all-inclusive. The information on these grids is based on information provided by the respective companies.

## 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. You should make sure that any program you are considering includes the indicators important to your analysis. Do not automatically write off a program just because it is seemingly lacking in the number of technical indicators it contains. Programs such as InsiderTA provide a small number of unique, proprietary indicators that you may find useful. Taking a moment to consider your needs will be helpful in assessing the number of indicators you will require from the program. The more advanced your needs, the greater the chances that you will need a program with a more extensive list of technical indicators.

Beyond a set of pre-defined 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 their own technical indicators that they have created themselves. 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.

Finally, many users of technical analysis follow more than one indicator. They track the behavior of multiple indicators in conjunction with one another to make buy and sell decisions. For this reason, it is convenient to have the ability to plot multiple indicators on the same screen. This may entail either plotting indicators on the same price chart, or opening new windows within the desktop for each new indicator. All of the reviewed programs can plot multiple indicators.

Table 1 details the "mainstream" indicators each program offers as well as the overall number they provide.

## Charting Elements

Most of the technical analysis you will perform will deal in some way with a chart. Whether it is only a price chart or a chart with indicators, the chart is the primary tool of the technical analyst. The following is an introduction of some of the key charting elements to look for in a technical analysis program.

## Chart Types

The most common types of charts are line and bar charts, and all but one of the programs listed here provide both. 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 include candlestick, equivolume, and point & figure. You tend to find these in the more advanced programs. If you use any of these chart types in your analysis, be sure the program you select supports them.

For a more in-depth discussion on basic chart types, refer to the Feature article in the March/April 1999 issue of *Computerized Investing*, called "Trader's Reference Guide Part 1." It is available at our Web site at [www.aaii.com](http://www.aaii.com) in the *Computerized Investing* archives.

### Templates

A chart template allows you to view data in a specified way. This may include the time period, periodicity (daily, weekly, etc.), chart type, as well as any applied indicators. 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.

### Trendlines

One of the main functions of technical analysis is to identify trends in price and volume in the hopes of forecasting future price movement. Trendlines, which are lines used to connect two or more points on a chart, are a useful tool to this end. Most technical analysis programs allow you to draw and manipulate trendlines in a manner not easily replicated using paper and pencil.

### Merging

Data merging involves the bringing together of two or more securities to create a custom "index." For example, you could merge the prices of Gateway, Dell, Micron and Apple to create your own custom computer index.

### Trading Systems

Ultimately most will use technical analysis to help decide when to buy and sell a security. Trading systems apply a set of rules and automatically indicate when buy and sell rules have been triggered. The trading rules can be a single indicator or group of indica-

tors 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 using 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 time frame. However, backtesting provides only 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.

### Data Maintenance

Many take for granted the role data plays in the technical analysis process. Without it, the program you

purchase is all but useless. Use incorrect data and you could be making investment decisions you otherwise would not. For these reasons, it is important to consider seriously your data source. The following are some data issues you should consider when purchasing a technical analysis program.

### Downloading

Downloading is the process of connecting to a data provider using a modem and collecting specific information on a set of companies and saving the data to a storage medium. Other methods of delivery are still available such as cable, satellite, and radio/video, but downloading is the preferred method of retrieval.

### Data Vendors

Most technical analysis programs are able to use data from third-party data providers, which means you must also select a data provider in order to use your program. Depending on the program you choose, you may be able to select from an array of vendors. MetaStock, for example, allows for direct downloading from six different data providers.

Some programs, however, are only compatible with their company's own proprietary feed. Such is the case with TC2000 (Worden Brothers), VectorVest ProGraphics, and WindowOnWallStreet.com.

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, however, it does tie you to the data they provide, as well as their fee structure.

### Auto Downloading

Some programs give you the flexibility to automatically retrieve data on a fixed schedule. This means that you do not have to physically execute the download process. You specify the frequency and time and the program will dial into the data provider, download the data, and then log off.

**Table 1.**  
**Technical Analysis Indicators**

	Behold! 2.8	InsiderTA Pro 4.0	Investor/RT 4.2	MacChart 3.1	MetaStock Professional 7.0/MetaStock	OmniTrader 2000	Personal Analyst 4.0	Personal Hotline 8.0	ProTA 2.0 /ProTA Gold	SMARTrader	TC2000.com	TIP@WallStreet	TradeStation 2000i	Trading Expert Pro	VectorVest ProGraphics 5.0/ProTrader	WindowOnWallStreet.com
<b>Moving Averages</b>																
Simple	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Exponential	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Weighted	✓		✓	✓	✓		✓	✓	✓	✓		✓	✓		✓	✓
<b>Chart Features</b>																
Andrew's Pitchfork	✓				✓		✓	✓		✓						✓
Bollinger Bands	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cycle Lines					✓		✓	✓	✓			✓	✓			✓
Fibonacci Analysis	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓
Gann Analysis					✓		✓	✓					✓		✓	✓
Horizontal Lines	✓		✓	✓	✓		✓	✓	✓	✓					✓	✓
Moving Average Bands	✓		✓		✓				✓	✓		✓		✓	✓	✓
Open Interest	✓		✓	✓	✓		✓	✓	✓	✓		✓		✓	✓	
Parallel Lines	✓	✓	✓		✓				✓			✓				
Linear Regression	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓
Tick Volume	✓		✓							✓						
Tirone Levels					✓								✓		✓	
Trendlines	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vertical Lines	✓		✓	✓	✓		✓	✓				✓			✓	✓
Volume	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Built-In Indicators</b>																
Absolute Breadth Index											✓		✓			
Accumulation/Distribution (Chaikin)	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Accumulated Swing Index					✓								✓			
Advance/Decline Ratio			✓				✓	✓	✓	✓	✓	✓	✓	✓		
Arms Index (TRIN)			✓		✓		✓	✓	✓	✓			✓	✓		✓
Average True Range	✓		✓		✓		✓	✓	✓	✓					✓	✓
Beta					✓						✓					
Chaikin Oscillator	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Commodity Channel Index	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Commodity Selection Index	✓				✓											
Demand Indexx	✓				✓					✓			✓			
Directional Movement Indicators	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓		✓		✓
Ease of Movement		✓	✓		✓					✓		✓	✓		✓	
Herrick Payoff Index	✓				✓								✓			
MACD	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Market Facilitation Index	✓				✓					✓						
Mass Index					✓		✓	✓					✓		✓	
McClellan Oscillator			✓		✓		✓	✓	✓	✓	✓	✓	✓	✓		
McClellan Summation Index			✓		✓		✓	✓	✓	✓	✓	✓	✓	✓		
Momentum	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Money Flow			✓		✓	✓				✓	✓	✓	✓	✓	✓	✓
Negative Volume Index					✓		✓	✓	✓				✓	✓	✓	✓
On-Balance Volume (OBV)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Parabolic SAR	✓			✓	✓	✓	✓	✓	✓	✓		✓				✓

**Table 1.**  
**Technical Analysis Indicators (continued)**

	Behold! 2.8	InsiderTA Pro 4.0	Investor/RT 4.2	MacChart 3.1	MetaStock 7.0/MetaStock Professional	Omnitrader 2000	Personal Analyst 4.0	Personal Hotline 8.0	ProTA 2.0 /ProTA Gold	SMARTrader	TC2000.com	TIP@WallStreet	TradingStation 2000i	Trading Expert Pro	VectorVest ProGraphics 5.0/ProTrader	WindowOnWallStreet.com
<b>Built-In Indicators (continued)</b>																
Percent Retracement			✓	✓	✓		✓	✓	✓						✓	✓
Positive Volume Index					✓		✓	✓	✓			✓	✓	✓	✓	✓
Price Oscillator	✓				✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
Put/Call Ratio									✓							
Rate of Change	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
Relative Strength	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Speed Resistance					✓		✓	✓		✓		✓				
Standard Deviation	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
Stochastics	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Swing Index	✓				✓				✓	✓			✓			
Trade Volume Index					✓											
TRIX	✓		✓		✓	✓	✓	✓	✓	✓			✓		✓	
Ultimate Oscillator					✓		✓	✓		✓			✓			✓
Volatility (Chaikin)			✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
Volatility (Wilder)	✓		✓						✓							
Volume Oscillator	✓		✓		✓		✓	✓	✓		✓	✓	✓	✓	✓	
Wilder's RSI	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	
Williams' %R	✓		✓		✓	✓	✓	✓	✓	✓			✓	✓	✓	
Williams' Accumulation/Distribution			✓		✓		✓	✓	✓	✓						
Zig Zag					✓				✓				✓	✓		
<b>Proprietary Indicators</b>	0	1	3	0	0	5	2	2	0	12	3	0	0	10	12	0
<b>Total Number of Indicators (Not All Listed)</b>	90	4	75	22	108	120	50	50	45	101	22	80+	100+	60+	36	40+

## CD-ROM

If you are not as concerned with frequent data updates or timeliness, historical data on CD-ROM is a less-expensive alternative to downloading. Programs such as Momentum offer several years of price and volume data for stocks, commodities, and mutual funds. Services such as this are useful when you are first starting out and wish to establish a historical set of data for backtesting, which normally requires many years of data. Instead of downloading such a large amount of data, you can save it from the CD to your system.

A CD-ROM also allows you to read the data directly from the disk

without having to save it to your hard drive—a concern if you are pressed for free hard disk space.

Even the software companies themselves have started shipping their programs with data disks as well as offering periodic (typically quarterly) updates via CD-ROM.

There are some drawbacks to relying on a CD-ROM database. First, you are limited as to the number of updates you receive and the timeliness of the data. Furthermore, you are responsible for manually correcting any incorrect data as well as entering distributions and splits. With a download service, these functions are typically automated.

## 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 not have to start over from scratch.

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

# PRODUCT COMPARISON: TECHNICAL ANALYSIS SOFTWARE

Product Name		Behold! 2.8	InsiderTA Pro 4.0	Investor/RT 4.2
Company		Investors' Technical Services	StockBlocks, Inc.	Linn Software, Inc.
Telephone		(512) 367-4626	(800) 697-1617	(800) 546-6842
Web Address		www.bhld.com	www.stockblocks.com	www.linnsoft.com
Price (AAll discount)		\$795	\$295	\$995 (10%)
Platform(s)		MacOS 7.5+	Windows 3.1/95/98/NT	Win 95/98/NT, MacOS
Indicators	Pre-defined indicators	90	4	75
	Modify of pre-existing indicators	✓	✓	✓
	Create new indicators	✓		✓
	Indicator overlay or new window	✓	✓	✓
Charting Elements	Chart types (see key below)	B, C, L	B, C, EV	B, C, L, P&F
	Pre-defined charts (chart templates)	14	4	2
	Create indic'tr/trading sys templates	✓	✓	✓
	Scaling (linear, semi-log)	linear, semi-log	linear, semi-log	linear, semi-log
	Moveable trendlines	✓	✓	✓
	Load specified historical data	✓		✓
	Security merge feature	✓		✓
	Maximum charts displayed	1	4	unlimited
	Maximum data points per chart	unlimited	2,600	unlimited
Trading Systems	Pre-defined trading systems	14	5	10
	Backtesting	✓	✓	✓
	Create & save custom systems	✓	✓	✓
	Rank/compare systems	No	✓	
	Generate profit reports of systems	✓	✓	✓
	Indicates maximum drawdown	✓	NA	✓
	System stop methods	trailing, max-loss, breakeven, profit target	trailing, max-loss, profit target	
	Pre-defined entry/exit signals		✓	
	User-defined entry/exit signals	✓	✓	✓
	Considers trade positions (long/short)	✓	✓	✓
Help Functions	Accounts for slippage/commission	✓	✓ (commission)	✓
	On-line help	✓	✓	✓
Data	Indicator interpretation help	✓	✓	✓
	Sources of data download	CSI, MJK	Quotes Plus	Signal, eSignal, BMI, DTN, Dial/Data, Interquote, myTrack
Maintenance	Auto download feature	✓		✓
	Import formats	Trendsetter, ProTA, CompuTrac, ASCII	ASCII, MetaStock, TC2000, Quotes Plus	ASCII
	Export formats	ASCII	ASCII	ASCII
	Handles distributions and splits	✓	✓	✓
	Data conversion/merge features	✓	✓	✓
	Historical database included	✓		
Batch Printing		✓		

Chart types: B = bar, C = candle, CV = candlevolume, EV = equivolume, L = line, P&F = point and figure

	<b>MacChart 3.1</b>	<b>MetaStock 7.0/ MetaStock Professional</b>	<b>OmniTrader 2000</b>	<b>Personal Analyst 4.0</b>
	Trendsetter Software	Equis International	Nirvana Systems, Inc.	Trendsetter Software
	(800) 825-1852	(800) 882-3040	(800) 880-0338	(800) 825-1852
	www.trendsoft.com	www.equis.com	www.nirv.com	www.trendsoft.com
	\$99	7.0, \$399/Pro, \$1,495	Stocks, \$395/Futures, \$695/Real-Time, \$995	\$349 (\$50)
8.5	MacOS 7.0+	Windows 95/98/NT	Windows 95/98/NT	Macintosh
	22	108	120	50
	✓	✓	✓	✓
		✓		
	✓	✓	✓	✓
	B, C, L	B, C, CV, EV, L, P&F	B, C, L	B, C, L, P&F
		14		
	✓	✓	✓	✓
	linear, semi-log	linear, semi-log	linear	linear, semi-log
	✓	✓		✓
	✓	✓	✓	✓
		✓	✓	✓
	unlimited	limited only by memory	unlimited	unlimited
	65,000	65,000	unlimited	65,000
		11	120	
		✓	✓	
		✓		
		✓	✓	
		✓	✓	
		✓		
		trailing, max-loss, breakeven, profit target, trading & inactivity, trailing	trailing, max-loss, breakeven, profit target, trading & inactivity, trailing	
		✓		
		✓	✓	
		✓	✓	
		✓	✓	
	✓	✓	✓	✓
	✓	✓	✓	✓
	Dial/Data	Dial/Data, Signal, Reuters, Telescan, eSignal, BMI	Telescan, Interquote, Quote.com, eSignal	Dial/Data
	✓	✓	✓	✓
	ASCII	ASCII, CSI, Excel, Futurelink, Quattro, Lotus, TC2000, AIQ	MetaStock, TC2000, AIQ, Omega	ASCII
	ASCII	ASCII, DIF, Excel, Quattro, Lotus 1-2-3		ASCII
	✓	✓	✓	✓
	✓	✓		✓
	✓	✓	✓	✓
	✓	✓	✓	✓

## PRODUCT COMPARISON: TECHNICAL ANALYSIS SOFTWARE (CONTINUED)

Product Name		Personal Hotline 8.0	ProTA 2.0/ProTA Gold	SMARTrader
<b>Company</b>		Trendsetter Software	BeeSoft International, Inc.	Stratagem Software Int'l
<b>Telephone</b>		(800) 825-1852	(800) 840-3588	(504) 885-7353
<b>Web Address</b>		www.trendsoft.com	www.beesoft.net	www.stratagem1.com
<b>Price (AAll discount)</b>		\$695 (\$100)	ProTA 2.0 \$59; Gold \$199	\$299 (\$50)
<b>Platform(s)</b>		Macintosh	MacOS 7.0+	Windows 95/98/NT
<b>Indicators</b>	<b>Pre-defined indicators</b>	50	45	101
	<b>Modify of pre-existing indicators</b>	✓	✓	✓
	<b>Create new indicators</b>		Gold only	✓
	<b>Indicator overlay or new window</b>	✓	✓	✓
<b>Charting Elements</b>	<b>Chart types (see key below)</b>	B, C, L, P&F	B, C, L	B, C, L, P&F
	<b>Pre-defined charts (chart templates)</b>		4	68
	<b>Create indic'tr/trading sys templates</b>	✓	✓	✓
	<b>Scaling (linear, semi-log)</b>	linear, semi-log	linear	linear
	<b>Moveable trendlines</b>	✓	✓	✓
	<b>Load specified historical data</b>	✓		✓
	<b>Security merge feature</b>	✓	✓ (Gold only)	✓
	<b>Maximum charts displayed</b>	unlimited	250	10
	<b>Maximum data points per chart</b>	65,000	32,768	2,000
<b>Trading Systems</b>	<b>Pre-defined trading systems</b>	6	4 (Gold only)	23
	<b>Backtesting</b>	✓	Gold only	✓
	<b>Create &amp; save custom systems</b>	✓	✓ (Gold only)	✓
	<b>Rank/compare systems</b>	✓	✓ (Gold only)	
	<b>Generate profit reports of systems</b>	✓	✓ (Gold only)	✓
	<b>Indicates maximum drawdown</b>	✓	✓ (Gold only)	✓
	<b>System stop methods</b>	trailing, profit target	trailing, max-loss, profit target	trailing, max-loss
	<b>Pre-defined entry/exit signals</b>	✓	✓ (Gold only)	
	<b>User-defined entry/exit signals</b>	✓	✓ (Gold only)	
	<b>Considers trade positions (long/short)</b>	✓	✓ (Gold only)	✓
<b>Help Functions</b>	<b>Accounts for slippage/commission</b>	✓	✓ (Gold only)	✓
	<b>On-line help</b>	✓	✓	✓
<b>Data</b>	<b>Indicator interpretation help</b>	✓	✓	✓
	<b>Sources of data download</b>	Dial/Data	Dial/Data, AOL, Quote.com, BeeSoft	
<b>Maintenance</b>	<b>Auto download feature</b>	✓	✓	
	<b>Import formats</b>	ASCII	ASCII	MetaStock, ASCII, TC2000
	<b>Export formats</b>	ASCII	MetaStock, ASCII	ASCII
	<b>Handles distributions and splits</b>	✓	✓	
	<b>Data conversion/merge features</b>	✓	✓	
	<b>Historical database included</b>	✓	✓	
<b>Batch Printing</b>		✓	✓	✓

Chart types: B = bar, C = candle, CV = candlevolume, EV = equivolume, L = line, P&F = point and figure



	TC2000.com	TIP@WallStreet	TradeStation 2000i	Trading Expert Pro
	Worden Brothers, Inc.	Telescan, Inc.	Omega Research	AIQ Systems
	(800) 776-4940	(800) 324-8246	(800) 556-2022	(800) 332-2999
	www.tc2000.com	www.telescan.com	www.omegaresearch.com	www.aiq.com
	Free	\$349 (10%)	\$2399; \$199.95/mo. for 1 yr.	\$49 setup + \$59/mo. end-of-day or \$79/mo. real-time
	Windows 95/98/NT	Windows 95/98/NT	Windows 95/98 or NT 4.0	Windows 95/98/NT
	12	80+	100+	60+
	✓	✓	✓	✓
			✓	✓
	✓	✓	✓	✓
	B, C, L	B, C, CV, EV, L, P&F	B, C, L, P&F	B, C, L, P&F
	12		5	12
	✓	✓	✓	✓
	linear, semi-log	linear, semi-log	linear, semi-log	linear, semi-log
		✓	✓	✓
		✓	✓	✓
			✓	✓
	2	4	unlimited	unlimited
	500	limited only by memory	unlimited	20 years
		80+	25+	200+
		✓	✓	✓
			✓	✓
		✓		NA
		✓	✓	✓
			trailing, max-loss, breakeven, profit target, trading & inactivity	trailing, max-loss, breakeven, profit target, trailing
			✓	✓
			✓	✓
			✓	✓
			✓	✓ (commission)
	✓	✓	✓	✓
	✓	✓	✓	✓
	Worden Brothers	Telescan	Dial/Data, Telescan, DBC Signal, Signal Online, BMI, DTN, PC Quote	Dial/Data, Interactive Data, Telescan, myTrack, Signal, BMI
	✓	✓	✓	✓
		AIQ, MetaStock	AIQ, ASCII, CompuTrac, CSI, Knight-Ridder, MegaTech, MetaStock, TC2000	ASCII, MetaStock, TC2000
	ASCII, MetaStock, TC2000 3.0		ASCII	ASCII, MetaStock, TC2000
	✓	✓	✓	✓
		✓	✓	✓
	✓	✓	✓	✓
		✓	✓	✓



## PRODUCT COMPARISON: TECHNICAL ANALYSIS SOFTWARE (CONTINUED)

Product Name		VectorVest ProGraphics	WindowOnWallStreet.com
Company		5.0/ Pro Trader	
Telephone		VectorVest, Inc.	Window On WallStreet, Inc.
Web Address		(888) 658-7638	(800) 375-8522
Price		www.vectorvest.com	www.windowonwallstreet.com
(AAII discount)		ProGraphics, \$39-\$49/month; ProTrader, \$295	\$79.95/mo. or \$69.95/mo. with annual prepay
Platform(s)		Windows 95/98/NT	Windows 95/98/NT
Indicators	Pre-defined indicators	36	40+
	Modify of pre-existing indicators	✓	
	Create new indicators		
	Indicator overlay or new window	✓	✓
Charting Elements	Chart types (see key below)	B, C, CV, EV, L, P&F	B, C, L
	Pre-defined charts (chart templates)	20	9
	Create indic'tr/trading sys templates	✓	✓
	Scaling (linear, semi-log)	linear	linear, semi-log
	Moveable trendlines	✓	✓
	Load specified historical data		✓
	Security merge feature		
	Maximum charts displayed	4	unlimited
	Maximum data points per chart	unlimited	unlimited
Trading Systems	Pre-defined trading systems	30+	
	Backtesting	✓	
	Create & save custom systems	✓	
	Rank/compare systems	✓	
	Generate profit reports of systems	✓	
	Indicates maximum drawdown		
	System stop methods	trailing	
	Pre-defined entry/exit signals	✓	
	User-defined entry/exit signals	✓	
	Considers trade positions (long/short)	✓	
Help Functions	Accounts for slippage/commission	✓	
	On-line help	✓	✓
Data	Indicator interpretation help	✓	✓
	Sources of data download	VectorVest	WindowOnWallStreet.com
Maintenance	Auto download feature	✓	✓
	Import formats	ASCII, Excel, Lotus	
	Export formats	ASCII, Excel, Lotus	
	Handles distributions and splits	✓	✓
	Data conversion/merge features		
	Historical database included	✓	
Batch Printing			

Chart types: B = bar, C = candle, CV = candlevolume, EV = equivolume, L = line, P&F = point and figure

## Technical Analysis Programs



### Behold!

Behold! is one of the most advanced technical analysis programs on the market for the Mac. Designed by Investors' Technical Services, it allows you to develop, test, and optimize trading systems. The trading model is the tool you use to create and test your trading strategies and consists of two parts: the worksheet and the trading rules.

The worksheet contains the original price data and plotting commands. The trading rules section is made up of the statements that determine the individual trades. Once you have created a model, whenever you open the model the program automatically performs the underlying calculations, displays the results to the worksheet, and draws the charts.

The autorun function of the program applies the active trading model. After scanning the data, Behold! generates a report that tells you what your current position should be as well as suggesting 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 those exiting a trade.

When optimizing a trading system with Behold!, you are provided with a graphical representation of how the changes you made impact the profitability of the system. This "optigraph" shows the net effect the optimization had on the system.



### InsiderTA

While most technical analysis programs attempt to be everything to everyone, there are some programs on the market that focus on one particular analysis technique; Insider TA is such a program. Focusing on volume analysis, the program uses box, or equivolume, charting to analyze the volume behavior of a stock. With equivolume charting, 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.

To aid in the volume analysis process, Insider TA offers four volume-related tools—consolidation mapping, box analyzer (BA), volume analyzer (VA), and VA rank. The box analyzer feature attempts to identify trends in box shapes and price movement. Based on these trends, Insider TA then produces buy and sell tags that indicate where a reverse in price movement may take place. Furthermore, the program gives you a performance summary of how, based on the buy and sell tags, the trades would have performed. You are able to optimize the box settings to find those that best fit an individual security.

Insider TA's volume analyzer is a derivation of on-balance volume (OBV). VA attempts to measure the demand for a stock. When the volume signal is increasing, this is a sign of potential interest in the stock while a falling volume indicator could signal a lack of, or waning, interest. Building on the VA function, Insider TA then measures the relationship between a stock's price and its respective volume indicator level, generating buy and sell signals from the observed relationships.

Insider TA Pro offers additional features beyond the standard release, such as stop-loss and trailing-stop signaling, MetaStock and TC2000 data compatibility, 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

Beyond being one of the more robust programs discussed here, Investor/RT is the only cross-platform system—meaning you can run it using either a Windows or Mac system. It offers practically everything a technician and active trader could ask for—end-of-day or intraday analysis, charting, custom indicator and trading system creation, system testing, and portfolio management functions.

Investor/RT offers an impressive array of chart types—bar, candlestick,

point & figure, line, market profile, and volume profile and boasts a library of over 160 technical indicators. For easy viewing of several charts, the program's slide show feature allows you to set the viewing time for each chart and 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.

With Investor/RT, you have the capability to identify trading signals using the scan function. You can choose from any of the technical indicators as well as prices, fundamental elements, and historical or current data. The program's "scan request language" supports arithmetic, relational, and logical operations of varying complexity. A scan can be run on daily, weekly, monthly, tick, or minute bar data. Once the program has completed its search, it offers up the results in a separate table.

For any trader it is important to track open positions. Having portfolio management 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 provide year-end tax reporting.

Linn Software is ceaseless in its efforts to improve and enhance its software. The past year has seen Investor/RT propelled into the upper echelon of technical analysis software due to some significant upgrades—the most significant being the ability to backtest trading systems and view reports outlining the performance of each. In addition, you can now create and plot your own indicators and trading systems. Some of the other recent additions include Nasdaq Level II display screens, raw-tick charts for showing tick-by-tick activity, and statistical and arithmetic scan functions.

**Figure1.**  
**Investor/RT**



tion 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 draw-down. 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.



### **MetaStock 7.0/ MetaStock Professional**

Equis International is one of the most influential and innovative companies offering technical analysis software. Its two flagship programs—MetaStock 7.0 and MetaStock Professional—are among the most complete technical analysis packages on the market today.

Both versions of MetaStock have an arsenal of over 100 technical indicators and line studies. If this isn't enough, or if you wish to modify an existing indicator, you can use the indicator builder. Here you can choose from over 200 mathematical, statistical, and technical functions for designing your own custom indicators. Furthermore, you are able to reference existing custom indicators when creating new ones.

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

The explorer function that comes with the program allows you to compare, filter, rank, search, and list multiple indicator values for multiple securities. You can view a list of securities that are generating either buy or sell signals or that have broken some predefined barrier in terms of price or technical indicator.

MetaStock includes Internet integration for obtaining up-to-date information. With just a few mouse clicks, you have access to 20-minute delayed quotes and current news and information on every security in the MetaStock



### **MacChart, Personal Analyst, Personal Hotline**

Trendsetter Software offers three Mac-based programs—MacChart, Personal Analyst, and Personal Hotline. As is typically the case with vendors that offer multiple software packages, these products offer the same core capabilities. Progressing through their product line, the number of features increases.

MacChart has replaced Analyst Lite in the Trendsetter lineup. While the name has changed, the program itself has remained basically the same. MacChart is designed for those who are looking to increase their knowledge of technical analysis without spending a lot of money or getting a lot of features they will not need right away. The program offers a wide array of technical studies—over 20 in all—and offers charting capabilities—including candlesticks—to satisfy most users.

Personal Analyst is a somewhat more advanced product than MacChart. With this program you can create line, bar, and candlestick charts and you have access to 50 technical indicators and studies. Beyond plotting candlesticks, Personal Analyst can also recognize popular patterns. The program scans the price data of a given security and will identify the patterns for you on the chart.

Both Personal Analyst and Personal Hotline—Trendsetter's high-end program—offer technical screening. You are able to specify the criteria in which you are interested and the program will scan its database for those stocks that meet all 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 an advance/decline line, up volume versus down volume, the TRIN, McClellan oscillator, and summation index.

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. For those looking for 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 results. In addition

database. Through the Reuters Money Network Web site, you get free portfolio tracking and fundamental information as well. Fundamental data and analysis is also provided by Multex and Market Guide.

To help users get a handle on what a technical indicator is telling them, Equis includes 27 Expert Advisors—a collection of technical commentaries 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 the Indicator Builder.

MetaStock offers several predefined trading systems, and allows you to create your own systems, all of which can be backtested. For the more advanced technical analysts, MetaStock allows you to write and backtest trading systems. 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.

MetaStock includes a single-vendor version of 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. You have access to either Dial/Data or Reuters Trend Datalink for data downloading. A six-vendor version of the Downloader is also available for an additional \$59, which allows downloading from DBC Signal, Dial/Data, Dow Jones, Reuters Datalink, and Telescan. Version 7.0's new Data-On-Demand feature allows subscribers of Reuters Datalink to instantaneously load charts—without the need to download or maintain historical data.

Of the top contenders in the real-time analysis forum, MetaStock Professional is the leader in value. All of the features outlined here are found on both version 7.0 and Professional. However, Professional provides you with tick-by-tick analysis capability, whereas MetaStock 7.0 offers analysis on an end-of-day basis.



### OmniTrader 2000

OmniTrader attempts to automate the entire analysis and trading process—it collects data on a real-time, delayed, or end-of-day basis, tests over 120 trading systems against a database of over 12,000 securities, generates buy/sell signals, processes trade orders, and tracks your positions.

Using Nirvana Systems' adaptive reasoning model, OmniTrader attempts to adjust to each security's personality. As the program tests its trading systems on the database of securities, it will only select the systems that are performing the best in the current market condition. Those systems generate signals that OmniTrader uses to form a consensus trading signal.

After OmniTrader has made its buy/sell signals, it provides a breakdown of the analysis. By clicking on any of the signals displayed on the chart, a trading adviser reports which trading system(s) generated the signal.

To further the analysis process, the to-do list automatically retrieves data, updates the current positions in the portfolio manager, tests the trading systems to find those that are the most profitable for each security, and calculates signals for a focus list. The focus list is a summary of each day's trading signals. With it, you are given a variety of statistics including the percentage of winning trades, number of long and short trades, etc. A portfolio manager tracks an unlimited number of accounts, maintains the current valuation of your trading positions, and can even generate a Schedule D for tax purposes.

OmniTrader offers two trading simulators. The first, called the trading game, allows you to practice trading a single security. The second, called the lab mode, allows you to practice trading a portfolio of securities.

OmniTrader provides access to a wide selection of financial data, research and information via the Internet. This includes daily buy and sell candidates and intraday and end-of-day industry and market analysis and commentary.

For traders interested in futures, OmniTrader also comes in a Futures Edition. Just as it does with stock and

mutual funds, this version 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 you 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.



### ProTA/ProTA Gold

For the analysis of stocks, mutual funds, indexes, futures, options, and bonds, ProTA has all of the popular chart types—close, bar, point & figure, and candlestick. In addition, it offers over 40 fully customizable technical indicators and line studies.

ProTA's portfolio sheets provide you with up to 20 columns of information in a spreadsheet-like format. You can keep track of trade-specific information such as purchase data, number of shares or contracts purchased, and commissions. The portfolio automatically calculates statistics including cost basis, profit/loss, and return on investment. You can track technical information such as moving average values and volume activity, as well as input 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 on high-end technical analysis packages. If you aren't 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 your own 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 of a chart,



**Figure 2.  
ProTA Gold**



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 and performance-based values and the program can scan the database or a portfolio to find securities that fit the parameters. Securities that pass the screen are then placed in a portfolio sheet where you can view and/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 "specs sheet" (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 specs sheet can have a "ChartFamily," where spreadsheet values are displayed in graphical form.

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 using indicators you specify. The SmartView function allows you to draw price charts and view them. "Browse" mode cycles through the charts automatically using a time interval of your choice.

SMARTrader includes quickcharts, a simple charting utility that allows you to chart securities and select from a few basic technical indicators to overlay.

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



### TC2000.com

Those looking for a simple, easy-to-use technical analysis and charting system for a reasonable price will want to take a look at TC2000 from Worden Brothers.

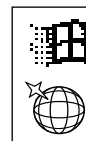
When compared to other technical analysis programs, TC2000 does not provide as extensive a technical indicator library. However, it does weigh in with a respectable total of 12. Included in this collection are some proprietary indicators: balance of power (BOP), moneystream, and time-segmented volume. 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 the 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 over 40 pre-installed scans from which to choose, although you are also able to build your own.

Worden Brothers has offered data along with its analysis program from the start. As a data provider alone TC2000 is a good value—less than \$30 a month for unlimited downloads.



### TIP@Wallstreet

TIP@Wallstreet was a pioneer in integrating the Internet into its interface.

This program combines the fundamental and technical analysis capabilities of the Telescan Investor's Platform (TIP) as well as the news, information, and analysis available at the Wall Street City Web site ([www.wallstreetcity.com](http://www.wallstreetcity.com)).

The program offers charting capabilities as well as technical and fundamental analysis. TIP@Wallstreet is unique in that you download the charts from Telescan, not the data. This saves you significant on-line time since you are not downloading raw data. With the autologon feature, you can program the system to automatically retrieve portfolio data, company and market news and to download graphs.

Over 80 technical indicators are provided including stochastics, MACD,

Bollinger bands, candlesticks and more. With profitability testing and optimizing testing, you can use the program to test the effectiveness of buy/sell signals generated by technical indicators. Optimizing identifies the combination of indicators that produce the best results.

Telescan's ProSearch Module is one of the most powerful stock screening features available with a technical analysis program. Whether you are using one of the 30 sample searches or creating your own using as many as 40 of the over 280 technical and fundamental criteria, you can find the top-ranked stocks based on value, growth, technical, or momentum factors, for example. Furthermore you can backtest the results of the screens to see how the various search strategies would have performed over time.

With TIP, you have access to one of the most comprehensive databases for historical statistical and textual information. It covers over 8,000 stocks, 2,000 mutual funds, 256 industry groups, 100 market indexes and 40,000 options. Historical price and volume data dates back 25 years and 20-minute delayed quotes are provided for securities listed on the New York Stock Exchange, the American Stock Exchange and Nasdaq. Twenty-four-hour news coverage and an archive of stories are also maintained for over 7,000 companies. The imbedded Web browser gives you access to additional information from such sources as Zacks Investment Research, Market Guide, S&P MarketScope, and Macro\*World Outlook reports.



### TradeStation

Having dropped SuperCharts in favor of the newly launched WindowOnWallStreet.com service, TradeStation now stands alone as Omega Research's only software program for technical analysis of stocks. This high-end program is designed for those who wish to follow some form of systematic trading, whether it is fundamental or technical.

TradeStation provides charting and analysis tools that allow users to display charts and quote windows on their

screen. More than 200 technical indicators are included in the program. A unique feature in TradeStation is the ability to view trading activity at the tick level and look at each individual trade that was made during the period using the "look inside a bar" system.

TradeStation also allows users to set alerts for specific patterns or market conditions. Users can set alerts on trendlines so an audio or visual alarm will sound when a trendline is penetrated by market activity.

TradeStation allows users to write indicators, studies, or trading systems using the "EasyLanguage" PowerEditor. 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 2000i provides the EasyLanguage wizard that allows you to create trading systems, indicators, show-me studies and paintbar studies by simply "picking and clicking."

You test and optimize trading systems and receive system performance summaries that contain information such as total net profit, total number of winning and losing trades, and return on account. With the ability to "look inside" bars with TradeStation, you can test systems right down to the tick.

TradeStation's increased Internet integration allows you to place orders online. If your analysis indicates either a buy or sell opportunity, TradeStation can be linked with your on-line broker. The program will ask if you want to place the trade, will place the trade for you, and will automatically inform you when the order is filled and report the price at which it was filled.



### Trading Expert Pro

TradingExpert Pro from AIQ Systems is a market timing and stock screening application that combines charting, technical analysis, system design and testing, as well as portfolio management into one 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. For those interested in sector and group analysis, TradingExpert Pro has a group/sector report that ranks groups by trend score.

When you create a chart, you are given an area that lists the values of over 50 indicators in the program, providing you with an assessment of the technical indicators. Using red and green arrows, you can see indications of a strong uptrend or downtrend, respectively.

The expert design studio module that comes with TradingExpert Pro allows you to design, backtest, and optimize your own trading systems. The report writer screens data using your trading systems and generates customized reports listing the information and securities that meet your trading criteria. The program also allows you to construct trading systems built on fundamental factors. Any of the systems you create or that come with the program can then be backtested.



### VectorVest ProGraphics, ProTrader

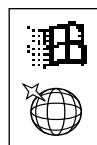
VectorVest ProGraphics provides a combination of fundamental and technical analysis as well as unique indicators based on a stock's value, safety, and timing. This stock analysis and graphics system allows you to analyze, sort, screen, search, rank and graph stocks, industry groups and sectors by any 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 has to do with 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, which are obtained with your data downloads, offer a weekly commentary of the financial markets. They also offer opinions on whether the market is overvalued or undervalued as well as the market's overall trend.

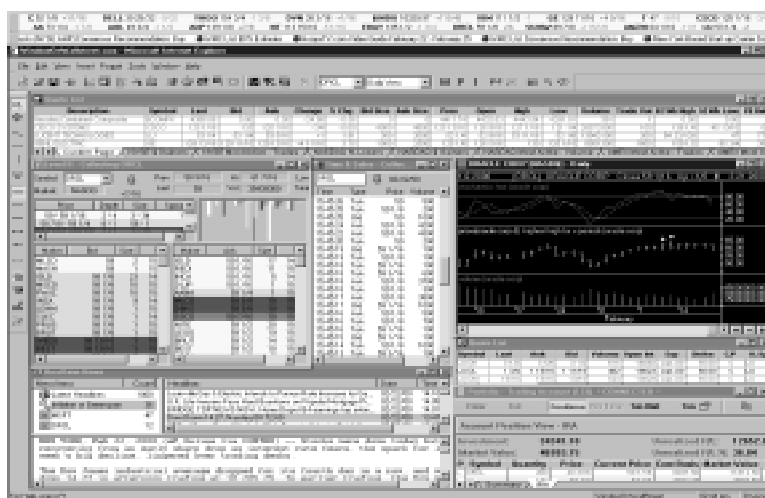
The ProTrader module provides charting capabilities and over 40 technical indicators. The searches allow you to find stocks that meet pre-defined criteria, such as key reversals, moving average crossovers, range breakouts, and gap finder.



#### WindowOnWallStreet.com

In October of last year, Omega Research bought Window On WallStreet—one of its chief competitors. This could mark the beginning of a “shaking out” period in the industry, as companies merge to keep pace. Window-OnWallStreet.com could also be the first in a line of new programs that are,

**Figure 3.**  
**WindowOnWallStreet.com**



for all intent and purposes, Internet-based. The site ([www.window-onwallstreet.com](http://www.window-onwallstreet.com)) offers most of the functionality that was found in Window On WallStreet's products as well as Omega's SuperCharts, but on a Web-based platform.

Subscribers to the service can access streaming real-time quotes, charts, and news, a dynamically updated portfolio manager, technical indicators, line studies and drawing tools, Nasdaq Level II data (for an additional \$50 per month), and customizable Internet research.

Several chart types are offered including bar and candlestick, as well as real-time daily charts, intraday tick charts, user-defined minute bar charts, and tick bar charts. There are over 40 technical indicators, trendline studies, and drawing tools. Charts are also updated in real time, tick by tick.

With the Level II screens, you are able to watch the buying and selling activity of individual market makers and elec-

tronic communications networks (ECNs). Dynamic time and sales data is also available.

Using the Internet research feature, you are given links to research sites, brokers, and corporate Web sites. The research area is customizable.

Other features include the Market Leaders window where you see which stocks are making the big moves, streaming on-line news with search capabilities and real-time alerts, and a live quote ticker. A dynamically updated portfolio manager tracks realized and unrealized gains and hypothetical portfolios and multiple accounts. Discussion forums allow you to interact with other traders and discuss the latest trading news, plus read and give buy and sell recommendations on the symbols of your choice.

*Wayne A. Thorp is the assistant financial analyst at AAII.*