

## Step-by-Step Tutorials: Overview

Learning the Basics  
Using the Interface  
Creating Trading Signals  
Using Advanced Features

### Welcome to the TradingSolutions tutorials!

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These step-by-step tutorials will introduce you to many of the features of TradingSolutions.

The first tutorial shows you the basics to get you up and running quickly. The remaining tutorials take you through the details of using the TradingSolutions interface, creating trading signals, and using advanced features.

- Note: The TradingSolutions tutorial text is intended to be viewed side-by-side with the TradingSolutions program. If this help is currently covering part of the TradingSolutions program window, you can resize the program appropriately by selecting **Resize Program for Help Panel** from the **Window** menu of TradingSolutions.
- Note: The TradingSolutions help file and tutorials are also available as PDF documents that can be displayed or printed from the TradingSolutions web site. See <http://www.tradingsolutions.com/downloads/documentation.html>.

⇒ **Begin the first tutorial now.**

⇒ [Learning the Basics](#)

### Copyright Information

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## Tutorial: Learning the Basics

Introduction  
The TradingSolutions Interface  
Understanding Fields  
A Quick Example  
The Solution Service

### Welcome to the TradingSolutions tutorials!

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#### Tutorial Task

Learn the basics of using TradingSolutions for swing trading.

This tutorial will provide you with the big picture of how you can use TradingSolutions for swing trading. It will show you how to generate a pre-created signal, analyze the performance, and track it for daily trading.

#### General Note about Day Trading

This tutorial addresses trading on a daily basis with end-of-day data. TradingSolutions Real-Time also supports streaming data real-time for day trading. In general, the concepts covered here apply equally to both types of trading.

Later tutorials will go into more detail and show you how to generate your own signals. **Don't worry if you don't completely understand something right now** – most basic questions are explained in the tutorial. After you have completed the tutorial, answers for advanced questions can be found elsewhere in the help.

#### Continue to the first task.

 [The TradingSolutions Interface](#)

 Or, return to the [Overview](#) for the tutorials chapter.

## Tutorial: Learning the Basics

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### The TradingSolutions Interface

#### ① Tutorial Task

Understand the basics of the TradingSolutions Interface

This brief tutorial task will give you quick tour around the TradingSolutions interface so you can perform the other tasks more easily.

#### Step-by-step Instructions

1. The main focus of the interface is the **Portfolio View**. It lists all of the stocks and data in your portfolio.
  - Data can be imported from Internet data services or from files on your computer. TradingSolutions can be used with stocks, futures, FOREX data; domestic or international – pretty much any data-based financial data.
  - The Portfolio View can be customized to split the data into groups and display current signals, analyses, and other data for each group.

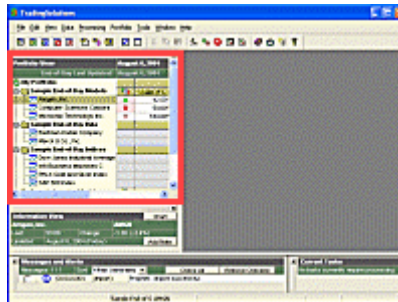





Figure 1. Location of the Portfolio View

2. Right-click on any of the stocks in the Portfolio View. This displays a **context menu** of options available for working with this stock.
  - Context menus are available for many different parts of TradingSolutions.
3. The  icon in the Portfolio View indicates your **Primary Signal**. The Primary Signal is the signal you are most interested in for each stock. TradingSolutions displays signals as directional arrows and triangles. Here is a quick overview of the symbols.

-  Enter Long
-  Exit Short
-  Hold, price may increase
-  Hold
-  Hold, price may decrease
-  Exit Long
-  Enter Short

 Note: If you forget what a symbol means, simply place your mouse over it and a tip will appear.

 Note: For information about what long and short means, see the [Notes](#).

4. You can quickly view an analysis of any signal by right-clicking on it and selecting **Analyze Signal...** . You can also compare all of the signals for a single stock by right-clicking on it and selecting **Analyze Signals...**

5. Beneath the Portfolio View, the **Information View** displays additional information for the currently selected stock or group in the Portfolio View.
  - You can use the Information View to keep notes about how a stock is trading.

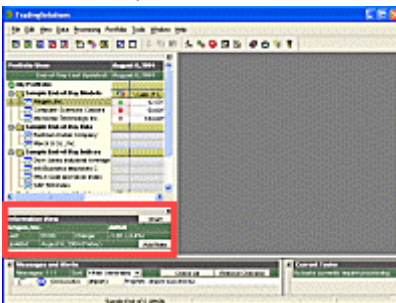


Figure 2. Location of the Information View

6. Along the bottom of the screen, the **Messages and Alerts** window displays information about activities that are happening in the background.
  - Messages are issued when the importing of data is completed, when an analysis is ready, and any other time information is available.
  - TradingSolutions Real-Time includes the ability to generate custom alerts which are displayed here.

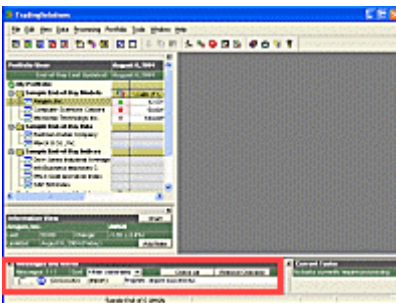


Figure 3. Location of the Messages and Alerts Window

7. To the right of the Messages and Alerts window, the **Current Tasks** window displays an overview of the tasks that TradingSolutions is currently working on.
  - After updating your portfolio with lots of new data, you can see TradingSolutions updating all of your calculations and signals.

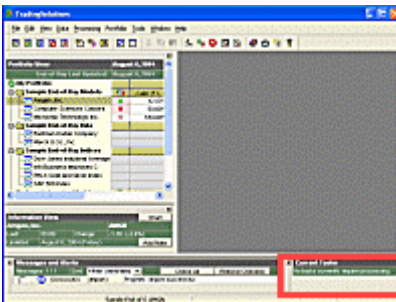


Figure 4. Location of the Current Tasks Window

8. The gray area in the middle of the interface is where you can display charts and spreadsheets of your data.
  - Click on a stock in the Portfolio View. Then, press the **Chart** button in Information View. This will display the default chart for a stock.
  - You can also display custom charts and spreadsheets for any data by right-clicking on it in the Portfolio View and selecting **Display in Chart...** or **Display in Spreadsheet....**

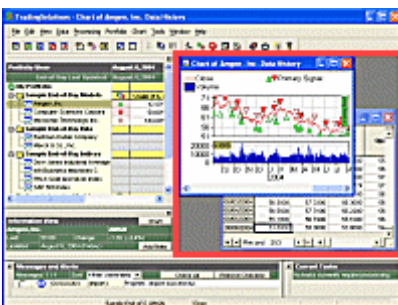


Figure 5. Location of charts and spreadsheets.

### Congratulations!

Now that you have had a tour of the interface, continue on to the next task for an understanding of how TradingSolutions calculates and stores values.

⇒ **Continue to the next task.**

👉 [Understanding Fields](#)

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### Understanding Fields

#### ① Tutorial Task

Understand TradingSolutions fields by viewing them in a spreadsheet and learning how to create different types of fields.

A field is a price, indicator, or other value for a piece of data. TradingSolutions stores all of its values in columns similar to a spreadsheet. Let's see a collection of fields and learn how you can create your own.

### Step-by-step Instructions

1. Right-click on the stock **Amgen** in the Portfolio View and select **Display in Spreadsheet...**. This will display the **Display Spreadsheet Dialog**.

Note: If Amgen is not available in your portfolio, you can use any stock for this example.

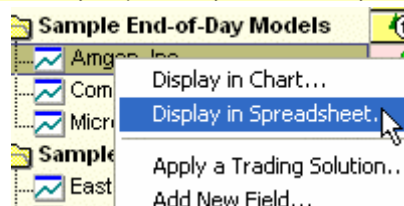


Figure 1. Selecting Add New Field..."

2. Click on **Select new fields to display**. This will present a list of fields that have been created for this stock.

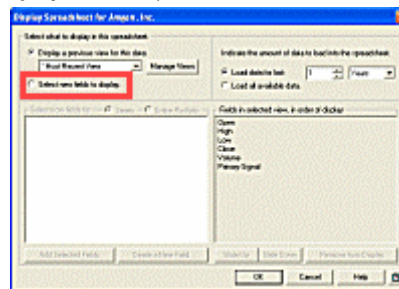


Figure 2. Location of Select new fields to display".

3. Let's display all of the fields that have been imported or created for Amgen. Select Amgen, Inc." from the top of the list of fields, then press **Add Selected Fields**. The list of currently selected fields should now look like this.

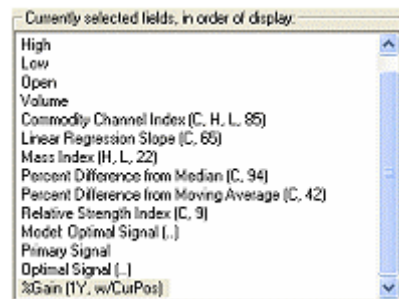


Figure 3. List of all fields added.

4. Press **OK**. This will display the selected fields in a spreadsheet.

Date	Close	High	Low	Open	Volume
07/16/2004	55.7300	56.2500	55.5400	56.3300	9,409,71
07/19/2004	55.6100	56.1100	54.0000	55.2300	9,395,71
07/20/2004	57.0000	57.0000	55.5800	55.8500	7,403,51
07/21/2004	55.6500	57.3800	55.8300	57.0000	9,406,08
07/22/2004	56.1000	56.2500	54.9800	55.7910	9,295,31
07/23/2004	55.3600	56.5700	55.1600	55.8900	6,460,91
07/26/2004	55.5010	55.6100	54.2200	55.3300	9,156,61
07/27/2004	55.9100	56.4200	55.4600	55.6610	10,324,21
07/28/2004	57.0000	57.8300	56.0000	56.2000	12,890,51
07/29/2004	67.0000	67.6000	67.0000	67.3000	7,940,61
07/30/2004	58.6800	57.8400	56.8774	57.0000	6,401,71
08/02/2004	66.2100	67.2100	66.2100	66.7910	6,166,61
08/03/2004	56.2500	57.3300	56.3000	56.2500	6,335,01
08/04/2004	66.6500	67.2100	66.2200	66.2200	6,965,51
08/05/2004	55.1000	56.7900	55.1000	56.7000	6,932,21
08/06/2004	57.0000	58.0800	53.8000	54.7600	9,441,41

Figure 4. Sample spreadsheet.

- Notice how each field that we selected has a column in the spreadsheet. This includes imported price and volume data, calculations, signals, and signal analyses.

Note: You can view additional areas of the spreadsheet using the scrollbars on the bottom and right sides of the spreadsheet window.

- Locate the **Primary Signal** field. This is typically the field you are most interested in. The current value is the recommendation of what position you should be in for this stock. You can see the value for the current day in the Portfolio View for Amgen.
- The majority of the other fields currently defined for Amgen were used to calculate or analyze this field. Let's see what kinds of fields can be created. Right-click on Amgen in the Portfolio View and select **Add New Field...** This will display the **Create a Field Wizard**.

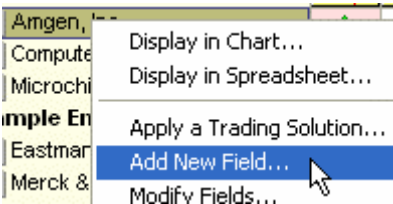


Figure 5. Selecting Add New Field..."

- As can be seen from this wizard, there are several different types of fields available. You can quickly see that for almost any value you would want to calculate in TradingSolutions, you would do so by creating a field.

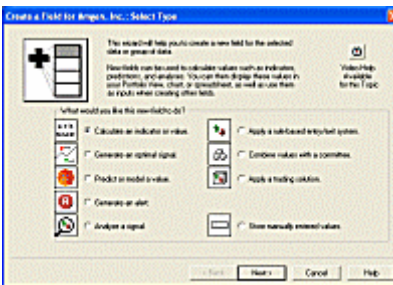


Figure 6. The Create a Field Wizard.

- If you would like additional information about the individual types press the **Help** button. You can return to this tutorial page by pressing the **Back** button at the top of this window.

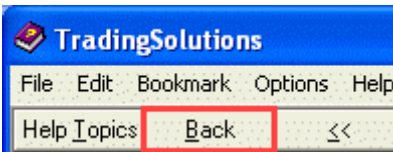


Figure 7. Location of Back button to return to tutorial from help.

- Press the **Video Help** button in the upper right-hand corner of this dialog. Context-specific video helps are available from many context menus and wherever you see this icon.



Figure 8. Video Help button.

11. Look at the video help topics that are available. Feel free to view the video topics now or revisit them later. When you are finished, press the **Close** button.
12. Press **Cancel** to exit this wizard, or experiment with creating different types of fields before continuing on to the next task.

Congratulations, you should now have a good idea of what a field is and how it fits into the big picture. In the next task, we will see a quick example of how to create a trading signal based on multiple fields in a single step.

<a href="#">⇒ Continue to the next task.</a>
<a href="#">↪ A Quick Example</a>





## Tutorial: Learning the Basics

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### A Quick Example

#### ① Tutorial Task

Apply a trading solution” to create a signal for a stock.

In addition to data with signals already created, the sample TradingSolutions portfolio also includes sample stock data that does not currently have any signals. Let’s look at a quick way that you can experiment with creating your own signals using a trading solution”.

↪ Note: Later tutorials go into more detail about this and other ways to create new signals.

Trading solutions are bundled methods for creating signals. They are typically used to recreate good results found with a particular stock. However, they can also be used to try methods that were successful on one stock on new data.

### Step-by-step Instructions

1. Right-click on any stock in the Sample End-of-Day Data group and select **Apply a Trading Solution....** This will display the **Apply a Trading Solution Wizard**.

↪ Note: If your portfolio no longer has this group and you would like to try this task using the sample portfolio, see the [Notes](#).

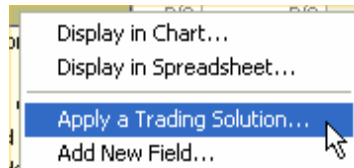


Figure 1. Selecting Apply a Trading Solution...”

2. Review the introduction to the **Apply a Trading Solution Wizard** and press the **Next** button.

↪ Note: Wizards are dialogs that present their information in step-by-step format. The **Next** button allows you to advance through the steps.

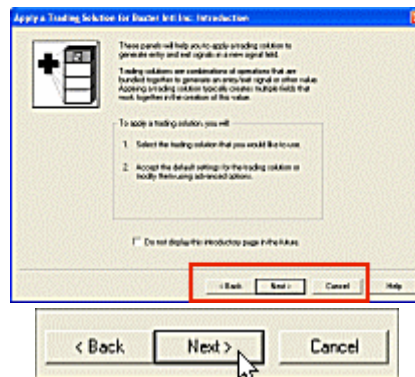


Figure 2. Pressing the Next button to advance.

3. On the **Select Trading Solution** page, select "Sample End-of-Day Model Solutions” from the Trading Solutions Groups” list.

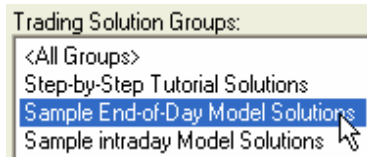


Figure 3. Selecting Sample End-of-Day Model Solutions".

4. Select a sample model from the right-hand window.

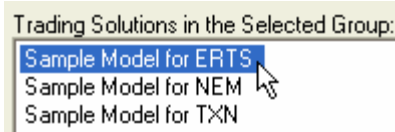


Figure 4. Selecting a sample model.

⚠ Note: The sample models listed here may differ those available in the software.

5. Press the **Next** button. TradingSolutions will perform some brief processing.
6. On the **Create Fields** page, review the information on the page and press the **Finish** button.

⚠ Note: The **Next** button on the last page of a wizard changes to a **Finish** button to indicate that this is the last step.

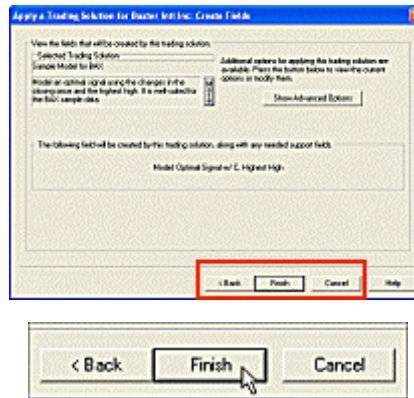


Figure 5. Pressing the Finish button to complete the wizard.

7. Let TradingSolutions perform the requested tasks. TradingSolutions displays a **Status Dialog** to let you know when it is updating things. When it is finished, the Status Dialog will disappear.

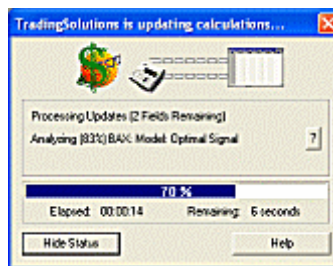


Figure 6. Example of a Status Dialog.

⚠ Note: This task may take a few minutes. This is because the neural network model contained in the trading solution is being optimized to work with the data of a new stock.

8. After processing has completed, you will have a new tradable signal for this stock based on a technique that worked on another stock. Later tutorials will go into creating signals in other ways and how you can analyze and use this signal. Here is an overview of what you could do next:
  - The first signal for a stock will automatically be set to your Primary Signal for that stock. The Sample End-of-Day Data group in the sample portfolio is set up to automatically display the current value of the Primary Signal in the Portfolio View under the 🇮🇹 icon.

- You can use this value for trading. The value of this signal is updated automatically each time you import new data.
- You can analyze the performance of the signals for a stock and select a new Primary Signal by right-clicking on the stock and selecting **Analyze Signals...**
- You can visually see how this signal would have traded by adding it to a chart.

### **Congratulations!**

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You have created your own signal by applying a trading solution. Now let's see another easy way to get started with TradingSolutions.

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[↩ The Solution Service](#)



## Tutorial: Learning the Basics

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### ① Tutorial Task

Use the Solution Service to see sample signals updated on a daily basis.

You can see TradingSolutions in action by registering for the **free** Solution Service. The Solution Service provides you with current signals for several stocks and data that is updated after each trading day. This allows you to use these signals on a daily basis and learn by example how to generate your own winning signals.

↪ Note: If you do not want to register for the free Solution Service at this time, proceed to the bottom of this page to advance to the next tutorial.

### Step-by-step Instructions

1. Press the **Update Solution Service** button on the toolbar. This will display the **Register for the Solution Service Wizard**.

↪ Note: If you previously registered for the Solution Service, the **Update Solution Service Dialog** will be displayed instead of the **Register for the Solution Service Wizard**. In this case, jump ahead to step 6.



Figure 1. Location of Update Solution Service" button.

2. Review the introduction to the **Register for the Solution Service Wizard** and press the **Next** button.

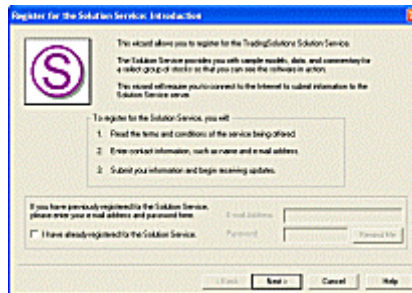


Figure 2. The Register for the Solution Service Wizard, Introduction page.

3. On the **Terms and Conditions** page, review the Terms and Conditions and check the **I accept these terms and conditions** box, then press **Next**.
4. On the **Enter Information** page, enter your registration information and press **Finish**.
5. After a brief delay, a message should appear indicating Registration Successful". Press **OK**. This completes the registration process and displays the **Update Solution Service** Dialog to begin your update.

↪ Note: If you receive a message indicating an error, see the **Notes** for help with common errors.

↪ Note: If TradingSolutions was not able to register you for the Solution Service, a different message will be displayed, along with suggestions for remedying the problem.

↪ Note: If you are not able to register for the Solution Service at this time, you can still proceed with the other tutorials using the link at the bottom of this page.

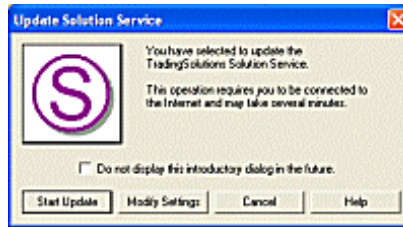


Figure 3. The Update Solution Service Dialog.

6. On the **Update Solution Service** Dialog, press the **Start Update** button.
7. A final message welcoming you to the Solution Service will be displayed. Press the **Yes** button to continue.



Figure 4. Additional welcome message.

8. TradingSolutions will contact the Solution Service server to download the required data, models, and commentary. A Status Dialog will be displayed while this information is downloaded.

↩ Note: If you decide not to update the Solution Service at this time or encounter an error, you can still proceed with the other tutorials using the link at the bottom of this page.

9. After the download is complete, a message will appear in the **Messages and Alerts Window** indicating **The update completed successfully.** TradingSolutions will then work on updating its calculations based on the information it downloaded. A new Status Dialog will be displayed while these calculations are being completed.

↩ Note: If you receive a message indicating an error, see the **Notes** for help with common errors.

↩ Note: Additional messages may be displayed indicating **The default data source has been updated to the Solution Service** for some stocks. This is an indication that stocks that were already in your portfolio will have data imported by future updates to the Solution Service.

10. When the processing has completed, the Status Dialog will disappear and a message will appear in the Messages and Alerts Window indicating how many fields were processed and the total amount of time it took.

11. Examine the Portfolio View. Updating the Solution Service caused the following changes to take place.

Portfolio View		Jan 15, 2003
End-of-Day Last Updated: Jan 14, 2003		
[-] DJ Industrial Avg		
[-] S&P 500 Index		
[+] Solution Service		
[-] Active Solutions		
[-] America Online Inc	▲	74.96%
[-] Baker Hughes Inc	△	20.23%
[-] Best Bath & Beyond Inc	▼	106.19%
[-] Computer Sciences Cp	△	36.56%
[-] Electronic Arts Inc	▲	31.04%
[-] Hiltendorf Cp	▲	41.54%
[-] Microchip Technology Inc	▼	85.44%
[-] Novellus Systems Inc	▼	5.30%
[-] PeopleSoft Inc	△	81.52%
[-] Texas Instruments	+	152.96%

Figure 5. The Portfolio View after a Solution Service update.

- The **End-of-Day Last Updated** date is updated to a recent date, typically the most recent trading day.
- An **Active Solutions** group is added beneath the Solution Service group.
- The Active Solutions group is selected automatically.
- Each stock in the Active Solutions group has a signal and %Gain displayed after the calculations are completed.
- The signals and analyses for any sample stocks you have primary signals for may change to reflect the values for the current date. The values of other sample stocks will turn gray if they have not been updated.

↩ Note: It may be necessary to scroll the Portfolio View down to see the entire Active Solutions group.

↩ Note: If you do not see a signal and an analysis column next to the stock names, you may need to expand the width of the Portfolio View by dragging on the right-hand edge of that window.

- Examine the Information View. Since the update selected the Active Solutions" group in the Portfolio View, the Information View is now displaying information about this group.

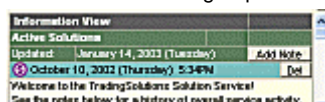


Figure 6. The Information View after a Solution Service update.

Note: If you selected another group or stock in the Portfolio View after the update was started, you can re-select the Active Solutions" group by clicking on it.

- The Information View includes a section for notes about the selected group or stock. With the Active Solutions" group still selected, view some of the notes for the Active Solutions" group.

Note: You can use the scrollbar on the Information View to scroll through the notes. If an individual note is larger than the Information View window, the entire note may not display. In this case, it may necessary to resize the Information View to view the entire note. You can do this by dragging on the top or side of the Information View.

- Click on a stock in the Active Solutions" group in the Portfolio View. This will select this stock and the Information View will change to display information about the new selection.

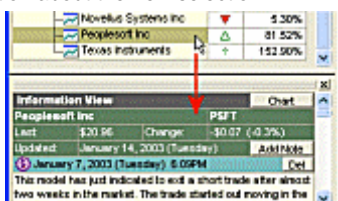


Figure 7. Clicking on a stock updates the Information View.

- View some of the notes about the currently selected stock. Click on other stocks to read their notes.
- Let's view an analysis of one of the Solution Service signals. Right-click on a signal for a stock in the Active Solutions" group and select Analyze Signal..."



Figure 8. Selecting Analyze Signal..." from context menu.

- This will display the **Modify Field Dialog** opened to the **Signal Analysis** page. This is the same dialog we looked at in the previous task. When you are finished with this dialog, press the **OK** button.
- You can update the data for the stocks in the Active Solutions" group after each trading day pressing the **Update Solution Service** button. This updates the signals for each stock to show you how to trade at the open of the next day.

Note: When a new signal results in needing to change position, the signal will be highlighted with a pink background.

Note: The Solution Service is typically updated after each trading day by 7:30pm U.S. Eastern time.

### Congratulations!

You now have an overview of the TradingSolutions interface, a basic understanding of how TradingSolutions calculates and stores values, a method for creating new signals, and several up-to-date examples you can use, even from the evaluation version.

The next tutorials provide you with more detail about each of these steps and introduce you to experimenting with your own methods for creating signals.

Continue to the next tutorial.

Using the Interface

## Tutorial: Learning the Basics: Notes

### Displaying a Context Menu

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To right-click" on something, position your mouse over it and click the right-most button on your mouse. This action will display a context menu", which is a list of actions you can perform with the object you clicked on.

### Understanding Signals

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TradingSolutions displays signals as directional arrows and triangles. Here is a quick overview of the symbols that are used here.


	Enter Long
	Exit Short
	Hold, price may increase
	Hold
	Hold, price may decrease
	Exit Long
	Enter Short

Longing" a stock is the same as buying it. In a sense, you are betting that the price of the stock will increase while you have a long position. In other words, buy low, sell high".


Shorting" a stock is slightly more complicated. You are borrowing shares of the stock from your broker and selling those borrowed shares. At a later date, you close this position by buying shares and giving them to your broker to replace the shares you borrowed.

When shorting a stock, you are betting that the price of the stock will decrease. This changes the order of the axiom to sell high, buy low".

When an Enter" (filled in triangle) appears, you should begin or currently be in the indicated position. Later, when an Exit" (hollow triangle) appears, you should exit that position. You should also exit a position when an enter appears in the opposite direction.

 Note: When a new signal results in needing to change position, the signal will be highlighted with a pink background.

Hold" signals simply mean that you should hold whatever position you currently have. Stay in the market if you are already in there, or stay out of the market if you are currently out. The size of the anticipated movement is either unknown or predicted to not be worth trading against.

 Note: When streaming data with TradingSolutions Real-Time, these signals are updated continuously as new information becomes available.

### Changing to the Sample Portfolio

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If your portfolio does not appear to contain the stocks or solutions being referenced by this tutorial, you may be migrating from a previous version or you may have already done some work in TradingSolutions. In either case, it will typically be easier to follow the tutorials using the original sample portfolio.

TradingSolutions stores all of its data and calculations in a folder called a Work directory. You can have multiple Work directories on a single computer, accessing one at a time.

To change to a new Work directory, do the following:

1. Select **Change Work Directory...** from the **File** menu.
2. On the **Browse For Folder** dialog, select a location on your computer to add a new Work directory and press the **New Folder** button. Change the name to something meaningful, such as Tutorial Work".
3. Press the **OK** button with this folder selected.
4. A message will appear indicating This appears to be a new Work directory" and asking if you would "like to have the sample data pre-loaded into your new portfolio". Press the **Yes** button.

You can return to your previous Work directory using the **Change Work Directory...** menu item again, this time selecting your previous Work directory and pressing **OK**.

### **Resolving Errors Contacting the Solution Service**

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There are a few minor problems that can occur when signing up for the Solution Service. Most of them can be resolved easily. However, if you encounter a problem that you cannot resolve yourself, feel free to contact NeuroDimension technical support for help.

- **The Solution Service server could not be contacted.**

This typically happens for one of two reasons. Either something is preventing TradingSolutions from contacting the server or the server is momentarily unavailable.

TradingSolutions uses your Internet connection to contact the Solution Service server. Make sure your Internet connection is working by trying to display a webpage. Also, if you run any firewall" software, you may need to set it to allow TradingSolutions to contact the Internet.

If you appear to be able to get to the Internet without a problem, wait a few minutes and try again. If you still get this message, contact NeuroDimension technical support for assistance.

- **You are having trouble signing up for the Solution Service again.**

If you previously signed up for the Solution Service and would like to try it again, simply select **I have already registered for the Solution Service** when you begin the sign up process. If you don't remember the password that was assigned to you signed up the first time, you can have it sent to you by pressing the **Remind Me** button after entering your e-mail address.





## Tutorial: Using the Interface

Introduction  
Importing Data  
Displaying Charts  
Displaying Spreadsheets  
Analyzing Signals  
Modifying the Portfolio View

Welcome to the second TradingSolutions tutorial!

---

### Tutorial Task

Learn how to interact with the TradingSolutions interface.

This tutorial will take you step-by-step through different sections of the TradingSolutions interface so that you can around more easily as you use the software.



Note: The TradingSolutions tutorial text is intended to be viewed side-by-side with the TradingSolutions program. If this help is currently covering part of the TradingSolutions program window, you can resize the program appropriately by selecting **Resize Program for Help Panel** from the **Window** menu of TradingSolutions.



Continue to the first task.



[Importing Data](#)



Or, return to the [Overview](#) for the tutorials chapter.

## Tutorial: Using the Interface

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### Importing Data

**Tutorial Task**  
Import historical data from a file.

The first step to working with TradingSolutions is to import historical data into the program. Historical data is a collection of previous prices or values of data. The import action brings that data into TradingSolutions so that you can work with it. This tutorial task will show you how can import data from a file.

Here are some notes about this task:

- The evaluation version of TradingSolutions is limited to importing sample data included with the program, sample data from the TradingSolutions website, and data for the Solution Service.
- TradingSolutions can be used with almost any date-based financial data. This includes historical price information for stocks, futures, FOREX, mutual funds and other instruments, both domestic and international.
- The majority of TradingSolutions users subscribe to a data service, such as Prophet or eSignal. Data from data services can be imported directly using a similar method. See the Video Help for more information.

### Step-by-step Instructions

1. Let's import additional data into the Sample End-of-Day Data group. Right-click on this group and select **Import Data....** This will open the **Import Data Wizard**.

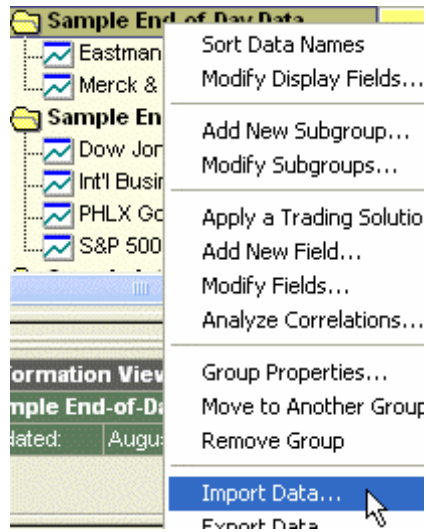


Figure 1. Selecting Import Data.

2. Select **Import data from files on your computer**.

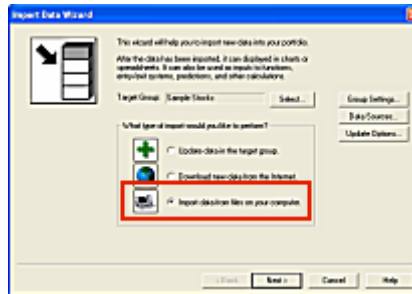


Figure 2. Selecting the type of import in the Import Data Wizard.

3. Press the **Next** button.
4. From the **Select Files** page, press the **Select New Files...** button. This will display a file selection dialog labeled **Select Files with Data to Import**.



Figure 3. Location of the "Select New Files..." button.

5. Use the file selection dialog labeled **Select Files with Data to Import** to select the "WY.txt" file from the "Sample Data" directory. Press the **Open** button to use this file and return to the **Select Files** page.

Note: If you need help doing this, see the [Notes](#).

6. The selected file will now appear on the **Select Files** page. Press **Next** to continue.
7. The **Start Import** page displays the symbols that will be imported. Press **Finish** to start the import.
8. TradingSolutions will display a **Status Dialog** while it is importing the data. When it is finished, the Status Dialog will disappear.
9. When the import has completed, a message will be displayed in the **Messages and Alerts Window**.

The message should read: "WY.txt – The import was successful."

Note: If you are repeating this tutorial, you may see the message "No new data was imported." By default, TradingSolutions will only import data that is not already in your portfolio. Since you have already imported all of the data in this file, there is no new data to import.

10. WY is the stock symbol for Weyerhaeuser. Examine the Portfolio View and verify that Weyerhaeuser Company" has been added to the "Sample End-of-Day Data" group.

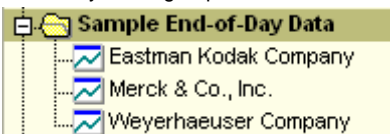


Figure 4. Weyerhaeuser" in "Sample End-of-Day Data" group.

Continue to the next task.

Displaying Charts

## Tutorial: Using the Interface

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### Displaying Charts

#### ① Tutorial Task

Learn how to display and manipulate charts.

Charts are the most common way for people to view historical data. This task will show you common ways to display charts and manipulate them once they are displayed.

#### Step-by-step Instructions

1. Click on **Amgen** in the Portfolio View to select it.

↩ Note: You can perform this task with any stock. However, it should have calculations and a Primary Signal defined for it.

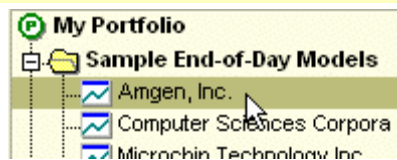


Figure 1. Selecting Amgen.

2. Press the **Chart** button in the Information View. This will display the default chart.

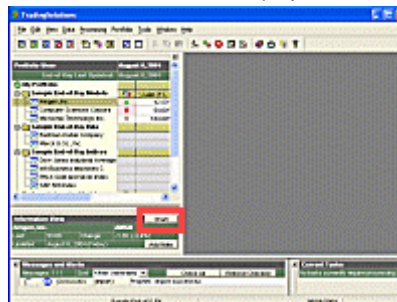


Figure 2. Location of the Chart button.

3. The default chart will display the closing price, the Primary Signal, and the volume.

↩ Note: To change the fields included in the default chart, select **Options** from the **Tools** menu. Then, select the **Charting** tab.

↩ Note: The meaning of the signal symbols was covered in a previous tutorial. For a review of what these symbols mean, see the [Notes](#).



Figure 3. The default chart for Amgen.

- Let's add an indicator to the chart. Right-click on the chart and select **Add/Change Fields in Chart....** This will display the **Display Chart Dialog**.

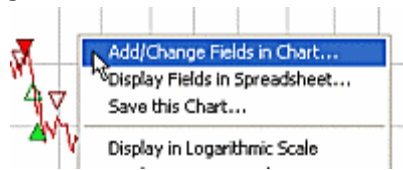


Figure 4. Selecting Add/Change Fields in Chart"

- Expand the **Calculations** category and select **Mass Index (H,L,22)**, but do not add it yet.

Note: If you are using another stock or cannot locate this field, you can use any calculation for this example.

- Most indicators have values which are in different range from the underlying prices. Because of this, you will typically want to display them in their own sub-chart. To do this, select **Display added field in a new sub-chart**.

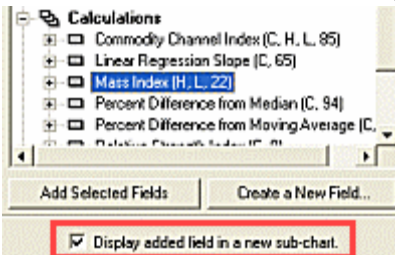


Figure 5. Location of Display added field in a new sub-chart."

- Press **Add Selected Fields**. The Mass Index will now be listed in the currently selected fields.
- Press **OK**. The chart will be updated to display the Mass Index in a sub-chart beneath the other fields.

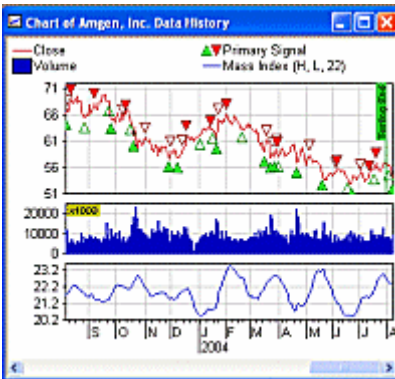


Figure 6. Chart with Mass Index added.

- Let's change the chart to display only the last three months of data. Right-click on the **date axis** to see a context-menu specific to date actions.

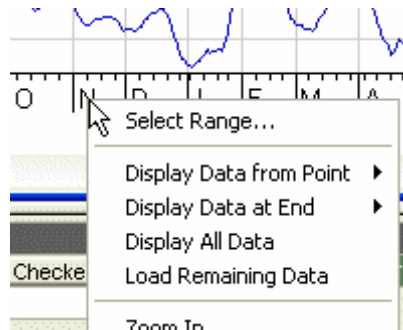


Figure 7. Context menu for date axis.

10. Click on **Display Data at End**, then select **Last Quarter** from the submenu.

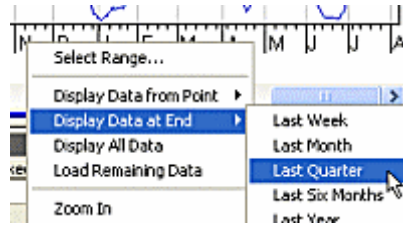


Figure 8. Selecting to display the last quarter.

11. Let's return to the previous chart size. Right-click on the chart and select **Undo Last Scaling**.

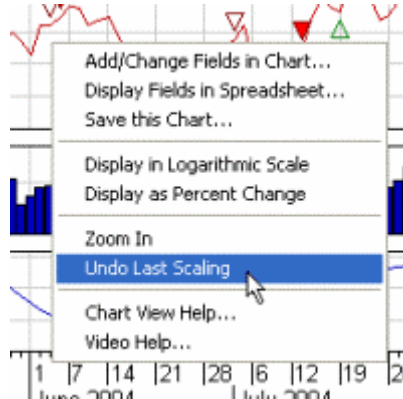


Figure 9. Selecting Undo Last Scaling".

12. You can also zoom-in on a section of the chart. Drag your mouse across a section of the chart with the left mouse button held down.

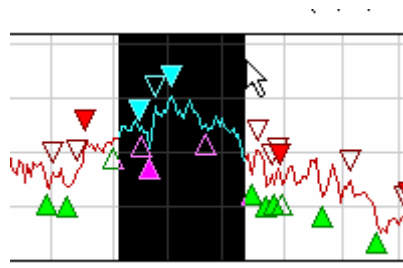



Figure 10. Selecting a chart region to zoom.

13. Close this chart window by clicking on the  in the upper right corner of the chart window.

 Note: Do not click the  in the upper right corner of the program at this time. That would close the entire program.

14. For one final example, let's see how you can display custom charts. Right-click on **Amgen** in the Portfolio View and select **Display in Chart....** This will display the **Display Chart Dialog**.

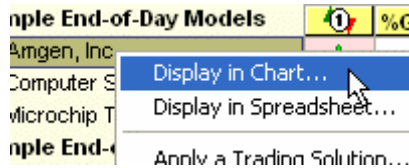


Figure 11. Selecting Display in Chart".

- The **Display Chart Dialog** is the same dialog that we used to change the chart we had open. By default, the most recent chart is selected. Let's display a new chart. Click on **Select new fields to display**.

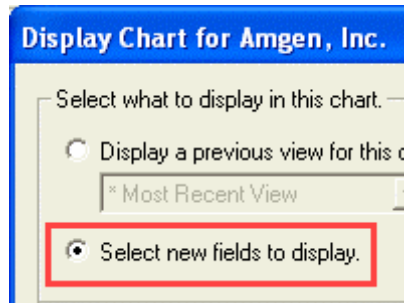


Figure 12. Selecting Select new fields to display".

- Let's display a High/Low/Open/Close chart. Expand **Composite Charts**, then double-click on **High/Low/Open/Close Chart**.

Note: Double-clicking an entry in a list will perform a default action on it. In this case, it will add it to the selected fields.



Figure 13. Double-clicking on High/Low/Open/Close Chart".

- By default, only a portion of the data is loaded into the chart. For this example, select **Load all available data** in the upper-right corner.

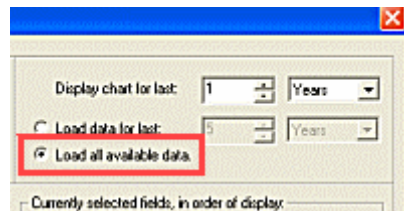


Figure 14. Location of Load all available data."

- Press **OK**. The new chart will be displayed.
- Display all of the loaded data by right-clicking on the date axis and selecting **Display All Data...**

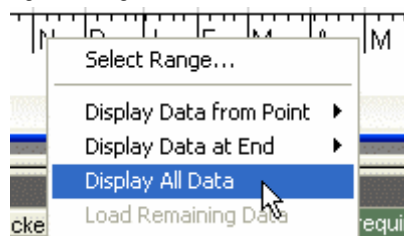




Figure 15. Selecting Display All Data"

- For additional help, select **Chart View Help** or **Video Help** from any of the context menus for the chart.

21. When you are done experimenting with the charts, close this window by clicking on the ☒ in the upper right corner of the chart window.

**Congratulations!**

You should now have a good idea how to display and interact with charts in TradingSolutions. The next tutorial will show you a few differences when displaying data in a spreadsheet.

 <b>Continue to the next task.</b>
 <a href="#">Displaying Spreadsheets</a>





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### Displaying Spreadsheets

#### ① Tutorial Task

Learn how to display and manipulate spreadsheets

Spreadsheets are useful for seeing the data behind the charts. While charts can be useful for seeing the big picture, spreadsheets quickly show the actual numbers involved.

Displaying spreadsheets is very similar to displaying charts and was touched on in an earlier tutorial, so this task will only highlight a few features.

### Step-by-step Instructions

1. Right-click on **Amgen** in the Portfolio View and select **Display in Spreadsheet....**

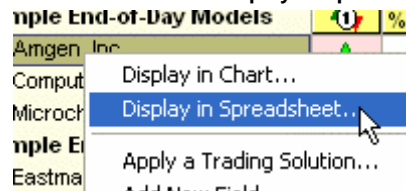


Figure 1. Selecting Display in Spreadsheet."

2. If you performed the previous tutorial, various fields are probably currently selected. Let's change to the default selections by selecting \* **Default Spreadsheet**.

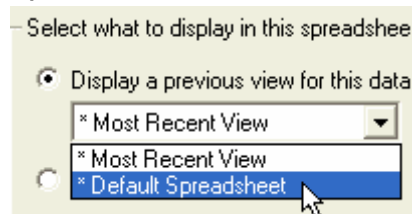
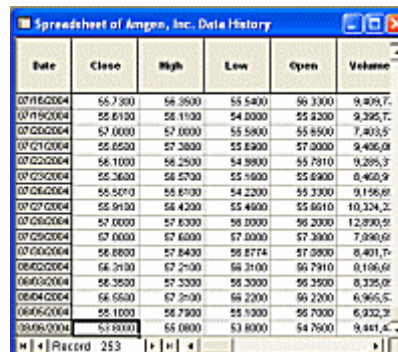


Figure 2. Selecting \* Default Spreadsheet".

3. Press **OK**. This will display the spreadsheet.



Date	Close	High	Low	Open	Volume
07/16/2004	55.7300	56.2500	55.5400	56.3300	9,409,71
07/19/2004	55.6100	56.1100	54.0000	55.2300	9,395,71
07/20/2004	57.0000	57.0000	55.5800	55.8500	7,403,51
07/21/2004	55.6500	57.3800	55.8300	57.0000	9,406,08
07/22/2004	56.1000	56.2500	54.8800	55.7910	9,295,31
07/23/2004	55.3600	56.5700	55.1000	55.8900	8,460,91
07/26/2004	55.5010	55.6100	54.2200	55.3300	9,156,61
07/27/2004	55.9100	56.4200	55.4600	55.6610	10,324,21
07/28/2004	57.0000	57.8300	56.0000	56.2000	12,890,51
07/29/2004	57.0000	57.6000	57.0000	57.3000	7,940,61
07/30/2004	56.6800	57.8400	56.8774	57.0000	8,401,71
08/02/2004	56.2100	57.2100	56.2100	56.7910	8,166,61
08/03/2004	56.2600	57.3300	56.3000	56.2500	8,335,01
08/04/2004	56.5500	57.2100	56.2300	56.2200	6,965,51
08/05/2004	55.1000	56.7900	55.1300	56.7000	6,932,31
08/06/2004	53.8000	55.0800	53.8000	54.7600	9,441,41

Figure 3. Sample spreadsheet.

- Let's add a new calculation to the spreadsheet. Right-click on the header and select **Add/Change Fields in Spreadsheet**. This will re-display the **Display Spreadsheet Dialog** we just saw.

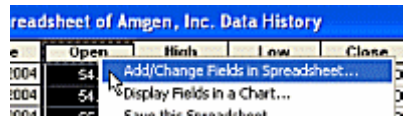


Figure 4. Selecting Add/Change Fields..."

- Select **Create a New Field...**

Note: Creating new fields will be covered in detail in the next tutorial. This tutorial will go through these steps quickly to illustrate the effect of this on the spreadsheet.

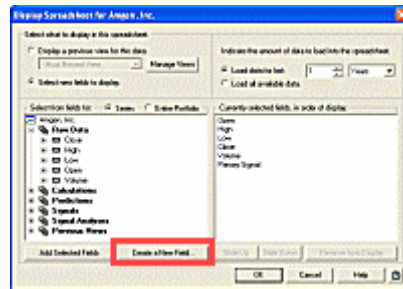


Figure 5. Location of Create a New Field".

- Press **Next** to advance into the **Calculate a Value Wizard**. Then, press **Next** to pass the **Introduction** page.

- On the **Select Function** page, in the **Function Group** list, select **Series Averaging Functions**.

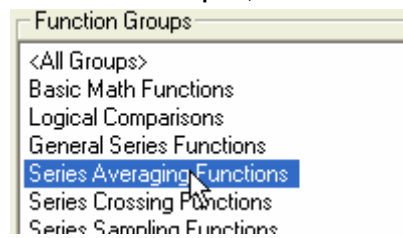


Figure 6. Selecting Series Averaging Functions"

- In the **Functions in the Selected Group** list, select **Moving Average**.

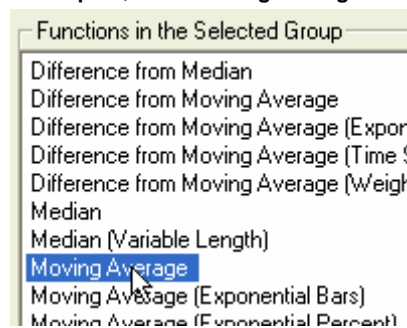


Figure 7. Selecting Moving Average"

- Press **Next**.

- On the **Select Inputs** page, select **Volume** from the list of fields.

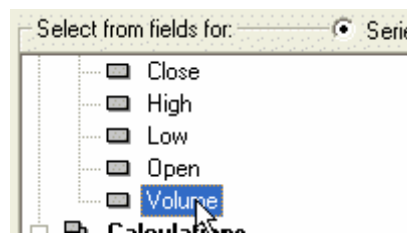



Figure 8. Selecting Volume" for spreadsheet.

- Press **Next**, then press **Finish** to create the **Moving Average (V, 10)** field.
- This new field will automatically be added to the list of fields being displayed.

 Note: You may have noticed the similarities between the **Display Chart Dialog** and the **Display Spreadsheet Dialog**. This same technique could be used to add new indicators to charts.

- Press **OK** to view the updated spreadsheet.
- Scroll to the right end of the spreadsheet to see the added field.

08/06/2004	9,441,474	59.6%	8,853,315.8000
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Figure 9. Last row of Amgen data series.

- Raw data in spreadsheets can be modified directly. This allows you to examine what if" scenarios, as well as update incorrect figures. Let's see how the Volume field affects the other fields that are displayed. Right-click on the last **Volume** cell and select **Copy Value** to preserve the current value.

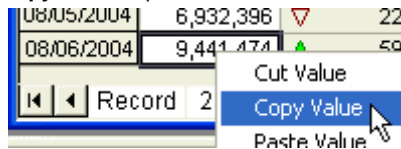



Figure 10. Copying Volume cell.

- With that cell selected, type **0** and press the **Enter** key.
- TradingSolutions will confirm you want to modify a value in the spreadsheet. Press **Yes**.

 Note: Only the first modification to a spreadsheet window requires confirmation.

- The **Moving Average (V, 10)** decreased as expected. The value of the **Primary Signal** also decreased from an enter long signal (above 50%) to an exit short signal (below 50%). This is because the current Primary Signal for Amgen uses Volume in its calculation.

08/05/2004	0	30.9%	7,909,168.5000
------------	---	-------	----------------

Figure 11. Last row after Volume changed to 0.

- Right-click on the cell and select **Paste Value** to restore the previous value.

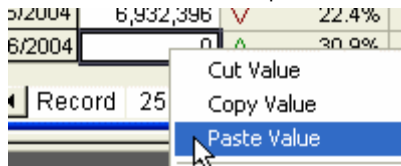




Figure 12. Pasting the previous value back in the cell.

### Congratulations!

You have learned how to display a spreadsheet, add a new field to a spreadsheet or chart, and how to modify values. The next task will teach you the basics of analyzing signals.

 **Continue to the next task.**

 [Analyzing Signals](#)

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### Analyzing Signals

#### ① Tutorial Task

Learn the basics of analyzing trading signals in TradingSolutions.

The primary reason many people have for using TradingSolutions is the ease with which trading signals can be created and analyzed. Let's see how we can analyze existing trading signals to determine if they are worth trading.

#### ① Important Note about Signal Analysis

Deciding whether to trade using a signal is a subjective process that depends largely on your individual profit goals and tolerance for risk. However, there are several tools TradingSolutions places at your disposal to make it easier to decide.

This tutorial will introduce you to these tools and provide you with some basic things to look at when evaluating signals.

### Step-by-step Instructions

1. You can create multiple signals for each stock. Right-click on **Amgen** and select **Analyze Signals...** This will display the **Entry/Exit Signals** page for this stock.

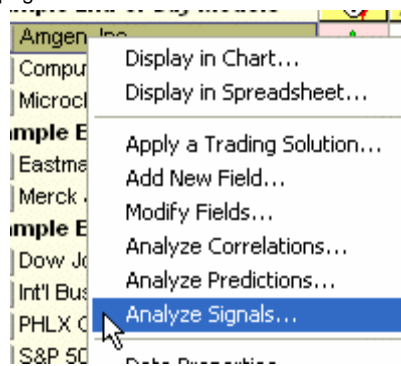


Figure 1. Selecting Analyze Signals..."

2. From this page, you can compare the **Annualized Return**, **Annual Trades**, and **Percent Wins** of all of the signals created for this stock over a given date range.

General things to look for here:

- The **Annualized Return** should be positive – the higher, the better.
- The **Annual Trades** should typically be higher than 10. Smaller numbers indicate the signal is trading less than once per month. This can be because the signal is being selective about its trades, but is more often because the signal is staying in positions more than a few weeks.
- The **Percent Wins** should typically be higher than 50% and preferably be 70% or higher. Some signals can produce good results with lower numbers, but these signals may be riskier since they can require enduring lots of losing trades while waiting for larger winners.

Entry / Exit Signals	Annualized Return	Annual Trades	Percent Wins
Optimal Signal ( )	93.3%	25.5	93.6%
Optimal Signal ( )	27.3%	29.8	82.6%
Buy/Hold	15.4%	1.0	100.0%

Figure 2. Signal analysis grid for data series.

- The **Buy/Hold** line indicates the results of buying the stock at the start of the analysis and holding it through the end. This is the same as investing in the stock for the entire period of time.

General things to look for here:

- The **Annualized Return** of your signal should typically be better than that of **Buy/Hold**. Lower values can still be produced by good signals, but only if they take less risks with short well-timed trades.
- You can obtain a detailed analysis of any signal. Select **Model: Optimal Signal (..)** and press **Analyze....** This will display the **Signal Analysis** page for the signal field.

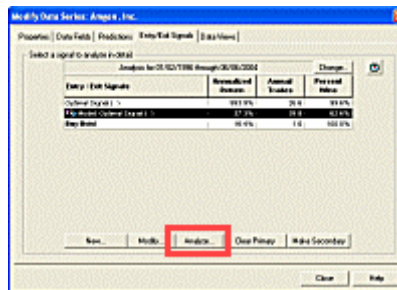


Figure 3. Location of "Analyze" button.

- The **Overview** page includes an **Equity Curve**. This is a graph of the amount of equity that this signal produced versus buy and hold. Select the **Equity Curve** tab to display a more detailed view.

General things to look for here:

- The **Equity By Bar** should increase throughout the entire period of the analysis.
- Special attention should be paid to the size and number of decreases in this chart. These are times when you would be losing money while trading with this signal.



Figure 4. Location of "Equity Curve" tab and results.

- By default the signal analysis re-invests any profits, which can result in a logarithmically increasing amount of equity. Right-click on the chart and select **Display in Logarithmic Scale**.

General things to look for here:

- In the logarithmic scale, the **Equity By Bar** should increase fairly linearly. Note that this may not happen until the middle of the analysis range, but it should be fairly constant once it starts.
- Advanced users may want to look at the interaction between the Equity By Bar and the **Buy/Hold Equity**. This may provide information about what markets during which this signal is more effective.

Note: The current logarithmic scale setting is preserved, so if you have already performed this tutorial, this setting may already be selected.

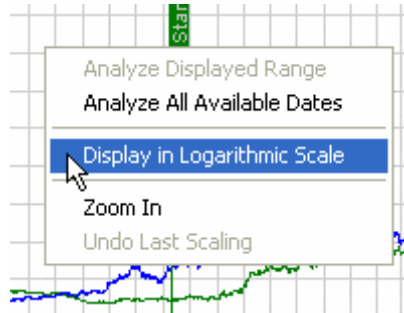


Figure 5. Selecting Display in Logarithmic Scale".

7. Select the **Analysis By Trade** tab. This displays an analysis of each trade this signal would have indicated. Scroll to the bottom of this analysis to see the most recent trades.

General things to look for here:

- Check the **Gain/Loss** column for the size and frequency of recent losses. When evaluating a signal, decide if you would be comfortable with any losses relative to the size and frequency of the winners.

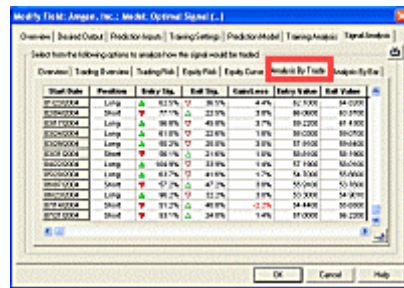


Figure 6. Location of Analysis By Trade" tab and results.

8. Select the **Overview** tab. Included in the overview are the date range and trading style used for the analysis. The range is probably set to all of the data that is available. Let's change it to just analyze recent data. Press the **Change...** button.

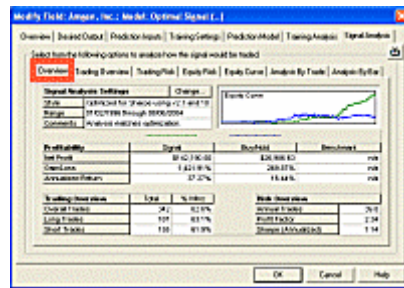


Figure 7. Location of Overview" tab and results.



Figure 8. Location of Change" button.

9. When optimized signals are created, TradingSolutions automatically sets aside the most recent data for testing. This date range is the most important to analyze since it is most like any new data. To analyze this range for this field, press **Copy Optimization Range from Field...**

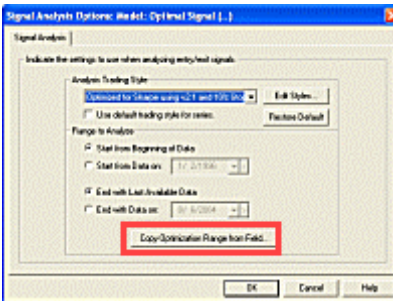


Figure 9. Location of Copy Optimization Range from Field" button.

10. The defaults for the **Copy Optimization Range from Field Dialog** will be to use the **Accuracy Testing Set Only** for **Model: Optimal Signal (. .)**. This is what we want to analyze, so press **OK**.
11. On the **Signal Analysis Options Dialog**, press **OK** to analyze the newly selected date range.

Look at the same things you looked for in the entire date range, specifically:

- Look at the **Gain/Loss** and compare it to **Buy/Hold**.
  - Look at the **Trading Overview** for the total number of trades and percent wins.
  - Look at the **Equity Curve** to verify it is increasing fairly consistently.
12. Look through the other pages of the Signal Analysis. If you would like additional information about any of the other values press the **Help** button. You can return to this tutorial page by pressing the **Back** button at the top of this window.

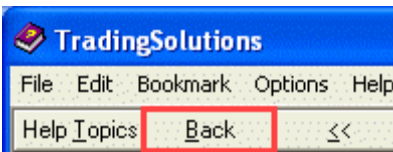


Figure 10. Location of Back" button to return to tutorial from help.

13. Press **OK** to return to the list of all signals for this stock.
14. Here are some additional notes about this page:
  - The date range for this combined analysis is listed at the top of this page. Notice that a **Change...** button is available to change the date range associated with this comparison.
  - When you locate the signal that you would most like to trade for this stock, make it your **Primary Signal** by selecting it and pressing **Make Primary**. This will make it easier to display and analyze in the Portfolio View.
  - If you would like to watch another signal in addition to your **Primary Signal**, you can do this by making it your **Secondary Signal**.
  - **Optimal Signals** cannot be used for trading. The usage of optimal signals will be explained in a later tutorial.
15. Press **Close** when you are finished with the analysis of all signals for a stock.
16. One additional thing to look at is the signal in a chart. This gives you a visual sense of how often the signal trades and under what conditions. You can quickly view a chart of the **Primary Signal** by pressing the **Chart** button in the **Information View**.

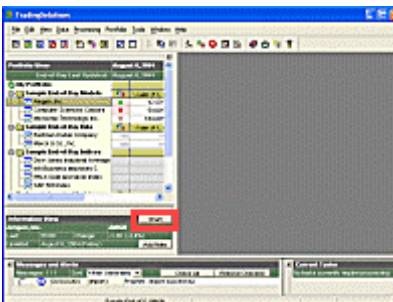




Figure 11. Location of Chart™ button.

**Congratulations!**

You have learned some of the basic things to look for when analyzing trading signals. Specifically, is it likely to make you money on a fairly consistent basis. The next task will show how you can add signal analysis fields and other information to your Portfolio View so you can keep track of the performance of the signals you are trading.

 <b>Continue to the next task.</b>
 <a href="#">Modifying the Portfolio View</a>





## Tutorial: Using the Interface

Introduction  
Importing Data  
Displaying Charts  
Displaying Spreadsheets  
Analyzing Signals  
Modifying the Portfolio View

### Modifying the Portfolio View

#### ① Tutorial Task

Display signals and custom signal analyses in the Portfolio View.

The Portfolio View is the focal point of the TradingSolutions interface. By default, the Portfolio View of the sample TradingSolutions portfolio includes a display of the Primary Signal and the percent gain of that signal over the past year. Let's see how these fields and others can be added to the display.

### Step-by-step Instructions

1. Let's remove the current display fields for **Sample End-of-Day Models**. Right-click on each display field for this group and select **Remove Display Field**.

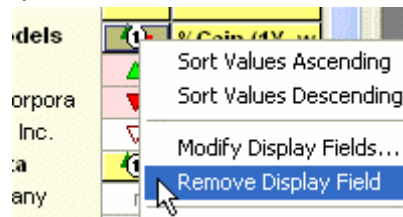


Figure 1. Selecting Remove Display Field".

2. Now let's see how these fields were added. Right-click on **Sample End-of-Day Models** and select **Modify Display Fields**. This will display the **Display** page for this group.

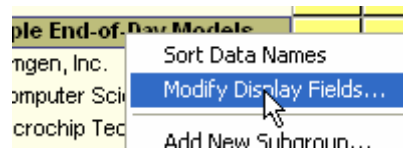


Figure 2. Selecting Modify Display Fields".

3. First, let's add the Primary Signal (📌). From under **Common Display Fields**, expand **Primary Signal**. Then, select **Current Value of Signal** and press **Add to Display**. This will add it to the **Current Display**.

📌 Note: The Primary Signal is the signal you are most interested in trading for each stock. Displaying its current value in the Portfolio View allows you to determine what position you should be in based on this signal.

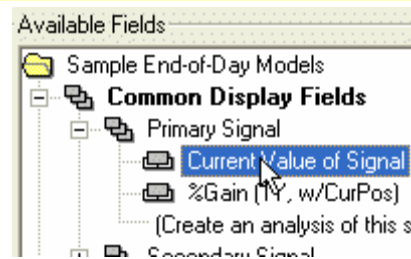


Figure 3. Selecting Current Value of Signal".

4. Now, let's add an analysis of the percent gain of the signal over the past year. Select **(Create an analysis of this signal...)** and press **Add to Display**. This will display the **Create Signal Analysis Fields Wizard**.

Note: An analysis of this type already exists for this group. However, let's see how it can be created in general.

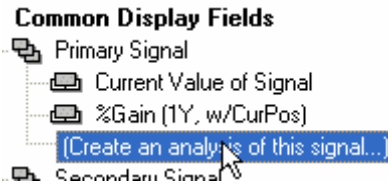


Figure 4. Selecting (Create an analysis of this signal...).

5. On the **Introduction** page, press **Next**.
6. On the **Trading Parameters** page, confirm the following values are selected:
  - **Entry/Exit Signal** is set to **Primary Signal**.
  - **Trading Style** is set to **Trading style used for default analysis of signal**.
  - **Analysis Range** is set to **Most recent one year (adjusted)**.

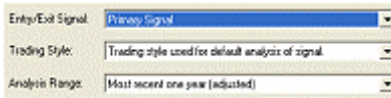


Figure 5. Trading parameters defaults.

7. Now, let's select the field or fields we want to create for this analysis. In this case, we want to store the percent gain. Under **Select Analysis Fields To Create**, select **Percent Gain**, then press **Add Selection**.

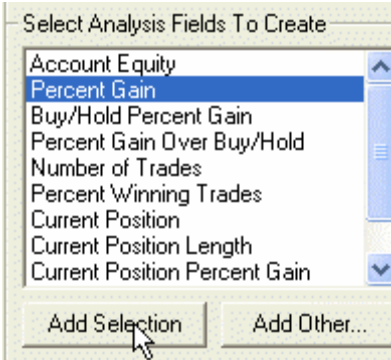


Figure 6. Adding Percent Gain".

Note: Since an analysis field of this type already exists for this group, it may be named with a #2.

8. Press **Finish** to create this field and add it to the display list.

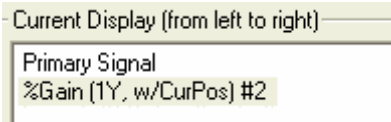


Figure 7. Fields in current display.

9. View the other types of fields that can be added to the display.
  - **Common Data** includes prices and volume fields.
  - **Data Information** includes values such as the start and end date of the imported data.
  - **Streaming Tick Information** includes **Tick**, **Bid**, and **Ask** prices, sizes, and times for real time streaming data.
  - **Other Display Fields** includes any calculations or other fields.



Figure 8. Other display fields.

10. Press **Close** to view the added display fields.

Day Models		%Gain (1Y, w)
	▲	42.00%
nces Corpora	▼	54.60%
nology Inc.	▼	184.00%

Figure 9. The added display fields.

### Congratulations!

You have learned how to display fields in the Portfolio View.

This concludes the tutorial on using the interface. You should now understand the basics of importing data, displaying charts, displaying spreadsheets, analyzing signals, and displaying fields in the Portfolio View.

If you need additional help with these topics, please view the Video Help or see the help documentation. You may also want to repeat any or all of these tutorial tasks.

⇒ **Continue to the next tutorial.**


↳ [Creating Trading Signals](#)




## Tutorial: Using the Interface: Notes

### Selecting a File

Here's how you select the WY.txt" file from the Sample Data" directory. First, verify you are looking in the Sample Data" directory. Near the top of the dialog, there should be a box labeled **Look in:**. The first time you import data into TradingSolutions, this box should say Sample Data".

 Note: If this box says TradingSolutions", locate the folder labeled Sample Data" and double-click on it.

Now, locate the WY.txt" file in the Samples directory and click it. Its name will appear in the **File name:** box. After you have done this, press the **Open** button to use this file.

 Note: You can also use a file by double-clicking on it.

### Understanding Signals

TradingSolutions displays signals as directional arrows and triangles. Here is a quick overview of the symbols that are used here.


	Enter Long
	Exit Short
	Hold, price may increase
	Hold
	Hold, price may decrease
	Exit Long
	Enter Short

Longing" a stock is the same as buying it. In a sense, you are betting that the price of the stock will increase while you have a long position. In other words, buy low, sell high".


Shorting" a stock is slightly more complicated. You are borrowing shares of the stock from your broker and selling those borrowed shares. At a later date, you close this position by buying shares and giving them to your broker to replace the shares you borrowed.

When shorting a stock, you are betting that the price of the stock will decrease. This changes the order of the axiom to sell high, buy low".

When an Enter" (filled in triangle) appears, you should begin or currently be in the indicated position. Later, when an Exit" (hollow triangle) appears, you should exit that position. You should also exit a position when an enter appears in the opposite direction.

 Note: When a new signal results in needing to change position, the signal will be highlighted with a pink background.

Hold" signals simply mean that you should hold whatever position you currently have. Stay in the market if you are already in there, or stay out of the market if you are currently out. The size of the anticipated movement is either unknown or predicted to not be worth trading against.

 Note: When streaming data with TradingSolutions Real-Time, these signals are updated continuously as new information becomes available.

### Changing to the Sample Portfolio

If your portfolio does not appear to contain the stocks or solutions being referenced by this tutorial, you may be migrating from a previous version or you may have already done some work in TradingSolutions. In either case, it will typically be easier to follow the tutorials using the original sample portfolio.

TradingSolutions stores all of its data and calculations in a folder called a Work directory. You can have multiple Work directories on a single computer, accessing one at a time.

To change to a new Work directory, do the following:

5. Select **Change Work Directory...** from the **File** menu.

6. On the **Browse For Folder** dialog, select a location on your computer to add a new Work directory and press the **New Folder** button. Change the name to something meaningful, such as Tutorial Work”.
7. Press the **OK** button with this folder selected.
8. A message will appear indicating This appears to be a new Work directory” and asking if you would ”like to have the sample data pre-loaded into your new portfolio”. Press the **Yes** button.

You can return to your previous Work directory using the **Change Work Directory...** menu item again, this time selecting your previous Work directory and pressing **OK**.



## Tutorial: Creating Trading Signals

Introduction

Applying a Trading Solution

Predicting the Optimal Signal

Applying an Entry/Exit System

Working with Multiple Stocks

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### Welcome to the third TradingSolutions tutorial!

TradingSolutions can be viewed as a technical analysis toolbox that allows you to create and evaluate your own entry/exit signals for trading. This tutorial will introduce you to multiple methods you can use to create trading signals. Each of these methods is a valid approach. The most common methods are presented first to aid in understanding.

#### General Note about TradingSolutions

TradingSolutions can also work with entry/exit signals created by other people. Many TradingSolutions users start out using the Solution Service and other pre-made signals. Then, as they grow more comfortable with the software, they begin creating their own signals.

#### Important Note about Tutorial Data

If this is your first time using TradingSolutions, we strongly recommend using the sample data provided with TradingSolutions for the tutorials. This will alleviate confusion by ensuring your results match what is described in the tutorial steps.



Note: The TradingSolutions tutorial text is intended to be viewed side-by-side with the TradingSolutions program. If this help is currently covering part of the TradingSolutions program window, you can resize the program appropriately by selecting **Resize Program for Help Panel** from the **Window** menu of TradingSolutions.



Continue to the first task.



Applying a Trading Solution



Or, return to the [Overview](#) for the tutorials chapter.

## Tutorial: Creating Trading Signals

### Introduction

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## Applying a Trading Solution

### ① Tutorial Task

Apply a trading solution" to create a signal for a stock.

The easiest way to create a trading signal for a stock is to apply a trading solution". Trading solutions are collections of fields required to recreate a specific signal or technique. They are created based on an existing trading signal, either from your portfolio or from another portfolio.

Applying a trading solution to the stock it was created with will cause it to recreate the same signal for that stock. Applying a trading solution to a new stock will cause it to perform any optimizations or training used to create the original signal so that it is now optimized for the new stock.

This tutorial will show you how to create a trading signal by applying an existing trading solution to a new stock. Later tutorials will show you how to create your own trading solutions.

Note: This task is similar to the **Quick Example** task in the first tutorial. It is repeated here in more detail to emphasize this as a way to create signals.

## Step-by-step Instructions

1. Right-click on **Eastman Kodak Company** in the Sample End-of-Day Data group and select **Apply a Trading Solution....** This will display the **Apply a Trading Solution Wizard**.

Note: If your portfolio no longer has this group and you would like to try this task using the sample portfolio, see the [Notes](#).

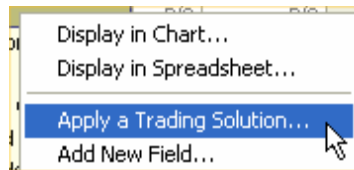


Figure 1. Selecting Apply a Trading Solution..."

2. Review the introduction to the **Apply a Trading Solution Wizard** and press the **Next** button.

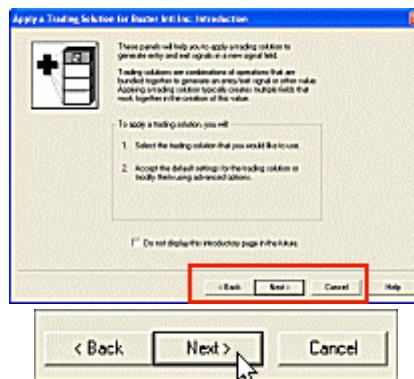


Figure 2. Pressing the Next button to advance.

3. On the **Select Trading Solution** page, select **Sample End-of-Day Model Solutions** from the **Trading Solutions Groups** list.

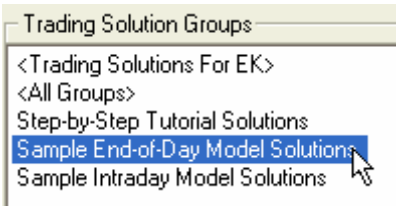


Figure 3. Selecting Sample End-of-Day Model Solutions".

4. Select **Sample Model for AMGN**.

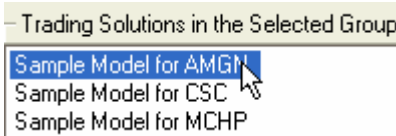



Figure 4. Selecting Sample Model for AMGN".

5. View the description of the selected solution. Press the **More** button next to the description to display a complete description. When you are finished with this additional information, press **Done**.

 **Note:** If you do not see a description beneath the list of trading solutions, make sure the **Display Descriptions** box is checked.

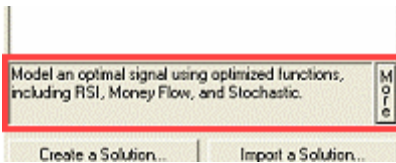


Figure 5. Location of description and More button.

6. Press the **Next** button. TradingSolutions will perform some brief processing.
7. On the **Create Fields** page, review the information and press the **Finish** button.

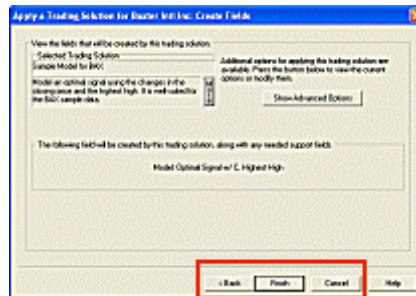


Figure 6. Pressing the Finish button to complete the wizard.

8. Let TradingSolutions perform the requested tasks. Optimizing a new signal can take several minutes. For information on monitoring this processing, see the [Notes](#).
9. After processing has completed, you will have a new signal for this stock which can be used for trading. For information on how to analyze signal or use it for trading, see the [Notes](#).

### Congratulations!

You have learned how to apply a trading solution to recreate a technique. Now, let's learn how to perform various methods of creating signals directly in TradingSolutions.

⇒ **Continue to the next task.**

 [Predicting the Optimal Signal](#)





## Tutorial: Creating Trading Signals

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### Add an Input to a Prediction

#### Tutorial Task

Predict the current value of an optimal signal.

The most common way to create a signal in TradingSolutions is to model the optimal signal. In essence, this is predicting the correct position to be in to take advantage of the anticipated short-term variations in the prices.

Neural networks work by training a mathematical model to take a group of known input data and transform it as best as possible into a desired output. In this case, we would like to take what we know about the market and predict what position we should be in. Therefore, our desired output is the position we should be in throughout the history of the stock.

To determine what position we should have been, TradingSolutions creates an optimal signal. It does this by looking forward at each point in the history of the stock to determine what position would have produced the best profit within a given set of guidelines.

#### Step-by-step Instructions

##### Part 1: Create an Optimal Signal

First, let's create the optimal signal.

1. Right-click on **Merck & Co., Inc.** and select **Add New Field...** This will display the **Create a Field Wizard**.

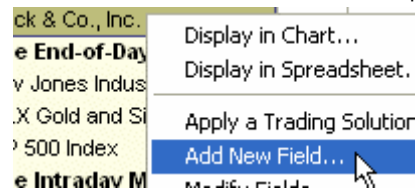


Figure 1. Selecting Add New Field..."

2. Select **Generate an optimal signal** and press **Next**.

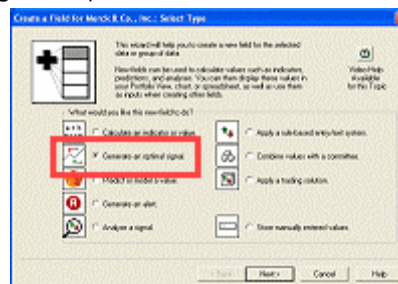


Figure 2. Location of Generate an optimal signal".

3. Review the introduction to the **Generate an Optimal Signal Wizard** and press the **Next** button.
4. TradingSolutions uses several parameters to determine what type of profit opportunities to look for. For now, accept the default values by pressing **Next**.

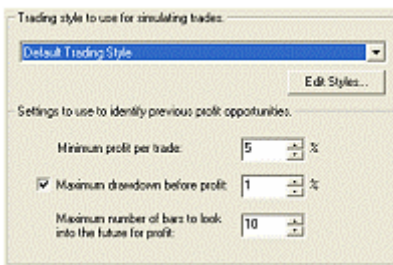


Figure 3. Parameters for optimal signal.

5. Press **Finish**. TradingSolutions will perform some brief processing and the optimal signal will be ready to use.

Note: You only need to create one optimal signal for each stock. The exception to this would be if you are experimenting with other parameters to the optimal signal.

### Step-by-step Instructions Part 2: Predict the Optimal Signal

Now, let's predict the current value of the optimal signal.

6. Right-click on **Merck & Co., Inc.** and select **Add New Field...** again.
7. Select **Predict or model a value**.

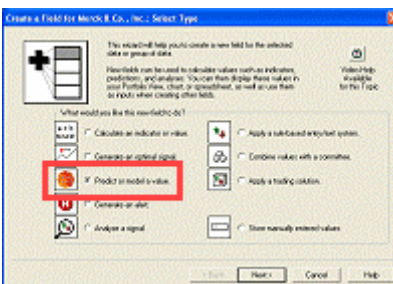


Figure 4. Location of Predict or model a value".

8. Review the introduction to the **Predict a Value Wizard** and press the **Next** button to advance to the **Select Desired Outputs** page.
9. Set the **Value to Predict** to **Optimal Signal (Default Trading Style)**.

Note: Optimal signals with other names and parameters may be also created for this stock if you applied trading solutions to this stock. For this example, select the optimal signal with the name listed here.

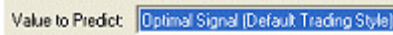


Figure 5. Setting Value to Predict".

10. Press **Next** to advance to the **Select Inputs** page.
11. Now we indicate what information is available to the neural network for predicting the desired output. This can be any of the following:
  - Raw price data for this stock
  - Pre-calculated indicators or other fields for this stock
  - Raw price data or indicators for another data series, such as an index.
  - Optimizable functions, which are typically indicators you want to try multiple values for.
12. Let's add all of the raw data. Using **Select from fields in this data series**, select **Raw Data**. Then, press **Add Selected Input**.

Note: If you have previously applied a trading solution to this stock, it may be necessary to scroll up to see "Raw Data" above the Close field.

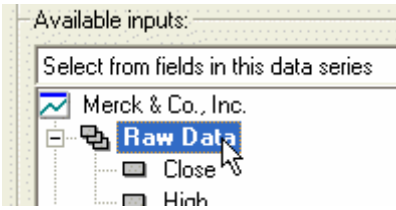


Figure 6. Selecting Raw Data".

- Let's add an optimized percent difference between the closing price and its moving average. Change **Select from fields in this data series** to **Select from optimizable functions**.

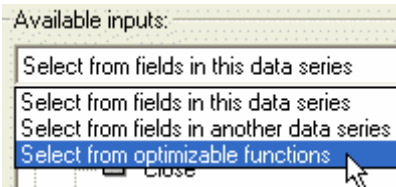


Figure 7. Selecting Select from optimizable functions".

- Expand **Series Averaging Functions**, scroll down and select **Percent Difference from Moving Average**. Then, press **Add Selected Input**.

Note: There may be several similarly named functions in this list. Select the first one. Function names which are longer than the list box can be seen by scrolling the mouse over the abbreviated listings.

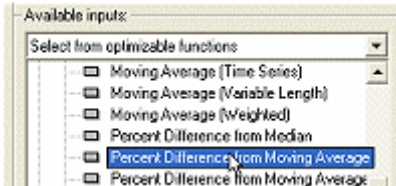


Figure 8. Selecting Percent Difference from Moving Average".

- Press **Next** to advance to the **Select Options** page.

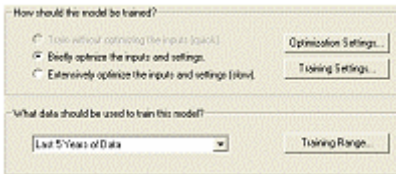


Figure 9. Options for creating prediction.

- By default, TradingSolutions will optimize the selected inputs and neural network settings to find the best results using the last five years of data. Accept these values by pressing **Next**.
- On the **Create Prediction** page, press **Finish**. TradingSolutions will begin optimizing the prediction.
- Let TradingSolutions perform the requested tasks. Optimizing a new signal can take several minutes. For information on monitoring this processing, see the [Notes](#).
- After processing has completed, you will have a new signal for this stock which can be used for trading. For information on how to analyze signal or use it for trading, see the [Notes](#).

### Congratulations!

You have learned the basics of creating a model of the optimal signal. In most cases, you will want to select additional functions or pre-calculated indicators as inputs to provide more information. For more information on this, see the Video Help and help documentation.

Applying a trading solution performed many of these steps for us. Once you find a set of inputs that works well, you will probably want to create a trading solution based on that approach so that you do not need to select each input again.

→ Continue to the next task.



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### Applying an Entry/Exit System

**Tutorial Task**  
Apply an entry/exit system and optimize its parameters.

Another way to create a signal in TradingSolutions is using a rule-based entry/exit system. This is the method typically used in traditional technical analysis. Signals are generated based on rules. These rules can be as simple or as complex as desired. And, the underlying parameters to these rules can be optimized for individual stocks.

TradingSolutions includes several basic entry/exit systems based on single indicators. The results from these basic systems typically will not be as good as those from a prediction of the model of the optimal signal. However, they provide good examples of how you can create more complex entry/exit systems.

For this example, let's enter long when a short-term moving average crosses above a long-term moving average and enter short when the opposite happens.

### Step-by-step Instructions

1. Right-click on **Merck & Co., Inc.** and select **Add New Field....** This will display the **Create a Field Wizard**.

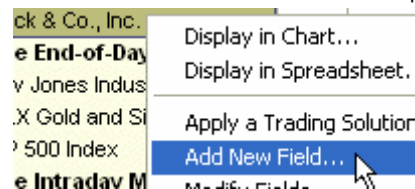


Figure 1. Selecting Add New Field...".

2. Select **Apply a rule-based entry/exit system** and press **Next**.

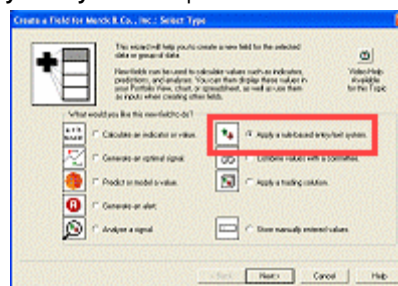


Figure 2. Location of Apply a rule-based entry/exit system."

3. Review the introduction to the **Apply an Entry/Exit System Wizard** and press the **Next** button to advance to the **Select Entry/Exit System** page.
4. By default, all groups of entry/exit systems will be selected. Select **Moving Average System** from under **Entry/Exit Systems in the Selected Group**.

Note: There may be several similarly named systems in this list. Select the first one.

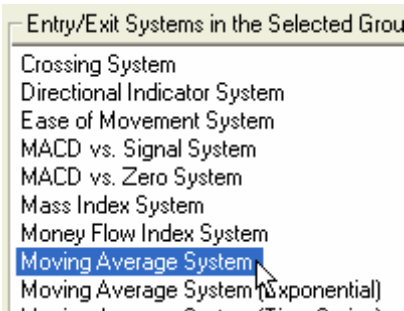



Figure 3. Selecting Moving Average System".

5. View the description of the selected system. Press the **More** button next to the description to display a complete description. When you are finished with this additional information, press **Done**.

 Note: If you do not see a description beneath the list of trading solutions, make sure the **Display Descriptions** box is checked.

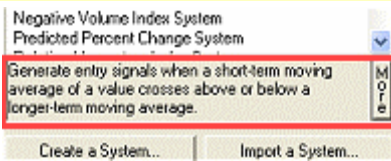


Figure 5. Location of description and More button.

6. Press **Next** to advance to the **Select Inputs** page.
7. By default, this system will use the **Close** field for prices and optimize the periods of the two moving averages to find the best results. Press **Next** to keep these defaults.

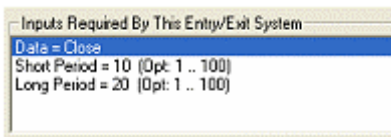


Figure 6. Default inputs to selected system.


8. On the **Select Name** page, press **Finish**. TradingSolutions will begin optimizing the system.
9. Let TradingSolutions perform the requested tasks. Optimizing a new signal can take several minutes. For information on monitoring this processing, see the [Notes](#).
10. After processing has completed, you will have a new signal for this stock which can be used for trading. For information on how to analyze signal or use it for trading, see the [Notes](#).


### Congratulations!

You have learned how to apply a basic entry/exit system and have it optimized to provide the best results for a stock.

Advanced tutorials will introduce you to creating your own entry/exit systems. However, the application of this basic system should show you the basics of how this works.

The next tutorial combines predictions and entry/exit systems into a more traditional approach to using neural networks in financial trading.

 **Continue to the next task.**

 [Working with Multiple Stocks](#)

## Tutorial: Creating Trading Signals

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### Working with Multiple Stocks

#### ① Tutorial Task

Locate profitable models by working with a group of stocks.

New users of TradingSolutions sometimes concentrate on one or two stocks or data series that they feel familiar with. While TradingSolutions will work with almost any date-based financial data, some securities are easier to find profitable signals for than others.

Because of this, a better approach to developing new signals can often be to try new approaches on entire groups of stocks instead of one single stock. This increases the probability that a profitable signal will be found with only a small number of additional steps.

This approach can be performed on groups of any size. However, it is recommended that portfolios and groups be kept to 100 stocks or less to improve processing.

#### Step-by-step Instructions

##### Part 1: Apply a Trading Solution to a Group

1. Right-click on the Sample End-of-Day Data group and select Apply a Trading Solution. This will display the Apply a Trading Solution Wizard.

Note: If your portfolio no longer has this group and you would like to try this task using the sample portfolio, see the [Notes](#).

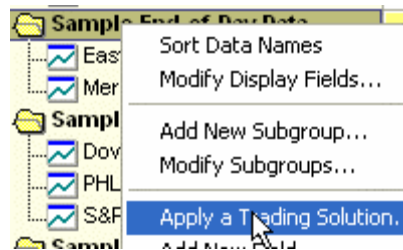


Figure 1. Selecting Apply a Trading Solution."

2. Review the introduction to the **Apply a Trading Solution Wizard** and press the **Next** button.

Note: The remaining steps for applying a trading solution to a group are the same as they were for applying it to a data series.

3. On the **Select Trading Solution** page, select **Sample End-of-Day Model Solutions** from the **Trading Solutions Groups** list.

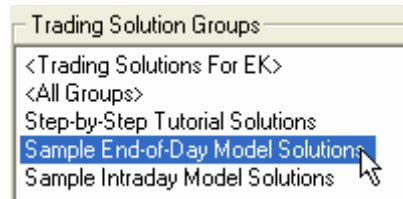


Figure 3. Selecting Sample End-of-Day Model Solutions".

4. Select **Sample Model for CSC**.





Figure 4. Selecting Sample Model for CSC".

5. Press the **Next** button. After some brief processing, the wizard will advance to the **Create Fields** page.
6. Note the name of the field that will be created by this solution. Depending on the experiments you performed previously, the field being created will probably be named **Model: Optimal Signal (..) #2** or something similar.
7. Press the **Finish** button.
 

⚠ Note: The fields associated with the trading solution will be optimized for each stock individually.
8. TradingSolutions will now begin performing the requested tasks. The overall processing of these tasks will typically take longer than the previous steps since the process is being repeated for multiple stocks. For information on monitoring this processing, see the **Notes**.

**Step-by-step Instructions**  
**Part 2: Comparing Results for a Group Field**

9. Create an analysis of how the signal traded for each stock. Right-click on the **Sample End-of-Day Data** group and select **Add New Field**. This will display the **Create a Field Wizard**.
 

⚠ Note: These steps can be performed while TradingSolutions is processing the previous tasks.
10. Select **Analyze a signal** and press **Next**.

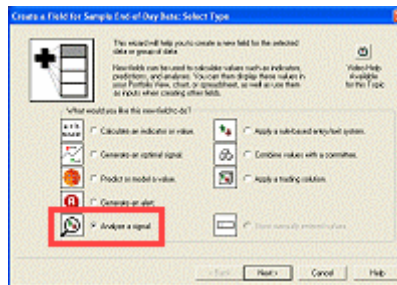


Figure 5. Location of Analyze a signal".

11. Review the introduction to the **Create Signal Analysis Fields Wizard** and press the **Next** button.
12. On the **Trading Parameters** page, change the Entry/Exit Signal being analyzed to the newly created field.

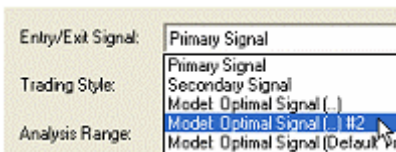


Figure 6. Selecting the newly created field for analysis.

13. Under **Select Analysis Fields To Create**, select **Percent Gain**, then press **Add Selection**.

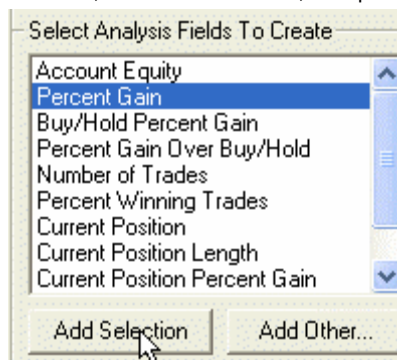


Figure 7. Adding Percent Gain".

- Note the name of the field being created and press **Finish**.
- Now, add this analysis to the Portfolio View. Right-click on the **Sample End-of-Day Data** group and select **Modify Display Fields**.
- Expand **Other Display Fields** and **Signal Analyses**. Then, select the new signal analysis field and press **Add to Display**.

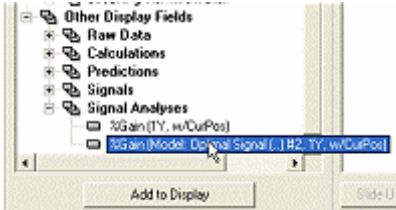


Figure 8. Selecting the signal analysis field.

- Press **Close**.
- If the new display field is located off the screen, scroll the Portfolio View to the right until you can see the new field.

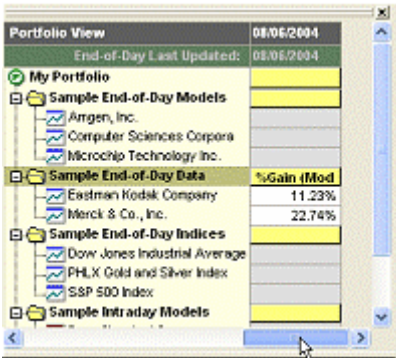


Figure 9. Scrolling the Portfolio View.

- Right-click on the header for the new display field and select **Sort Values Descending**.

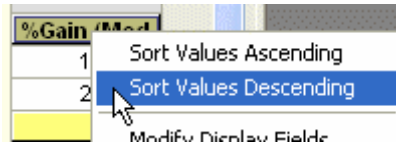


Figure 10. Selecting Sort Values Descending".

- You now have a sorted list of potential candidates to trade based on this approach. Any stocks that produced favorable returns using this method can be analyzed further to determine if they are worth trading.

Note: For a group of two or three stocks, sorting the results is not necessary. However, for groups of 10 or more stocks, this can aid in quickly determining the best candidates.

- When you are done with the additional field, you can remove it from the display by right-clicking on the header and selecting **Remove Display Field**.

Note: This action will not delete the created field, just remove it from the display. To delete the field, select **Modify Fields** for the group, select the field, and press the **Delete** button.

Note: If you do not remove the field and want to restore the original sort, right-click on the group and select **Sort Data Names**.

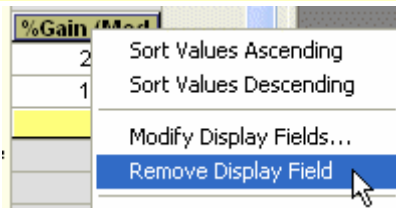


Figure 11. Selecting Remove Display Field".

**Congratulations!**

You have learned how to create signals and other fields for entire groups of stocks. You have also learned how this process can be used to locate new trading opportunities.

It is important to understand that almost any type of field that you can create for an individual stock, you can create for an entire group.

<a href="#">⇒ Continue to the next task.</a>
<a href="#">↩ What To Do Next</a>



## Tutorial: Creating Trading Signals

Introduction

Applying a Trading Solution

Predicting the Optimal Signal

Applying an Entry/Exit System

Working with Multiple Stocks

What To Do Next

### Congratulations!

---

Congratulations, you should now have a basic understanding of several methods for creating trading signals in TradingSolutions. These include:

- **Applying Existing Trading Solutions**
- **Predicting the Optimal Signal**
- **Applying an Entry/Exit System**
- **Working with Multiple Stocks**

Also, from the tutorial on **Using the Interface**, you should have a basic understanding of the following topics:






- **Importing Data**
- **Displaying Charts**
- **Displaying Spreadsheets**
- **Analyzing Signals**
- **Modifying the Portfolio View**

More information on all of these topics is available in both the Video Help and help documentation. You may also want to repeat specific tutorials if you ever need to review specific topics.

### What To Do Next

---

With this wide range of tools, you may still be wondering how to approach creating profitable models (and making money) with TradingSolutions. Here are some suggestions as to how to continue.

1. Begin by following the Solution Service. The signals and commentary provided with the Solution Service provide an excellent starting point for seeing how models can be used on a day-to-day basis.  
 **Note:** Remember, the Solution Service is updated each evening to provide you with information about what you could trade at the next open.
2. Look at previously created models for examples of financial indicators people are using to create profitable models.  
 **Note:** Good sources of existing models are the Solution Service, the TradingSolutions web site, and TradingSolutions users groups.
3. Instead of concentrating on individual stocks, try applying approaches to entire groups of stocks and working on improving the models that show some potential.  
 **Example:** Try importing the S&P 100 or NASDAQ 100 into a group and apply trading solutions to the entire group. Use the Primary Signal and display fields to identify the best performers and concentrate on trading or improving those.  
 **Note:** Don't get frustrated if you can't model an individual stock. If you are having trouble creating profitable models for a particular stock, that stock may be very difficult to model.
4. Don't discount your own knowledge of trading when selecting inputs for models. If you have previous experience in technical analysis, what financial indicators would you normally look at? When you look at a chart of the price and the optimal signal, what information might lead you to trade around when the optimal signal trades?  
 **Note:** Magazines and websites can be excellent sources of additional information concerning technical analysis and financial indicators.
5. Use correlation analysis to identify potential inputs for your models. Correlation analysis will be introduced in the Advanced Features tutorials.

→ Continue to the next tutorial.

→ Using Advanced Features



## Tutorial: Creating Trading Signals: Notes

### Monitoring Processing

TradingSolutions displays a **Status Dialog** to let you know when it is processing. When it is finished, the Status Dialog will disappear.

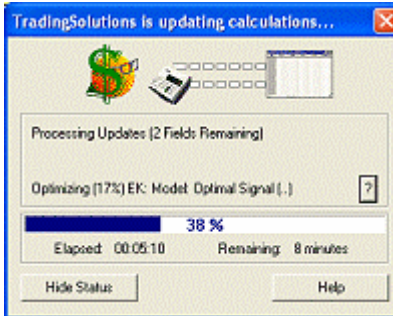


Figure 1. Example of a Status Dialog.

While TradingSolutions is working on a specific task, you can see additional detail about what it is working on by pressing the ? button next to the task. This will display an additional **Status Dialog**.

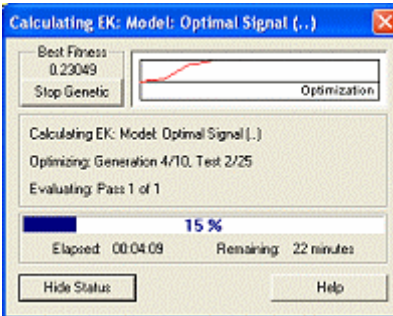


Figure 2. Example of a detail Status Dialog.

### Working with Created Signals

Here is an overview of what you can do with the signals you create using the methods in this tutorial. Each of these topics is covered in the **Using the Interface** tutorial.

- When the processing of a new signal is completed, a message will appear in the **Messages and Alerts Window** indicating an analysis of the new field is ready. You can jump straight to this analysis by double-clicking on this message.
- You can compare a new signal to other signals for a stock and optionally assign it to be your Primary Signal by right-clicking on the stock and selecting **Analyze Signals....**
- You can visually see how the new signal would have traded by adding it to a chart.
- You can display the new signal in your Portfolio View for trading. The easiest way to do this is to make it your Primary Signal. Then, add the Primary Signal to your display fields if it is not already there.

### Changing to the Sample Portfolio

If your portfolio does not appear to contain the stocks or solutions being referenced by this tutorial, you may be migrating from a previous version or you may have already done some work in TradingSolutions. In either case, it will typically be easier to follow the tutorials using the original sample portfolio.

TradingSolutions stores all of its data and calculations in a folder called a Work directory. You can have multiple Work directories on a single computer, accessing one at a time.

To change to a new Work directory, do the following:

1. Select **Change Work Directory...** from the **File** menu.

2. On the **Browse For Folder** dialog, select a location on your computer to add a new Work directory and press the **New Folder** button. Change the name to something meaningful, such as Tutorial Work".
3. Press the **OK** button with this folder selected.
4. A message will appear indicating "This appears to be a new Work directory" and asking if you would "like to have the sample data pre-loaded into your new portfolio". Press the **Yes** button.

You can return to your previous Work directory using the **Change Work Directory...** menu item again, this time selecting your previous Work directory and pressing **OK**.




## Tutorial: Using Advanced Features

Introduction  
Creating Trading Solutions  
Writing Custom Functions  
Writing Custom Entry/Exit Systems  
Predicting Future Prices  
Using Correlation Analysis


### Welcome to the final TradingSolutions tutorial!

This tutorial will take you step-by-step through some of the advanced features in TradingSolutions. This tutorial assumes that you understand the concepts presented in the previous tutorials. It does not require any of that work to be present.

 Note: The TradingSolutions tutorial text is intended to be viewed side-by-side with the TradingSolutions program. If the TradingSolutions program window is not currently displayed next to this help text, you can resize it appropriately by selecting **Resize Program for Help Panel** from the **Window** menu of TradingSolutions.

 **Continue to the next task.**

 [Creating Trading Solutions](#)

 Or, return to the [Overview](#) for the tutorials chapter.



## Tutorial: Using Advanced Features

Introduction  
Creating Trading Solutions  
Writing Custom Functions  
Writing Custom Entry/Exit Systems  
Predicting Future Prices  
Using Correlation Analysis

### Creating Trading Solutions

- Tutorial Task**  
Create a trading solution and export it.

In previous tutorials, you learned how you could apply a trading solution to recreate all of the fields necessary to reproduce a trading signal. Now, let's learn how you can create your own trading solutions.

#### Step-by-step Instructions Part 1: Create a Trading Solution

1. Press the **Define Trading Solutions** button in the toolbar.

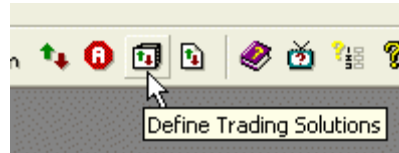


Figure 1. Pressing Define Trading Solutions".

Note: If you cannot locate this button, you can also select this option from the **Processing** menu.

2. Create a group for your trading solutions so you can keep them separate from those included with the software. Press the **New...** button beneath the list of **Trading Solution Groups**.

Note: If you have already created a new group, simply select it from the list of groups and proceed to step 4.

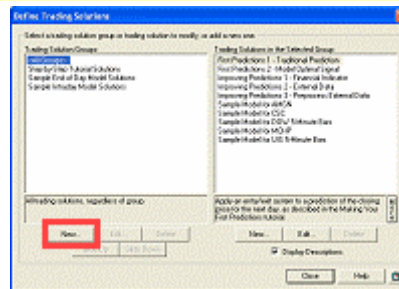


Figure 2. Location of New..." button for creating a new group.

3. Accept the default name of **My Trading Solutions** by pressing **OK**.
4. Create a new trading solution in the selected group by pressing the **New...** button beneath the list of **Trading Solutions in the Selected Group**.

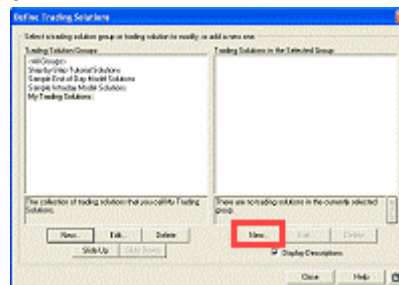


Figure 3. Location of New..." button for creating a new solution.

5. Enter a name for your solution. For example, call this one **My Solution**".



Figure 4. Entering a name for the new solution.

6. Press the **Next** button.
7. You can use any field as the basis for your trading solution. For example, let's base this solution on the Primary Signal we are currently using for Amgen. Locate **Amgen** in the **Sample End-of-Day Models** group and select the **<Primary Signal>** field.

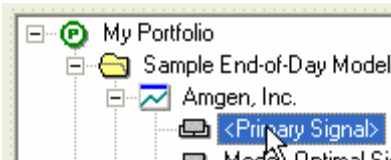


Figure 5. Selecting the Primary Signal for Amgen.

8. Press the **Next** button. TradingSolutions will perform some brief processing.
9. On the **Verify Inputs** panel, press **Finish**.
10. Press **Close**. You can now apply this new trading solution to any data or group, the same as any trading solution included with the software.

### Step-by-step Instructions Part 2: Export the Trading Solution

There may be times when you want to export trading solutions for use in other portfolios or to share with other users. Here is how you can do this.

11. Select **Export Trading Solution...** from the **File** menu.

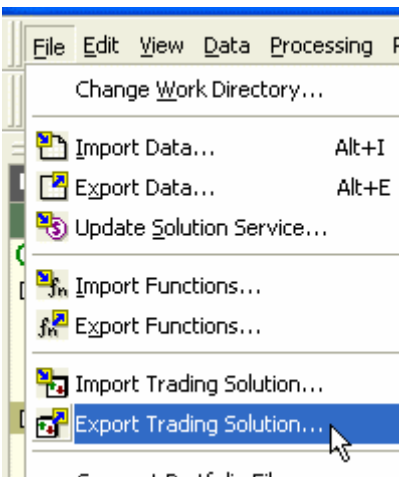


Figure 6. Selecting Export Trading Solution..."

12. Select **My Solution** from the list of **Trading Solutions in the Selected Group**.
13. Press **OK**.
14. Select a name and location for the file, then press **Save**.

Note: By default, the file will be named based on the name of the trading solution and placed in the **Sample Solutions** directory, or whichever directory you worked with last.

Note: Trading solution files have the extension **.tss**".

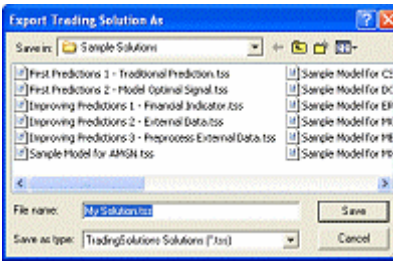


Figure 7. The file save dialog.

15. You can now import this trading solution file into another portfolio or send it to another TradingSolutions user for them to import. To import a trading solution, select **Import Trading Solution...** from the **File** menu.

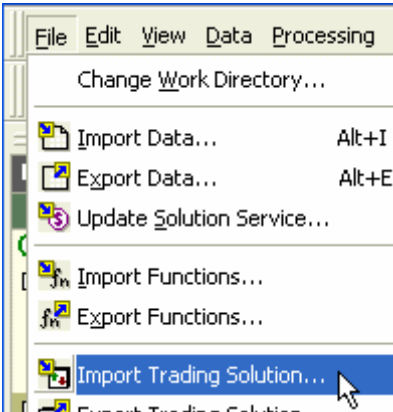


Figure 8. Selecting Import Trading Solution..."

### Congratulations!

You have learned how to create a trading solution, which you can use to recreate previously created fields. You have also learned how you can export a trading solution for use in another portfolio or for sending to another TradingSolutions user.

<span style="font-size: 1.2em;">⇒</span> <b>Continue to the next task.</b>
<span style="font-size: 1.2em;">⇒</span> <a href="#">Writing Custom Functions</a>



## Tutorial: Using Advanced Features

Introduction  
Creating Trading Solutions  
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### Writing Custom Functions

**Tutorial Task**  
Learn to write a custom function.

TradingSolutions includes over 250 built-in functions and technical indicators. However, there may be times when you want to use your own custom formulas. Examples of this would be when you have a new indicator you would like to try or when you want to combine several steps into one formula.

For this example, let's create a simple moving average. While this function is already included in TradingSolutions, the equation provides us with a straightforward example of how formula entry works.

A moving average is an average of the most recent values for each point in time. To calculate an average, you simply take the sum of the recent values and divide it by the number of values being included.

The resultant formula will look like this:

$$\text{Div} ( \text{Sum} ( \text{Data}, \text{Period} ), \text{Period} )$$

### Step-by-step Instructions

1. Press the **Define Functions** button in the toolbar.

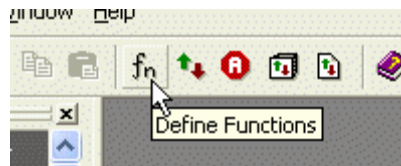


Figure 1. Pressing Define Functions".

Note: If you cannot locate this button, you can also select this option from the **Processing** menu.

2. Create a group for your functions so you can keep them separate from those included with the software. Press the **New...** button beneath the list of **Trading Solution Groups**.

Note: If you have already created a new group, simply select it from the list of groups and proceed to step 4.

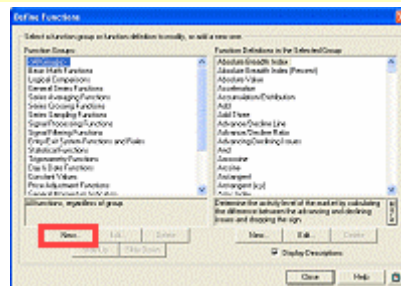


Figure 2. Location of New..." button for creating a new group.

3. Accept the default name of **My Functions** by pressing **OK**.
4. Create a new function in the selected group by pressing the **New...** button beneath the list of **Function Definitions in the Selected Group**.

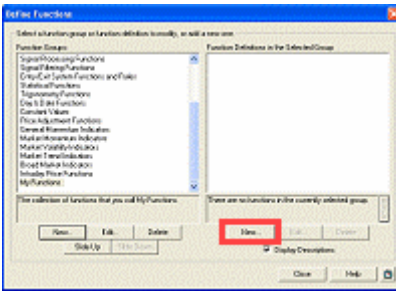


Figure 3. Location of New..." button for creating a new function.

5. Enter a **Display Name** for your function of **My Moving Average** and a **Short Name** of **MyMA**.

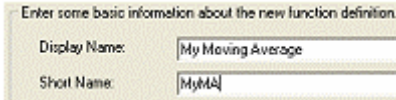


Figure 4. Entering the names for the function.

6. Enter a brief description, such as **My function for a tutorial exercise.**



Figure 5. Entering a description.

7. Press the **Next** button.
8. TradingSolutions formulas are entered from the outside in, so the first thing we want to put in our equation is the Divide function. Select **Basic Math Functions** from the **Function Group** list.

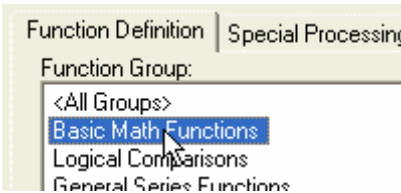


Figure 6. Selecting the "Basic Math Functions" group.

9. Select the **Divide** function from the **Function Definitions in this Function Group**.

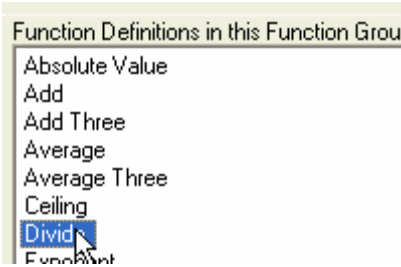


Figure 7. Selecting the "Divide" function.

10. Press **Insert into Formula**. This will result in the formula at the top of the wizard looking like this.

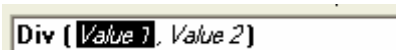


Figure 8. Formula after Divide inserted.

11. Now insert a function to provide a sum of recent values. Select the **Function Definition** tab.

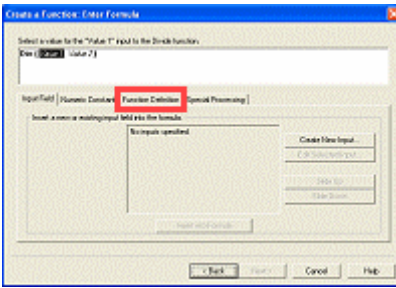


Figure 9. Location of Function Definition" tab.

- Don't worry if you don't know what group a function is in. With **<All Groups>** selected, scroll down through the alphabetical list of functions and select the **Summation** function.

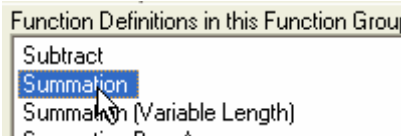


Figure 10. Selecting the Summation" function.

- Press **Insert into Formula**. This will result in the formula at the top of the wizard looking like this.



Figure 11. Formula after Summation inserted.

- We will specify the value to take the moving average of when we go to use the function. On the **Input Field** sub-page, press **Create New Input...**

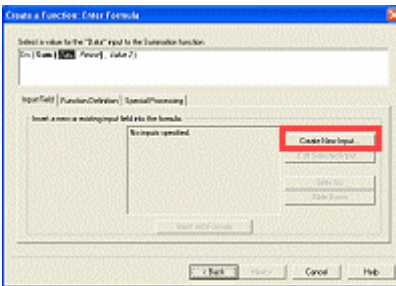


Figure 12. Location of Create New Input" button.

- Accept the default values of naming this input "Data" and providing it as a data series. Press **OK**.

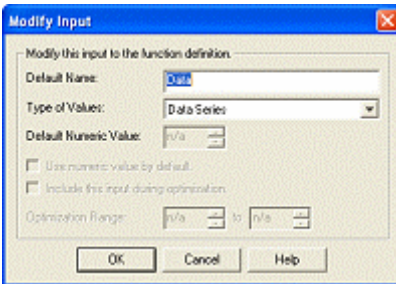


Figure 13. The Modify Input dialog.

- Press **Create New Input...** and press **OK** again to repeat these steps and create a **Period** input.

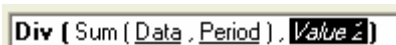


Figure 14. Formula after both inputs added.

- Now, to calculate a moving average, we want to divide the sum by the period. Select **Period** from the list of inputs.

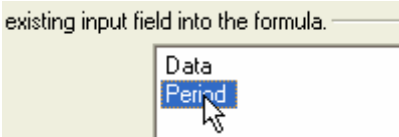


Figure 15. Selecting the "Period" input.

18. Press **Insert into Formula**. This will result in the formula at the top of the wizard looking like this.

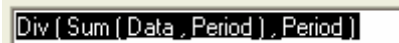


Figure 16. Formula after "Period" inserted.

- 19. Press the **Next** button.
- 20. On the **Verify Inputs** page, press **Finish** to create your function.
- 21. Press **Close**. You can now use this new function directly as an indicator, as an optimizable input to predictions, or anywhere else you would use an existing function.

### **Congratulations!**

You have learned the basics of writing custom functions in TradingSolutions. These same principles of formula entry can be used to write custom entry/exit systems and alerts, as well. In the next tutorial, we'll see a slightly more complex example that builds on these principles.

<a href="#">Continue to the next task.</a>
<a href="#">Writing Custom Entry/Exit Systems</a>

## Tutorial: Using Advanced Features

Introduction  
Creating Trading Solutions  
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Writing Custom Entry/Exit Systems  
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### Writing Custom Entry/Exit Systems

#### ① Tutorial Task

Learn to write a custom entry/exit system by modifying an existing one.

TradingSolutions includes several basic entry/exit systems. These sample entry/exit systems are based on single indicators to provide examples both of how entry/exit systems work and how various indicators can be used for market timing. They can work well in specific market conditions, but often break down for long periods of time.

Entry/exit systems used for trading are often more complex. They involve several different rules working in conjunction to produce signals that work well in a variety of market conditions.

For this example, let's take an existing entry/exit system and add an additional rule to it. Specifically, let's start with the Moving Average System, which enters the market when a short-term moving average crosses over a long-term moving average. Then, let's add rules that force it to exit (stop) in cases where losses exceed a certain amount.

#### Step-by-step Instructions

1. Press the **Define Entry/Exit Systems** button in the toolbar.

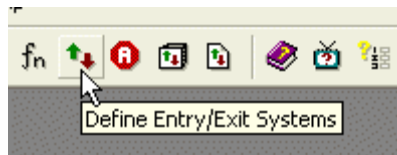


Figure 1. Pressing Define Entry/Exit Systems".

Note: If you cannot locate this button, you can also select this option from the **Processing** menu.

2. Create a group for your functions so you can keep them separate from those included with the software. Press the **New...** button beneath the list of **Trading Solution Groups**.

Note: If you have already created a new group, simply select it from the list of groups and proceed to step 4.

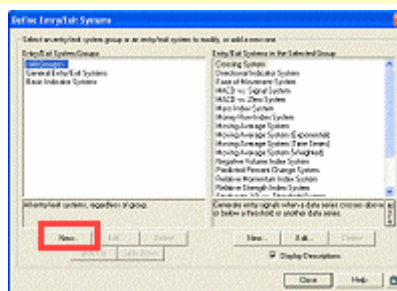


Figure 2. Location of New..." button for creating a new group.

3. Accept the default name of **My Entry/Exit Systems** by pressing **OK**.
4. Create a new function in the selected group by pressing the **New...** button beneath the list of **Entry/Exit Systems in the Selected Group**.



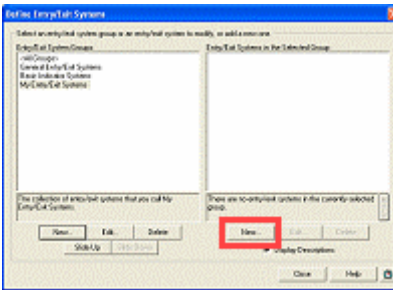


Figure 3. Location of New..." button for creating a new entry/exit system.

5. Enter a **Display Name** for your function of **MA System with Stop on Loss**.

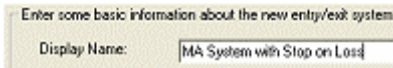


Figure 4. Entering a name for the new system.

6. Press **Copy another Entry/Exit System....**

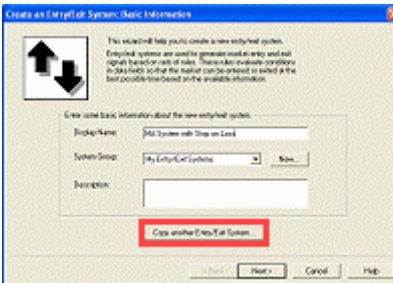


Figure 5. Location of Copy another Entry/Exit System..."

7. Select **Moving Average System** from the list of **Entry/Exit Systems in the Selected Group**.

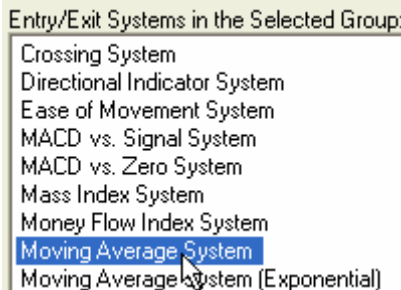


Figure 6. Selecting Moving Average System".

8. Press the **OK** button to perform the copy.
9. Press **Next** to advance to the **Enter Rules** page.
10. If we were creating a new Entry/Exit System, these rules would be empty. However, since we copied another system, rules are already defined for Enter Long and Enter Short.
11. Now, let's add our exit rules. Select the **Exit Long** tab.

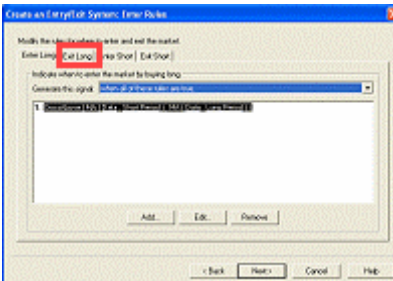


Figure 7. Location of Exit Long" tab.

12. Press the **Add...** button to add a new rule for when to exit long.

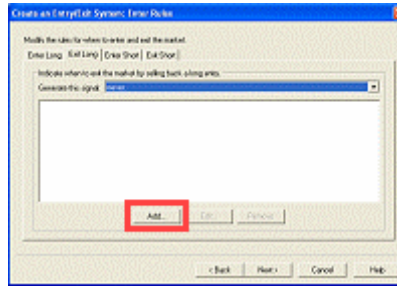


Figure 8. Location of Add" button.

13. Entering entry/exit system rules is exactly the same as entering formulas for custom functions. In this case, select the **Entry/Exit System Functions and Rules** group.

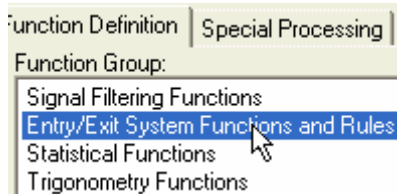


Figure 9. Selecting Entry/Exit System Functions and Rules".

14. Select **Rule: Exit On Percent Loss** and press **Insert into Formula**.

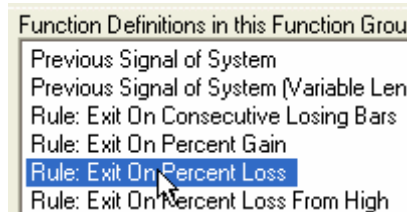


Figure 10. Selecting Rule: Exit On Percent Loss".

15. This function requires the opening and closing price. This information will need to be provided when the entry/exit system is applied. We will need to create inputs to do this. Press **Create New Input....**

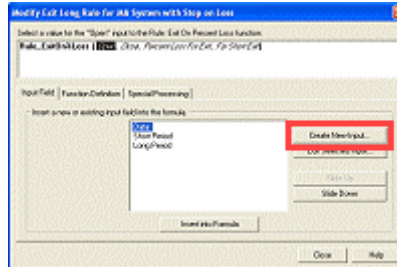


Figure 11. Location of Create New Input..."

16. Accept the default values of naming this input "Open" and providing it as a data series. Press **OK**.
17. Press **Create New Input...** and press **OK** again to repeat these steps and create a **Close** input.
18. This function also needs to know what loss percentage to exit at. Let's provide this information when the entry/exit system is applied and allow it to be optimized. Press **Create New Input....**
19. The default values for this input set the default to a 5% loss which can be optimized to any value from 0 to 100%. Accept these defaults by pressing **OK**.

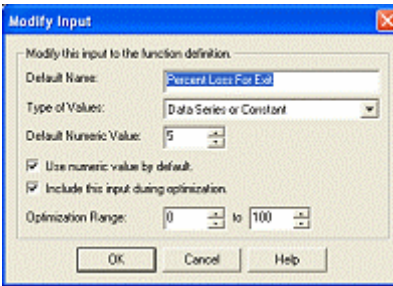


Figure 12. The Modify Input dialog for Percent Loss For Exit".

20. The final input to this function indicates whether it is being used for a long or a short exit. In this case, it's a long exit, so let's set it to zero, indicating false". Press the **Numeric Constant** tab.

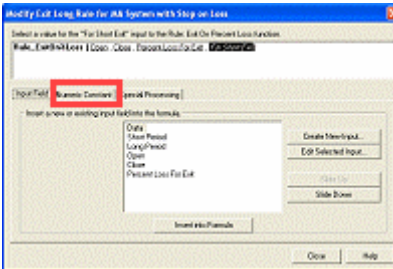


Figure 13. Location of the Numeric Constant" tab.

21. The default value for this parameter is 0. Press **Insert into Formula** to use this.
22. Our exit long rule is now completed. Press **Close**.
23. We should now enter a similar rule for exiting short. Press the **Exit Short** tab.

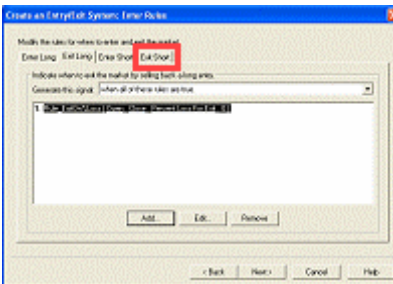


Figure 13. Location of the Exit Short" tab.

24. Press the **Add...** button to start a new rule.
25. Select **Rule: Exit On Percent Loss** from the **Entry/Exit System Functions** group and press **Insert into Formula**.
26. We can reuse the inputs we have already created to use with this function. Press **Insert into Formula** for the **Open** value, the **Close** value, and the **Percent Loss For Exit** value.
27. We will want to set the **For Short Exit** value to a value other than zero, indicating "true". Select the **Numeric Constant** tab.
28. Enter 1 and press **Insert into Formula**.

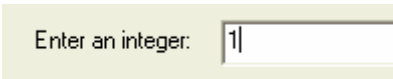


Figure 14. Entering a constant of 1

29. Our exit short rule is now completed. Press **Close**.
30. With our rules completed, press the **Next** button to continue in the wizard.
31. The **Verify Inputs** shows us all of the inputs required by our system. If desired, the order of these inputs can be modified by sliding them up or down in the overall order. Feel free to experiment with this, then press **Next**.

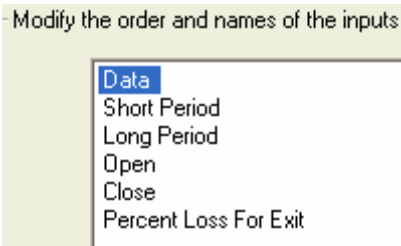


Figure 15. List of inputs in the order they are specified.

32. Since we copied an existing entry/exit system, the notes associated with that system were also copied. Later, we may want to update these notes to include the new inputs and functionality we have added. However, for now, press **Finish** to save our changes.
33. Press **Close**. You can now apply this new entry/exit system to any data or group, the same as any entry/exit system included with the software.

### **Congratulations!**

You have learned the basics of writing custom entry/exit systems by taking an existing entry/exit system and adding new rules to it.

⇒ **Continue to the next task.**

↳ [Predicting Future Prices](#)

## Tutorial: Using Advanced Features

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### Predicting Future Prices

#### ① Tutorial Task

Predict the next closing price and generate a trading signal based on that prediction.

When people think of using neural networks and predictions on financial data, they typically think of predicting prices. The theory is that if you can create a reasonably accurate prediction of future prices, you can use that information to determine whether you should be in or out of the market.

The problem with this approach is that financial price information is inherently noisy. There are so many different influences on the prices that predicting the next price or even the direction of the next price can be difficult to do.

Most predictions in TradingSolutions are of the optimal signal. This is essentially predicting what would be the best action to take for the current market conditions. However, it is also possible to predict prices in TradingSolutions and use that information for trading. Let's see how this can be done.

Note: This particular example works well with the Weyerhaeuser (WY) sample data that we imported in the **Using the Interface** tutorial. If that data is not available, any data can be used.

#### Step-by-step Instructions

##### Part 1. Predict Tomorrow's Close

1. Right-click on **Weyerhaeuser** in the Portfolio View and select **Add New Field...**

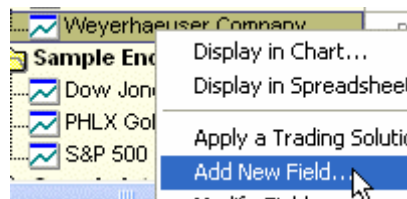


Figure 1. Selecting Add New Field..."

2. Select **Predict or model a value** and press the **Next** button.

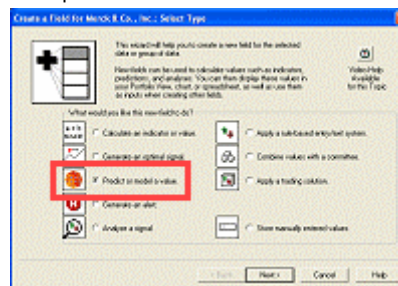


Figure 2. Location of Predict or model a value".

3. Review the introduction to the **Predict a Value Wizard** and press the **Next** button to advance to the **Select Desired Outputs** page.
4. Set the **Value to Predict** to **Close**.

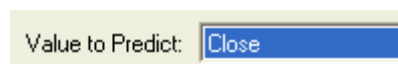


Figure 3. Setting Value to Predict to Close.

5. **Samples in Advance** will automatically update to 1, meaning that the value of the Close field one bar in the future will be predicted. The **Preprocessing** will automatically set to **Percent Change** so that the values are kept in a fairly constant range.
6. Press **Next** to continue.
7. For this example, let's use only the prices and volume as inputs. Select **Raw Data** and press **Add Selected Input**.

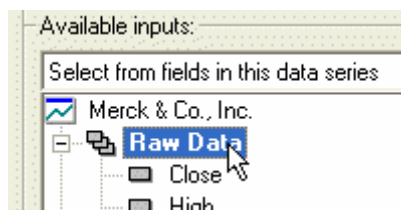


Figure 4. Selecting Raw Data.

8. Press **Next** to advance to the **Select Options** page.



Figure 5. Options for creating prediction.

9. By default, TradingSolutions will optimize the selected inputs and neural network settings to find the best results using the last five years of data. Accept these values by pressing **Next**.
10. On the **Create Prediction** page, press **Finish**. TradingSolutions will begin optimizing the prediction.

## Step-by-step Instructions Part 2. Trade Based on Price Prediction

After TradingSolutions has completed optimizing the prediction, you may want to view it in a chart. Typically, price predictions will appear to lag the price by the number of days in the prediction.

When predictions do not have adequate information to work from, they will tend to predict near the mean (average) value. In this case, since we are predicting the percent change in the closing price, that mean value is 0, meaning no change.

This is not to say that no useful information has been predicted. Some directional information can often be derived from even minor price predictions. Let's see how you can use a simple entry/exit system to determine when to trade based on this information.

11. Right-click on **Weyerhaeuser** in the Portfolio View and select **Add New Field...**
12. Select **Apply a rule-based entry/exit system** and press **Next**.

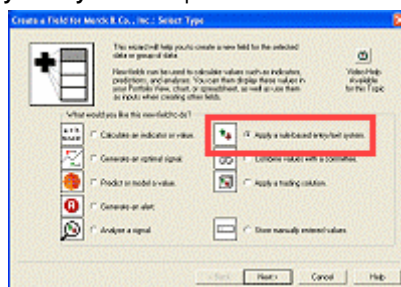


Figure 6. Location of Apply a rule-based entry/exit system.

13. Review the introduction to the **Apply an Entry/Exit System Wizard** and press the **Next** button to advance to the **Select Entry/Exit System** page.

14. By default, all groups of entry/exit systems will be selected. Select the **General Entry/Exit Systems** group, then select the **Predicted Percent Change System** and press **Next**.

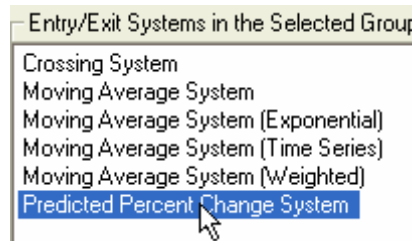


Figure 7. Selecting Predicted Percent Change System".

15. For the **Predicted Value** input, select **Predict: Close in 1 sample**.

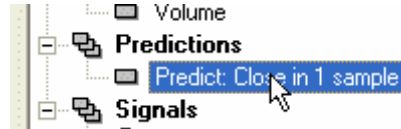


Figure 8. Selecting Predict: Close in 1 sample".

16. Press the **Next** button. This will select the new value for the input and advance to the next step.
17. On the **Select Name** page, press **Finish**. TradingSolutions will automatically optimize the entry/exit system settings to extract the best signal from the price prediction.
18. After processing has completed, you will have a new signal for this stock which can be used for trading.

### Congratulations!

You have learned the basics of predicting prices with TradingSolutions. As with predicting the optimal signal, the selection of inputs will have a lot to do with how successful your individual signals are.

You have also learned how to use a basic entry/exit system to extract directional information from the prediction and use it for trading.

<a href="#">↩ Continue to the next task.</a>
<a href="#">👉 Use Correlation Analysis</a>

## Tutorial: Using Advanced Features

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### Using Correlation Analysis

#### ① Tutorial Task

Run correlation analysis and create a prediction based on the highest correlated inputs.

The Correlation Analysis Wizard helps you identify which inputs may provide leading information about values you are trying to predict. It does this by analyzing the relative correlation between selected prices and indicators with the desired output.

The main limitation of this is that Correlation Analysis identifies potential inputs based only on correlation. Other values may contain valuable information that is not linear in nature or is only relevant at certain times. Because of this, correlation analysis should not be viewed as the only source for potential inputs.

Let's see an example of how Correlation Analysis can be used to create a price prediction.

#### Step-by-step Instructions

##### Part 1. Run Correlation Analysis Wizard

Let's begin by seeing if any of the index data in the sample portfolio could provide information about how Amgen will trade.

1. Right-click on **Amgen** in the Portfolio View and select **Analyze Correlations...**

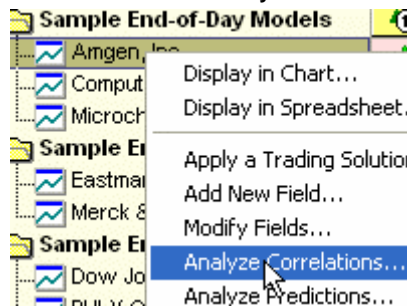


Figure 1. Selecting "Analyze Correlations..."

2. On the **Select a Field to Analyze Dialog**, the **Close** field will be selected by default. Press **OK** to accept this.
3. The **Correlation Analysis Wizard** will default to **Determine if other fields may be good inputs for predicting this field**. Press **Next** to continue.
4. Let's see if there is any correlation between this value and the closing prices of our sample indices. Select **Sample End-of-Day Indices**.

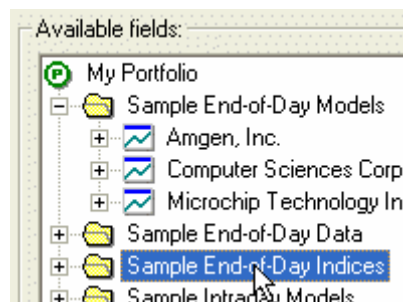




Figure 2. Selecting Sample End-of-Day Indices"

5. Press **Add Selected Fields...** TradingSolutions will ask if we only want to select a single field name from the selected data series. Let's limit our search to just the Close field. Press **Yes**.

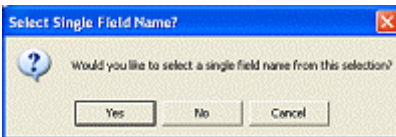


Figure 3. The "Select Single Field Name?" message.

6. On the **Select a Field Name to Add Dialog**, the **Close** field will be selected by default. Press **OK** to accept this.
7. The percent change in the closing prices of the sample indices should now be listed in the currently selected fields.



Figure 4. The selected fields after indices have been added.

8. Press **Next** to advance to the **Analysis Options** page.
9. By default, TradingSolutions will analyze the correlations for the values it would use in training a prediction. To perform the analysis, press **Finish**.

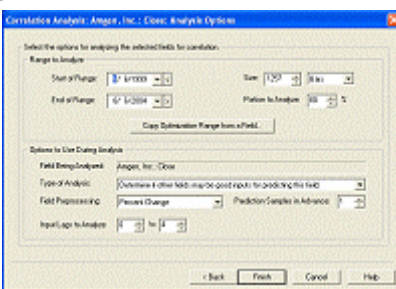


Figure 5. The "Analysis Options" page.

10. After some brief processing, TradingSolutions will display a sorted list of the highest correlations.

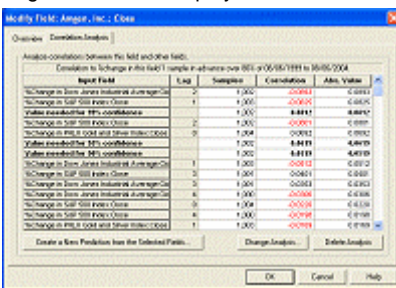


Figure 6. Correlation Analysis results.

11. The row indicating **99% confidence** indicates the correlation that would be necessary to be 99% statistically confident that the values are inter-related as opposed matching by random chance.

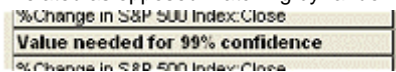


Figure 7. The 99% confidence row.

**Step-by-step Instructions**  
**Part 2. Create a Prediction**

Using the correlation analysis report, we can create a prediction based on the highest correlated values.

12. Select the top four correlated input fields by click on the top entry, holding down the **Shift** key, and clicking on the fourth entry (which is on the fifth row).

Note: Negative correlations are just as informative as positive correlations. It simply indicates that the values are moving in opposite directions rather than the same direction.



Figure 8. Selecting the input fields to use in the prediction.

- Press the button labeled **Create a New Prediction from the Selected Fields...**

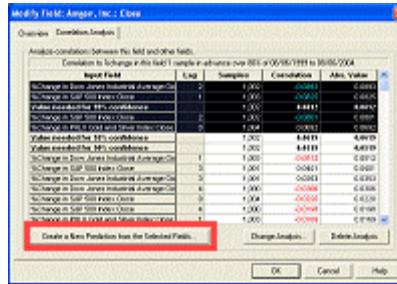


Figure 9. Location of Create a New Prediction... button.

- Review the introduction to the **Predict a Value Wizard** and press the **Next** button to advance to the **Select Desired Outputs** page.
- The wizard will automatically be pre-configured to use the values from the Correlation Analysis Wizard. For example, on the **Select Desired Outputs** page, the **Close** field is automatically selected. Press **Next**.
- On the **Select Inputs** page, the selected index values are automatically selected. Other inputs could also be added at this time. For example, let's add the closing price of this stock by clicking on **Add Selected Input**.

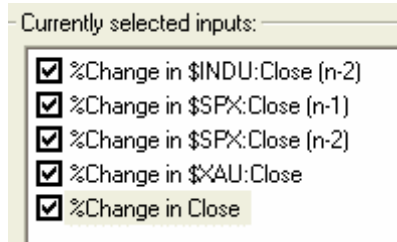


Figure 10. Prediction inputs after Amgen Close is added.

- Let's keep the remainder of the settings. Press **Next**, then **Next** again, then **Finish** to create the prediction.
- TradingSolutions will be optimizing the prediction. Exit out of the Correlation Results by pressing **OK**.
- When TradingSolutions is done processing, you can use it the same as any other price prediction. This includes using it in an entry/exit system to determine when to buy and sell.

**Congratulations!**

You have learned the basics of creating a correlation analysis and using the highly correlated inputs as inputs to a prediction.

This approach can also be used to find inputs for predictions of the optimal signal. However, since the value of the optimal signal is abstracted from the change in the price, it may be more difficult to find highly correlated inputs.

### **Tutorial 3: Using Advanced Features: Notes**

There are currently no additional notes for this section.

