Step-by-Step Tutorials: Overview

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

Welcome to the TradingSolutions tutorials!

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

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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!

(i) 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.

i 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.

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The TradingSolutions Interface

(i) 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 ⁽¹⁾ 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.

| L | 4 | Enter Long |
|----|----|--|
| | Δ | Exit Short |
| [| Ŷ | Hold, price may increase |
| [| ~~ | Hold |
| [| ÷ | Hold, price may decrease |
| | V | Exit Long |
| | V | Enter Short |
| ¢ | | Note: If you forget what a symbol means, simply place you mouse over it and tip will appear. |
| \$ | | Note: For information about what long" and short" means, see the Notes. |

4. You 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 you 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.

Solution Understanding Fields

Tutorial: Learning the Basics

Introduction

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Understanding Fields

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.



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

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|--|--|
| Conversion Solds for the R. Steam in C. Stream Particular, 19 | Field in selected view, in order of ducker |
| | Cann Ange Lon Cann Vision Panny Typel |
| Add brieved fields | Darty Ton Done Presented Caster |

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.

| High Low | ^ |
|--|---|
| Open | |
| Volume Commodity Channel Index (C. H. L. 85) | |
| Linear Regression Slope (C, 65) Mass Index (H, L, 22) | |
| Percent Difference from Median (C. 94) | |
| Percent Difference from Moving Average (C, 42) Relative Strength Index (C, 9) | |
| Modet Optimal Signal () Primary Signal | |
| Optimal Signal () | |
| %Gain (1Y, w/CurPos) | Y |

Figure 3. List of all fields added.

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

| Dute | Close | High | Low | Open | Volume |
|--------------|----------|----------|----------------|------------|----------|
| 07/16/2004 | 66.7300 | 56.3500 | 55.5400 | 59 3300 | 9,409,7 |
| 07/19/2004 | 55.5100 | 58.1100 | 54,0000 | \$\$ \$200 | 9,395,7 |
| 07 00 0004 | 57.0000 | 57.0000 | 55 5800 | 55 8500 | 7,403,5 |
| 07/21/2004 | 55,6500 | 57 3800 | 55 5900 | 57.0000 | 9,406,0 |
| 07/02/0004 | 56.1000 | 58,2500 | 54,5900 | 55 7810 | 9,295,3 |
| 070230004 | 55,3600 | 56,5700 | 55.1900 | 25 6900 | 0,460,9 |
| 07 06 0004 | 55.5010 | 55.6100 | 54,2200 | 55 3300 | 9,156,6 |
| 07 027 02004 | 55.9100 | 55.4200 | \$5,4900 | \$5 9610 | 10,324,2 |
| 07/08/2004 | 57.0000 | 57.6300 | 58.0000 | 56 2000 | 12,890,5 |
| 07.0502004 | \$7,0000 | \$7.6000 | \$7.0000 | \$7,3900 | 7,090,6 |
| 07/20/2004 | 56.8800 | 57.8400 | 55.5774 | 57 0800 | 8,401,7 |
| 06/02/2004 | 56.3100 | \$7,2100 | 56.2100 | 99 7910 | 8,196,6 |
| 08032004 | 58.3500 | 57.3300 | 55,3000 | 55 3500 | 8,335,0 |
| 05/04/2004 | 56.5500 | 67.2:00 | 96 2200 | 96 2200 | 6,965,5 |
| 06/05/2004 | 55,1000 | 56,7900 | 55,1000 | 56 7000 | 6,932,3 |
| 08/06/2004 | 63 8000 | 65.0800 | 53 8000 | 54 7900 | 9,441,4 |
| H I Race | and 253 | F H A | | | • |

Figure 4. Sample spreadsheet.

- 5. 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.
- 6. 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.
- 7. 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.

| Amgen, ' Compute Microchi | Display in Chart Display in Spreadsheet |
|---------------------------------|--|
| mple En | Apply a Trading Solution |
| Eastmar Merck & | Add New Field |
| 1.00000000000 | Modify Fields " 5. Selecting Add New Field" |

8. 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.

9. 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.

| 🥏 Trading | Solutions | |
|---------------------|--------------|-------------|
| File Edit E | Bookmark Oj | ptions Help |
| Help <u>T</u> opics | <u>B</u> ack | |

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

10. 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.

 ⇒
 Continue to the next task.

 A Quick Example

Tutorial: Learning the Basics

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A Quick Example

i 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.



- 2. Review the introduction to the Apply a Trading Solution Wizard and press the Next button.
 - Vote: Wizards are dialogs that present their information in step-by-step format. The **Next** button allows you to advance through the steps.

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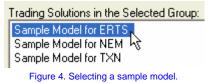
Figure 2. Pressing the Next button to advance.

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

| Trading Solution Groups: |
|--|
| <all groups=""></all> |
| Step-by-Step Tutorial Solutions |
| Sample End-of-Day Model Solutions Sample intraday Model Solutions |
| Sample intraday Model Solutions ら |

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

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



- 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.

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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.

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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 Endof-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 1 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 rightclicking on the stock and selecting **Analyze Signals...**
- You can visually see how this signal would have traded by adding it to a chart.

Congratulations!

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

➡ Continue to the next task.

Solution Service

Tutorial: Learning the Basics

Introduction

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(i) 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.

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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.
 - Vote: 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.
 - Vote: 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.



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.

12. 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.



- Note: If you selected another group or stock in the Portfolio View after the update was started, you can reselect the Active Solutions" group by clicking on it.
- 13. 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.
- 14. 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.

- 15. View some of the notes about the currently selected stock. Click on other stocks to read their notes.
- 16. 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...".

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|---|-----|--|
| mation View | | Analyze Signal |
| ica Online Inc 514 33 Damar | AOL | Portfolio View Help |

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

- 17. 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.
- 18. 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.
 - Vote: 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.

| ntinue | to the | next | tutorial |
|--------|--------|---------------|--------------------|
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Using the Interface

Tutorial: Learning the Basics: Notes

Displaying a Context Menu

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

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

| | Enter Long |
|----------|--------------------------|
| Δ | Exit Short |
| Ŷ | 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 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:

- 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

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!

| (j) | Tutorial Task Learn how to interact with the TradingSolutions interface. |
|-----|---|
| | s tutorial will take you step-by-step through different sections of the TradingSolutions interface so that you can und 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

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

Importing Data

| 1 | 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**.

| 📇 Sample En | Lof Dav Data |
|----------------|---|
| Eastman | Sort Data Names Modify Display Fields |
| Sample En | Add New Subgroup Modify Subgroups |
| PHLX Go | Apply a Trading Solutio Add New Field Modify Fields Analyze Correlations |
| ormation Viev | Group Properties |
| nple End-of-Di | Move to Another Group |
| lated: Augu: | Remove Group |
| | Import Data |

Figure 1. Selecting Import Data.

2. Select Import data from files on your computer.

| Mit the dashes have imposed it an diabatic in class or generalized. It are also in our out of the relations, extracted present, predictions, and other relativistics. Target Group: Cample Storks Select. | Emploting. |
|--|----------------|
| Ved igen dreget meld public is partent? | Update Dynamic |

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.

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| Clube No Import actives: □" Your test No import actives to each rike being imported □" Select indirectual totar anticels on fields from the Nex. | |
| Cuts lie inpot action: " Yew test lie inpot actions to each lie being inported | Ontrach Exchanger in Herr Symbols (Hayer U.S. Exchanges y |

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.

| 🖨 🦳 Sample End-of-Day Data |
|----------------------------|
| |
| |
| |

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

⇒ Continue to the next task.

bisplaying Charts

Tutorial: Using the Interface

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

Displaying Charts

| 1 | Tutorial Task Learn how to display and manipulate charts. |
|---|--|
| L | |

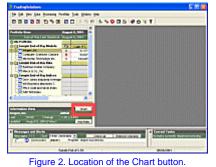
Charts are the most common way for people to view historical data. This task will show you common ways to display charts and manipulate them once they are displayed.

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.

| My Portfolio |
|------------------------------|
| 🖨 🤭 Sample End-of-Day Models |
| Amgen, Inc. |
| |
| Microchin Technology Inc |
| Figure 1. Selecting Amgen. |

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



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.

4. 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.



- 5. 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.
- 6. 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.**



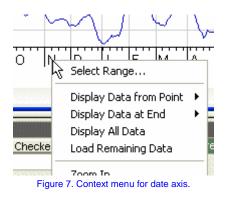
Figure 5. Location of Display added field in a new sub-chart."

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

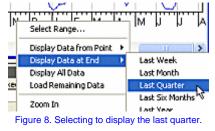


Figure 6. Chart with Mass Index added.

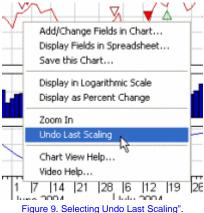
9. Let's change the chart to display only the last three months of data. Right-click on the **date axis** to see a contextmenu specific to date actions.



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



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

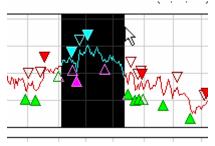


Figure 10. Selecting a chart region to zoom.

- 13. Close this chart window by clicking on the 🖂 in the upper right corner of the chart window.
 - Note: Do not click the I 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.**

| nple End-of | -Day Models | - 🗘 😽 |
|---|------------------|----------|
| Amgen, Inc | | |
| Computer S | Display in Chart | |
| vlicrochip T | Display in Sprea | idsheet |
| nple End-(| Apply a Trading | Solution |
| Figure 11. Selecting Display in Chart". | | |

15. 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**.

| Display Chart for Amgen, Inc | :. | | |
|---|------|--|--|
| Select what to display in this char | t. — | | |
| Display a previous view for the second se | | | |
| * Most Recent View | 1 | | |
| Select new fields to display. | | | |
| | | | |

Figure 12. Selecting Select new fields to display".

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

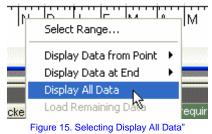
| \$ Note: Double-clicking an entry in a list will perform a default action on it. In this case, it will add it to the |
|---|
| selected fields. |

| Select from | Select from fields for: — 🙃 Series — C E | | | | |
|-------------------|--|--|--|--|--|
| 🛛 Amgen, | 👌 Amgen, Inc. | | | | |
| ∋-& Co | 🗄 🖫 Composite Charts | | | | |
| 🗈 | High/Low/Open Close Chart | | | | |
| ····· 💶 | Japanese Candlestick Chart | | | | |
| | High/Low/Close Area Chart | | | | |
| Figure 13. Double | -clicking on High/Low/Open/Close Chart". | | | | |

17. 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.

| Dis | play chart for las | st 1 | - | Years | |
|-------|--------------------|-------|---|-------|---|
| C Los | d data for last: | 5 | ÷ | Years | + |
| F Los | d all available d | lata. | | | |

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



20. 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.

⇒ Continue to the next task.

Displaying Spreadsheets

Tutorial: Using the Interface

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Displaying Spreadsheets

| (i) Tutorial Task |
|-------------------|
|-------------------|

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....

| nple Er | • | %0 | | | | |
|-------------------|----------------------|------------------------|--|--|--|--|
| Amgen | Inc | | | | | |
| Comput | Display in Chart | | | | | |
| Microck | Display in Spreadsh | Display in Spreadsheet | | | | |
| nple Er Eastma | Apply a Trading Solu | ution | | | | |
| Figure | eadshee | et." | | | | |

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

| Sele | ct what to display in this spreadshee |
|------|---|
| ۲ | Display a previous view for this data |
| | * Most Recent View |
| ~ | * Most Recent View * Default Spreadsheet |
| · · | * Default Spreadsheet |

Figure 2. Selecting * Default Spreadsheet".

3. Press OK. This will display the spreadsheet.

| Date | Close | Nigh | Low | Open | Volume |
|-------------|----------|----------|----------------|----------|----------|
| 07/16/2004 | 66.7300 | 55.3500 | 55.5400 | 59 3300 | 9,409,7 |
| 07/19/2004 | 55.6100 | 58,1100 | 54,0000 | 55 \$200 | 9,395,7 |
| 07/20/2004 | 57.0000 | 57.0000 | 55,5800 | 55 8500 | 7,403,5 |
| 07/21/2004 | 55.6500 | 57.3800 | 55.5900 | 57.0000 | 9,406,0 |
| 07/02/0004 | 56.1000 | 58,2500 | 54,5800 | 55 7810 | 9,295,3 |
| 070230004 | 55.3600 | 56.5700 | \$5,1900 | 55 6900 | 0,460,9 |
| 07050004 | 55.5010 | 55,6100 | 54 2200 | 55 3300 | 9,156,6 |
| 07 07 02004 | 55.9100 | 55.4200 | \$5,4900 | \$5.9610 | 10,324,2 |
| 07/28/2004 | 57.0000 | 57.6300 | 58.0000 | 56 2000 | 12,890,5 |
| 07/25/2004 | \$7,0000 | \$7.6000 | \$7.0000 | \$7,3900 | 7,090,6 |
| 07/2002004 | 55,5500 | 57.8400 | 55.5774 | 57 0800 | 8,401,7 |
| 06/02/2004 | \$6.3100 | \$7,2100 | 56.2100 | 96 7910 | 8,196,6 |
| 08/03/2004 | 58.3500 | 57.3300 | 55.3000 | 55.3500 | 8,335,0 |
| 05/04/2004 | 56.5500 | 67.2:00 | 96 2200 | 96 2200 | 6,965,5 |
| 06052004 | 55.1000 | 56,7900 | 55.1000 | 55 7000 | 6,932,3 |
| 08/06/2004 | 63 8010 | 65.0800 | 53 8000 | 54 7600 | 9,441,4 |

Figure 3. Sample spreadsheet.

4. 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.



5. 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.

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|--|--|
| Add Inducted Fails Deute allow Fail. | many Instan Presentation |

Figure 5. Location of Create a New Field".

- 6. Press Next to advance into the Calculate a Value Wizard. Then, press Next to pass the Introduction page.
- 7. On the Select Function page, in the Function Group list, select Series Averaging Functions.

| Function Groups |
|---|
| <all groups=""></all> |
| Basic Math Functions |
| Logical Comparisons |
| General Series Functions |
| Series Averaging Functions |
| Series Crossing Ptinctions |
| Series Sampling Eurotions |
| Figure 6. Selecting Series Averaging Functions" |

F 2 1 2 4 6 1 1 10

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

| Functions in the Selected Group |
|--|
| Difference from Median |
| Difference from Moving Average |
| Difference from Moving Average (Expon |
| Difference from Moving Average (Time S |
| Difference from Moving Average (Weigh |
| Median |
| Median (Variable Length) |
| Moving Average |
| Moving Avesage (Exponential Bars) |
| Moving Average (Evponential Percent) |
| Figure 7. Selecting Moving Average" |
| |

- 9. Press Next.
- 10. On the Select Inputs page, select Volume from the list of fields.

| Select from fields for: Serie |
|--|
| Close |
| 🖽 High |
| Low |
| Dpen |
| - Volune |
| 🗏 🗇 🖽 Coloulatións |
| Figure 8. Selecting Volume" for spreadsheet. |

- 11. Press Next, then press Finish to create the Moving Average (V, 10) field.
- 12. 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.
- 13. Press OK to view the updated spreadsheet.
- 14. Scroll to the right end of the spreadsheet to see the added field.

B306/2004 9,441,474 ▲ 59.6% 8,853,315.9000

Figure 9. Last row of Amgen data series.

15. 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.



- 16. With that cell selected, type **0** and press the Enter key.
- 17. 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.



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

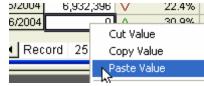


Figure 12. Pasting the previous value back in the cell.

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.

Signals

Tutorial: Using the Interface

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Analyzing Signals

(i) 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.

(i) 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.

| | , | / | | |
|--------------------------------------|----------------------|------|--|--|
| Amgen | Inc | | | |
| Compu | Display in Chart | | | |
| Second and | oot | | | |
| Microcl | Display in Spreadshe | 380 | | |
| mple E | Apply a Trading Solu | tion | | |
| Eastma | | | | |
| 100000000 | Add New Field | | | |
| Merck | Modify Fields | | | |
| mple E | • | | | |
| Dow Jo | Analyze Correlation: | 5 | | |
| 100000 | Analyze Predictions. | | | |
| Int'l Bus | | •• | | |
| PHLX C | Analyze Signals | | | |
| S&P 50 | N | | | |
| 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.

| Analysis for 01/02/1895 through 08/06/2004 | | | | |
|--|----------------------|------------------|-----------------|--|
| Entry / Exit Signals | Annualized Return | Arread Tradee | Percent Winn | |
| Optimal Signal () | 953.9% | 26.6 | 92.6% | |
| Model: Optimal Signal () | 37.3% | 39.8 | \$2.6% | |
| Buy Beld | 15.4% | 1.0 | 100.0% | |

Figure 2. Signal analysis grid for data series.

3. 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.
- 4. 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.

5. 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.

6. 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.

| | Analyze Displayed Range Analyze All Available Dates |
|------|--|
| | Display in Logarithmic Scale |
| | Zoom In |
| | Undo Last Scaling 🏼 🦕 |
| | |
| Figu | e 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.

| invite [lac | to Denine | Tet | ing/id | (p) | h Fiel | lipsity Curve | lenderic By Trad | b Indentify | 64 |
|--------------|-----------|-----|---------|-----|--------|---------------|------------------|-----------------|------|
| That Date | Peakon | | Av Its. | | 474 | Canvlant | Date Value | Bull Value | 6 |
| # 50950A | Life | 4 | 82.5% | Υ. | 31.5% | 445 | 40,500 | 64-0000 | |
| 0.00×0004 | 2444 | 7 | 22.276 | Δ. | 22.9% | 31% | 80-0000 | 40.3700 | |
| 100 100004 | Ling | 4 | 1111 | Ψ. | 4115 | 37% | 10.2208 | 41.4 300 | 1.1 |
| E3040004 | Long | 4 | 6105 | | 116% | 18% | | BHC708 | |
| \$1090004 | Long | 4 | 912% | 4 | 21.0% | 31% | 17 (100) | Bhield St. | |
| Ence pooe | Deart | | 04.176 | ð. | 315% | 105 | | LE HOS | 12.1 |
| Baccore a | Long | | 104 114 | | 1100 | 105 | 87 Hadd | Showard Showard | 1.5 |
| 10000000 | Long | 1. | 617% | 4 | 415% | 176 | \$4,1006 | 55-0006 | |
| amer 9004 | 5444 | | 925 | 4 | 47.7% | 115 | 55-9+06 | 55 1604 | |
| 00020000A | Ling | | 91.2% | 2 | 11.7% | 21% | 50,0001 | 54-9010 | |
| B/17 403304 | 2404 | 7 | 11.75 | 4 | 411% | 4276 | 54-8402 | 50-0000 | 1.64 |
| 8107 0004 | prod. | | 83.1% | Δ | 341% | 14% | 17 0000 | N-178 | |
| | | | | | | | | | 8 |

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.

| And by Field: Amgan, Inc.:) | Medel: Optimal Signal E. J. | | |
|--|--------------------------------------|--|-----------------------|
| Owners BesietOutur Per | Anterior Transferral | Peddor/Mobil Taimp Arabii | Tend Index |
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| The second secon | et et ques aux | | Destroyed 1 |
| P-many | Det 1 | Bolist Desi | |
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| LingToole | 107 83.1% | Pullindo | 1.14 |
| Short Name | 100 81.9% | Sharpe (Advantiged) | 114 |
| Figure 7. Loc | ation of Over | view" tab and | |
| Signal Analys | is Settings | a | nange |
| Style 0 | ptimized for SI | harpe using v2. | 1 and 10 |
| Range 0 | 1.02/1996 thro | ugh 08/06/2004 | 1 |
| Comments A | nalysis match | es optimization. | |
| | . Location of | Change" hut | ~~ |

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.

| TradingSolutions | | |
|---------------------|--------------|-------------|
| File Edit E | Bookmark Oj | ptions Help |
| Help <u>T</u> opics | <u>B</u> ack | |

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.

⇒ Continue to the next task.

b Modifying the Portfolio View

Tutorial: Using the Interface

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

Modifying the Portfolio View

| (| 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**.

| 1212233333 | | |
|---|-----|------------------------|
| dels | (h) | V Cain (4V w |
| | | Sort Values Ascending |
| orpora | | Sort Values Descending |
| inc. a | 7 | Modify Display Fields |
| any | | Remove Display Field |
| 100000000000000000000000000000000000000 | | 3 |

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.

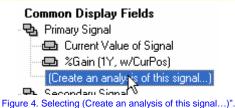
| ple End-of- | Dav Modele | | |
|---|-----------------------|--|--|
| | Sort Data Names | | |
| ngen, Inc. | Durit Data Maines | | |
| omputer Sci | Modify Display Fields | | |
| crochip Tec | Add New Subaroup | | |
| Figure 2. Selecting Modify Display Fields". | | | |

- 3. First, let's add the Primary Signal (⁽¹⁾). 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.

| Available Fields |
|---|
| 🔄 Sample End-of-Day Models |
| 🖻 🔁 Common Display Fields |
| 🖻 🔁 Primary Signal |
| Current Value of Signal |
| |
| (Create an analysis of this s |
| 📄 📩 🖬 - Cocondory Cional |
| 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.



- 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).

| Entry/Exit Signal | Princy Signal | |
|-------------------|--|---|
| Trading Style: | Trading style used for default analysis of signal. | - |
| Analysis Range. | 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.

| Select Analysis Fiel | ds To Create |
|----------------------|-----------------|
| Account Equity | ^ |
| Percent Gain | |
| Buy/Hold Percent | Gain |
| Percent Gain Ove | r Buy/Hold 🛛 🗧 |
| Number of Trades | |
| Percent Winning 1 | Trades 🛛 |
| Current Position | |
| Current Position Le | |
| Current Position P | ercent Gain 🛛 💙 |
| | C7 |
| Add Selection | Add Other |
| | |

Figure 6. Adding Percent Gain".

Vote: 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.

| - | Current Display (from left to right) |
|---|---|
| | Primary Signal %Gain (1Y, w/CurPos) #2 |
| | 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.

| i 📺 🖓 Jervice Jighar | | |
|--------------------------------|--|--|
| 🗄 🔁 Common Data | | |
| 🖅 🗣 Data Information | | |
| 🗉 🖶 Streaming Tick Information | | |
| 🗄 🔁 Other Display Fields | | |

Figure 8. Other display fields.

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

| Day Models | 0 | %Gain (1Y, w |
|-------------------------------------|----------|--------------|
| | A | 42.00% |
| nces Corpora | | 54.60% |
| nnology 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.

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 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 What To Do Next

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.

(i) 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.

(i) 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

Applying a Trading Solution Predicting the Optimal Signal Applying an Entry/Exit System Working with Multiple Stocks What To Do Next

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.

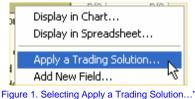


Figure 1. Selecting Apply a Trading Solution...

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

| *曾 | Der Der Faucher Het Hach Herzeichersteinen Tweie genetinnel heigt zweich geschleinen stehten im genetiken einig weit der digelichen in einer speciel fahrt. Tradege unklassen einer kennen fahrt speciel ein einer Fahreiche Haupelen im genetiken einer speciel auf der die weich kennellen ein beschleine Alter weiter. | |
|----|--|--|
| | To scole a trading advance, you will | |
| | Select for heir gehine for you wait it is to us. Kooge for detail articipally transfer while or Kooge for detail articipally transfer while or Kooge formany provided price. | |
| | De net dejuste reconcer page intentione | |

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.

| Trading Solution Groups |
|---|
| <trading ek="" for="" solutions=""></trading> |
| <all groups=""></all> |
| Step-by-Step Tutorial Solutions |
| Sample End-of-Day Model Solutions |
| Sample Intraday Model Solutions が |
| |

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

4. Select Sample Model for AMGN.

- Trading Solutions in the Selected Group Sample Model for AMGN Sample Model for CSC

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 c Descriptions box is check | lescription beneath the list of trading s ked. | olutions, make sure the Display |
|--|--|--|
| | Model an optimal signal using optimized functions. | |
| | including RSI, Money Flow, and Stochastic. | M |

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.

| Ann the labb that will be created by the hading cluster Selected Tandag Schem Isanae Model in Mill Nodel are called in card with the changes in the Million and the laboration of the selection of the interval and and the laboration of the selection of the ter fails' sample data | Additional options for applying the bading induces an analysis. Priors the batter bades to save the count account in hodily them. Stran-Advanced Boliess |
|---|---|
| The following field will be created for the fracting solate | r, ding off any model agoot field. |
| Hodel Optimal St | gudw'E Higher High |
| | |
| | illadi Pauli Canad |

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

Introduction

Applying a Trading Solution Predicting the Optimal Signal Applying an Entry/Exit System Working with Multiple Stocks What To Do Next

Add an Input to a Prediction

1 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.

| ck & Co., Inc. 🗆 | |
|------------------|---|
| e End-of-Day | Display in Chart Display in Spreadsheet. |
| X Gold and Si | Apply a Trading Solution |
| 9500 Index | Add New Field 📐 |
| e Intradav M | kaluka maluka M |
| Figure 1. Se | electing Add New Field". |

2. Select Generate an optimal signal and press Next.

| Stription des contexp des lates Veter word you ha fré innervielet de cit Veter word you ha contexp de cit | |
|--|--|
| 💽 🗆 Model to hodel to value. 💽 🦳 Apply a trading cold.tim. | |
| Consume or elect | |

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**.

| | In the second second |
|--------------|----------------------|
| | Edit Styles |
| oportunities | |
| 5 | ÷ X |
| 1 : | |
| 10 - | ন |
| | 1 |

- 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.

Value to Predict: Optimal Signal (Default Trading Style)

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.

| -Available inputs: |
|--|
| Select from fields in this data series |
| Merck & Co., Inc. |
| 🖻 🗣 Raw Data |
| Close 🕏 |
| Figure 6. Selecting Raw Data". |

13. 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.

| Available inputs: | |
|---|--------------------|
| Select from fields in this data se | eries |
| Select from fields in this data se Select from fields in another dat Select from optimizable function | eries ta series |
| Select from optimizable function | |

Figure 7. Selecting Select from optimizable functions".

- 14. 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.

| Select from | optimizable functions | - |
|-------------|--------------------------------------|-----|
| | Moving Average (Time Series) | 12 |
| | Moving Average (Variable Length) | - 8 |
| | Moving Average (Weighted) | |
| | Percent Difference from Median | |
| - 0 | Percent Difference from Moving Avera | ge. |
| | Percent Dillerence from Moving Avera | Q. |

Figure 8. Selecting Percent Difference from Moving Average".

15. Press Next to advance to the Select Options page.



Figure 9. Options for creating prediction.

- 16. 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**.
- 17. On the Create Prediction page, press Finish. TradingSolutions will begin optimizing the prediction.
- 18. Let TradingSolutions perform the requested tasks. Optimizing a new signal can take several minutes. For information on monitoring this processing, see the Notes.
- 19. 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.

Applying an Entry/Exit System

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

Applying an Entry/Exit System

1 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.

| - Li O O - Li | |
|---|--------------------------|
| ck & Co., Inc. | Display in Chart |
| e End-of-Day | |
| | Display in Spreadsheet. |
| v Jones Indus | |
| X Gold and Si | |
| A Guid and Si | Apply a Trading Solution |
| > 500 Index | A del stato martella |
| 600 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 | Add New Field 📐 |
| e Intradav M | MALAKE PERMAN |
| Figure 1, Se | electing Add New Field". |
| | |

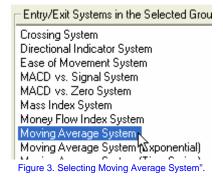
2. Select Apply a rule-based entry/exit system and press Next.

| date or grouped data Hearingth can be used in prediction, and and one | a canada a nave hald ha file anticidad anademider nach an Andrauten, Yakas Hald "Xiscon film dan kan kan han har hald ha har hald ha har had an wat dan kan file har |
|--|--|
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| sodger a signal | 📩 🗠 Deer narsally intereduction |

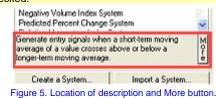
Figure 2. Location of Apply a rule-based entry/exit system."

- 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.



- 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.



- 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.

| 1 | Inputs Required By This Entry/Exit System | | |
|---|---|--|--|
| | Data = Close Short Period = 10 (Opt: 1 100) Long Period = 20 (Opt: 1 100) | | |

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.

| ⇒ | Con | nue to the next task. |
|---|-----|------------------------------|
| | Ð | Working with Multiple Stocks |

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

Working with Multiple Stocks

1 Tutorial Task

P

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

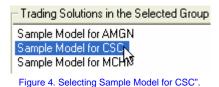
see the Notes.

- Right-click on the Sample End-of-Day Data group and select Apply a Trading Solution. This will display the Apply 1. 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, ed of Dour Doto 1 🗟 Sampl Sort Data Names ᠵ Eas Modify Display Fields... 📈 Mer Sampl Add New Subgroup... Z Dov Modify Subgroups... Z PHL Apply a Trading Solution. NS&F Campl Figure 1. Selecting Apply a Trading Solution."
- 2. Review the introduction to the Apply a Trading Solution Wizard and press the Next button.
 - P 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.

| Trading Solution Groups |
|---|
| <trading ek="" for="" solutions=""></trading> |
| <all groups=""></all> |
| Step-by-Step Tutorial Solutions |
| Sample End-of-Day Model Solutions |
| Sample End-of-Day Model Solutions |
| |

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

Select Sample Model for CSC. 4



- 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.

 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.

| Entry/Exit Signal: | Primary Signal |
|------------------------|--|
| Trading Style: | Primary Signal Secondary Signal Modet: Optimal Signal () |
| Analysis Range: | Modet Optimal Signal () #2 Modet Optimal Signal (Default Vice |
| Figure 6. Selecting th | e newly created field for analysis. |

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

| Select Analysis Fields To Create | |
|----------------------------------|----------|
| Account Equity | ^ |
| Percent Gain | |
| Buy/Hold Percent Gain | |
| Percent Gain Over Buy/Hold | = |
| Number of Trades | |
| Percent Winning Trades | |
| Current Position | <u> </u> |
| Current Position Length | 18 |
| Current Position Percent Gain | * |
| Add Selection Add Other | |

Figure 7. Adding Percent Gain".

- 14. Note the name of the field being created and press Finish.
- 15. Now, add this analysis to the Portfolio View. Right-click on the Sample End-of-Day Data group and select Modify Display Fields.
- 16. 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.

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

| Portfolio View | 08/06/2004 | 1 |
|-------------------------------|------------------|-------------|
| End-of-Day Last Updated: | 08/06/2004 | |
| 🕑 My Portfolio | | |
| 🕀 😋 Sample End-of-Day Models | | |
| | | |
| Computer Sciences Corpora | | |
| LZZ Microchip Technology Inc. | | |
| | %Gain (Mod | |
| | 11.23% | |
| LZ Merck & Co., Inc. | 22.74% | |
| 🛱 😋 Sample End-of-Day Indices | | |
| Dow Jones Industrial Average | | 88 - |
| PHLX Gold and Silver Index | | |
| LZZ SSP 500 Index | | |
| 🛱 🤤 Sample Intraday Models | Local States and | |
| c) | | 3 |

Figure 9. Scrolling the Portfolio View.

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



- 20. 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.
- 21. 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.
 - ſ 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.
 - P Note: If you do not remove the field and want to restore the original sort, right-clock 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.

⇔ Continue to the next task. ¢

What To Do Next

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 your 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.

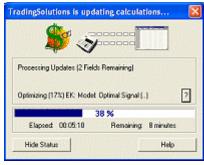


Figure 1. Example of a Status Dialog.

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**.

| Best Fitness 0.23049 | | |
|---|----------------|--|
| Stop Genetic | Optimization | |
| Calculating EK: Model: Opt | imal Signal () | |
| Optimizing: Generation 4/10, Test 2/25 | | |
| Optimizing: Generation 4/1 | 0. Test 2/25 | |
| Optimizing: Generation 4/1 Evaluating: Pass 1 of 1 | 0. Test 2/25 | |
| | 0. Test 2/25 | |
| | | |

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. |
|---|----------|--------|------|-------|
|---|----------|--------|------|-------|

Screating 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

| 1 | 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.





Vote: 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.

| an add some sea |
|--|
| Index Johann in Kriteko Burg, Andrekston L. Jackson Parkon Warneng Parkson I. Fandra Markon Warneng Parkson I. Fandra Markon Warneng Parkson I. Fandra Markon Sangti Adalah Salah Markon Sangti Adalah Salah Sangti Adalah Salah Salah |
| Role or establed action to appellate of the chaining prest of the next day, as decided in the Making You and the set decided in the Making You |
| New. Ed. Dates |
| |

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**.

| Estiles Trading Solations | Sec |
|---|---|
| "Solve scaling relation page to builting solution in reading Tanking California George Tanking California Source Solvers Source Solvers Source Solvers Source Solvers Source Solvers Source Solvers My Tanking Solutions | a di awa na Taning Lidawa n Ke Sekatel Jange |
| The schedule of today between the susceptible Facility Sections New Tel. Tel. Teles Sections | Por en volado situar in fe constituides del 20 por 1000 - En - En - En - 20 States Constitui |

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".

| Enter some basic infor | mation about the new trading so | ution. |
|------------------------|---------------------------------|--------|
| Solution Name: | My Salution | |
| Solution Group: | My Trading Solutions | - |

Figure 4. Entering a name for the new solution.

- 6. Press the Next button.
- 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.

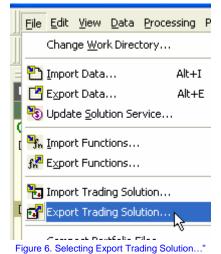
| · · · · · · · · · · · · · · · · · · · |
|---|
| 🖃 🕑 My Portfolio |
| 🚊 🔄 Sample End-of-Day Models |
| 🖻 🖂 Amgen, Inc. |
| |
| - Marth Ontimal Sign |
| Figure 5. Selecting the Primary Signal for Amgen. |

- 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.

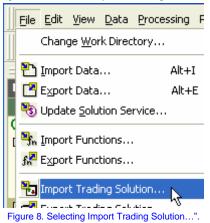


- 12. Select My Solution from the list of Trading Solutions in the Selected Group.
- 13. Press OK.
- 14. Select a name and location for the file, then press Save.
 - Note: By default, the file will be named based on the name of the trading solution and placed in the Sample Solutions directory, or whichever directory you worked with last.
 - Note: Trading solution files have the extension .tss".

| Save in: | Sample Solutions 💌 🔶 | | 🛨 🔟 - |
|---|--|---|---|
| First Prede Disproving Disproving Disproving | tions 1 - Traditional Prediction tas tions 2 - Ptoble Optimal Signal tas Predictors 1 - Financial Indicator tas Predictors 2 - External Data tas Hedictors 3 - Reprocess External Data tas del for AMSN tas | ii Sa ii Sa ii Sa ii Sa ii Sa | ngie Model for C ngie Model for D ngie Model for El ngie Model for M ngie Model for M ngie Model for M |
| < | | 1000 | > |
| File name: | My Solution too | | Save |
| | TradingSolutions ("Jan) | - | Cancel |

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.



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.

Continue to the next task.

Solution Writing Custom Functions

Tutorial: Using Advanced Features

Introduction

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

Writing Custom Functions

| 1 | 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:

Div (Sum (Data, Period), Period)

Step-by-step Instructions

1. Press the Define Functions button in the toolbar.

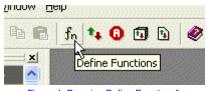


Figure 1. Pressing Define Functions".

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.

| Purcher Dongo | Function Definitions in the Delevies/Group |
|---|--|
| Control C | Adecian Sector Nate Jackara Fisch Nate (Jackara Fisch Nate Network) Adecian Visit Nate (Network) Adecian Visit Nate Adecian Visit Nate Adecian Visit Nate Adecian Visit Nate Adecian Visit Nate Adecian Visit Nate Adecian Adocian Ado |
| allowing, spaller of gas. | Determine the activity level of the mail of its collabolity [14 |
| | the difference between the advancing and decising insure and decising the sign |
| Nex. 1.1. Door | Nes. Ed. Cour |
| Charlen Contraction Contraction | P Dials Decision |

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**.

| Function Econopee | Function Definitions in the Delevier/Group |
|---|--|
| Spanishousepi-school Spanishou | |
| The caleries of facelines that per cal HyP-backers Rese. Diff. Date: Statuty The State: | Here, Lat Door |

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.

| Display Name: | My Moving Average |
|---------------|-------------------|
| Short Name: | MyMA |

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

| Description: | My function for a tutorial exercise. |
|--------------|--------------------------------------|
| Figure | e 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.

| | F | unction Definition | Special Processing |
|----|------|------------------------|--------------------------|
| | | Function Group: | |
| | | <all groups=""></all> | |
| | | Basic Math Funct | tions |
| | | Logical Comparis | ons |
| | | General Series Fr | unctions |
| Fi | gure | 6. Selecting the Basic | ic Math Functions" group |

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

| Function Definitions in this Function Group |
|---|
| Absolute Value |
| Add |
| Add Three |
| Average |
| Average Three |
| Ceiling |
| Divid |
| Evention |
| 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.



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

| No (2001 Links 7) | | |
|----------------------------|--|----------------------|
| | | |
| | | |
| | Levi Function Emiliation Episode Processing | |
| Sector & sector & stationy | Input feld ets for formals. Nationals specified | |
| | | Caste New Input |
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| | | Pearts 11 |
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| And and a second second | and the second s | |
| nu curcerette | | |

Figure 9. Location of Function Definition" tab.

12. 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.

| Function Definitions in this Function Group |
|---|
| Subtract |
| Summation |
| Summahon (Variable Length) |
| |
| Figure 10. Selecting the Summation" function. |

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

| Div (Sum (<i>Date</i> , Period) , Value 2 | ') |
|---|-----|
| Figure 11. Formula after Summation insert | ed. |

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

| and a value for the | TAC red to be Summitte humber | |
|---------------------|---|-----------------------|
| | | |
| | | |
| hourfield Purcha | Orinian IsocialProcessing | |
| - Intel a second se | alogingal feld etc for landa. | |
| | Receptor specified | Caste New Input |
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| | RUBE RECEIPTION AND A DESCRIPTION AND A | The Reserves of State |
| | There is a former | |
| | | |
| | Contract in the | Carcel Heb |

Figure 12. Location of Create New Input" button.

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

| Modify Input | | |
|-----------------------------|--|---|
| Modify this input to the lu | and the second | |
| Delauit Name: | 0.02 | |
| Type of Values: | Data Series | ¥ |
| Delault Numeric Value: | rva 🚍 | |
| 🗖 Use numeric value b | y default. | |
| 🗖 Include fris input due | ing optimization | |
| Optimization Ranger | [n/a → 10 [n/a → | |
| OK | Cancel Help | |

Figure 13. The Modify Input dialog.

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

| Div (Sum (Data , Period) , Value 2) |
|---|
| Figure 14. Formula after both inputs added. |

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

| existing input field into the formula. | |
|---|--|
| Data Period | |
| 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.

⇒ Continue to the next task.

♥ Writing Custom Entry/Exit Systems

Tutorial: Using Advanced Features

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

Writing Custom Entry/Exit Systems

(i) 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.

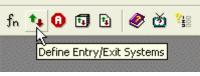


Figure 1. Pressing Define Entry/Exit Systems".

- 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.

| Define LengeTals Symmetry | C |
|--|--|
| - Cent analytical gives page as an entry half gives to Control of Lipschmann - Control of Lipschmann - Execution of Lipschmann - Rane Indexes Unders | Landing and a manufer Control Control of the Manufacture Control Control of the Manufacture Control of the Manufacture Manufacture Control of the Manufacture Man |
| Manufait primit, egades s'ana. | Cenerale entry ignet where a data select conservation in or taxion articologic or another data select. |
| Res. 14. Store | Hen. I.d. Drive |
| | 0e+ He 8 |

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**.

| Color a Latenciana Colorado Control Latencia Conten Real Inducto Conten My Cont Col Science | Tainy Tail Systems in the Tolensied Source |
|---|--|
| The pulseboar of weap-link between that are call the Complete discusses. Security Tele Society | These are to opticated systems in the particular systems of the partic |

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.

| Enter some basic infor | iter some basic information about the new entry/exit system | | |
|------------------------|---|--|--|
| Display Name: | MA System with Stop on Loss | | |

Figure 4. Entering a name for the new system.

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

| Ta Indu | actual his pouts cance a new endy/well puter. In yourse an useful to generate much strategy and set and yourse an useful to generate much strategy of the sector state of the sector to the sector strategy of the sector state of the sector to the sector strategy of the sector state of the sector strategy of the sector strategy of the sector state of the sector strategy of the sector strategy of the sector state of the sector strategy |
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| | Coox worker Circus (Fail Springer |
| | Test Next Carel 1 |

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.
 - Entry/Exit Systems in the Selected Group: Crossing System Directional Indicator System Ease of Movement System MACD vs. Signal System MACD vs. Zero System Mass Index System Money Flow Index System Moving Average System Moving Average System (Exponential) 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.

| Diseling Kalling | | | | |
|--|-----------------------------|-----------|------------|----|
| Indexte scharvic-ant Generate tric signal | he mailed by selling back o | ing pric. | | • |
| | | | | |
| | | | | |
| | | | | |
| Construction of the local sectors of the local sect | AM. | ER. Pan | our l | |
| | | | | |
| | | det P | lats Carol | He |

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

| | unction Definition | Special Processing |
|--------|-------------------------|----------------------------------|
| | Function Group: | |
| | Signal Filtering Fu | inctions |
| | | Functions and Rules |
| | Statistical Function | ins K |
| | Trigonometry Fun | ctions |
| Figure | e 9. Selecting Entry/Ex | tit System Functions and Rules". |

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

F

| Function Definitions in this Function Group |
|--|
| Previous Signal of System |
| Previous Signal of System (Variable Len; |
| Rule: Exit On Consecutive Losing Bars |
| Rule: Exit On Percent Gain |
| Rule: Exit On Percent Loss |
| Rule: Exit On Nercent Loss From High |
| igure 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...**

| e. Dethellorr i Bar | lan, fremindala, fa sh | 915 4 |
|-------------------------------|----------------------------|-----------------|
| or Field Faranter-Defender | (SpecialProcessing) | |
| inset arrow or existing input | I faiklinte the tomule | |
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| | | Cale La |
| | | Slide Boxes |
| | Interl Harris | 10 |
| | STORE CONSISTER STORES | |

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...**
- 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.

| Modily this input to the lu | nction definition. |
|-----------------------------|-------------------------|
| Default Name: | Percent Loss For Ext |
| Type of Values: | Data Series or Constant |
| Delault Numeric Value: | 5 |
| 🔽 Use nurveric value by | default. |
| 🗟 Include this input due | ng optinization. |
| Optimization Range: | 0 10 100 |

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.

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|------------|
| ethed hour |
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| in Dr. J |
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| |

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.

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| | Add |]ia] | Panova | |
| | AM | 1.1 | Pances | Carol P |

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.

| Enter an integer: | 1 |
|-------------------|---|
| | |

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**.

Modify the order and names of the inputs

| Data |
|-----------------------|
| Short Period |
| Long Period |
| Open |
| Close |
| Percent Loss For Exit |
| Percent Loss For Exit |

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

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

Predicting Future Prices Using Correlation Analysis

Predicting Future Prices

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....

| ,≂ Weyerha | euser Company |
|-------------|--|
| Sample End | Display in Chart |
| 🖉 Dow Jon | Display in Spreadsheet |
| | Apply a Trading Solutic |
| 3αF 300 | Add New Field |
| III III | •••••••••••••••••••••••••••••••••••••• |
| Figure 1 Se | lecting Add New Field " |

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

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| | then Next Carol Het |

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

- 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**.
 - Available inputs: Select from fields in this data series Merck & Co., Inc. Raw Data Close Hinh Figure 4. Selecting Raw Data".
- 8. Press Next to advance to the Select Options page.

| C Train without optimizing the inputs (quick). | Optimization Settings |
|--|-----------------------|
| P Briefly cotinize the inputs and settings. C Extensively optimize the inputs and settings (size). | Taining Settings. |
| what data should be used to train this model? | |
| | Training Range |

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**.

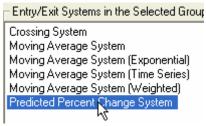


Figure 7. Selecting Predicted Percent Change System".

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

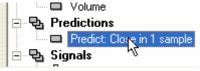


Figure 8. Selecting Predict: Close in 1 sample".

- 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.

➡ Continue to the next task.

Use Correlation Analysis

Tutorial: Using Advanced Features

Introduction Creating Trading Solutions

Writing Custom Functions Writing Custom Entry/Exit Systems Predicting Future Prices Using Correlation Analysis

Using Correlation Analysis

(i) 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.

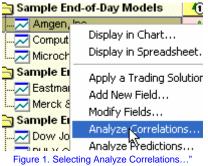
The main limitation of this is that Correlation Analysis identifies potential inputs based only on correlation. Other values may contain valuable information that is not linear in nature or is only relevant at certain times. Because of this, correlation analysis should not be viewed as the only source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



- 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**.

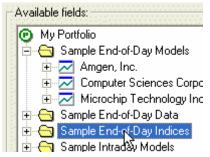


Figure 2. Selecting Sample End-of-Day Indices"

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.

| 2 | Would you like to | select a single l | field name from this | selection |
|---|-------------------|-------------------|----------------------|-----------|
| | Yes | No | Cancel | |

- 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.

| SChange in D | ow Jones Industrial Average: Close |
|--------------|------------------------------------|
| | |
| %Change in P | HLX Gold and Silver IndexClose |
| | &P 500 Index:Close |

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**.

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Figure 5. The Analysis Options" page.

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

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|---|---|--------------------|-------------------|-----------------|
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| techange in Fig. 1 cost and Silve Table Cost | 2 | 1,004 | 00003 | 0.000 |
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| Value mended for MPI confidence | 0.000 | 1,000 | 4400 | 4470 |
| Scharge in Dow Areas Industrial Average-Co | 10001 | 1,000 | 0.000 | 6.690 |
| Charge in Diff Gill Failes Group | 11112 | 1,001 | 0.0604 | C 040 |
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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.



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.

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

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

- 14. Review the introduction to the **Predict a Value Wizard** and press the **Next** button to advance to the **Select Desired Outputs** page.
- 15. 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**.
- 16. 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**.





- 17. Let's keep the remainder of the settings. Press Next, then Next again, then Finish to create the prediction.
- 18. TradingSolutions will being optimizing the prediction. Exit out of the Correlation Results by pressing OK.
- 19. 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.