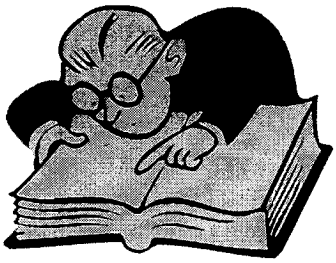

BULKY DOCUMENTS

(Exceeds 300 pages)

Proceeding/Serial No: 91173105

Filed: 10-28-08

Title: NOTICE OF FILING OF TESTIMONY

Part 1 of 4

Processed by Curtis Puryear

TTAB

WILMERHALE

Dyan Finguerra-DuCharme

+1 212 937 7203 (t)
+1 212 230 8888 (f)
dyan.finguerra-ducharme@wilmerhale.com

October 28, 2008

BY EXPRESS MAIL (EB 491291417 US)

Commissioner of Trademarks
US Patent & Trademark Office
TTAB
PO Box 1451
Alexandria, VA 22313-1451

#78339571

Dear Commissioner:

On October 29, 2008, Opposer Honda Motor Co. Ltd. filed its Notice of Testimony and Notice of Reliance through the ESTTA system. Although we have received the attached confirmation emails, it is unclear from the website whether all of the documents have been posted. Out of an abundance of caution, Opposer filed the Notice of Reliance yesterday further to 37 C.F.R. § 110 and is hereby submitting the enclosed complete Notice of Testimony.

Very truly yours,

Dyan Finguerra-DuCharme

DF:baw
Enclosures

cc: Michael Dalton (enclosures served under separate cover)

Winterble, Barbara

From: estta-server@uspto.gov
Sent: Monday, October 27, 2008 8:14 PM
To: Finguerra-DuCharme, Dyan
Subject: ESTTA. Plaintiff's Notice of Reliance confirmation receipt ID: ESTTA245204

Opposition No.: 91173105

Tracking No: ESTTA245204

ELECTRONIC SYSTEM FOR TRADEMARK TRIALS AND APPEALS Filing Receipt

We have received your Opposition No.: 91173105 submitted through the Trademark Trial and Appeal Board's ESTTA electronic filing system. This is the only receipt which will be sent for this paper. If the Board later determines that your submission is inappropriate and should not have been accepted through ESTTA, you will receive notification and appropriate action will be taken.

Please note:

Unless your submission fails to meet the minimum legal requirements for filing, the Board will not cancel the filing or refund any fee paid.

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The status of any Board proceeding may be checked using TTABVUE which is available at http://ttabvue.uspto.gov Complete information on Board proceedings is not available through the TESS or TARR databases. Please allow a minimum of 2 business days for TTABVUE to be updated with information on your submission.

The Board will consider and take appropriate action on your filing in due course.

Printable version of your request is attached to this e-mail

ESTTA server at http://estta.uspto.gov

ESTTA Tracking number: ESTTA245204
Filing date: 10/27/2008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

Proceeding: 91173105
Party: Plaintiff
Honda Motor Co., Ltd.

Correspondence Address: Mark G. Matuschak
Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, MA 02109
UNITED STATES
mark.matuschak@wilmerhale.com, cora.han@wilmerhale.com Phone:

Submission: Plaintiff's Notice of Reliance

Filer's Name: Dyan Finguerra-DuCharme
Filer's e-mail: dyan.finguerra@wilmerhale.com
Signature: /dyan finguerra-ducharme/
Date: 10/27/2008

Attachments: Notice of reliance tab C.pdf (48 pages)

Winterble, Barbara

From: estta-server@uspto.gov
Sent: Monday, October 27, 2008 8:09 PM
To: Finguerra-DuCharme, Dyan
Subject: ESTTA. Plaintiff's Notice of Reliance confirmation receipt ID: ESTTA245201

Opposition No.: 91173105

Tracking No: ESTTA245201

ELECTRONIC SYSTEM FOR TRADEMARK TRIALS AND APPEALS Filing Receipt

We have received your Opposition No.: 91173105 submitted through the Trademark Trial and Appeal Board's ESTTA electronic filing system. This is the only receipt which will be sent for this paper. If the Board later determines that your submission is inappropriate and should not have been accepted through ESTTA, you will receive notification and appropriate action will be taken.

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The Board will consider and take appropriate action on your filing in due course.

Printable version of your request is attached to this e-mail

ESTTA server at http://estta.uspto.gov

ESTTA Tracking number: ESTTA245201
Filing date: 10/27/2008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

Proceeding: 91173105
Party: Plaintiff
Honda Motor Co., Ltd.

Correspondence Address: Mark G. Matuschak
Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, MA 02109
UNITED STATES
mark.matuschak@wilmerhale.com, cora.han@wilmerhale.com Phone:

Submission: Plaintiff's Notice of Reliance

Filer's Name: Dyan Finguerra-DuCharme
Filer's e-mail: dyan.finguerra@wilmerhale.com
Signature: /dyan finguerra-ducharme/
Date: 10/27/2008

Attachments: notice of reliance Tab B.pdf (22 pages)

Winterble, Barbara

From: estta-server@uspto.gov
Sent: Monday, October 27, 2008 8:03 PM
To: Finguerra-DuCharme, Dyan
Subject: ESTTA. Plaintiff's Notice of Reliance confirmation receipt ID: ESTTA245198

Opposition No.: 91173105

Tracking No: ESTTA245198

ELECTRONIC SYSTEM FOR TRADEMARK TRIALS AND APPEALS Filing Receipt

We have received your Opposition No.: 91173105 submitted through the Trademark Trial and Appeal Board's ESTTA electronic filing system. This is the only receipt which will be sent for this paper. If the Board later determines that your submission is inappropriate and should not have been accepted through ESTTA, you will receive notification and appropriate action will be taken.

Please note:

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If you have a technical question, comment or concern about your ESTTA submission, call 571-272-8500 during business hours or e-mail at estta@uspto.gov.

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The Board will consider and take appropriate action on your filing in due course.

Printable version of your request is attached to this e-mail

ESTTA server at http://estta.uspto.gov

ESTTA Tracking number: ESTTA245198
Filing date: 10/27/2008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

Proceeding: 91173105
Party: Plaintiff
Honda Motor Co., Ltd.

Correspondence Address: Mark G. Matuschak
Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, MA 02109
UNITED STATES
mark.matuschak@wilmerhale.com, cora.han@wilmerhale.com Phone:

Submission: Plaintiff's Notice of Reliance

Filer's Name: Dyan Finguerra-DuCharme
Filer's e-mail: dyan.finguerra@wilmerhale.com
Signature: /dyan finguerra-ducharme/
Date: 10/27/2008

Attachments: Ex A cont part 1.pdf (50 pages)

Winterble, Barbara

From: ...tta-server@uspto.gov
Sent: Monday, October 27, 2008 7:39 PM
To: Finguerra-DuCharme, Dyan
Subject: ESTTA. Plaintiff's Notice of Reliance confirmation receipt ID: ESTTA245188

Opposition No. .173105

ESTTA Tracking number: ESTTA245188

...T FOR TRADEMARK TRIALS AND APPEALS Filing Receipt

...your Opposition No.: 91173105 submitted through
...rial and Appeal Board's ESTTA electronic filing
...the only receipt which will be sent for this
...oard later determines that your submission is
...nd should not have been accepted through ESTTA, you
...otification and appropriate action will be taken.

Please note:

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The Board will consider and take appropriate action on your filing in due course.

Printable version of your request is attached to this e-mail

ESTTA server at http://estta.uspto.gov

ESTTA Tracking number: ESTTA245188
Filing date: 10/27/2008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

Proceeding: 91173105
Party: Plaintiff
Honda Motor Co., Ltd.

Correspondence Address: Mark G. Matuschak
Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, MA 02109
UNITED STATES
mark.matuschak@wilmerhale.com, cora.han@wilmerhale.com Phone:

Submission: Plaintiff's Notice of Reliance

Filer's Name: Dyan Finguerra-DuCharme
Filer's e-mail: dyan.finguerra@wilmerhale.com
Signature: /dyan finguerra-ducharme/
Date: 10/27/2008

Attachments: Notice of reliance ex A cont exihbits.pdf (98 pages)

Winterble, Barbara

From: estta-server@uspto.gov
Sent: Monday, October 27, 2008 7:14 PM
To: Finguerra-DuCharme, Dyan
Subject: ESTTA. Plaintiff's Notice of Reliance confirmation receipt ID: ESTTA245180

Opposition No.: 91173105

Tracking No: ESTTA245180

ELECTRONIC SYSTEM FOR TRADEMARK TRIALS AND APPEALS Filing Receipt

We have received your Opposition No.: 91173105 submitted through the Trademark Trial and Appeal Board's ESTTA electronic filing system. This is the only receipt which will be sent for this paper. If the Board later determines that your submission is inappropriate and should not have been accepted through ESTTA, you will receive notification and appropriate action will be taken.

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The Board will consider and take appropriate action on your filing in due course.

Printable version of your request is attached to this e-mail

ESTTA server at http://estta.uspto.gov

ESTTA Tracking number: ESTTA245180
Filing date: 10/27/2008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

Proceeding: 91173105
Party: Plaintiff
Honda Motor Co., Ltd.

Correspondence Address: Mark G. Matuschak
Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, MA 02109
UNITED STATES
mark.matuschak@wilmerhale.com, cora.han@wilmerhale.com Phone:

Submission: Plaintiff's Notice of Reliance

Filer's Name: Dyan Finguerra-DuCharme
Filer's e-mail: dyan.finguerra@wilmerhale.com
Signature: /dyan finguerra-ducharme/
Date: 10/27/2008

Attachments: Notice of Reliance Ex A.pdf (131 pages)
Notice of reliance ex A continued.pdf (105 pages)

Winterble, Barbara

From: -server@uspto.gov
Sent: day, October 27, 2008 7:09 PM
To: uerra-DuCharme, Dyan
Subject: TA. Plaintiff's Notice of Reliance confirmation receipt ID: ESTTA245178

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Oppositic

Tracki TRADEMARK TRIALS AND APPEALS Filing Receipt

ır Opposition No.: 91173105 submitted through
and Appeal Board's ESTTA electronic filing
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mission fails to meet the minimum legal
for filing, the Board will not cancel the filing or
fee paid.

have a technical question, comment or concern about your
submission, call 571-272-8500 during business hours or
ail at estta@uspto.gov.

The status of any Board proceeding may be checked using TTABVUE which is available at http://ttabvue.uspto.gov Complete information on Board proceedings is not available through the TESS or TARR databases. Please allow a minimum of 2 business days for TTABVUE to be updated with information on your submission.

The Board will consider and take appropriate action on your filing in due course.

Printable version of your request is attached to this e-mail

ESTTA server at http://estta.uspto.gov

ESTTA Tracking number: ESTTA245178
Filing date: 10/27/2008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

Proceeding: 91173105
Party: Plaintiff
Honda Motor Co., Ltd.

Correspondence Address: Mark G. Matuschak
Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, MA 02109
UNITED STATES
mark.matuschak@wilmerhale.com, cora.han@wilmerhale.com Phone:

Submission: Plaintiff's Notice of Reliance

Filer's Name: Dyan Finguerra-DuCharme
Filer's e-mail: dyan.finguerra@wilmerhale.com
Signature: /dyan finguerra-ducharme/
Date: 10/27/2008

Attachments: Notice of reliance.pdf (5 pages)

Winterble, Barbara

From: estta-server@uspto.gov
Sent: Monday, October 27, 2008 6:32 PM
To: Finguerra-DuCharme, Dyan
Subject: ESTTA. Testimony For Plaintiff confirmation receipt ID: ESTTA245163

Opposition No.: 91173105

Tracking No: ESTTA245163

ELECTRONIC SYSTEM FOR TRADEMARK TRIALS AND APPEALS Filing Receipt

We have received your Opposition No.: 91173105 submitted through the Trademark Trial and Appeal Board's ESTTA electronic filing system. This is the only receipt which will be sent for this paper. If the Board later determines that your submission is inappropriate and should not have been accepted through ESTTA, you will receive notification and appropriate action will be taken.

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The Board will consider and take appropriate action on your filing in due course.

Printable version of your request is attached to this e-mail

ESTTA server at http://estta.uspto.gov

ESTTA Tracking number: ESTTA245163
Filing date: 10/27/2008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

Proceeding: 91173105
Party: Plaintiff
Honda Motor Co., Ltd.

Correspondence Address: Mark G. Matuschak
Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, MA 02109
UNITED STATES
mark.matuschak@wilmerhale.com, cora.han@wilmerhale.com Phone:

Submission: Testimony For Plaintiff

Filer's Name: Dyan Finguerra-DuCharme
Filer's e-mail: dyan.finguerra@wilmerhale.com
Signature: /dyan finguerra-ducharme/
Date: 10/27/2008

Attachments: Mangham ex 24 00956-001057.pdf (102 pages)
Mangham exhibit 24001058-1133.pdf (76 pages)
Mangham exhibit 22 00710-00801.pdf (92 pages)

Winterble, Barbara

From: estta-server@uspto.gov
Sent: Monday, October 27, 2008 6:19 PM
To: Finguerra-DuCharme, Dyan
Subject: ESTTA. Testimony For Plaintiff confirmation receipt ID: ESTTA245154

Opposition No.: 91173105

Tracking No: ESTTA245154

ELECTRONIC SYSTEM FOR TRADEMARK TRIALS AND APPEALS Filing Receipt

We have received your Opposition No.: 91173105 submitted through the Trademark Trial and Appeal Board's ESTTA electronic filing system. This is the only receipt which will be sent for this paper. If the Board later determines that your submission is inappropriate and should not have been accepted through ESTTA, you will receive notification and appropriate action will be taken.

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The Board will consider and take appropriate action on your filing in due course.

Printable version of your request is attached to this e-mail

ESTTA server at http://estta.uspto.gov

ESTTA Tracking number: ESTTA245154
Filing date: 10/27/2008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

Proceeding: 91173105
Party: Plaintiff
Honda Motor Co., Ltd.

Correspondence Address: Mark G. Matuschak
Wilmer Cutler Pickering Hale and Dorr LLP
60 State Street
Boston, MA 02109
UNITED STATES
mark.matuschak@wilmerhale.com, cora.han@wilmerhale.com Phone:

Submission: Testimony For Plaintiff

Filer's Name: Dyan Finguerra-DuCharme
Filer's e-mail: dyan.finguerra@wilmerhale.com
Signature: /Dyan Finguerra-DuCharme/
Date: 10/27/2008

Attachments: Filing of testimony.pdf (3 pages)
Mangham transcript.pdf (71 pages)
Mangham exhibits 1-20.pdf (60 pages)
Mangham ex 21 000001-000099.pdf (99 pages)
Mangham ex 21 000100-000160.pdf (61 pages)
Mangham ex 21 00161-000273.pdf (113 pages)
Mangham ex 21 000246-0000346.pdf (73 pages)
Mangham ex 22 00585-00649.pdf (65 pages)
Mangham ex 22 00650-00709.pdf (60 pages)
Mangham ex 22 00802-00907.pdf (106 pages)
Mangham ex 23 000347-000440.pdf (94 pages)
Mangham ex 23 00441-000542.pdf (102 pages)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

In the Matter of Application Serial No. 78/339,571
Published: May 30, 2006 at TM 674
Mark: DEALERDASHBOARD

HONDA MOTOR CO., LTD.,	)	Opposition No. 91/173,105
	)	
Opposer,	)	
	)	
v.	)	
	)	
MICHAEL DALTON,	)	
	)	
Applicant	)	
	)	

NOTICE OF FILING OF TESTIMONY

Opposer Honda Motor Co., Ltd. hereby files the transcript of Cyndee Mangham taken on September 16, 2008, along with Exhibits 1 through 24, pursuant to 37 C.F.R. § 2.125. Further to 37 C.F.R. § 2.123, this transcript has been certified by the officer taking the deposition and the exhibits have been properly prepared.

Dated: New York, New York
October 27, 2008

Respectfully submitted,

WILMER CUTLER PICKERING
HALE and DORR LLP

By: _____
Dyan Finguerra-DuCharme
399 Park Avenue
New York, NY 10022
(212) 937-7203

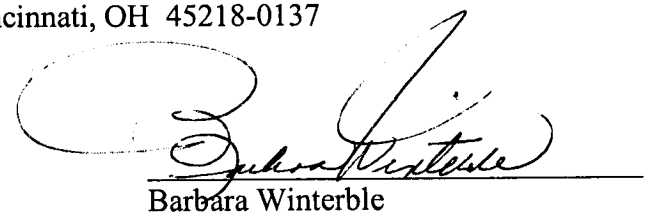
Mark G. Matuschak
60 State Street
Boston, Massachusetts 02109
(617) 526-6000

Attorneys for Opposer
Honda Motor Co., Ltd.

Certificate of Service

I hereby certify that a true and complete copy of the foregoing Opposer's Notice of Filing of Testimony has been served by FedEx to:

Michael Dalton
Box 18137
670 Northland Blvd.
Cincinnati, OH 45218-0137



Barbara Winterble

CERTIFIED TRANSCRIPT

UNITED STATES PATENT AND TRADEMARK OFFICE

HONDA MOTOR CO., LTD.,	)	
	)	
Opposer,	)	
	)	
vs.	)	OPPOSITION NO.
	)	91173105
MICHAEL DALTON,	)	
	)	
Applicant.	)	
	)	

Trial Testimony of CYNTHIA MANGHAM, at 3635 Fashion Way, Torrance, California, commencing at 10:00 a.m., Tuesday, September 16 ,2008, before Deborah L. Heskett, CSR No. 11797.

PAGES 1 - 60

APPEARANCES OF COUNSEL:

FOR HONDA MOTOR CO., LTD.:

WILMER CUTLER PICKERING HALE AND DORR LLP
BY: DYAN FINGUERRA-DUCHARME, ATTORNEY AT LAW
399 Park Avenue
New York, New York 10022
(212) 937-7203
dyan.finguerra-ducharme@wilmerhale.com

ALSO PRESENT:

LINDA YAMADA

Tuesday, September 16 ,2008, Torrance, California

10:00 a.m.

-- o0o --

CYNTHIA MANGHAM,

the witness, having been administered an oath in accordance with CCP Section 2094, testified as follows:

EXAMINATION

BY MS. FINGUERRA-DUCHARME:

Q. Good morning. Will you please state your name.

A. Cynthia Mangham.

Q. And are you employed?

A. Yes. At American Honda.

Q. And what is your position?

A. Manager of the interactive network marketing and rollout.

Q. Before we get into what your current job responsibilities are, why don't we start with your background.

A. All right.

Q. Where did you go to college?

A. University of Florida.

Q. And what degree did you earn?

A. Business Administration, marketing. Bachelor

of Science in business administration in marketing specialty.

Q. What did you do after you graduated from the University of Florida?

A. I went to the company called Computer Forms & Systems.

Q. And how long were you at Computer Forms & Systems?

A. Nine months.

Q. And what was your job at Computer Forms & Systems?

A. I was a sales trainee for computer supplies and accessories.

Q. And what did you do after you left Computer Forms & Systems?

A. Went to a company called ECZELL.

Q. And what did you do at ECZELL?

A. I started as a sales trainee, and then I was in purchasing and product development.

Q. Okay. And how long did you work at ECZELL?

A. Approximately two years.

Q. And what did you do when you left ECZELL?

A. Went to a company called Contel.

Q. And what was your position at Contel?

A. I started in market research, and then I was a

marketing administrator.

Q. And how long were you there for?

A. About four years.

Q. And what did you do when you left Contel?

A. Went to power equipment at American Honda.

Q. And what position did you hold initially at Honda?

A. Assistant manager of market research.

Q. And what were your responsibilities as the assistant manager?

A. Conducting primary and secondary market research on power equipment consumers and with our dealers, power equipment dealers.

Q. And when you say conducting primary research on power equipment, what does that involve?

A. Primary research is research that is developed by us or by a company that was hired by us as opposed to a company going out and researching multiple people or customers for a number of companies.

Q. And would that latter definition be secondary market research?

A. Yes.

Q. And how long did you hold the position of assistant manager of marketing?

A. About two years, year and a half. About year

and a half, actually.

Q. And what happened after that?

A. I went to the service division, automotive service division, as a marketing administrator.

Q. And what did that entail?

A. I was responsible for our customer satisfaction surveys.

Q. And how long were you in that position for?

A. About two years.

Q. And what position did you move to after that?

A. I went to the parts division and was originally marketing administrator for research and then assistant manager of marketing research.

Q. Okay. And when did you move into the position you are currently in?

A. In 2000, I started working in E-Business division in the role of -- working with the interactive network.

Q. What is the E-Business division?

A. E-Business division is a short-lived division that started in 2000, and it existed for about four years at American Honda. And it consisted of technical and nontechnical staff working on E-Commerce projects. And it was split into two areas within the group, and that was business to dealer and business to consumer.

And I was on the business-to-dealer side.

Q. Okay. And what about today?

A. I am still working on the interactive network.

Q. Okay. And are you on both sides, or are you just business to dealer?

A. E-Business no longer exists, and we are actually in separate divisions. So as of right now, we are in the automotive sales division, even though we support all the different dealerships. And the B-to-C side is in the automotive operations division.

Q. Okay.

A. So they are completely separated.

Q. And what exactly are your responsibilities now?

A. My interactive network is our dealer communication system. And our group is responsible for working with the dealers and working with other business units to help our IT group develop applications that enhance the interactive network so it's a better product for them.

Q. Okay. And how familiar are you with the automotive industry?

A. I'm very familiar.

Q. Okay. In total, how long have you been working in the automotive industry?

A. It's about 17 years.

Q. Okay. And how much of your time is dedicated to working with car dealers?

A. Probably 85 percent of the time.

Q. Okay. I'm going to move now into talking a bit about the way terms are used in the automotive industry --

A. Okay.

Q. -- or in the business world in general. So the first term I want to talk about is dealer.

A. Okay.

Q. Are you familiar with the term dealer?

A. Yes.

Q. And how are you familiar with the term dealer?

A. As it relates to the automotive business, I'm familiar with it from working with dealers and having to do research about dealers and with dealers.

Q. And what does the term dealer mean?

A. Dealer is basically, the middleman between us and the consumers. They are the ones who purchase our product and sell it to consumers.

Q. Okay.

A. And the dealer is the owner of the business.

Q. And what term is used to describe the dealer's business?

A. Dealership.

Q. Do you know -- strike that.

What do you base your definition of dealer upon?

A. Well, if you look it up on the Internet or if you look in the dictionary or just knowledge, kind of has a file of all of our dealers, and the data element for the person who owns a dealer is called dealer.

Q. How does -- strike that.

Do you know whether the definition of the term dealer is acceptable in the industry?

A. Yes. It's widely known.

Q. And how does Honda use the term dealer?

A. As the person who owns the dealership.

Q. And throughout your tenure at Honda, have you ever become aware of other companies in the United States using the term dealer to describe their services?

A. Yes.

Q. Can you provide me with some examples?

A. Well, in most companies, there's electronics dealers or -- people who sell office supplies are considered dealers or any -- any business where you're purchasing a product and selling it without modifying it is usually considered a dealer. The person who owns it is the dealer.

Q. Now, I want to talk about another term, dashboard.

A. Okay.

Q. Other than as a console in a car, what other types of dashboards are you familiar with?

A. Dashboard is -- it's a definition for a user interface, for a product that provides a snapshot of key indicators, usually for executive level people at -- within a business.

Q. And when did interactive dashboards become popular?

A. Interactive dashboards probably -- well, around the -- when the Internet became more prevalent, it became more viable. It became viable to have dashboards as we know them now.

Q. Does the term dashboard describe the functions and features of these interactive products?

A. Could you repeat that?

Q. Does the term dashboard describe the functions and features of these interactive products?

A. Yes.

Q. How so?

A. Basically, a dashboard, just like a dashboard on a car, is just a quick snapshot of what you need to know, in the case of a business dashboard, to run your

business, like in a car, you need to see the dashboard in order to operate the car properly.

Q. What types of information is generally found on a dashboard?

A. It's usually key operating indicators and real-time information data that can be updated frequently. If it's something that's only updated monthly, it probably wouldn't -- or yearly, it wouldn't be on the dashboard.

Q. When you say "key operating indicators," what do you mean by that?

A. Indicators that somebody in the -- usually in the management, definitely -- or usually in the executive, definitely in a management position, needs to run their business or to help them better run their business.

Q. Can you give me some examples of what a key operating indicator would be?

A. In our case, number of vehicles they are selling, their inventory, their turn on the inventory, their customer satisfaction ratings, the percent complete of training.

Q. And when you said before "real-time information," what do you mean by real-time information data?

A. It's information that is updated almost immediately from the time it's available. For example, for retail delivery registrations, dealership personnel would input the information into their interactive network, and within 10, 15 minutes, they would see that information show up on the report, that they had sold that car, vehicle.

Q. Now, are there other terms that describe this kind of a product?

A. A dashboard?

Q. Right.

A. Reports, summary reports. I usually hear it referred to as dashboard or digital dashboard.

Q. Is there a general understanding of the term dashboard for use in business?

A. Yes.

Q. And is the term dashboard unique to the automotive industry?

A. No, it's not.

Q. All right. Before, you had mentioned that you were in charge -- or you are responsible for parts of Honda's interactive network system.

A. Uh-huh.

Q. Can you talk a little bit more about what that means and how it works?

A. What the interactive network is?

Q. Uh-huh.

A. Interactive network is our dealer communication system. So all automotive dealers -- automotive companies, excuse me, have a dealer communication system, or it's referred to as DCS in the industry. And it's a way for dealers and manufacturers to communicate with each other, including us providing information to the dealerships, such as we do in the dashboard or dealers providing us information as to the number of cars they've sold, what kind of parts they want to order, or -- just a wealth of information that goes back and forth.

Q. And communicating with your dealers is the primary mechanism now that you use a dashboard?

A. Yes. Yes.

Q. And you mentioned too that the dealers, they can communicate with each other?

A. Correct.

Q. They do that through the dashboard?

A. Yeah. There are some applications on the interactive network, such as bulletin boards, where they can post, and dealers can respond to those posts. Or there's something called a parts locater or a vehicle locater, and that's where dealership personnel is

looking for a specific part or a car that they -- if they have a customer, let's say, who needs a car or a part for their vehicle, they can find out where those vehicles or parts are located. And they can either e-mail that person; they can call the person.

If it's something called a critical part or a part that's an obsolescent part that -- for example, a part that hasn't been around for 30 years for a car that's -- or 30 years old or 20 years old and it's a part that Honda doesn't sell, they can post a message. And the next day, all the dealerships will receive a message saying such and such dealer needs X part and to let them know to contact that dealership if they have it.

Q. And that message gets posted on the dashboard?

A. No. It gets posted on the interactive network.

Q. So how is the interactive network different from the dashboard?

A. The dashboard is one of the applications that resides on the interactive network. So you can go -- when you log in to the interactive network, depending on your job role, if you're a dealer, the first thing you see is the dashboard. And from there, you can go to any other application on IN.

Q. I see.

So the dashboard is a portal through which you can get to other areas on IN?

A. No. IN is the portal; the dashboard is one of the tools or applications on IN.

Q. Okay. But the first thing that the dealer sees when they log in to the system is their own personal dashboard?

A. Right. Most of the IN users would see the home page, which is messages -- the messages that they receive and few links to different applications. If you are a dealer, the first page that you would see is the dashboard.

Q. Did there come a time when Honda used the term dealer dashboard in connection with its interactive network system for dealers?

A. No.

Q. Did there come a time when Honda used the term dealer dashboard in connection with its dealers at all?

A. Well, the dealer dashboard is a tool for the dealers, and it resides on the interactive network.

MS. FINGUERRA-DUCHARME: All right. Let's go off the record for a second.

(Recess taken.)

BY MS. FINGUERRA-DUCHARME:

Q. Did there come a time when Honda used the term

dealer dashboard to describe an application?

A. Yes.

Q. What did it use it in -- what service or product did it use the term dealer dashboard in connection with?

A. Our dealer dashboard that we offer to dealer principals.

Q. Okay. And what did it consist of?

A. Key operating indicators and information about that dealership to help them perform better.

Q. How did it come about that Honda developed a dashboard for dealers?

A. Our dealers requested information on E-Business products, like our Owner Link, which is a consumer product for new -- actually for existing car owners of Honda products. And there are a variety of reports in different areas, and they were mentioning that they didn't have access to those reports, and it would be nice to have a place where they had a summary of all the information.

So we started investigating the dashboard and just -- a dashboard-type product, and we decided to add other key operating indicators on there other than E-Business so they would actually be interested in looking at all the information.

Q. What are the key indicators that you add?

A. The retail delivery, sales inventory information, customer satisfaction information.

Q. And when did Honda first begin using the term dealer dashboard?

A. In 2004.

Q. And you may have already answered this, but what was the purpose of Honda's dealer dashboard?

A. To provide a summary of information to the dealer principal.

Q. What made Honda choose the term dealer dashboard to describe its product?

A. Prior to our group existing, the technical group was responsible for naming the applications on IN. And they had a tendency to come up with clever marketing types of names, and it was difficult for dealerships to find applications. And based -- that was based on research. We went out and asked dealers about their opinion on the interactive network.

And based on that, my group was directed by me -- and in this case, this was my product -- to name applications as -- for what they are as opposed to coming up with marketing terms, since this is really a utility site. It's not something we are trying to sell the dealers.

Q. And when you say that it was -- in this case, you wanted to come up with a name for an application as for what they are as opposed to a marketing term, what do you mean by that?

A. So in this case, it's a dashboard. And it's a dashboard for dealers, so it's called dealer dashboard. And we knew in the future that we might have a dashboard for, for example, sales managers. So it would be called sales manager dashboard or service manager dashboard. And basically, the dealer is the audience and dashboard is what it is.

Q. Who did you work with to develop the dealer dashboard?

A. Our interactive network development team and also the dealers' advisory board and other managers at American Honda.

Q. What does Honda's dealer dashboard look like?

A. Now it has four tabs. At the time when it was first developed, there were three tabs by department in the dealership. So there's a sales, service, and parts.

And on there, it's a series of numbers or snapshots of reports. And on each of the reports, the title -- some of the titles are underlined. If it's underlined, then that means it's a link, which is standard for the Internet industry: If it's underlined,

it's usually a link. And by "link," I mean they can click on it, and it takes them somewhere. It either takes them to an application that elaborates on the report, or it takes them to a report with a lot more detail.

So on the dashboard, it's a summary of all those various reports and applications.

Q. And who has access to Honda's dealer dashboard?

A. Any user at a dealership that is given access. Dealer principals are automatically given access to the application. Other than that, the dealer has to assign it to the person.

Q. And who is the primary audience for Honda's dealer dashboard?

A. Dealer principals.

MS. FINGUERRA-DUCHARME: Let's take a short recess again.

(Recess taken.)

BY MS. FINGUERRA-DUCHARME:

Q. When a dealer opens up the application for the dashboard, what do they see on their screen?

A. They see a title that says dashboard, and there are three tabs. And it also automatically opens up to the sales tab. So they will see the various snapshot figures or reports on the page for the sales area.

Q. All right. Now, we are going to talk a bit about other people who use the term dealer dashboard or dashboard.

A. Okay.

(Deposition Exhibit 1 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. I have just handed you a document that has been marked Exhibit 1.

A. Yes.

Q. And it consists of Bates numbers H-001142 through 001143.

A. Okay.

Q. And are you familiar with this document?

A. Yes.

Q. Actually, let's just back up for a second.

Can you tell me what research you've done concerning the third-party use of the term dealer dashboard?

A. I ran several searches on Google on dealer dashboard -- on Google, Yahoo!, and AOL -- and I also have read a number of books.

Q. Okay. Can you walk me through the steps that you took when you conducted your Internet research?

A. Yes. I pulled up the search engine, like in

this case, Google or AOL or Yahoo!, and I typed in the word "dealer dashboard." And from there, I got over 9 million hits.

And then I went through the different selections and clicked on most of them, other than the ones that were related directly to a vehicle dashboard, and read the article and went to different links -- or read the site, not the article -- to review the site and went to different links attached to that -- tied to that site and reviewed them.

Q. So now, if you can take a look at Exhibit 1 that I handed you.

A. Okay.

Q. What is Exhibit 1?

A. It is for a product called CORDA CenterView. It's a dashboard software.

Q. And have you seen Exhibit 1 before?

A. Yes.

Q. When did you first come across Exhibit 1?

A. August 3rd, 2008.

Q. Okay. And does Exhibit 1 accurately reflect the Web site that you reviewed when you were doing your Internet research?

A. Yes, it does.

Q. I assume August 3rd is the date you did your

Internet research?

A. Well, it says that. It varies by document.

Q. Okay.

A. I did searches multiple times, but I printed it out the day I did the search.

Q. Okay. If you could look on the first page of Exhibit 1, H-001142.

A. Uh-huh.

Q. You'll see towards the bottom, it says, About a dashboard. Can you read to me how it describes a dashboard?

A. A dashboard is like a dashboard of a car, always supplying the user with all the vital information to manage your performance. The dashboard helps you see where you've been and where your business is going.

Q. Okay. Is this definition of dashboard consistent with your own understanding and use of the term dashboard?

A. Yep. Perfect.

Q. Okay. And is this definition of dashboard in line with the way Honda uses the term in its dashboard product?

A. Yes, it is.

(Deposition Exhibit 2 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. We've just marked Exhibit 2, which consists of H-001149 through H-001151.

What is Exhibit 2?

A. It is a screen shot of a company -- of a site called First Break Consulting.

Q. Have you seen Exhibit 2 before?

A. Yes.

Q. When did you first come across Exhibit 2?

A. During my search on August 3rd, 2008.

Q. Does Exhibit 2 accurately reflect the Web site that you reviewed when you did your Internet research?

A. Yes, it does.

Q. Okay. What kind of service does First Break Consulting provide on this Web site printout?

A. It looks like they are a consulting firm that works with dealers on business solutions, including digital dashboards.

Q. And are they offering dashboards to dealers?

A. Yes.

(Deposition Exhibit 3 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. Okay. We've just marked as Exhibit 3, a document that's Bates-labeled H-001162 through 001172.

What is Exhibit 3?

A. It is a screen shot of a site that is a -- Dashboard Spy blog is the name of it.

Q. Have you seen Exhibit 3 before?

A. Yes.

Q. When did you first come across Exhibit 3?

A. August -- well, I came across it earlier.

Q. Okay.

A. So I don't know the exact date.

This article or this screen shot I printed August 3rd, but I saw it earlier. Probably in April or May of 2008.

Q. Okay. Because you've done Internet research several times over the spring and the summer?

A. Yes.

Q. Does Exhibit 3 accurately reflect the Web site you reviewed when you did your Internet research?

A. Yes.

Q. If you look on page 7, which is labeled 001168 --

A. Uh-huh.

Q. -- what type of dashboard does the Web site describe?

A. It is an auto dealer sales management dashboard.

Q. Does the term dashboard describe the services that are offered in connection with this software?

A. Yes, it does.

Q. And what audience or group is this company targeting with this product?

A. Automobile dealerships, management at automobile dealerships.

Q. Does the term dealer dashboard describe the product or service that's provided by this company?

A. Yes, it does.

(Deposition Exhibit 4 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. Okay. We've handed you Exhibit 4, which is Bates-labeled H-001173 through H-001174.

A. Okay.

Q. What is Exhibit 4?

A. It is a screen shot of a site for Goal Lines Solutions.

Q. And have you seen Exhibit 4 before?

A. Yes, on August 3rd, 2008.

Q. Does Exhibit 4 accurately reflect the Web site that you reviewed when you did your Internet research?

A. Yes, it does.

Q. What product is advertised on Exhibit 4?

A. It is a product to build dealer dashboards.

Q. Okay. What kind of service does Goal Line Solutions, Inc., provide with its dealer dashboard product?

A. The dashboard product provides key operating information.

Q. It's okay if you read straight from --

A. Okay.

Q. -- the exhibit as well.

A. Okay. So it provides key operating or -- they're called KPI information for advisers and technicians at a dealership in a graphical format.

Q. Does the term dashboard describe its services?

A. Yes, it does.

Q. What audience or group is this company targeting with its service?

A. Auto dealers.

Q. Does the term dealer dashboard describe the product or service provided by this company?

A. Yes.

(Deposition Exhibit 5 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. We've just handed you Exhibit 5, which consists of Bates numbers H-001208 through H-001210.

What is Exhibit 5?

A. It is a screen shot of an article on a SharePoint site.

Q. And have you seen Exhibit 5 before?

A. Yes, on August 20th, 2008.

Q. Does Exhibit 5 accurately reflect the Web site that you reviewed when you did your Internet research?

A. Yes, it does.

Q. Okay. What product is advertised on Exhibit 5?

A. Karastan, which is a manufacturer of rugs.

Q. And what are they describing in this article?

A. A dashboard that is available for Karastan dealers.

Q. What do they call this dashboard? If you look on page H-001209, how do they describe their dashboard?

A. It's a dealer dashboard. It's for -- each dealer can go to the site to gain information. And it says it's just like a car dealer -- a car dashboard delivers critical information to the driver. Each dealer dashboard delivers all the current and important information at a glance.

Q. Does the term dashboard describe its services?

A. Yes.

Q. And what audience or group is Karastan trying to reach with their service?

A. Their dealer.

Q. Does the term dealer dashboard describe the service that Karastan provides to its customers --

A. Yes, it does.

Q. -- or strike that -- that it provides to its dealers?

A. Yes, it does. Those are their customers; their dealers are their customers.

(Deposition Exhibit 6 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. We've just given you Exhibit 6 --

A. Yes.

Q. -- which is Bates-stamped H-001211 through H-001213.

What is Exhibit 6?

A. It is a screen capture of a site about Autogate Pro.

Q. Have you seen Exhibit 6 before?

A. Yes, on August 20th, 2008.

Q. Does Exhibit 6 accurately reflect the Web site that you reviewed when you did your Internet research?

A. Yes, it does.

Q. What kind of product is advertised on Exhibit 6?

A. A dealer dashboard.

Q. Okay. What kind of services does Autogate provide with its dealer dashboard product?

A. Autogate company -- Autogate provides Internet leads, and this is a dashboard that reports the leads for the dealership.

Q. Does the term dashboard describe its services?

A. Yes.

Q. Okay. And what audience or group is this company targeting with its service?

A. Dealers.

Q. Does the term dealer dashboard describe the product or service provided by this company?

A. Yes, it does.

(Deposition Exhibit 7 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. You have just been handed Exhibit 7, which is marked H-001214 through H-001217.

What is Exhibit 7?

A. It is a screen capture of RV Trader online and an article -- a press release that resides on RV Trader online.

Q. Have you seen Exhibit 7 before?

A. Yes, I have, on August 20th, 2008.

Q. Okay. Does Exhibit 7 accurately reflect the Web site that you reviewed when you did your Internet research?

A. Yes, it does.

Q. If you turn to page -- it's marked H-001217.

A. Uh-huh.

Q. And you will see in the second paragraph, it's talking about a newsletter.

A. Yes.

Q. What is the name of the newsletter?

A. Dealer Dashboard e-newsletter.

Q. And who is the audience for the newsletter?

A. RV dealers.

Q. And what does the Dealer Dashboard e-newsletter consist of?

A. It offers tips on how to drive more business to the dealership and how to more effectively leverage the RVTraderOnline.com selling tools.

Q. Does the term dashboard describe its services?

A. Yes, it does.

Q. And what audience or group is the company targeting?

A. Dealers, RV dealers.

Q. Does the term dealer dashboard describe the services provided by this company?

A. Yes, it does.

(Deposition Exhibit 8 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. You've been handed Exhibit 8, which is marked H-001140 through H-001141.

A. Yes.

Q. What is Exhibit 8?

A. It is a screen shot for Autogate Pro.

Q. This is the same as we looked at before?

A. Yes. Yeah.

Q. Okay.

A. It is.

I probably did it, and I was trying -- it doesn't have a date on it either.

MS. YAMADA: It's the same one without the first page.

THE WITNESS: Yeah. And it's a little --

MS. YAMADA: It's --

THE WITNESS: It's the same information.

MS. FINGUERRA-DUCHARME: Okay.

MS. YAMADA: -- Exhibit 6.

MS. FINGUERRA-DUCHARME: Okay.

THE WITNESS: It is the same as Exhibit 6.

MS. FINGUERRA-DUCHARME: It's just printed in a

nicer format.

THE WITNESS: Or a different part of that site, I think.

BY MS. FINGUERRA-DUCHARME:

Q. So does Exhibit 8 accurately reflect the Web site that you reviewed when you had done your Internet research?

A. Yes, it does.

Q. And what service does this promote, or product?

A. It's a dealer dashboard that provides a real-time snapshot of performance of a business by measuring leads and time and business hours, average response time.

Q. Does the term dashboard describe its services?

A. Yes, it does.

Q. And what audience or group is the company targeting with its service?

A. Dealers.

Q. And does the term dealer dashboard describe the product or service provided by this company?

A. Yes, it does.

(Deposition Exhibit 9 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. Okay. You've just been handed Exhibit 9, which

consists of H-001137 through H-001139.

What is Exhibit 9?

A. It is a screen capture of a AutoTrader.com site, printed on August 3rd, 2008.

Q. Have you seen Exhibit 9 before?

A. Yes.

Q. Does Exhibit 9 accurately reflect the Web site that you reviewed when you did your Internet research?

A. Yes, it does.

Q. What kind of service is provided or is advertised in Exhibit 9?

A. A dashboard --

Q. And --

A. -- for dealers.

Q. -- does the term dealer dashboard describe the services that are provided?

A. Yes, it does.

Q. And what audience or group is the company targeting with its service?

A. Automotive dealers.

Q. Does the term dealer dashboard describe the services that are provided by this company?

A. Yes, it does.

(Deposition Exhibit 10 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. I'm handing you Exhibit 10, which is stamped H-001134 through H-001136.

A. Yes.

Q. What is Exhibit 10?

A. It is a screen shot of a ZDNet site, and it's about Mazda's dealer analysis dashboard application.

Q. Have you seen Exhibit 10 before?

A. Yes, I have, on August 3rd, 2008.

Q. Does Exhibit 10 accurately reflect the Web site that you reviewed when you did your Internet research?

A. Yes, it does.

Q. What kind of service is advertised on Exhibit 10?

A. A dealer dashboard application for Mazda dealers.

Q. What kind of service does Mazda provide with its dealer dashboard product?

A. It provides performance data for the field managers at Mazda.

Q. Does the term dashboard describe its services?

A. Yes, it does.

Q. What audience or group is the company targeting with its service?

A. It's for field managers to use with dealers.

Q. Does the term dealer dashboard describe the service provided by this company?

A. Yes, it does.

(Deposition Exhibit 11 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. You've just been handed Exhibit 11, which is H-001236 through H-001238.

A. Yep.

Q. What is Exhibit 11?

A. It is a screen capture of a blog from FurnishWEB about a dealer dashboard.

Q. Have you seen Exhibit 11 before?

A. Yes, I have.

Q. Okay. Does Exhibit 11 accurately reflect the Web site that you reviewed when you did your Internet research?

A. Yes, it does.

Q. What product is described on Exhibit 11?

A. A dealer dashboard.

Q. Okay. And what kind of service is provided with the dealer dashboard described in Exhibit 11?

A. What kind of services?

Q. Or what kind of product?

A. FurnishWEB is a -- looks like it's a software

product that creates dealer dashboards.

Q. And what does the dealer dashboard consist of? Or what is some of the information that could be found on the dealer dashboard that is discussed in Exhibit 11?

A. Sales analysis information, year-to-date sales, top sales, top sellers.

Q. Does the term dashboard describe the services that are provided?

A. Yes, it does.

Q. And what audience or group is this company targeting with this software?

A. Dealers.

Q. And does the term dealer dashboard describe the service that is provided by this company?

A. Yes, it does.

(Deposition Exhibit 12 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. You've just been handed Exhibit 12, which is Bates-stamped H-001233 through H-001235.

What is Exhibit 12?

A. It is an article about Subaru Australia's dealer dashboard.

Q. Okay. Have you seen Exhibit 12 before?

A. Yes, I have, on August 20th, 2008.

Q. Does Exhibit 12 accurately reflect the Web site that you reviewed when you did your Internet research?

A. Yes, it does.

Q. So what product is discussed on Exhibit 12?

A. Subaru's dealer dashboard.

Q. And what is Subaru's dealer dashboard?

A. It's a summary of sales figures, orders, inventory for Subaru dealers.

Q. Does the term dashboard describe its services?

A. Yes, it does.

Q. And what audience or group is Subaru targeting?

A. Dealers.

Q. Does the term dealer dashboard describe the product or service provided by Subaru?

A. Yes, it does.

(Deposition Exhibit 13 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. You've just been handed Exhibit 13, which is Bates-stamped H-001231 through H-001232.

What is Exhibit 13?

A. It is a log-on page for McIntosh dealers' dealer dashboard.

Q. Have you seen Exhibit 13 before?

A. Yes, I have.

Q. Does Exhibit 13 accurately reflect the Web site that you reviewed when you did your Internet research?

A. Yes, it does.

Q. What product is advertised on Exhibit 13?

A. A dealer dashboard.

Q. What service is McIntosh providing with its dealer dashboard?

A. Price list, dealer agreements, images.

Q. Does the term dashboard describe McIntosh's services?

A. Yes.

Q. And what audience or group is McIntosh targeting with its service?

A. Dealers.

Q. Does the term dealer dashboard describe the product or service that's provided by McIntosh?

A. Yes.

(Deposition Exhibit 14 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. You've been handed Exhibit 14, which consists of H-001228 through H-001230.

A. Yes.

Q. What is Exhibit 14?

A. You realize it's two different things.

Q. Oh.
A. It's Section 3.
Q. It's actually three different things.
A. Yeah.
Q. Okay. Let's just have Exhibit 14 be simply 001228.
A. Okay.
Q. So what is Exhibit 14?
A. It's a log-in page for Denon dealers' dashboard.
Q. Have you seen Exhibit 14 before?
A. Yes, I have.
Q. Does Exhibit 14 accurately reflect the Web site that you reviewed when you did your Internet research?
A. Yes, it does.
Q. What service is reflected on Exhibit 14?
A. A dealer dashboard for Denon dealers.
Q. And what is the Denon dealer dashboard?
A. It is a product that provides you with all kind of product-related items such as download images, sell sheets, and more.
Q. And does the term dashboard describe Denon's services?
A. Yes, it does.
Q. And what audience or group is Denon targeting

with its service?

A. Their dealers.

Q. Does the term dealer dashboard describe the service that's provided by Denon?

A. Yes, it does.

MS. FINGUERRA-DUCHARME: So let's mark H-001229 as Exhibit 15.

(Deposition Exhibit 15 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. Okay. What is Exhibit 15?

A. It is a screen capture of Dashboard Online.

Q. Have you seen Exhibit 15 before?

A. Yes, I have.

Q. Does Exhibit 15 accurately reflect the Web site that you reviewed when you did your Internet research?

A. Yes, it does.

Q. Okay. What product is advertised on Exhibit 15?

A. Their dashboard product for dealers.

Q. Okay. And what does the dashboard provide dealers with?

A. Web management solutions for auto dealers.

Q. Does the term dashboard describe its services?

A. Yes, it does.

Q. What audience or group is this company targeting with its service?

A. Dealers.

Q. And does the term dealer dashboard describe the product or service provided by this company?

A. Yes, it does.

(Deposition Exhibit 16 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. You've been given Exhibit 16, which is H-001230.

What is Exhibit 16?

A. A screen capture of the Marantz dealer dashboard.

Q. Have you seen Exhibit 16 before?

A. Yes, I have.

Q. When did you first come across Exhibit 16?

A. August 20, 2008.

Q. Does Exhibit 16 accurately reflect the Web site that you reviewed when you did your Internet research?

A. Yes, it does.

Q. What service is reflected on Exhibit 16?

A. A dealer dashboard.

Q. Whose dealer dashboard is reflected on Exhibit 16?

A. Marantz.

Q. And what kind of service is Marantz providing with its dealer dashboard?

A. What kind of service? It's providing a dealer dashboard that has sell sheets, images, identity images.

Q. Does the term dashboard describe this service?

A. Yes.

Q. And what audience or group is the company targeting with its service?

A. Marantz dealers.

Q. Does the term dealer dashboard describe the service that's provided by Marantz?

A. Yes, it does.

(Deposition Exhibit 17 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. You've just been handed Exhibit 17, which is Bates-stamped H-001226 through 001227.

A. Yes.

Q. What is Exhibit 17?

A. A screen capture of Siebel Dealer dashboard.

Q. Have you seen Exhibit 17 before?

A. Yes.

Q. Does Exhibit 17 accurately reflect the Web site that you reviewed when you did your Internet research?

A. Yes, it does.

Q. What product is advertised on Exhibit 17?

A. A dealer dashboard.

Q. What kind of service does Siebel provide with its dealer dashboard product?

A. It's a -- they provide a variety of dashboard for dealer employees, including sales consultant, sales manager, service employees -- service managers.

Q. Does the term dashboard describe its services?

A. Yes, it does.

Q. And what audience or group is the company targeting with its dashboard?

A. Dealers.

Q. Does the term dealer dashboard describe the product or service provided by this company?

A. Yes, it does.

(Deposition Exhibit 18 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. Okay. You've been handed Exhibit 18, which is marked H-001224 through H-001225.

What is Exhibit 18?

A. It is a screen shot capture from Diversified Financial Solution services site.

Q. Have you seen Exhibit 18 before?

A. Yes, I have.

Q. Does Exhibit 18 accurately reflect the Web site that you reviewed when you did your Internet research?

A. Yes, it does.

Q. Okay. What service is described on Exhibit 18?

A. Their dealer dashboard.

Q. What is their dealer dashboard?

A. It's a dashboard for their dealers.

Q. Does the term dashboard describe its services?

A. Yes, it does.

Q. And what group is the company targeting with its service?

A. The dealers.

Q. Does the dealer dashboard describe the service provided by Diversified Financial?

A. Yes, it does.

(Deposition Exhibit 19 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. You've just been handed Exhibit 19, which consists of H-001218 through H-001223.

What is Exhibit 19?

A. It is a screen capture of Dashboard Spy.

Q. Have you seen Exhibit 19 before?

A. Yes, I have.

Q. Does Exhibit 19 accurately reflect the Web site that you reviewed when you did your Internet research?

A. Yes, it does.

Q. Okay. What product or service is advertised in Exhibit 19?

A. It's an article about an auto dealer's management -- sales management dashboard.

Q. And what does this dashboard provide?

A. Provides real-time financial information about dealers, sales, F&I, fixed ops, accounting, and inventory profit centers.

Q. Does the term dashboard describe the services?

A. Yes, it does.

Q. And what audience or group is the company targeting?

A. Dealers.

Q. Does the term dealer dashboard describe this service provided by this company?

A. Yes, it does.

MS. FINGUERRA-DUCHARME: Do you need to take a break?

THE WITNESS: I'm okay.

MS. YAMADA: I'm going to run to the restroom before you start on these.

MS. FINGUERRA-DUCHARME: Okay. We're off the

record for now.

(Recess taken.)

(Deposition Exhibit 20 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. Did there come a time when you have done any research for the use of dashboard on Amazon?

A. Yes, I have.

Q. And what is Amazon?

A. Amazon is a site that sells a variety of products, especially books.

Q. Okay. And is Amazon a site that's open to the general consuming public?

A. Yes, it is.

Q. So the general consuming public can order books from Amazon?

A. Yes.

Q. And what search did you run on Amazon?

A. Books for dashboards.

Q. And you've been handed Exhibit 20, which is Bates-stamped H-001175 through H-001177.

A. Correct.

Q. What is Exhibit 20?

A. It is a screen capture of the books that showed up when there was a search on dashboards.

Q. And so all of the books that are reflected here relate to dashboards?

A. All except for one.

Q. Which one does not?

A. The bottom, Dashboard Confessional. That's a group.

Q. Okay. And other than the Dashboard Confessional, which I think is Item No. 6, the other dashboard -- the other books that are reflected here, the dashboards, are they the same dashboards that we've been discussing today?

A. Yes. Same type of dashboards.

MS. FINGUERRA-DUCHARME: Okay. So let's mark this as an exhibit.

(Deposition Exhibit 21 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. You have just been handed Exhibit 21, which consists of H-00001 through H-000346.

A. Correct.

Q. What is Exhibit 21?

A. It's a copy of the book Excel 2007 Dashboards & Reports for Dummies.

Q. If you could turn to page 11 of Exhibit 21. So it's -- actually, the real book, 11.

A. Oh. Sorry.

Q. Can you review the definition of dashboard?

A. Read it?

Q. Sure.

A. Dashboard is a visual interface that provides at-a-glance views into key measures relevant to a particular objective or business process. They have three main attributes: Typically graphical in nature, often display only data relevant to the goal of the dashboard, and they inherently contain predefined conclusions that relieve the end user from performing his own analysis.

Q. Is this definition of dashboard consistent with your own understanding and use of the term?

A. Yes, it is.

Q. Does this definition of dashboard align with the way Honda uses the term in its dashboard products?

A. Yes, it does.

Q. Is it also consistent with the ways in which we just saw all of those third parties using the term dashboards in the previous exhibits?

A. Yes, it is. Yes, it does.

(Deposition Exhibit 22 marked for identification.)

///

BY MS. FINGUERRA-DUCHARME:

Q. You've just been handed Exhibit 22, which is Bates-stamped H-000585 through H-000907.

A. Correct.

Q. What is Exhibit 22?

A. It is a copy of a book entitled Performance Dashboards.

Q. Do you recall if this book had come up in your Amazon search?

A. Yes, it did.

Q. If you could turn to page 293 of the book. It's almost the end.

A. Okay.

Q. And if you'll see towards the bottom of the page, there's a glossary and the term dashboard is defined.

A. Uh-huh.

Q. Can you read that definition?

A. Dashboard is a visual display mechanism used in an operationally oriented performance management system that measures performance against targets and thresholds using right-time data.

Q. Is this definition of dashboard consistent with your own understanding and use of the term?

A. Yes, it is.

Q. Does this definition of dashboard align with the way Honda uses the term dashboard in its dashboard products?

A. Yes, it does.

Q. And is it consistent with the ways in which the third parties that we had seen in the previous exhibits use the term dashboard?

A. Yes.

(Deposition Exhibit 23 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. Okay. You've just been given Exhibit 23, which consists of H-000347 through H-000584.

What is Exhibit 23?

A. It is a copy of the book Marketing by the Dashboard Light.

Q. And do you recall if Exhibit 23 was reflected in the Amazon search that you had done for dashboard?

A. Yes, it was.

Q. If you could turn to page H-000365.

A. Okay.

Q. And you'll see that in the second paragraph, it describes a marketing dashboard. Will you take a moment to read that definition?

A. Out loud?

Q. Or you can read it to yourself.

A. Okay. All right.

Q. Is this definition of dashboard consistent with your own understanding and use of the term?

A. Yes, it is.

Q. Does this definition of dashboard align with the way Honda uses the term in its dashboard?

A. Yes, it does.

Q. And is this consistent with the way the third parties that we saw in the previous exhibits use the term dashboard?

A. Yes.

(Deposition Exhibit 24 marked for identification.)

BY MS. FINGUERRA-DUCHARME:

Q. You have now been given Exhibit 24, which consists of Bates Nos. H-000908 through H-001133.

A. Okay.

Q. What is Exhibit 24?

A. It is a copy of a book entitled Information Dashboard Design.

Q. Do you recall if this book was reflected on your Amazon search?

A. No.

Q. Do you want to look back on --

A. On this search?

Q. -- that search?

A. Okay. Yes, it was.

Q. Okay. Great.

If you can turn to page H-000952. And if you can read -- you can read it to yourself -- the paragraph underneath What is a Dashboard.

A. All right. All right.

Q. Okay. Is this definition of dashboard consistent with your understanding and use of the term?

A. Yes, it is.

Q. Does this definition of dashboard align with the way Honda uses the term in its dashboard products?

A. Yes.

Q. And is it consistent with the way the third parties have used the term in the exhibits that we had looked at before?

A. Yes, it does.

Q. Okay. And if you'd turn back to -- maybe starting on page H-00929, and flip forward through the pages, can you let me know if these pages accurately reflect your understanding of what a dashboard looks like?

A. 929 through 952?

Q. Yeah.

A. Okay. Okay.

Q. So are those accurate reflections for your understanding of what dashboards may look like?

A. Yes.

MS. FINGUERRA-DUCHARME: Okay. Thank you very much for your time.

(TIME NOTED: 11:42 a.m.)

CERTIFICATE OF DEPONENT

I have read the foregoing transcript of my deposition and except for any corrections or changes noted on the errata sheet, I hereby subscribe to the transcript as an accurate record of the statements made by me.

Cynthia Mangham

CYNTHIA MANGHAM

SUBSCRIBED AND SWORN before and to me this 21 day of October, 2008, by Cynthia Mangham proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

Linda Yamada

NOTARY PUBLIC

My Commission expires:

LINDA YAMADA
Commission # 1616334
Notary Public - California
Los Angeles County
My Comm. Expires Nov 13, 2009

STATE OF CALIFORNIA) ss:
COUNTY OF LOS ANGELES)

I, DEBORAH L. HESKETT, CSR No. 11797, do hereby certify:

That the foregoing deposition testimony of Cynthia Mangham was taken before me at the time and place therein set forth, at which time the witness was placed under oath and was sworn by me to tell the truth, the whole truth, and nothing but the truth;

That the testimony of the witness and all objections made by counsel at the time of the examination were recorded stenographically by me, and were thereafter transcribed under my direction and supervision, and that the foregoing pages contain a full, true, and accurate record of all proceedings and testimony to the best of my skill and ability.

I further certify that I am neither counsel for any party to said action, nor am I related to any party to said action, nor am I in any way interested in the outcome thereof.

IN WITNESS WHEREOF, I have subscribed my name this 23rd day of September, 2008.

DEBORAH L. HESKETT, CSR No. 11797

I N D E X

TUESDAY, SEPTEMBER 16 ,2008

DEPOSITION EXHIBITS

CYNTHIA MANGHAM

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CenterView

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Corda Customers:

Chevron

Check out some of Corda's Clients

Testimonial

"You can go to the Intranet, pull up your dashboard and see your sales performance in relation to weekly and monthly goals. This instant access to sales data has proven to be a major motivational tool for our sales staff."
– Barry Moore, Director of E-Commerce
Australia's Tourism Queensland

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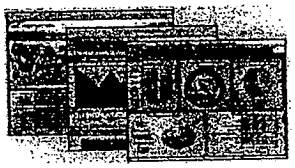

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Dashboard

CORDA CenterView an enterprise dashboard solution that allows for rap prototyping, cloning and deployment from any and all databases, busines intelligence, spreadsheet or operational applications throughout an organization.

Learn more about Dashboard Software
Dashboard Examples

A dashboard is an important tool for any C-level executive and other business manager. Whil keeping you on top of vital statistics and KPIs, a dashboard solution like CORDA CenterView helps you visualize and track trends on every level of your business and to align activities wit key goals. With a dashboard solution, your business intelligence is ready and waiting for you. Try a free evaluation download of our dashboard today.

About CORDA and CenterView™

CORDA Technologies Inc. is a leading provider of software products that transform raw data into easy-to-read and easy-to-use graphical formats. CORDA's dashboard solution, CenterView™, creates charts, maps and graphs from business information that help you to organize and understand raw data.

Working on any platform or operating system, CORDA CenterView™ can take data stored in virtually any file format and enterprise system to create highly interactive and understandable graphs and charts. Because it creates a fully customizable dashboard, you can choose whicl graphs and charts – as well as business-specific visualizations, such as factory processes, logistics routes, etc. -- are the most important to keep on your office computer always, as wel on your tablet PC, wireless PDA and cell phone.

The infinite drill-down capabilities of our dashboard means you never have to sacrifice information. Click on a bar or point to reveal associated graphs and details of the dashboard. of your business information is at your fingertips with CenterView™ dasboards.

About a Dashboard

A dashboard is like the dashboard of a car, always supplying the user with all the vital information to manage your performance. A dashboard helps you see where you've been an where your business is going.

CORDA CenterView™ is an easy-to-use yet very informative business dashboard solution. Compare CenterView™ to other dashboard products or business intelligence software and th

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H-001143

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Digital Dashboards

Digital Dashboards use Microsoft Exchange and other Office 2000 products to knit together a real-time system that integrates information from many different sources. The idea is like the dashboard of your car -- at a glance, you can see if things are working or not (engine, transmission, speed, tach, electronics, radiator temperature, etc.) and make quick, yet informed decisions based on what the information tells you.

Digital Dashboard Example

A sales department has a digital dashboard that tells them what products are selling well, how regions are selling relative to one another, key customers and accounts receivable. Using real-time information from the Web, direct connections to operational systems databases inside the company, and other systems, the dashboard presents a concise picture of your business to the people who can make decisions quickly.

A FBC Customer uses their Digital Dashboard to let them know a few pieces of key information clearly, concisely and in real-time:

- how are dealers converting sales from leads passed to them
- what is the relative effectiveness of different advertising campaigns on leads to the call center
- what is the revenue by dealer by day, week, month, quarter and annually

Isn't this an Executive Information System?

Yes and no. In the past Executive Information Systems (EIS) were developed to provide very similar function to Digital Dashboards. The key difference is the information in the Dashboard is real-time, generated by connecting to databases or the web. It is not coded in static pages or assembled by a support person.

As a result, the information in the Dashboard has far wider applicability in business. While a CEO may be able to justify a headcount to gather and sort this type of information, a Sales Manager cannot. That does not mean however, the Sales Manager doesn't need this type of information. It just means it is often hard to get the real data. (Anybody who has tried to get real budget/actual data from a finance department knows what I mean)

Isn't a Digital Dashboard a Data Warehouse?

To a certain degree, but Data Warehouses are the answer to poorly integrated and unfriendly systems. The warehouse integrates these disparate systems together. The best example I can think of is the Telephone Company. They think of you as telephone numbers (home, fax, internet, cell, pager) and each of these numbers is an account. Unfortunately, they cannot think of you as a person. The warehouse lets them do it until their systems become more market-focused.

To a great extent, connecting to

- how many customers are in the queue waiting a callback
- what are their competitors doing – discussion database

Using the Digital Dashboard enables management to deal with the issues in real-time. A dealer's telephone representative is ill -- and no calls are being made back to leads. Previously, they would find this out a week later, when the percentage converted to sales was low and they investigated it. Now they can call the dealer and say: "You have 5 calls in you queue you have not called back ... why?" In this case they can assist the dealer or re-direct the calls to a dealer that can handle the workload.

Similarly, the effectiveness of marketing campaigns can be seen immediately. If a campaign is successful, the marketing group can recognize it immediately and refocus resources to the most successful campaign.

In the past we have performed post-mortems ... today we can provide real-time treatment of business problems.

How does it work?

Office 2000 has features that make the integration of information to Knowledge Workers (MS calls it Knowledge Management or KM) relatively easy. We can connect to SQL Server, Oracle or DB2 databases and extract information as it is requested. The information is placed in a web-page format and displayed in Outlook -- where users look at their mail, their calendar and other relevant business information. The Digital Dashboard can display any web pages, from the WWW or internal webs, as well as the public and private folders of the user. The user easily customizes the the data in real-time will eliminate data warehouses. If this isn't possible, an intermediary, such as a SQL Server database can accumulate the information, and pass it to the Dashboard.

How do I get started?

You can read about Digital Dashboards from Microsoft on their web-site. They have a few demonstration Dashboards you can look at to get a look and feel. Naturally, I would recommend you engage a consultant with the business experience to help you determine what information is worthwhile putting on your Dashboard, and how to access the data at its source.

How can First-Break Consulting help?

We have senior consultants that will help you determine what you need to view on the dashboard and how to connect to your data. We can quickly and inexpensively mockup a few screens to review and refine. Our technical experts can build the web-pages and Exchange folders required. We can also assist in managing the connectivity requirements to databases inside your organization.

For more information and a discussion on how we can help you implement Digital Dashboards in your organization please contact Matt Alexander at matt.alexander@firstbreak.com

dashboard and the flexible reporting features can be used instead of the many printed reports generated by most business systems.

Voice: 604.926.6031 Fax: 604.922.1860

Dashboards By Example Volume I

What's on your Dashboard?

Welcome to the definitive collection of BI Dashboards - where you and your work are the stars. No sales pitches, useless theory or big egos - just real-life dashboard project teams and their dashboards. Dedicated to keeping BI real!

Part of the Oz Spy Network

Dashboard: Examples & Best Practices. From Excel Dashboards to Enterprise Business Intelligence, these dashboard implementations contain KPIs, metrics, charts, trends and more.

For more Business Intelligence Dashboard Examples, use this link to the Dashboard Spy sitemap: **Dashboard**

Note: Dashboards By Example readers can get these interesting business intelligence dashboard white papers and I.T. trade magazines at no cost.

Dashboard

From a simple excel dashboard to a fully integrated enterprise reporting suite, the **Business Dashboard** is being quickly adopted as the new face of Business Intelligence. It has a rapidly growing role in BI reporting and analysis.

An enterprise dashboard allows at-a-glance visualization of company health and monitoring of key performance indicators. Simple to understand and high in ROI, these executive dashboards are becoming "must-haves" for all enterprises. Easy-to-use by business users and fun-to-implement by the IT department, BI dashboard projects are quickly funded and politically popular.

Dashboards by Example Sponsors

Business Intelligence Dashboard Vendors to check out:

"Dashboards by Example" is a business intelligence blog dedicated to showing you actual examples of do's and don'ts of dashboard design. Study examples of enterprise dashboards, scorecards and other business intelligence interfaces implemented by the world's top organizations.

Looking for a particular dashboard? Try these listings of BI dashboards (call them what you want):

- Dashboards Page 1
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- Dashboard Page 4
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- Dashboard Page 7

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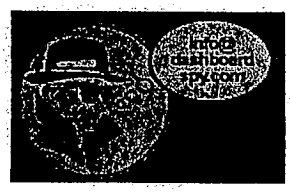
This dashboard screenshot blog is part of the Dashboard Spy network - a unique collection of business intelligence resources. Send us your Dashboards!



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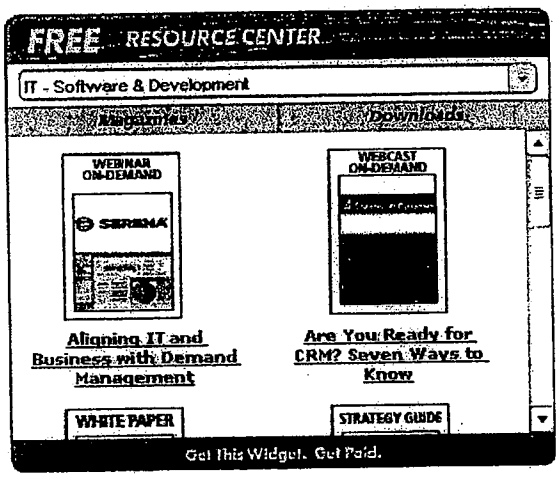
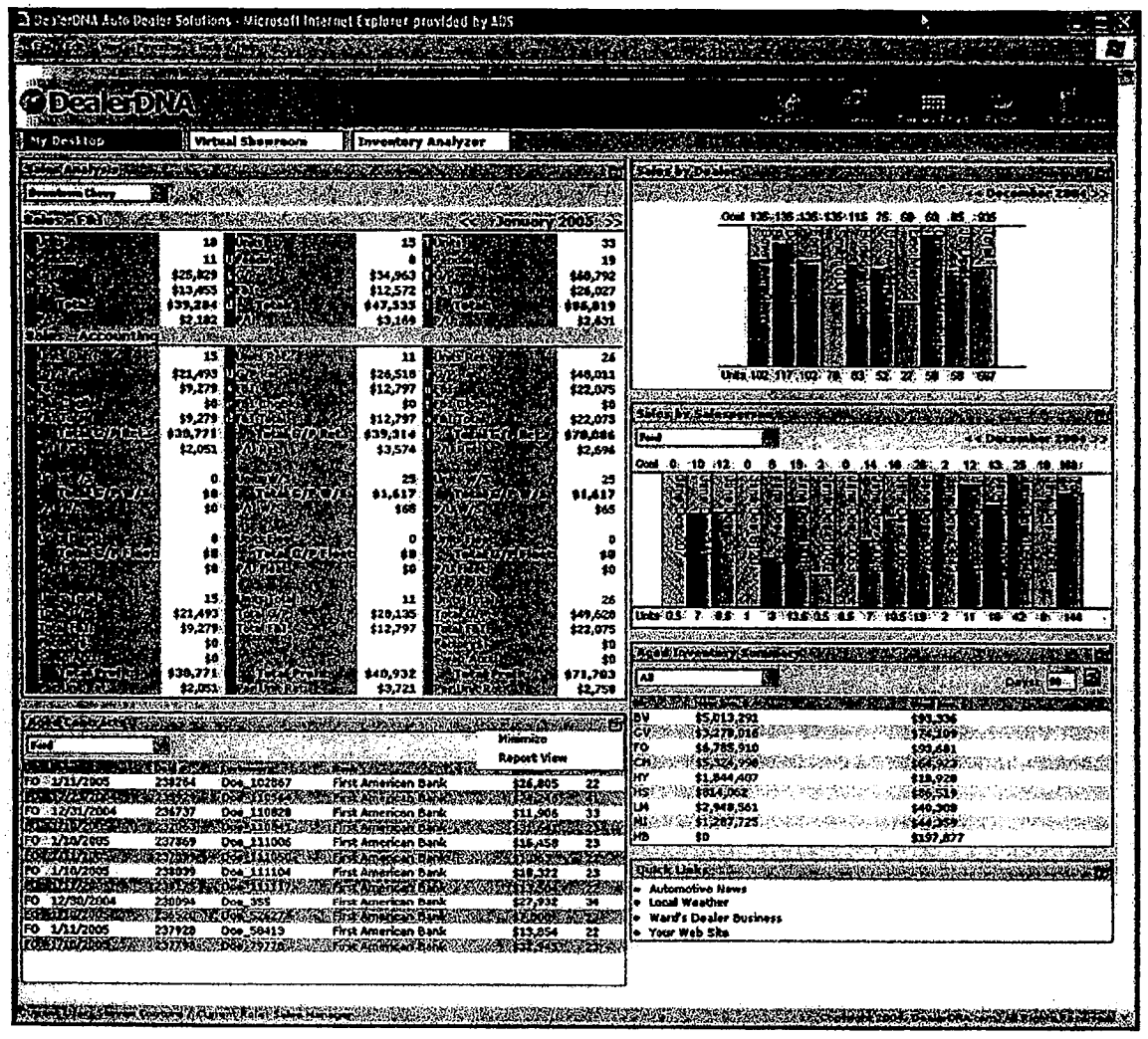
« A property management dashboard
Network monitoring dashboard »

An auto dealer sales management dashboard

Automobile dealerships have embraced the **business intelligence dashboard** as it effectively allows summarization of monthly sales metrics. The monthly trends in sales have become a "hot" KPI to track on executive dashboards.

This sales dashboard provides users with real-time financial information about their Sales, F&I, Fixed Operations, Accounting and Inventory profit centers. PDFs available at http://www.dealerdna.com/pages/sales.html





So what or who is The Dashboard Spy? As his about page states, The Dashboard Spy is just a guy interested in the design of business dashboards. He could not find any executive dashboard design source books and so set about creating his own. Finally convinced to post his extensive collection of dashboard screenshots online, he was amazed to find how popular it has become. If you have a nice screenshot to share, please leave a comment or send an email to info _at_ dashboardspy.com. Also check out The Dashboard Spy's favorite books.

Tags: Dealership dashboards, Automobile Dealership Management Dashboard

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Was this enterprise dashboard interesting enough to share? Help spread the news about **Dashboards By Example**. Click on the "Share" icon above to submit this post to your social bookmark service or email the link to a fellow dashboarder or even yourself.

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Last Modified: Tuesday, March 18th, 2008 @ 05:23

This business intelligence dashboard blog entry was posted on Saturday, March 4th, 2006 at 6:54 pm and is filed under Dashboard Screenshots. You can follow any responses to this entry through the RSS 2.0 feed. You can leave a response, or trackback from your own site.

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- Branding Dashboard - Gorgeous enterprise dashboards for marketing management and tracking advertising awareness...
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More Dashboards

Dashboards by Example Volume 1 Goals and Objectives

"Dashboards By Example - BI Dashboard Samples" is the theme and mission statement of this blog. We salute the Dashboard Spy in the field - those business users, project managers, IT executives, application designers, business intelligence experts, analysts, coders and subject matter experts who are on site creating this exciting and new "face of BI". Your business intelligence dashboard can go by many names - performance dashboard, executive dashboard, business dashboard, balanced scorecard, KPI metric summary, enterprise dashboard, bi dashboard, corporate dashboard. Whatever we call it, we believe that the at-a-glance visual approach is the key to user-centric design. Let's learn from each other's dashboard examples and continue to increase the level of usability and usefulness.

We strongly believe that the more dashboards you study, the more adept you will become at choosing correct design solutions for your company. "Learn by Example" is not just a motto - we take it literally, hence the name "Dashboards by Example". So take every chance you get to view examples of BI interfaces. As a matter of fact, take a second now, and study this dashboard example.

What's on your Dashboard?

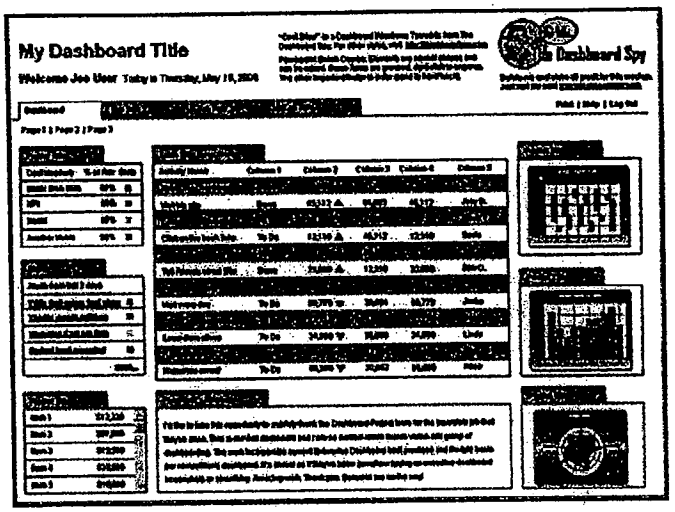
The Dashboard Spy wants your dashboards!! I've collected over 1000 screenshots of business intelligence dashboards and scorecards for Volume 1 and now need you to send me the next 1000 dashboards for Volume 2. Email me at info at dashboardspy.com and tell me about your dashboard. Send me images, notes, technical details, business rules, metrics, KPIs, anything that you think your fellow Dashboard Spies will have an interest in. Keep this library of dashboarding resources going!

Also, I'd love more links to both the main Dashboard Spy site at http://dashboardspy.com and the Volume 1 blog of 1000 dashboards at http://www.enterprise-dashboard.com. I'd love your help in making these resources better known.

Looking forward to seeing your dashboards, The Dashboard Spy

The Dashboard Spy Blog On Enterprise Dashboards

P.S. Did you check out this free dashboard template for wireframing? Click on the image below for the download link and instructions. Consider it a gift for your unfailing support. Thank you very much. Sincerely, your friend in dashboarding, Dash.



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Dealer Dashboard

IF YOU CAN'T MEASURE IT, **CAN'T MANAGE IT**

Dealer Dashboard Key Performance Indicators (KPI's) provide the dealer and service manager with visibility to the crucial numbers that drive the performance of the sirvice Department. You have the ability to set target goals for the average labor dollars per repair order, one line work order percentages and average hours per repair order and see the results by year, month, week or day. By comparing it to the prior year's results, you have visibility to improvements in your department and more importantly areas of concern.

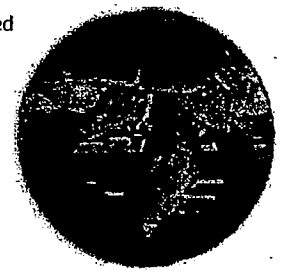
- Total r
- Total n
- Jobs pe
- Labor l

By using our secure data extraction portal we provide daily updating on Labor sales, Repair order counts and total hours sold for all sales categrories

The dealer Report allows you to graph the KPI's by pay type and reporting period to identify trends and areas of opportunity

Advisor and Technician Scorecards

- provide KPI information specific to the Advisor and Technician by pay type and specified time periods
- Graphic display of achieved labor hours per repair order to goal and to previous years performance.
- Allows for goal setting based on the number of repair orders for cross sell categories
- Displays sell through rate of cross sell opportunities and compares performance to set goals
- Provides year to date summary totals for all categories
- Printable copy for each staff member



- Repair
- Jobs pe
- Labor l (billed ho
- Total la
- Tech h (paid hou
- Dollars
- Total la

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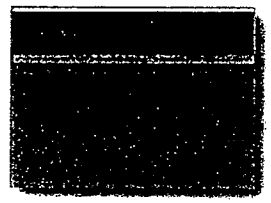
Karastan

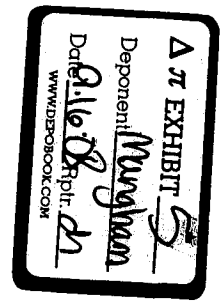
Karastan
Karastan has been creating some of the world's most beautiful rugs for almost three-quarters of a century and enjoys a dual role as leader in both manufacturing and interior design innovations.



Portal Entry Page

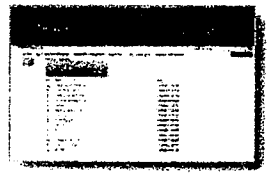
Karastan needed a secure way to effectively and efficiently communicate with their four distinct US dealer networks. Here is some of the information they need to communicate:

- **Price Lists** and **Price Tags**
- **Merchandising** and **Display Information**
- **Marketing** and **Promotions Calendars**
- **General** and **Special Announcements**
- **Current Microsoft Word** and **Excel Files**



H-001208

Dashboard



Document Library

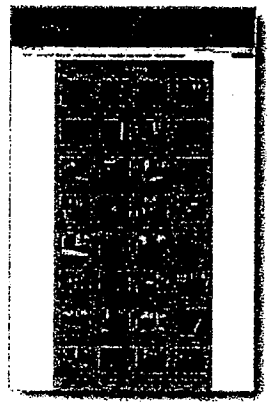


Image Library

Each dealer "Rep Group" needed it's own site so first we designed a **portal "entry" page**. All of the dealers go to www.repnews.com to log in and select their respective dashboard. Just like a car dashboard delivers critical information to the driver (i.e. speed, gear, lights, gas temperature etc.) Each dealer **Dashboard** delivers all the current and important information at a glance. (i.e. newest documents, announcements, calendars, links etc.)

As new documents, events and announcements are added to the sites the information is automatically posted to the dashboards making it easy for the dealers to stay informed and access files.

SharePoint has provided Karastan a secure online environment that is easy to navigate, can be accessed from any computer 24/7 and is almost effortless to maintain and manage.

dataBridge specializes in building Intranets, Extranets and Business Portals using Microsoft SharePoint. Our primary focus is intranet development, SharePoint Online Training, Customizing SharePoint, SharePoint development, Microsoft SharePoint consulting and SharePoint support. Collaborate more efficiently as a team with meeting workspaces. Manage tasks, manage documents, share calendars and contact lists with this powerful collaboration suite. Let us help you customize SharePoint, SharePoint Development, SharePoint Support, SharePoint Consulting SharePoint Online Training, dataBridge SharePoint Training DVD.

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DATAMOTIVE

Maximising Sales Opportunities

Feature Highlights

Escalation Process
Ensures no prospects go unactioned by providing back-ups to staff of your choice.

Inactivity Reports
A review of all prospects that have had no action for 14 days but remain active.

Configurable Reports
Create reports to suit your dealershipâ€™s requirements. Schedule reports for email delivery to multiple recipients. Configurable reports may be reviewed and edited.

Editable Leads
The editable lead function allows you to update any of the customer information fields.

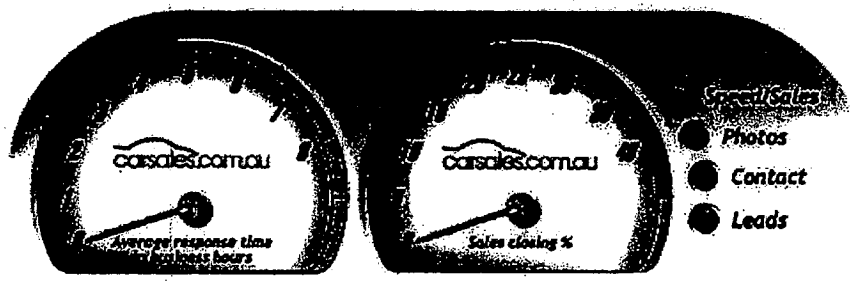
Summary Report
The summary report will provide you with an even greater snapshot of your business than the dashboard. It provides reporting with benchmarks to state and national results.

Diary
Autogate Pro has diary functionality and a to do list, providing your sales team with valuable time management tools.

Brochures
Print single or multi-vehicle brochures with your own dealership branding.

Bulk Emails
Email marketing is powerful and cost effective. Use the â€œbulk emailâ€□ function to keep in touch with your customers and prospects better than ever before.

AUTOGATE PRO.



The Dealer Dashboard appears in your home page when you login to Autogate Pro. It provides a real time snapshot of the performance of your business. The dashboard gauges are clearly marked, with green indicating the ideal performance range. Using Autogate, you can ensure your dealership operates â€œin the green,â€□ maximising your return on investment.

With Autogate Pro you can capture and manage all your leads - from carsales.com.au, your own dealer website, and all other Internet providers - in one location.

More Than Just Internet Leads

Autogate Pro is not just for Internet leads. All customers, including phone-ins, walk-ins and referrals, can be managed in this user-friendly application. You can even upload your existing customer data.

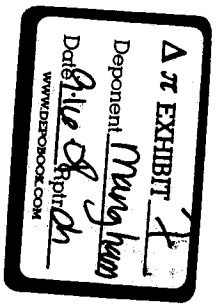
Reports

Autogate Proâ€™s configurable report writer will allow you to construct a report based on any criteria in your lead management system and then generate emails for specific marketing opportunities.

TRADER ONLINE SITES

- Aero Trader
- ATV Trader
- Bargain Trader
- Boat Trader
- Commercial Truck Trader
- Cycle Trader
- Equipment Trader
- PWC Trader
- Sailboat Trader
- Snowmobile Trader
- Trader Online
- Trailer Trader
- Walneck's Classic Cycle
- Yacht Trader

- » Search RVs
- » Browse RVs
  - Browse By Type
  - Browse By Make
  - Browse Dealers
- » Find Dealers



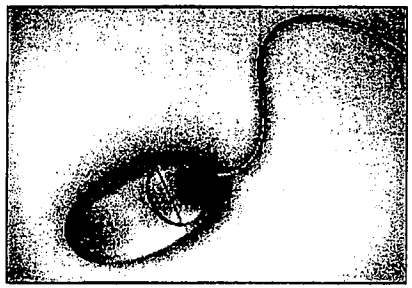
- » Resources
- » About Us

RVTraderOnline.com > About Us > Press Room > Press Release - New RVTraderOnline.com Breaks Weekly Visitor Record

PEOPLE ARE TALKING

RV buyers and sellers are talking about RV Trader.Learn More...

GOT FEEDBACK?



Tell us what you think of our new website.Learn More...

H-001215

PRESS RELEASE

New RVTraderOnline.com Breaks Weekly Visitor Record

Contact:
Jerald Motil
RV Trader Marketing
(757) 351-8640
jerald.motil@dominionenterprises.com

Norfolk, VA - February 19, 2008

RV Trader, a division of Dominion Enterprises, announced today record-breaking traffic on RVTraderOnline.com during the week of Feb. 11.

RVTraderOnline.com hosted 206,722 visitors between Feb. 11 and Feb. 17, 2008—up more than 48% over the same week in 2007 - according to Omniture SiteCatalyst HBX.

"As our Web site traffic continues to set new records, the new site design continues to prove its value. We look forward to offering more and more consumers access to the Internet's largest database of recreational vehicles," said Tim Custer, general manager of Dominion Enterprises' RV brand. "Particularly in light of slowing RV shipments, according to the Recreation Vehicle Industry Association, RVTraderOnline.com's growth is a welcome sign that RV buyers are still looking to buy," continued Custer.

Upcoming improvements to RVTraderOnline.com include more exposure for RV dealers in the site's Behind the Wheel consumer e-newsletter and on the RV Insider Blog.

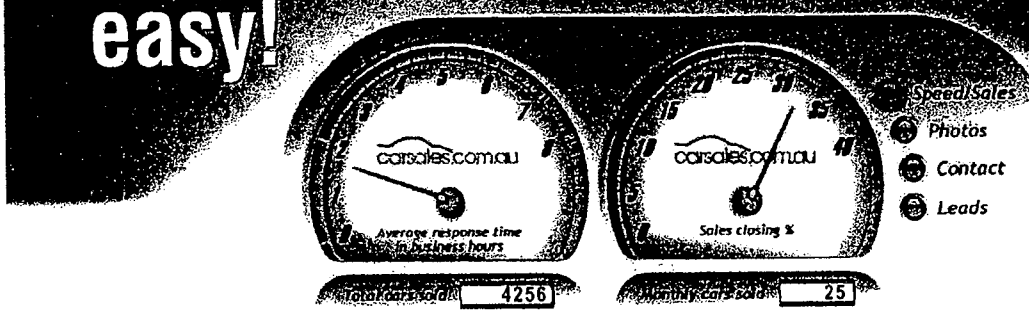
Re-launched in November 2007, the Web site offers RV dealers a completely redesigned Inventory Management Tool (IMT) and Instant Mobile Lead Alert. Also new for RV dealers is the Dealer Dashboard e-newsletter. Delivered directly to advertisers' inboxes every month, it offers tips on how to drive more business to the dealership and how to more effectively leverage the RVTraderOnline.com selling tools.

Three main buttons, "Find," "Sell" and "Research," take visitors directly to the information they seek. The "Find" button provides instant access to more than 81,000 RVs for sale - the Internet's largest database of recreational vehicles. The "Research" button offers additional information on everything from finance and insurance to RV parts and accessories.

About RVTraderOnline.com
RVTraderOnline.com, a division of Dominion Enterprises, is the largest database of recreational vehicles for sale online. Headquartered in Norfolk, Va., it is part of the Trader family of online vehicle classified advertising sites that includes BoatTrader.com, CycleTrader.com, AeroTrader.com, EquipmentTraderOnline.com and CommericalTruckTrader.com. For more information about RVTraderOnline.com, call toll-free 1-888-813-7304 or visit http://www.RVTraderOnline.com

About Dominion Enterprises
Dominion Enterprises, Norfolk, Va., is a leading media and information services company serving recreation, employment, automotive, real estate, marine and industrial markets. The company has more than 500 magazine titles, over 40 market-leading Web sites, and operates a variety of Web and technology businesses. The company had 2006 annual revenue of more than $850 million and has more than 7,200 employees nationwide. For more information, visit www.DominionEnterprises.com

The Dashboard makes it easy!



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Date 9.16.08 Rptr. dh
WWW.DEPOBOOK.COM

AUTOGATE PRO.

Autogate Professional's outstanding new features

Dealer Dashboard

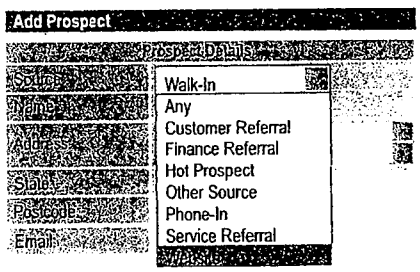
The Dealer Dashboard provides a real time snapshot of the performance of your business by measuring:

- Incoming leads
- Average response time in business hours
- % of cars displayed with photos
- % of customers contacted

Measure your exact **"Speed Of Response"**.
The #1 Critical Success Factor for Internet selling is how quickly your sales team are able to contact the customer. The dealer dashboard will measure this for you and will be your benchmark for ongoing improvement.

If your dealership is operating in "the green" in all categories, your return on investment will be significant.

Add a Prospect



Autogate Pro is more than just a tool to manage Internet leads. The Add a Prospect function allows you to enter **ALL** customers: phone-ins, walk-ins, referrals from customers or referrals from within your own business as well as all forms of e-leads. (Talk to us about uploading your existing customer data).

Integrated Lead Management

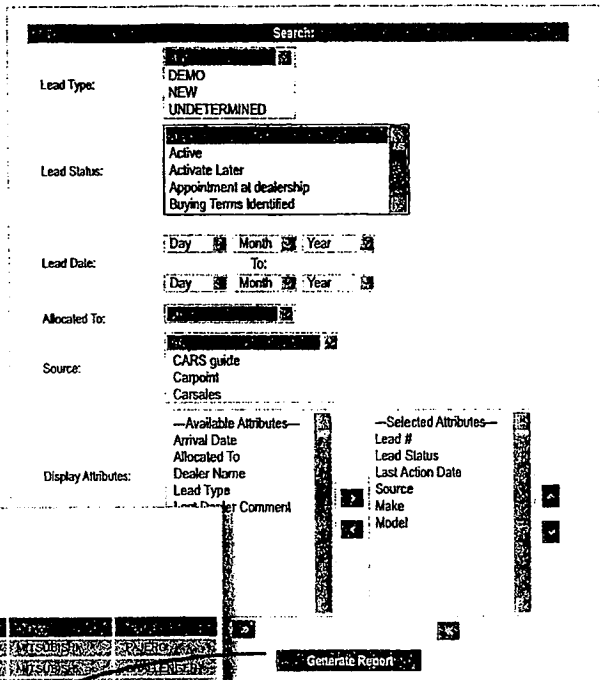
	358274	Un-actioned	MELISSA	Carsales	THU, 05/02 - 12:16	1 hr	5870
	358120	Home visit arranged	MRS JONES	Carsales	THU, 05/02 - 10:14	3 hr	8946
	359058	Active	DAVID	Drive	WED, 04/02 - 20:05	1 day	9023
	358563	Sent email	THOMAS	Dealer website	TUE, 03/02 - 9:50	2 days	4578
	358890	Appointment	ADAM	Walk-in	TUE, 03/02 - 1:35	2 days	5940
	356204	Sold	JASON	Carpoint	MON, 02/02 - 3:20	3 days	7098
	356200	Phoned - call back	ISMAIL	Carsales	SUN, 01/02 - 5:03	4 days	5890

Capture all your prospects in one location. All leads accepted – carsales.com.au, other Internet providers, dealer website, etc.

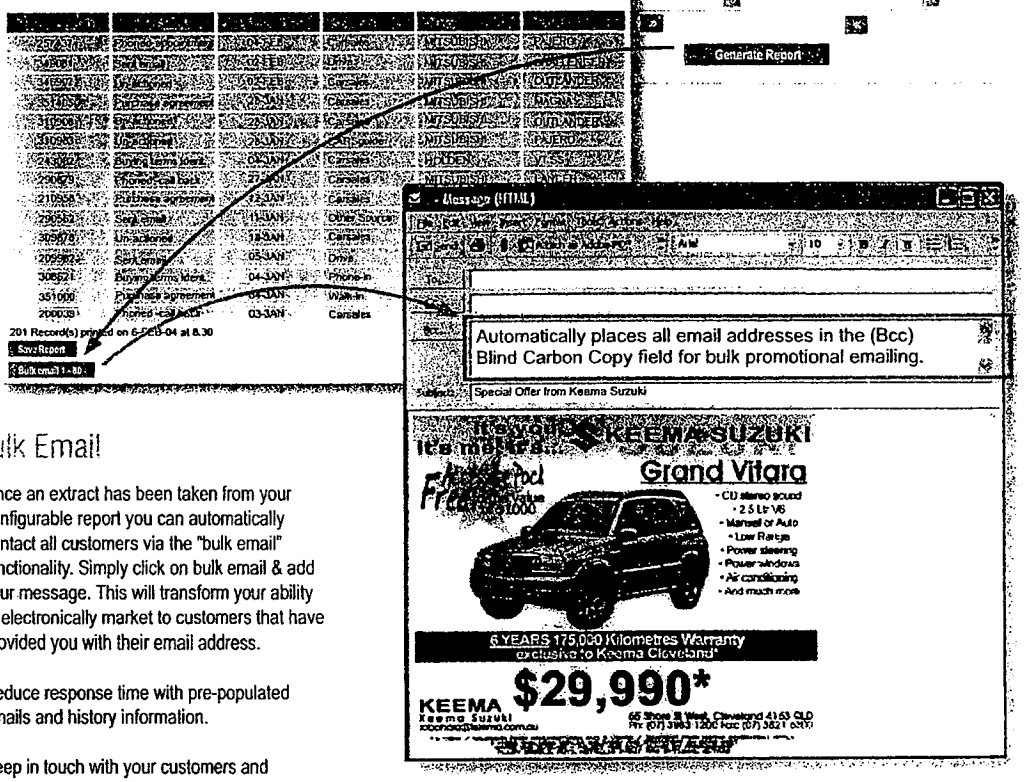
Dealer Specific Reporting

Dealer specific reporting – designed by you to get the information you want. The Autogate Pro configurable report writer will allow you to construct a report based on any criteria in your lead management system and then to generate emails for specific marketing opportunities.

Don't throw away sales oportunities!
Use Autogate Pro to manage all leads and produce reports that are relevant to your business needs. Check on leads that have status "unactioned" or "phoned but no contact", look at sales by lead source and compare to active leads. Search sold vehicles by salesperson or produce a "previous owner" contact schedule.



AUTOGATE



Bulk Email

Once an extract has been taken from your configurable report you can automatically contact all customers via the "bulk email" functionality. Simply click on bulk email & add your message. This will transform your ability to electronically market to customers that have provided you with their email address.

Reduce response time with pre-populated emails and history information.

Keep in touch with your customers and prospects better than ever before.

Advertising is an investment...Autogate Pro will help you maximise your returns.

AUTOGATE PRO

For more infomation: Ph: (03) 9805 3600
or email sales@carsales.com.au

carsales.com.au
Australia's Leading Automotive Website

H-001141

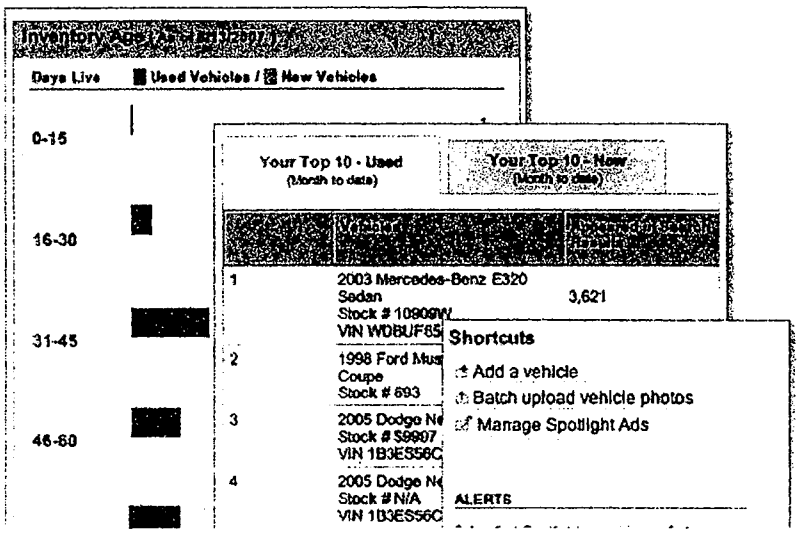
DEALER RESOURCES

AUTOTRADER.COM FOR DEALERS

Its the next generation of online automotive advertising. AutoTrader.com for Dealers gives our dealers more choices, more flexibility and more resources for success. With intuitive features and advanced options, we make it easier than ever to have 360-degree control of your virtual marketplace.

DASHBOARD FEATURE

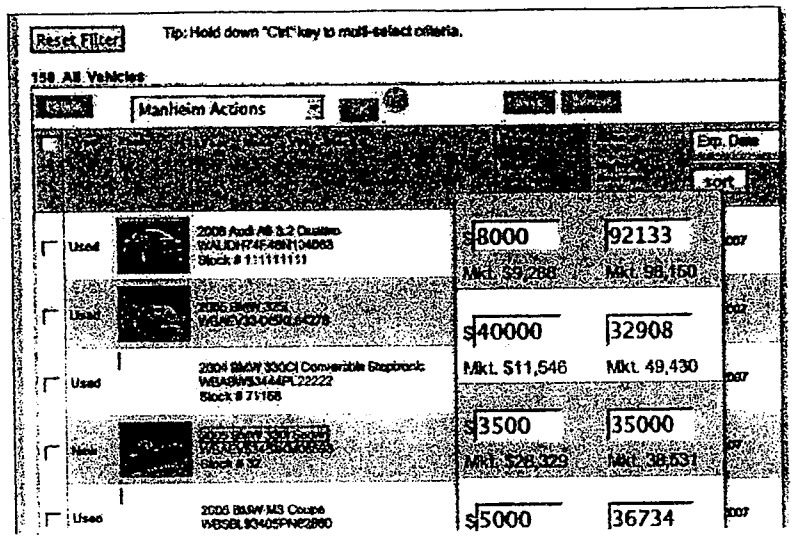
Your dealer site gives you critical inventory information and alerts, right on your dashboard. You can also see a snapshot of which vehicles are getting the most activity on the site.



MARKET COMPARISONS

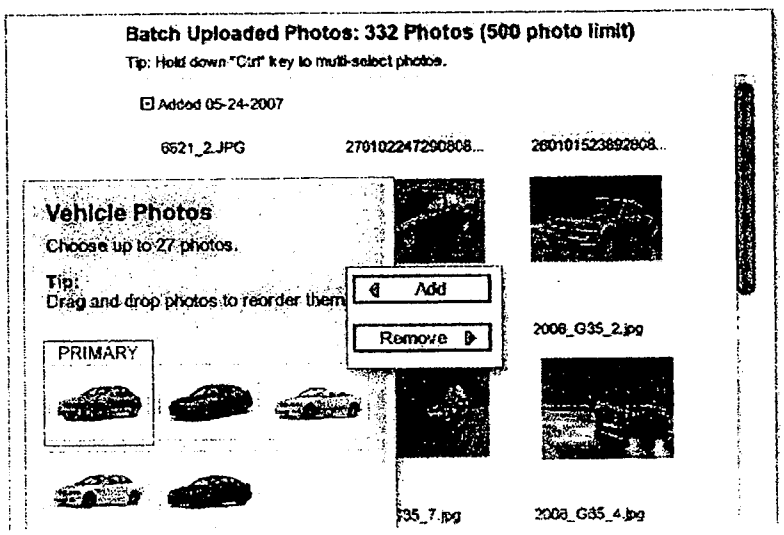
Now you can compare head-to-head pricing with your competition whether theyre across the street, or across the state.

H-001137



EASY PHOTO UPLOADING

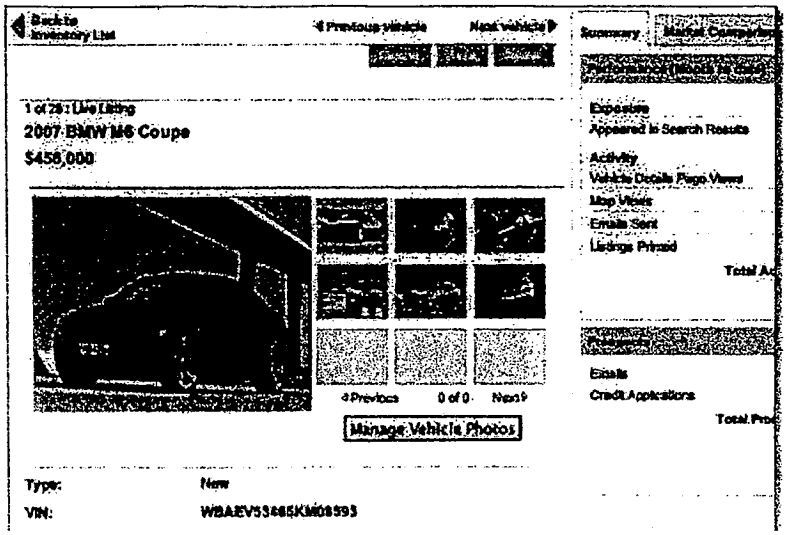
Weve also made managing your vehicle photos a snap, with two convenient ways to add pictures to your listings by selecting photos youve already added to your media library, or by uploading new ones directly from your computer.



ENHANCED USABILITY AND FLEXIBILITY

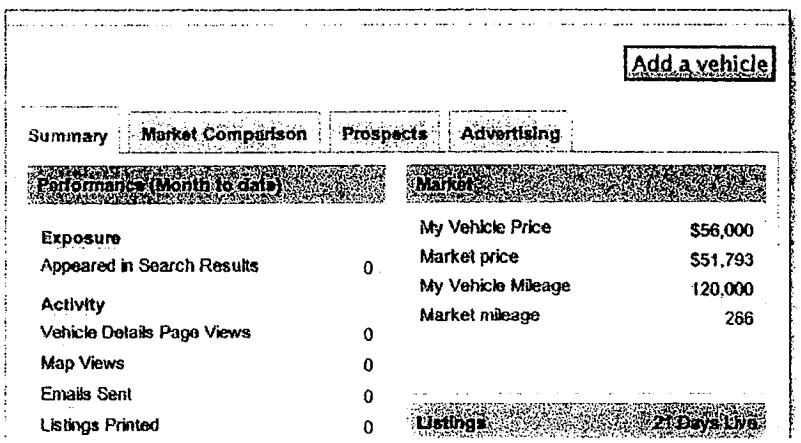
Our enhanced editing features make updating your listings faster and easier than ever. The single page layout provides a complete view of your vehicle, as a shopper would see it.

H-001138



ADVANCED REPORTING CAPABILITIES

Weve even added dedicated sections where you can easily see your prospects, gauge your activity, manage your advertising products, and review your reports.



H-001139

Mazda's Dealer Analysis Dashboard Application Creates More Productivity

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(you must be registered)

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Vendor:	BEA Systems
Registration:	Required
Type:	Case Studies
File size:	Not specified
Format:	PDF, Acrobat Reader
Pages:	Not specified

Publisher's description

North American Mazda sales and customer service field managers are responsible for visiting each dealership in their territory at least four times a year to review performance and improve sales. Field managers spent at least three days collecting performance data from several mainframe reports, spreadsheets, and third party analyses to prepare for one dealership visit. Mazda field managers needed a more efficient way to prepare for meetings. Mazda deployed the BEA AquaLogic User Interaction to provide managers with easy access to the data they need for dealership reviews. Through this dealer analysis application, managers view performance on the national, regional, and local level.

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So how many of you have bought a 3C iPhone? Do you feel like a sucker? If you don't, maybe you will once your first bill arrives.

Tags

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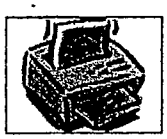
Featured

iPhone Launch Centre
The ZDNet.com.au iPhone resource guide contains everything you need to know about Apple's highly anticipated mobile device.
Click here for more.



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Looking to buy a printer? Our superguide rates the latest printers and shines a light into the industry.
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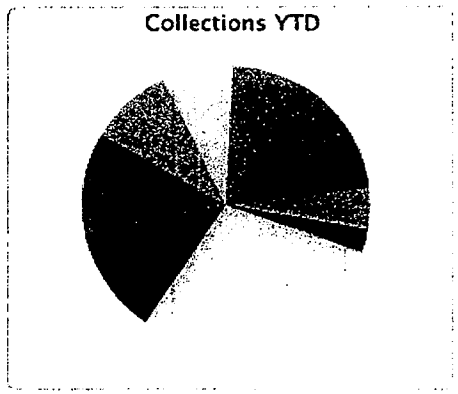
Thursday, April 3, 2008

Release 3.0.6 - Dealer Sales History and Analysis

Dealer Sales History and Analysis

We are very pleased to announce a new version of FurnishWEB launching just a few weeks after our last release and just in time for the High Point Furniture Market. FurnishWEB now has screens for Dealer Sales Analysis! This type of reporting has been one of the top requests from our clients and their users. We're are very glad to meet these requests and provide yet more value to our customers.

FurnishWEB accumulates and summarizes invoice sales information by customer and product for sales analysis and reporting. We've taken this summarized data and provided several online tools creating a more meaningful understanding of each dealer's sales history.



Dealer Dashboard Updates
On the Dealer Dashboard there are two new pieces of information; Collections Year-To-Date (YTD) and Top Sellers YTD. The Collections pie chart displays the collections a dealer has purchased most in the current year. The Top Sellers lists the top 10 products the dealer purchased this year.

Categories

In the News (11)

New Releases (8)

Tips and Tricks (4)

Thoughts and Ramblings (3)

Furniture Market (2)

Blog Archive

▼ 2008 (7)

▼ May (1)

Ligna Launches New Site Powered by FURNISHWEB

► April (2)

► March (2)

► February (2)

► 2007 (23)

► 2006 (2)

Furnishweb Users

A-America

H-001236

Dealer Sales Tools

There is also a new link on the Dealer Dashboard to Sales Tools. Sales Tools is deceptively simple but this link conceals some real power! Sales Tools is an interactive, sortable summary of sales information. Sales history can be summarized by product, collection, type, family, class and finish ... each column is sortable providing the ability to find the Best Sellers in each category.

Sales reps should find this area especially useful when preparing a visit with the dealer. We anticipate this tool to quickly become some of the most used web pages in FurnishWEB!

This page shows you:

- LY $: All Last Year Sales
- LY QTY : All Last Year Quantities
- LYTD $: Last Year to Date Sales
- LYTD QTY: Last Year to Date Quantities
- YTD $: Current Year to Date Sales
- YTD QTY : Current Year to Date Quantities
- Order $: Current Backlog Order Dollar Amount
- Order QTY : Current Backlog Order Quantites
- Order Price : Minimum Price Paid for Product on Open Order

Other Patches and Fixes

With this release we've also included some minor improvements based on user feedback. There are now links to the Collection, Finish, Family, Class and Types while viewing a Product Detail. This will allow a quick return to the product list for those categories.

We've collapsed the Shipto Locations on the Dealer dashboard so they don't fill up so much screen space and opens up space for the new Sales Analysis charts. The

Bassett Mirror

Bradington-Young

Creations

Intercon

Ligna

Ligo Products Inc.

Pulaski Furniture

Rivers Edge Furniture

Samuel Lawrence Furniture

Sitcom

Somerton Home Furnishings

Westwood Design

Furniture Industry

Furniture Today

High Point Market

Inside Furniture Blog

Las Vegas Market

Feed

Subscribe in a reader

H-001237

user can reveal the list of Shipto locations by clicking on the Shipto Bar.

Thanks to all of the sales managers, customer service reps, sales reps, and buyers that use FurnishWEB. We hope these new features will help you provide better service and do your jobs more efficiently.

Posted by Jeff at 10:53 AM

Labels: New Releases

0 comments:

Post a Comment

Links to this post

Create a Link

Newer Post Home Older Post

Subscribe to: Post Comments (Atom)

H-001238

Subaru Australia Drives Dealer Productivity Via Plumtree-Powered Dashboard

SAN FRANCISCO -- Plumtree Portal Helps Workload Management for Dealers, Streamlines Communications and Provides Tools to Improve Customer Satisfaction

Plumtree Software (Nasdaq:PLUM) today announced that Subaru Australia has deployed a dashboard application built using the Plumtree Enterprise Web Suite to its network of 92 dealers across Australia. The dealer dashboard has streamlined communication between Subaru and its dealer network so that each dealer has direct access to the latest metrics such as inventory, order status and promotional details. As a result, dealers are able to target improved customer service, while effectively representing the Subaru brand.

"The dealer dashboard in the portal has been a huge win for Subaru Australia because it gives dealers a central point of reference for key metrics and trends that they couldn't see before," said Gary Watson, national sales manager at Subaru.

Dealers clamored to test the dashboard, which went live in May 2004 after six months of development, and have been highly satisfied with the results. "Dealers used to ring our business managers every day asking for access to simple metrics like how many cars have been in inventory over 60 days. They need this information because they're measured, and paid on it, but there was no easy way for them to access it themselves," Watson said. "Now that the dashboard is in place, those types of calls have been replaced by requests for even more dashboard functionality."

What's in Subaru's Dealer Dashboard?

Subaru manufactures and imports its cars from Japan, covering the Forester, Impreza, Liberty and Outback models, which total approximately 30,000 units of sales annually. Australia is the company's third-largest market in the world, after Japan and the U.S. The Australian operation performs marketing and distribution functions, maintains supplies of spare parts and also sustains relationships with dealers across Australia.

To support the activities of the local Subaru operation, Subaru deployed a dealer dashboard that offers dealers access to the following information, much of which is drawn from a less accessible AS/400 system:

--Sales: reports on vehicle sales figures;

--Orders: lists of current orders for parts and vehicles or other items, status of cars in the dealership and delivery dates, and full detail of each dealers supply chain, from order to delivery;

--Inventory: data on spare parts and new vehicles;

--Marketing: promotional details including model specifications, feature comparisons and pricing guides;

--Services: details on services such as warranties;

--Branding: guidelines for promoting Subaru's brand;

--Calendar: calendar of sales appointments shared with Subaru employees; and

--Communications: Dealer bulletins and program information.

Previously, the company communicated with dealers in three separate lines of business: spare parts, services and sales. Each of these relationships was managed by different employees. By consolidating the three lines of business information targeted at dealers through one central dealer dashboard, information is presented in a way that allows dealers to "pull" access at any time convenient to them. This helps the dealers spend more time on planning and management, and reinforces the professionalism of the Subaru brand.

In addition to dealer satisfaction, customer satisfaction has also been targeted for improvement using the dealer dashboard. "Customers are anxious to know when their new car will arrive -- especially if they custom ordered it to meet their exact tastes," said Watson. "Using the dashboard in the portal gives the dealers better visibility into our production and delivery timelines, which makes for happy customers."

"Over 60% of Plumtree customers deploy dashboards in their portals to arm employees with critical business data for acting quickly and effectively," said Dean Stockwell, general manager, Asia Pacific at Plumtree Software. "Subaru's dealer dashboard is a great example of this and shows how quickly a dashboard can deliver value, with timelines measured in months, not years."

About Plumtree Software

Plumtree Software is a global pioneer in creating advanced software environments where information resources work together with human ingenuity. Well established as the portal thought leader, Plumtree enables a full, rich suite of applications that coordinate human-managed activities across systems, processes and business boundaries. With its flexible and open portal system, Plumtree delivers smart solutions throughout the enterprise and beyond. Progressive enterprises large and small, like Airbus, Mazda, Pratt & Whitney and the U.S. Navy depend on Plumtree to help them rapidly harness untapped potential in their organizations. For more information, visit www.plumtree.com.

Home / Dealer Dashboard

McIntosh®

DEALER DASHBOARD

session is

WELCOME TO THE MCINTOSH DEALER DASHBOARD

This section is devoted to you, the Dealer and International Distributor. After logging in, you will have access to price lists, dealer agreements, high resolution images and more.

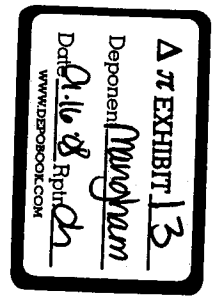
Dealer Login

Username/email:

Password:

LOG-IN

Forgot Your Password?



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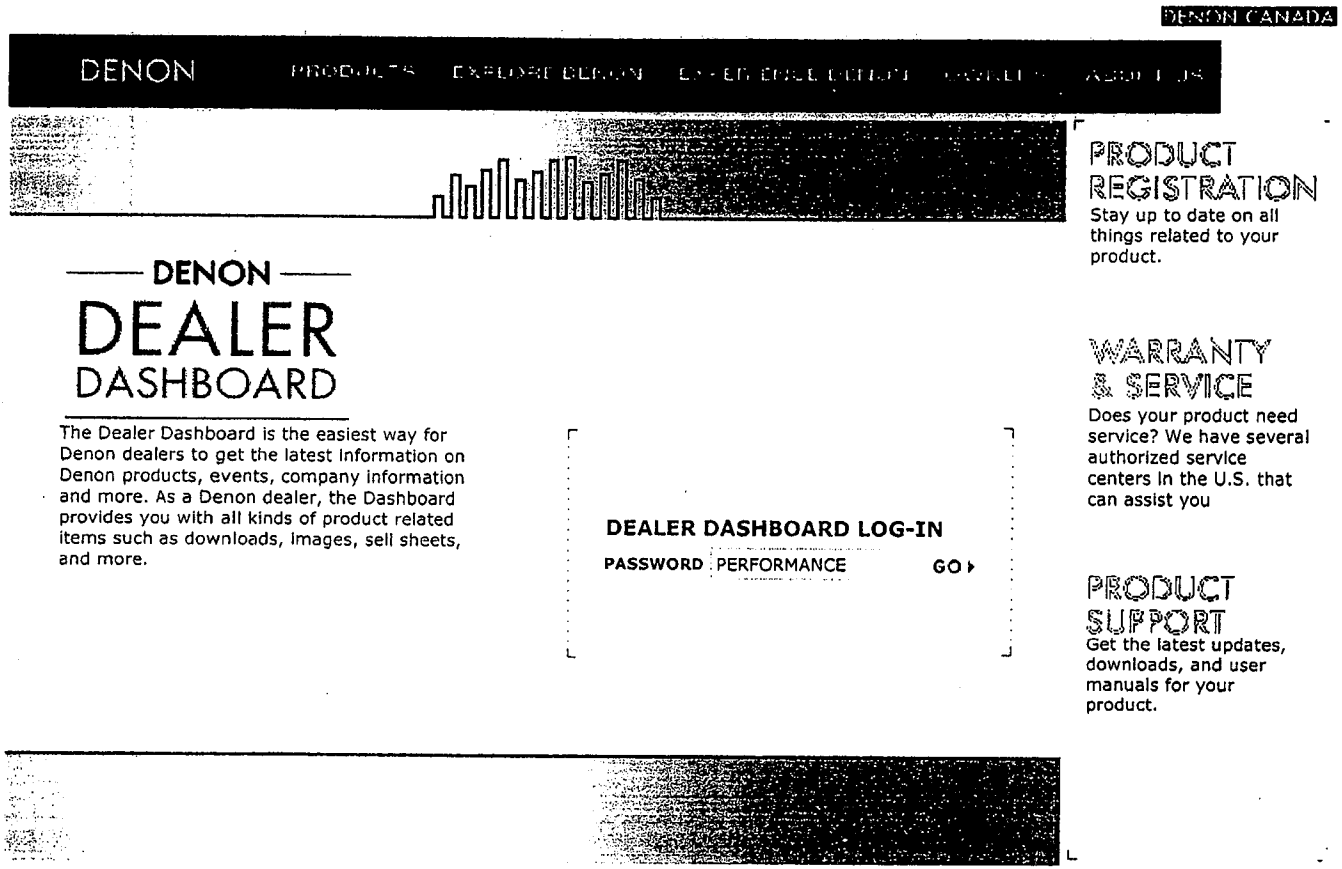

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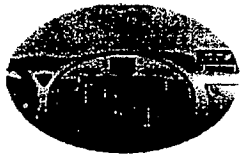

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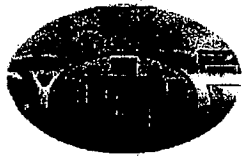

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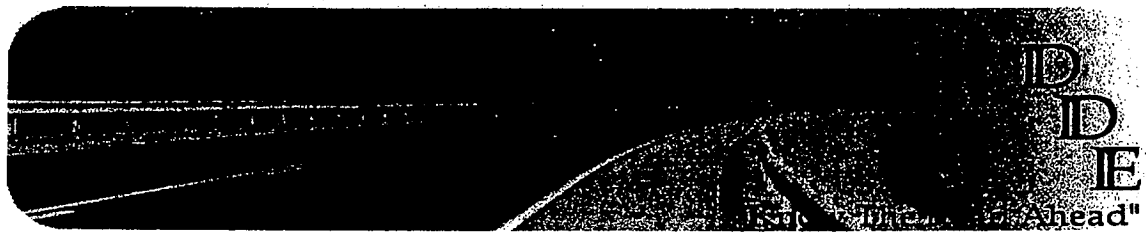

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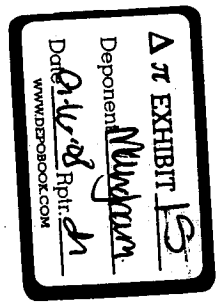
Dashboard leads the Automotive Industry in custom enterprise level reporting solutions. Many of the nation's most profitable Dealer Groups are our clients.

Our solutions are affordable, professional, and come with the best support team in the business.

Company Info

Dashboard is the market leader in Web management solutions for auto dealers. Dashboard rapidly develops high quality system products and related services to satisfy the current and emerging needs of our customers. Our mission is to exceed customer expectations for service, quality, speed of implementation, ease of use and support.



H-001229

THE marantz DEALER DASHBOARD

Welcome to the Marantz Dealer Dashboard!

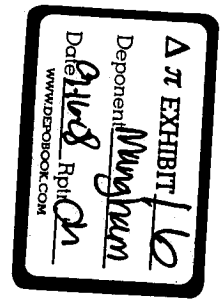
The Dealer Dashboard is the easiest way for Marantz dealers to get the latest information on Marantz products, events, company information and more. As a Marantz dealer, the Dashboard provides you with all kinds of product related items such as high resolution images, sell sheets, and corporate identity images.

To access the Dashboard, Marantz dealers should use their Dealer Dashboard password below:

Password Required: Submit

If you have trouble logging in, please send an email to: weberrors@marantz.com

H-001230



Using Siebel Dealer Dashboards (Dealer)

Siebel Dealer provides dealer employees with dashboards that allow them to view the most important information that they need for their work on one screen. The following dashboards are available:

- **Sales Consultant Dashboard.** Includes actual and goal unit sales, today's activities, my calendar, current opportunities, and my promotions.
- **Sales Manager Dashboard.** Includes actual and goal unit sales for team, today's activities, my calendar, current opportunities, team's promotions, and team's calendar.
- **Service Employee Dashboard.** Includes today's activities, my calendar, my promotions, and current service requests.
- **Service Manager Dashboard.** Includes today's activities, my calendar, store promotions, and current service requests for team.
- **Store Dashboard.** Includes actual and goal unit sales for store, today's activities, my calendar, current opportunities, team's promotions, and team's calendar. To be used by the store general manager.

Some of the applets on the dashboards display daily data, and some display monthly data. In addition, the calendar can display data for the day, week, or month.

- **Daily data.** The following applets display data for the current day:
  - Today's Activities. Displays all of the employee's activities for the current day. The first column lists activities that have a due date of today and are not done. The second column lists activities that have a due date of before today and are not done; it continues to display past-due activities for the number of days defined in Dealer Preference view, as described in Entering Dealer Preferences (Dealer).

    NOTE: The Today's Activities only displays certain types of activities, as described in Changing Types of Activities Displayed in the Dealer Dashboard.
  - Current Opportunities. Displays all current opportunities for this consultant where there is no activity or there has been activity in the last 15 days. This is based on the value in the Last Activity Date in the Opportunity view of the Contacts screen. Whenever you make any change to an opportunity, this field is updated.
  - My Promotions, Team's Promotions, or Store Promotions. Displays all promotions that are active on the current day. Promotions are displayed if their campaign is not completed, and the creation date is within 30 days of today's date, and today is between the start date and end date of the campaign.
  - Team's Calendar (Today). Available to sales managers and store manager only. Gives the managers a view of the calendars of all their reports for the current day. The manager can also click the left arrow or right arrow to view their reports' calendars for previous or later days.
- **Monthly data.** The following applet displays data for the current month:

- Unit Sales. Displays the actual sales and sales goals for the current month for fleet, new retail and used retail sales. On the sales consultant dashboard, it displays the actual sales and sales goals for that individual sales consultant. On the sales manager dashboard, it displays the actual sales and sales goals for the manager's team. All these sales goals are based on the monthly forecast, described in Process of Creating the Monthly Forecast (Dealer). Actual data is based on the Service History view.

- **Calendar**. Provides a complete calendar for creating and tracking appointments and other activities. Employees can display and use a daily, weekly, or monthly calendar.

To use Dealer dashboards

1. Navigate to the Dashboard screen.
2. From the Show drop-down list, select:
   - Sales Consultant Dashboard
   - Sales Manager Dashboard
   - Service Employee Dashboard
   - Service Manager Dashboard
   - Store Dashboard

   NOTE: Employees can only select the view that is appropriate to them. For example, a sales consultant does not have the sales manager view available.

   The dashboards display the most important information needed by these employees, in summary form.
3. Sales managers can refresh the data in the dashboard by clicking Refresh. Sales consultants' data is refreshed periodically, based on the refresh interval set in Dealer Preference view, as described in Entering Dealer Preferences (Dealer).

   The Update field in the Unit Sales and Activities applets shows the last time that the data was refreshed.
4. To view more complete information, click the heading above any of the applets in the dashboard.

   The appropriate screen appears, with more complete information.

Siebel Dealer Administration Guide

H-001227

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H-001224

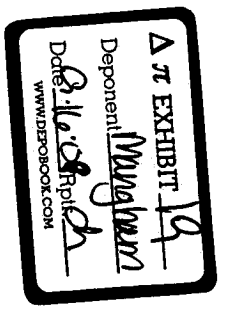
The Dashboard Spy

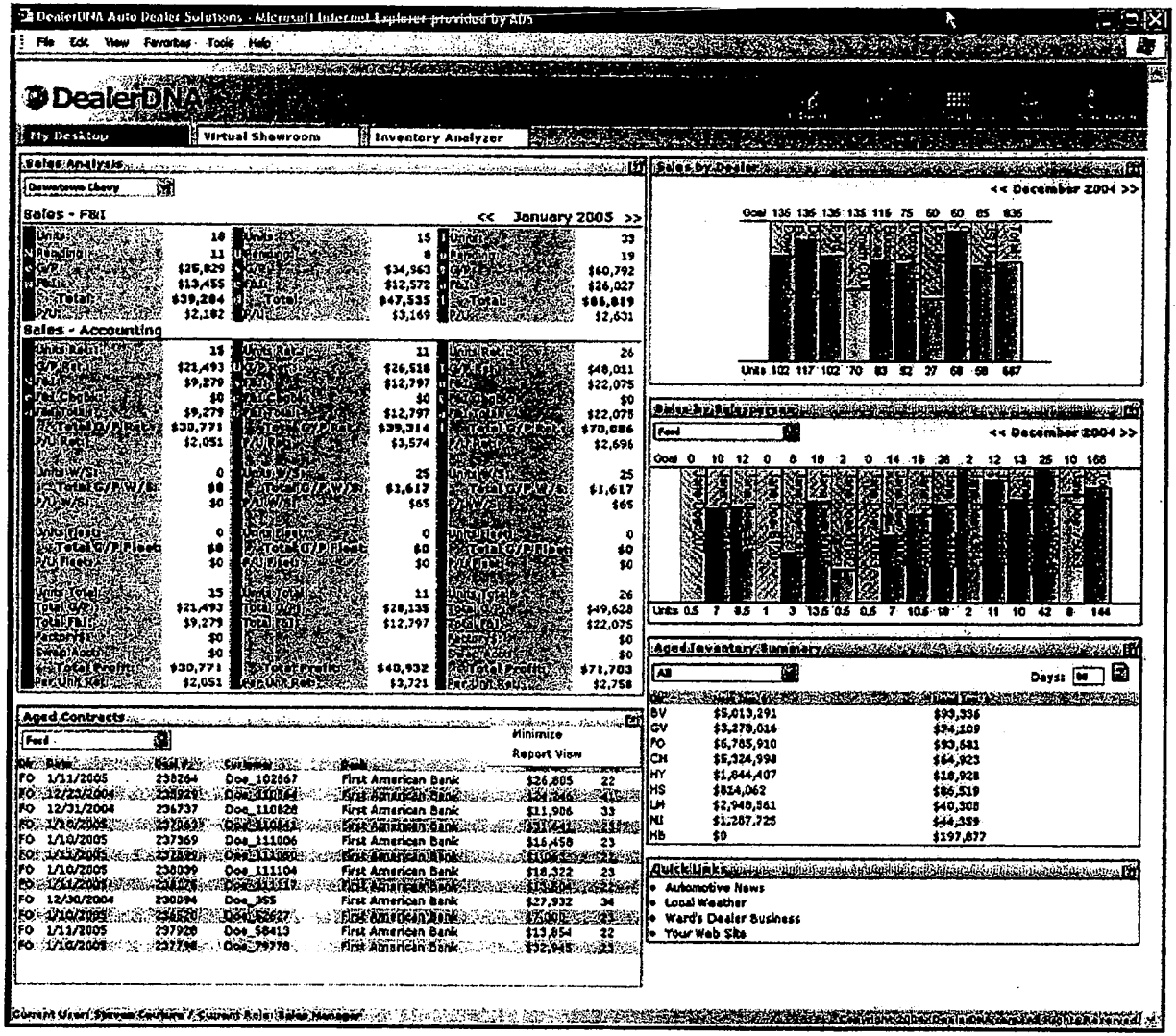
March 5, 2006

An auto dealer sales management dashboard

Filed under: Dashboard Screenshots — dashboardspy @ 2:54 am

This sales dashboard rovides users with real-time financial information about their Sales, F&I, Fixed Operations, Accounting and Inventory profit centers. PDFs available at http://www.dealerdna.com/pages/sales.html





So what or who is The Dashboard Spy? As his about page states, The Dashboard Spy is just a guy interested in the design of business

dashboards. He could not find any executive dashboard design source books and so set about creating his own. Finally convinced to post his extensive collection of dashboard screenshots online, he was amazed to find how popular it has become. If you have a nice screenshot to share, please leave a comment or send an email to info _at_ dashboardspy.com. Also check out The Dashboard Spy's favorite books.

Possibly related posts: (automatically generated)

- **Xcelsius Linear Gauge**
- The Tim O'Reilly Book Publishing Metrics Executive Dashboard

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- ## Executive Dashboards

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  Welcome to The Dashboard Spy - a collection of executive dashboard screenshots. This reference work is proudly offered as a source book to everyone involved in executive dashboard design and implementation. May it spur plenty of ideas and lead to a successful executive dashboard, scorecard or business intelligence project.

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- ## What is a Dashboard?

  Known by many names (enterprise dashboard, executive dashboard, digital dashboard, business dashboard, business intelligence dashboard, performance dashboard, balanced scorecard, kpi summary, data visualization, and so on...), it is basically a way for business users to get an at-a-glance understanding of metrics of importance to them. In addition to acting as a summarization device, the dashboard also serves to highlight specific data and allows the user to drill down and inspect specific items. It allows a browsing style of user interaction in addition to the usual menu based navigation. As such, the dashboard also represents a user interface design pattern that designers should study and understand. From the perspective of information technology staff, the dashboard often represents a consolidation of data from disparate data sources. The effort is usually considerable when it comes to the necessary extraction, transformation and presentation of the data.

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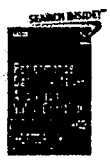
4. 

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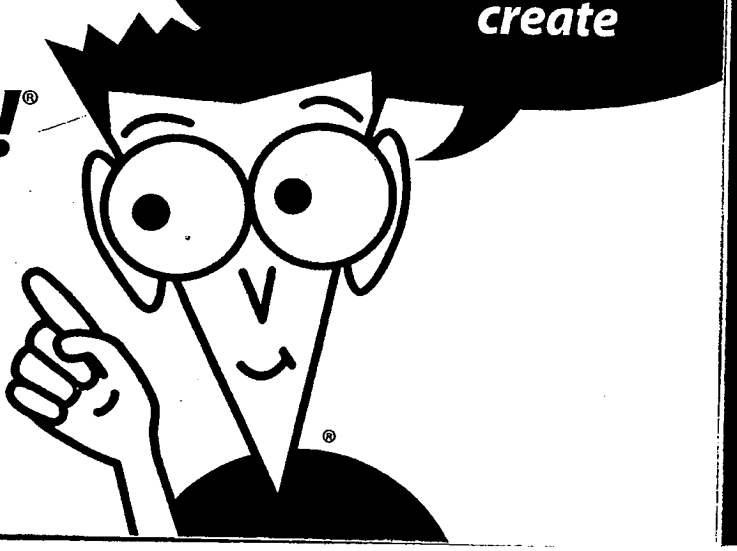

Michael Alexander
Author of Crystal Xclesius For Dummies

Excel® 2007 Dashboards & Reports For Dummies®

Cheat Sheet

Excel 2007 offers some new conditional formatting rules that allow you to add icons to your dashboards. With icons, you can represent and distinguish values from one another by using different shapes and colors. Here's a quick glance at the Icon Sets that come with Excel 2007.

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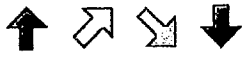
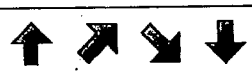
3 Arrows (Colored)		4 Arrows (Colored)	
3 Arrows (Gray)		4 Arrows (Gray)	
3 Flags		Red to Black	
3 Traffic Lights (Rimmed)		4 Traffic Lights	
3 Traffic Lights (Unrimmed)		4 Ratings	
3 Symbols (Circled)		5 Arrows (Colored)	
3 Symbols (Uncircled)		5 Arrows (Gray)	
3 Signs		5 Ratings	
		5 Quarters	

If you're working in an environment where not everyone has Excel 2007, definitely avoid using Excel 2007's Icon Set conditional formatting. Why? Icon Sets aren't backwards compatible, so anyone who doesn't have Excel 2007 can't use them.

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Excel® 2007 Dashboards & Reports For Dummies®

Cheat Sheet

A creative alternative to using the Icon Sets offered with conditional formatting is to use the various symbol fonts that come with Office. The symbol fonts are Wingdings, Wingdings2, Wingdings3, and Webdings. Each character/font combination shown in the table below displays an icon that can be used to represent a value in your dashboard.

Character	Font	Icon	Character	Font	Icon
3	Webdings	◂	f	Wingdings 3	←
4	Webdings	▸	g	Wingdings 3	→
5	Webdings	▴	h	Wingdings 3	↑
6	Webdings	▾	i	Wingdings 3	↓
l	Wingdings	●	j	Wingdings 3	↖
n	Wingdings	■	k	Wingdings 3	↗
t	Wingdings	◆	l	Wingdings 3	↙
P	Wingdings	✎	m	Wingdings 3	↘
C	Wingdings	✌	p	Wingdings 3	▲
D	Wingdings	👍	q	Wingdings 3	▼
J	Wingdings	☺	t	Wingdings 3	◀
K	Wingdings	☹	u	Wingdings 3	▶
L	Wingdings	😐	r	Wingdings 3	△
O	Wingdings 2	✗	s	Wingdings 3	▽
P	Wingdings 2	✓	v	Wingdings 3	◁
Q	Wingdings 2	☒	w	Wingdings 3	▷
R	Wingdings 2	☑			

It's always nice to see the approach others have taken to design their reporting mechanisms. Here's a list of sites (in no particular order) dedicated to business intelligence and the presentation of data through dashboards. I often visit these sites to get ideas and fresh new perspectives on dashboards and reports.

- **www.dashboardspy.com:** The Dashboard Spy posts examples of business intelligence dashboards, pointing out examples of good and bad dashboard design. This is a virtual warehouse of dashboarding ideas.
- **www.perceptualedge.com:** Visualization expert Stephen Few provides some fascinating insights on data visualization and dashboarding. A generous amount of articles and examples can be found at his site and his blog.
- **www.juiceanalytics.com/writing:** Zach and Chris Gemignani of Juice Analytics use their site as a platform to critique charts and offer interesting ideas around reporting data.
- **http://blog.instantcognition.com/category/visualization:** Instant Cognition is a blog where you'll find loads of articles on the latest visualization and Web analytics trends. You're sure to get plenty of ideas from the wide array of topics presented at this blog.
- **www.edwardtufte.com/bboard:** Professor Edward Tufte is an icon in the field of information design and data visualization. He shares his thoughts around visual communication in a series of articles at his site. Although many of these ideas are academic in nature, they'll get you thinking in new ways about how to best present data.

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Dedication

For my family.

Author's Acknowledgments

My deepest thanks to Greg Croy, Christopher Morris, Loren Abdulezer and all the professionals at Wiley who have helped bring this book to fruition. And a special thank you to my beautiful wife Mary who will open this book long enough to read the dedication and acknowledgments.

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We're proud of this book; please send us your comments through our online registration form located at www.dummies.com/register/.

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Contents at a Glance

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Introduction

The term *business intelligence (BI),* coined by Howard Dresner of the Gartner Group, describes the set of concepts and methods to improve business decision-making by using fact-based support systems. Practically speaking, BI is what you get when you analyze raw data and turn that analysis into knowledge. BI can help an organization identify cost-cutting opportunities, uncover new business opportunities, recognize changing business environments, identify data anomalies, and create widely accessible reports, among other things.

Over the last few years, the BI concept has overtaken corporate executives who are eager to turn impossible amounts of data into knowledge. As a result of this trend, whole industries have been created. Software vendors that focus on BI and dashboarding are coming out of the woodwork. New consulting firms touting their BI knowledge are popping up virtually every week. And even the traditional enterprise solution providers, like Business Objects and SAP, are offering new BI capabilities.

This need for BI has manifested itself in many forms. Most recently, it's come in the form of dashboard fever. *Dashboards* are reporting mechanisms that deliver business intelligence in a graphical form.

Maybe *you've* been hit with dashboard fever. Or maybe your manager is hitting you with dashboard fever. Nevertheless, you're probably holding this book because you're being asked to create BI solutions (that is, dashboards) in Excel.

Although many IT (information technology) managers would scoff at the thought of using Excel as a BI tool, Excel is inherently part of the enterprise BI tool portfolio. Whether IT managers are keen to acknowledge it, most of the data analysis and reporting done in business today is done by using spreadsheets. Here are several significant reasons to use Excel as the platform for your dashboards and reports:

- **Tool familiarity:** If you work in corporate America, you're conversant in the language of Excel. You can send even the most seasoned of senior vice presidents an Excel-based reporting tool and trust he'll know what to do with it. With an Excel reporting process, your users spend less time figuring how to use the tool and more time looking at the data.

- **Built-in flexibility:** With most enterprise dashboarding solutions, the capability to perform analyses outside the predefined views is either disabled or unavailable. How many times have you dumped enterprise-level data into Excel so you can analyze it yourself? I know I have. You can bet that if you give users an inflexible reporting mechanism, they'll do what it takes to create their own usable reports. In Excel, features, such as pivot tables, autofilters, and Form controls allow you to create mechanisms that don't lock your audience into one view. And because you can have multiple worksheets in one workbook, you can give them space to do their own side analysis as needed.
- **Rapid development:** Building your own reporting capabilities in Excel can liberate you from the IT department's resources and time limitations. With Excel, not only can you develop reporting mechanisms faster, but you have the flexibility to adapt more quickly to changing requirements.
- **Powerful data connectivity and automation capabilities:** Excel isn't the toy application some IT managers make it out to be. With its own native programming language and its robust object model, Excel can be used to automate processes and even connect to various data sources. With a few advanced techniques, you can make Excel a hands-off reporting mechanism that practically runs on its own.
- **Little to no incremental costs:** Not all of us can work for multi-billion dollar companies that can afford enterprise-level reporting solutions. In most companies, funding for new computers and servers is limited, let alone funding for expensive BI reporting packages. For those companies, leveraging Microsoft Office is frankly the most cost-effective way to deliver key business reporting tools without compromising too deeply on usability and functionality.

All that being said, so many reporting functions and tools are in Excel that it's difficult to know where to start. Enter your humble author, spirited into your hands via this book. Here, I show you how you can turn Excel into your own personal BI tool. With a few fundamentals and some of the new BI functionality Microsoft has included in this latest version of Excel, you can go from reporting data with simple tables to creating a meaningful reporting component that's sure to wow management.

About This Book

The goal of this book is to show you how to leverage Excel functionality to build and manage better reporting mechanisms. Each chapter in this book provides a comprehensive review of the technical and analytical concepts that help you create better reporting components — components that can be used for both dashboards and reports.

It's important to note that this book isn't a guide to visualizations or dashboarding best practices. Those are subjects worthy of their own book. This book focuses on understanding the technical aspects of using Excel's various tools and functionality and applying them to reporting.

The chapters in this book are designed to be standalone chapters that you can selectively refer to as needed. As you move through this book, you can create increasingly sophisticated dashboard and report components. After reading this book, you can

- Analyze large amounts of data and report that data in a meaningful way.
- Get a better understanding of data by viewing it from different perspectives.
- Quickly slice data into various views on the fly.
- Automate redundant reporting and analyses.
- Create interactive reporting processes.

Foolish Assumptions

I make three assumptions about you as the reader, which are:

- You've already bought and installed Excel 2007.
- You have some familiarity with the basic concepts of data analysis, such as working with tables, aggregating data, and performing calculations.
- You have a strong grasp of basic Excel concepts, such as managing table structures, creating formulas, referencing cells, filtering, and sorting.

How This Book Is Organized

The chapters in this book are organized into six parts. Each of these parts includes chapters that build on the previous chapters' instructions. The idea is that as you go through each part, you can build dashboards of increasing complexity until you're an Excel reporting guru.

Part I: Making the Move to Dashboards

Part I is all about helping you think about your data in terms of creating effective dashboards and reports. Chapter 1 introduces you to the topic of dashboards and reports, giving you some of the fundamentals and basic ground rules for creating effective dashboards and reports. Chapter 2 shows you a few concepts around data structure and layout. In this chapter, I demonstrate the impact of a poorly-planned data set and show you the best practices for setting up the source data for your dashboards and reports.

Part II: Building Basic Dashboard Components

In Part II, you take an in-depth look at some of the basic dashboard components you can create using Excel 2007. This part begins with Chapter 3 where I introduce you to pivot tables and discuses how a pivot table can play an integral role in Excel-based dashboards. Chapter 4 provides a primer on building charts in Excel 2007, giving beginners a solid understanding of how Excel charts work. Chapter 5 introduces you to the new and improved conditional formatting functionality found in Excel 2007. In this chapter, I present several ideas for using the new conditional formatting tools in dashboards and reports. In Chapter 6, you explore the various techniques that can be used to create dynamic labels, allowing for the creation of a whole new layer of visualization.

Part III: Building Advanced Dashboard Components

In Part III, you go beyond the basics to take a look at some of the advanced components you can create with Excel 2007. This part consists of three chapters, starting with Chapter 7, in which I demonstrate how to represent time trending, seasonal trending, moving averages, and other types of trending in dashboards. You're also introduced to Sparklines in this chapter. In Chapter 8, you explore the many methods used to *bucket* data, or put data into groups for reporting. Chapter 9 demonstrates some of charting techniques that help you display and measure values versus goals.

Part IV: Advanced Reporting Techniques

Part IV focuses on techniques that help you automate your reporting processes and give your users an interactive user interface. Chapter 10 provides a clear understanding of how macros can be leveraged to supercharge and automate your reporting systems. Chapter 11 illustrates how you can provide your clients with a simple interface, allowing them to easily navigate through and interact with their reporting systems.

Part V: Working with the Outside World

The theme in Part V is importing and exporting information to and from Excel. Chapter 12 explores some of the ways to incorporate data that doesn't originate in Excel. In this chapter, I show you how to import data from external sources as well as how to create systems that allow for dynamic refreshing of external data sources. Chapter 13 wraps up this look on Excel dashboards and reports by showing you the various ways to distribute and present your work.

Part VI: The Part of Tens

Part VI is the classic Part of Tens section found in almost all *For Dummies* series titles. The chapters found here each present ten or more pearls of wisdom, delivered in bite-sized pieces. In Chapter 14, I share with you ten or so chart-building best practices, helping you design more effective charts. In Chapter 15, I provide a checklist of questions you should ask yourself before sharing your Excel dashboards and reports.

Sample Files for This Book

This book comes with samples files that can be downloaded from the Wiley Web site at the following URL:

Icons Used In This Book

Throughout this book, you may notice little icons in the left margin that act as road signs to help you quickly pull out the information that's most important to you. Here's what they look like and what they represent.

Information tagged with a Remember icon identifies general information and core concepts that you may already know but should certainly understand and review.

Tip icons include short suggestions and tidbits of useful information.

Look for Warning icons to identify potential pitfalls, including easily-confused or difficult-to-understand terms and concepts.

Technical Stuff icons highlight technical details that you can skip unless you want to bring out the tech geek in you.

Where to Go from Here

If you want to get an understanding of best practices and techniques to get started with a dashboarding project, start with Chapters 1 and 2.

If you're looking for a quick tutorial on reporting data with pivot tables, Chapter 3 is what you need.

If you're relatively new to Excel and you're looking to get a sense of the basic reporting tools available in Excel, Chapters 4, 5 and 6 will get you started.

If you're a bit more experienced and you'd like to discover some advanced techniques for reporting data and automating you dashboards, you can explore Chapters 7 through 11.

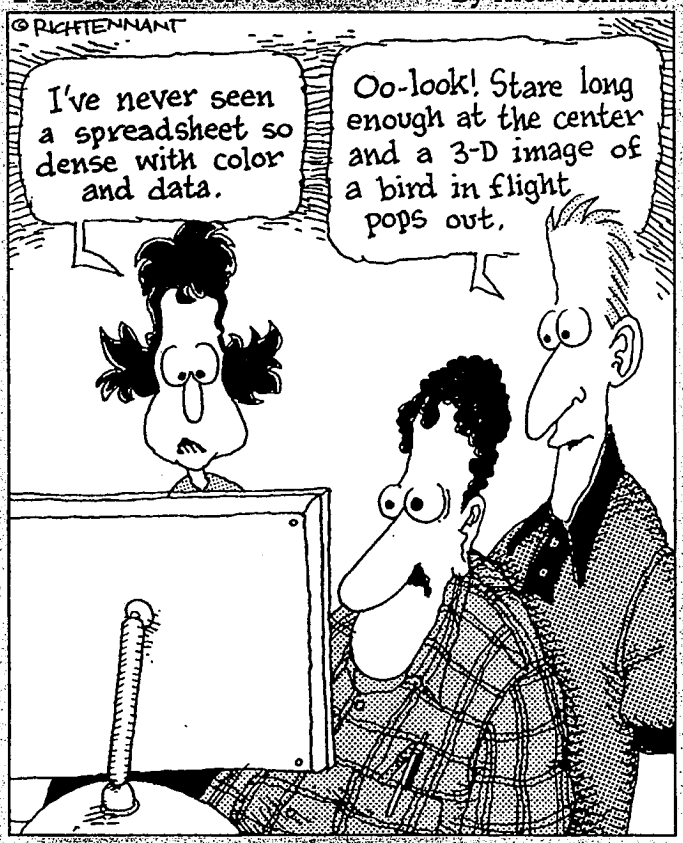
Working in an environment where you have to share your reporting with the outside world? Chapters 12 and 13 will show you how to use external data and some of the ways you can distribute your dashboards.

You can also just open the book to any chapter you want and dive right into the art and science of building reporting mechanisms with Excel.

Part I

Making the Move to Dashboards

The 5th Wave By Rich Tennant



In this part . . .

In this section, you discover how to think about your data in terms of creating effective dashboards and reports. Chapter 1 introduces you to the topic of dashboards and reports, giving you some of the fundamentals and basic ground rules for creating effective dashboards and reports. Chapter 2 shows you a few concepts around data structure and layout. In this part, you discover the impact of a poorly-planned data set and the best practices for setting up the source data for your dashboards and reports.

Chapter 1

Getting in the Dashboard State of Mind

In This Chapter

- Comparing dashboards to reports
- Getting started on the right foot
- Dashboarding best practices

In his song, "New York State of Mind," Billy Joel laments the differences between California and New York. In this homage to the Big Apple, he implies a mood and a feeling that comes with thinking about New York. I admit it's a stretch, but I'll to extend this analogy to Excel — don't laugh.

In Excel, the differences between building a dashboard and creating standard table-driven analyses are as great as the differences between California and New York. To approach a dashboarding project, you truly have to get into the dashboard state of mind. As you'll come to realize in the next few chapters, dashboarding requires far more preparation than standard Excel analyses. It calls for closer communication with business leaders, stricter data modeling techniques, and the following of certain best practices. It's beneficial to have a base familiarity with fundamental dashboarding concepts before venturing off into the mechanics of building a dashboard.

In this chapter, you get a solid understanding of these basic dashboard concepts and design principles as well as what it takes to prepare for a dashboarding project.

Defining Dashboards and Reports

It isn't difficult to use *report* and *dashboard* interchangeably. In fact, the line between reports and dashboards frequently gets muddied. I've seen countless reports that have been referred to as dashboards just because they included a few charts. Likewise, I've seen many examples of what could be considered dashboards but have been called reports.

Now this may all seem like semantics to you, but it's helpful to clear the air a bit and understand the core attributes of what are considered to be reports and dashboards.

Defining reports

Reports are probably the most common application of business intelligence. A *report* can be described as a document that contains data used for reading or viewing. It can be as simple as a data table or as complex as a subtotaled view with interactive drilling, similar to Excel's Subtotal functionality.

The key attribute of a report is that it doesn't lead a reader to a predefined conclusion. Although a report can include analysis, aggregations, and even charts, reports often allow for the end user to apply his own judgment and analysis to the data.

To clarify this concept, Figure 1-1 shows an example of a report. This report shows the National Park overnight visitor statistics by period. Although this data can be useful, it's clear this report isn't steering the reader in any predefined judgment or analysis; it's simply presenting the aggregated data.

National Park Overnight Visitor Stats

Jan-05	2,397,098	4,446,370	3,934,114	3,235,039	838,932	14,851,553
Feb-05	2,395,236	4,378,491	4,221,820	3,386,345	814,734	15,196,726
Mar-05	2,329,845	4,663,020	4,153,999	3,312,100	650,088	15,109,052
Apr-05	2,424,227	4,596,036	3,601,198	3,317,010	644,543	14,583,014
May-05	2,579,716	4,232,793	3,747,293	3,486,041	725,979	14,771,822
Jun-05	1,978,867	3,943,183	3,586,062	3,527,045	733,121	13,768,278
Jul-05	1,680,414	3,759,294	3,460,005	3,538,176	743,256	13,181,145
Sep-05	1,644,691	3,788,528	3,955,795	3,726,504	786,102	13,901,620
Oct-05	1,574,706	4,043,206	3,921,104	3,787,463	852,820	14,179,299
Nov-05	1,617,706	3,937,271	3,929,665	3,880,622	865,694	14,230,958

Figure 1-1: Reports present data for viewing but don't lead readers to conclusions.

Defining dashboards

A *dashboard* is a visual interface that provides at-a-glance views into key measures relevant to a particular objective or business process. Dashboards have three main attributes:

- Dashboards are typically graphical in nature, providing visualizations that help focus attention on key trends, comparisons, and exceptions.
- Dashboards often display only data that are relevant to the goal of the dashboard.
- Because dashboards are designed with a specific purpose or goal, they inherently contain predefined conclusions that relieve the end user from performing his own analysis.

Figure 1-2 illustrates a dashboard that uses the same data shown in Figure 1-1. This dashboard displays key information about the National Park overnight visitor stats. As you can see, this presentation has all the main attributes that define a dashboard. First, it's a visual display that allows you to quickly recognize the overall trending of the overnight visitor stats. Second, you can see that not all the detailed data is shown here; only the key pieces of information that's relevant to support the goal of this dashboard. Finally, by virtue of its objective, this dashboard effectively presents you with analysis and conclusions about the trending of overnight visitors.

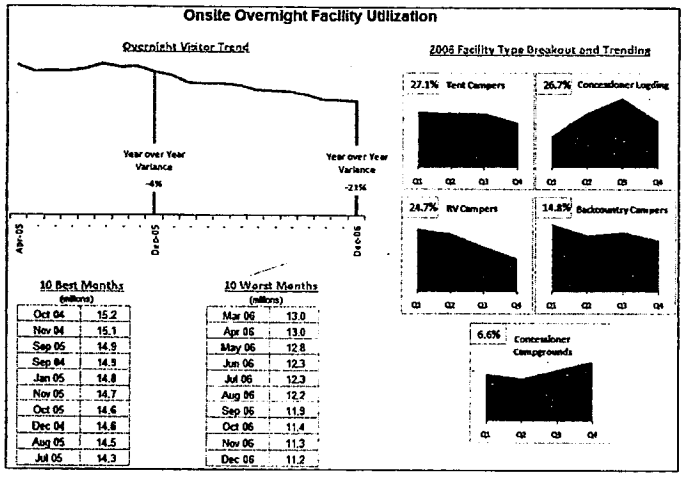


Figure 1-2: Dashboards provide at-a-glance views into key measures relevant to a particular objective or business process.

Preparing for Greatness

Imagine your manager asks you to create a dashboard that tells him everything he should know about monthly service subscriptions. Do you jump to action and slap together whatever comes to mind? Do you take a guess at what he wants to see and hope it's useful? These questions sound ridiculous but such situations happen more that you think. I'm constantly called to action to create the next great reporting tool but am rarely provided the time to gather the true requirements for it. Between limited information and unrealistic deadlines, the end product often ends up being unused or having little value.

This brings me to one of the key steps in preparing for dashboarding — collecting user requirements.

In the non-IT world of the Excel analyst, user requirements are practically useless because of sudden changes in project scope, constantly changing priorities, and shifting deadlines. The gathering of user requirements is viewed to be a lot of work and a waste of valuable time in the ever-changing business environment. But as I mention at the start of this chapter, it's time to get into the dashboard state of mind.

Consider how many times a manager has asked you for an analysis and then said "No, I meant this." Or, "Now that I see it, I realize I need this." As frustrating as that can be for a single analysis, imagine running into this during the creation of a complex dashboard with several data integration processes. The question is, would you rather spend your time on the front end gathering user requirements or spend time painstakingly redesigning the dashboard you'll surely come to hate?

The process of gathering user requirements doesn't have to be an overly complicated or formal one. Here are some simple things you can do to ensure you have a solid idea of the purpose of the dashboard.

Establish the audience and purpose for the dashboard

Chances are your manager has been asked to create the reporting mechanism, and he has passed the task to you. Don't be afraid to clarify the source of the initial request and talk to them about what they're really asking for. Discuss the purpose of the dashboard and the triggers that caused them to ask for a dashboard in the first place. You may find, after discussing the matter, that a simple Excel report meets their needs, foregoing the need for a full-on dashboard.

If a dashboard is indeed warranted, talk about who the end users are. Take some time to meet with some of the end users and talk about how they'd use the dashboard. Will the dashboard be used as a performance tool for regional

managers? Will the dashboard be used to share data with external customers? Talking through these fundamentals with the right people helps align your thoughts and avoids the creation of a dashboard that doesn't fulfill the necessary requirements.

Delineate the measures for the dashboard

Most dashboards are designed around a set of measures, or *key performance indicators (KPIs).* A KPI is an indicator of the performance of a task deemed to be essential to daily operations or processes. The idea is that a KPI reveals performance that is outside the normal range for a particular measure, so it therefore often signals the need for attention and intervention. Although the measures you place into your dashboards may not officially be called KPIs, they undoubtedly serve the same purpose — to draw attention to problem areas.

The topic of creating effective KPIs for your organization is a subject worthy of its own book and is out of the scope of this endeavor. For a detailed guide on KPI development strategies, pick up David Parmenter's *Key Performance Indicators: Developing, Implementing, and Using Winning KPIs* (Wiley). This book provides an excellent step-by-step approach to developing and implementing KPIs.

The measures used on a dashboard should absolutely support the initial purpose of that dashboard. For example, if you're creating a dashboard focused on supply chain processes, it may not make sense to have human resources headcount data incorporated. It's generally a good practice to avoid inclusion of nice-to-know data into your dashboards simply to fill white space or because the data is available. If the data doesn't support the core purpose of the dashboard, leave it out.

Here's another tip: When gathering the measures required for the dashboard, I find that it often helps to write a sentence to describe the measure needed. For example, instead of simply adding the word *Revenue* into my user requirements, I write what I call a *component question,* such as, "What is the overall revenue trend for the last two years?" I call it a *component question* because I intend to create a single component, such as a chart or a table, to answer the question. For instance, if the component question is, "What is the overall revenue trend for the last two years?," you can imagine a chart component answering that question by showing the two-year revenue trend.

I sometimes take this a step further and actually incorporate the component questions into a mock layout of the dashboard to get a high-level sense of the data the dashboard will require. Figure 1-3 illustrates an example.

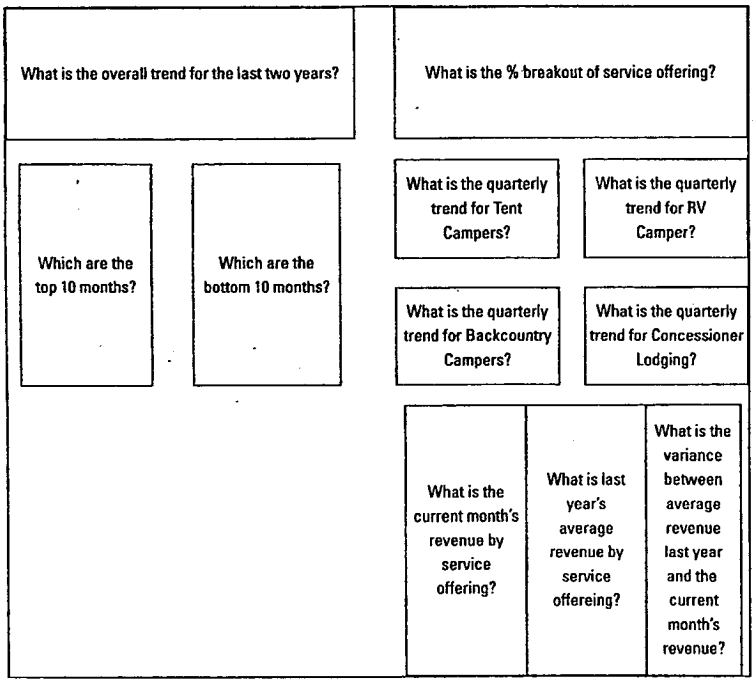


Figure 1-3: Each box in this dashboard layout mockup represents a component and the type of data required to create the measures.

Each box in this dashboard layout mockup represents a component on the dashboard and its approximate position. The questions within each box provide a sense of the types of data required to create the measures for the dashboard.

Catalog the required data sources

When you have the list of measures that need to be included on the dashboard, it's important to take a tally of the available systems to determine if the data required to produce those measures are available. Ask yourself the following questions:

- Do you have access to the data sources necessary?
- How often are those data sources refreshed?
- Who owns and maintains those data sources?
- What are the processes to get the data from those resources?
- Does the data even exist?

These are all questions you need answered when negotiating development time, refresh intervals, and phasing.

Conventional wisdom says that the measures on your dashboard shouldn't be governed by the availability of data. Instead, you should let dashboard KPIs and measures govern the data sources in your organization. Although I agree with the spirit of that statement, I've been involved in too many dashboard projects that have fallen apart because of lack of data. Real-world experience has taught me the difference between the ideal and the ordeal.

If your organizational strategy requires that you collect and measure data that is nonexistent or not available, press pause on the dashboard project and turn your attention to creating a data collection mechanism that will get the data you need.

Define the dimensions and filters for the dashboard

In the context of reporting, a *dimension* is a data category used to organize business data. Examples of dimensions are Region, Market, Branch, Manager, or Employee. When you define a dimension in the user requirements stage of development, you're determining how the measures should be grouped or distributed. For example, if it's determined that your dashboard should report data by employee, you need to ensure that your data collection and aggregation processes include employee detail. As you can imagine, adding a new dimension after the dashboard is built can get complicated, especially when your processes require many aggregations across multiple data sources. The bottom line is that locking down the dimensions for a dashboard early in the process definitely saves you headaches.

Along those same lines, you want to get a clear sense of the types of filters that are required. In the context of dashboards, *filters* are mechanisms that allow you to narrow the scope of the data to a single dimension. For example, you can filter on Year, Employee, or Region. Again, if you don't account for a particular filter while building your dashboarding process, you'll likely be forced into an unpleasant redesign of both your data collection processes and your dashboard.

If you're confused by the difference between dimensions and fields, think about a simple Excel table. A dimension is like a column of data (such as a column containing employee names) in an Excel table. A filter, then, is the mechanism that allows you to narrow your table to show only the data for a particular employee. For example, if you apply Excel's AutoFilter to the employee column, you are building a filter mechanism into your table.

Determine the need for drill-down features

Many dashboards provide *drill-down features* that allow users to "drill" into the details of a specific measure. You want to get a clear understanding of the types of drill-downs your users have in mind.

To most users, *drill-down feature* means the ability to get a raw data table supporting the measures shown on the dashboard. Although getting raw data isn't always practical or possible, discussing these requests will at a minimum allow you to talk to your users about additional reporting, links to other data sources, and other solutions that may help them get the data they need.

Establish the refresh schedule

A *refresh schedule* refers to the schedule by which a dashboard is updated to show the latest information available. Because you're the one responsible for building and maintaining the dashboard, you should have a say in the refresh schedules. Your manager may not know what it takes to refresh the dashboard in question.

While you're determining the refresh schedule, keep in mind the refresh rates of the different data sources whose measures you need to get. You can't refresh your dashboard any faster than your data sources. Also, negotiate enough development time to build macros that aid in automation of redundant and time-consuming refresh tasks.

A Quick Look at Dashboard Design Principles

When collecting user requirements for your dashboarding project, there's a heavy focus on the data aspects of the dashboard: The types of data needed, the dimensions of data required, the data sources to be used, and so on. This is a good thing — without solid data processes, your dashboards won't be effective or maintainable. That being said, here's another aspect to your dashboarding project that calls for the same fervor in preparation: the *design aspect.*

Excel users live in a world of numbers and tables, not visualization and design. Your typical Excel analyst has no background in visual design and is often left to rely on his own visual instincts to design his dashboards. As a result, most Excel-based dashboards have little thought given to effective visual design, often resulting in overly cluttered and ineffective user interfaces.

The good news is that dashboarding has been around for such a long time, there's a vast knowledge base of prescribed visualization and dashboard design principles. Many of these principles seem like common sense; even so, these are concepts that Excel users don't often find themselves thinking about. Because this chapter is about getting into the dashboard state of mind, I break that trend and review a few dashboard design principles that improve the design aspect of your Excel dashboards.

Many of the concepts in this section come from the work of *Stephen Few,* visualization expert and author of several books and articles on dashboard design principles. As this book is primarily focused on the technical aspects of building reporting components in Excel, this section offers a high-level look at dashboard design. If you find that you're captivated by the subject, feel free to visit Stephen Few's Web site at `www.perceptualedge.com`.

Rule number 1: Keep it simple

Dashboard design expert, Stephen Few, has the mantra, "Simplify, Simplify, Simplify." The basic idea is that dashboards cluttered with too many measures or too much eye candy can dilute the significant information you're trying to present. How many times has someone told you that your reports look "busy"? In essence, this complaint means that too much is going on in the page or screen, making it hard to see the actual data.

Here are a few actions you can take to ensure simpler and more effective dashboard designs.

Don't turn your dashboard into a data repository

Admit it. You include as much information onto a report as possible, primarily to avoid being asked for additional information. We all do it. But in the dashboard state of mind, you have to fight the urge to force every piece of data available onto your dashboards.

Overwhelming users with too much data can cause them to lose sight of the primary goal of the dashboard and focus on inconsequential data. The measures used on a dashboard should support the initial purpose of that dashboard. Avoid the urge to fill white space for the sake of symmetry and appearances. Don't include nice-to-know data just because the data is available. If the data doesn't support the core purpose of the dashboard, leave it out.

Avoid the fancy formatting

The key to communicating effectively with your dashboards is to present your data as simply as possible. There's no need to wrap it in eye candy to make it more interesting. It's okay to have a dashboard with little to no color

or formatting. You'll find that the lack of fancy formatting only serves to call attention to the actual data. Focus on the data and not the shiny happy graphics. Here are a few guidelines:

- **Avoid using colors or background fills to partition your dashboards.** Colors in general should be used sparingly, reserved for providing information about key data points. For example, assigning the colors red, yellow, and green to measures traditionally indicates performance level. Adding these colors to other sections of your dashboard only serves to distract your audience.
- **De-emphasize borders, backgrounds, and other elements that define dashboard areas.** Try to use the natural white space between your components to partition your dashboard. If borders are necessary, format them to hues lighter than the ones you've used for your data. Light grays are typically ideal for borders. The idea is to indicate sections without distracting from the information displayed.
- **Avoid applying fancy effects, such as gradients, pattern fills, shadows, glows, soft edges, and other formatting.** Excel 2007 makes it easy to apply effects that make everything look shiny, glittery, and generally happy. Although these formatting features make for great marketing tools, they don't do your reporting mechanisms any favors.
- **Don't try to enhance your dashboards with clip art or pictures.** Not only do they do nothing to further data presentation, they often just look tacky.

Limit each dashboard to one printable page

Dashboards in general should provide at-a-glance views into key measures relevant to particular objectives or business processes. This implies that all the data is immediately viewable on the one page. Although including all your data on one page isn't always the easiest thing to do, there's much benefit to being able to see everything on one page or screen. You can compare sections more easily, you can process cause and effect relationships more effectively, and you rely less on short term memory. When a user has to scroll left, right, or down, these benefits are diminished. Furthermore, users tend to believe that when information is placed out of normal view (areas that require scrolling), it's somehow less important.

But what if you can't fit all the data on one sheet? First, review the measures on your dashboard and determine if they really need to be there. Next, format your dashboard to use less space (format fonts, reduce white space, and adjust column and row widths). Finally, try adding interactivity to your dashboard, allowing users to dynamically change views to show only those measures that are relevant to them.

Use layout and placement to draw focus

As I discuss earlier in this chapter, only measures that support the dashboard's utility and purpose should be included in the dashboard. However, it should be said that just because all measures on your dashboard are significant, they may not always have the same level of importance. In other words, you'll frequently want one component of your dashboard to stand out from the others.

Instead of using bright colors or exaggerated sizing differences, you can leverage location and placement to draw focus to the most important components on your dashboard.

Various studies have shown that readers have a natural tendency to focus on particular regions of a document. For example, researchers at the Poynter Institute's Eyetracker III project have found that readers view various regions on a screen in a certain order, paying particular attention to specific regions on the screen. They use the diagram in Figure 1-4 to illustrate what they call *priority zones*. Regions with the number 1 in the diagram seem to have high prominence, attracting the most attention for longer periods of time. Meanwhile, priority 3 regions seem to have low prominence.

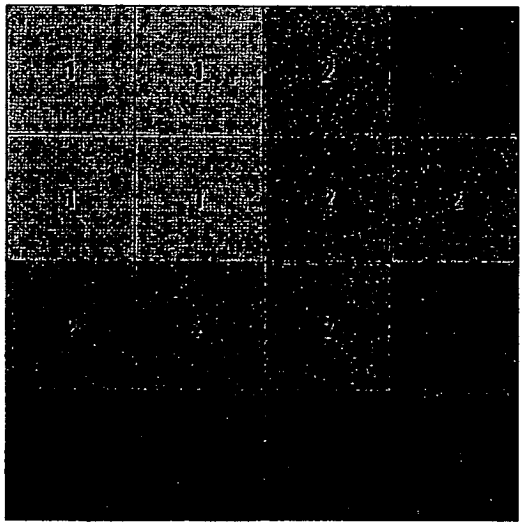


Figure 1-4: Studies show that users pay particular attention to the upper-left and middle-left of a document.

You can leverage these priority zones to promote or demote certain components based on significance. If one of the charts on your dashboard warrants special focus, you can simply place that chart in a region of prominence.

Note that surrounding colors, borders, fonts, and other formatting can affect the viewing patterns of your readers, de-emphasizing a previously high prominence region.

Format numbers effectively

There will undoubtedly be lots of numbers in your dashboards. Some of them will be in charts, and others will be in tables. Remember that every piece of information on your dashboard should have a reason for being there. It's important that you format your numbers effectively to allow your users to understand the information they represent without confusion or hindrance. Here are some guidelines to keep in mind when formatting the numbers in your dashboards and reports:

- **Always use commas to make numbers easier to read.** For example, instead of 2345, show 2,345.
- **Only use decimal places if that level of precision is required.** For instance, there's rarely benefit for showing the decimal places in a dollar amount, such as $123.45. Likewise in percentages, use only the minimum number of decimals required to represent the data effectively. For example instead of 43.21%, you may be able to get away with 43%.
- **Only use the dollar symbol when you need to clarify that you're referring to monetary values.** If you have a chart or table that contains all revenue values, and there's a label clearly stating this, you can save rooms and pixels by leaving out the dollar symbol.
- **Format very large numbers to the thousands or millions place.** For instance, instead of displaying 16,906,714, you can format the number to read 17M.

You can easily format large numbers in Excel by using the Format Cells dialog box, shown in Figure 1-5. Here, you can specify a custom number format by selecting Custom in the Category list and entering the desired number format code in the Type input box. In Figure 1-5, the format code `0,,"M"` ensures the numbers are formatted to millions with an M appendage.

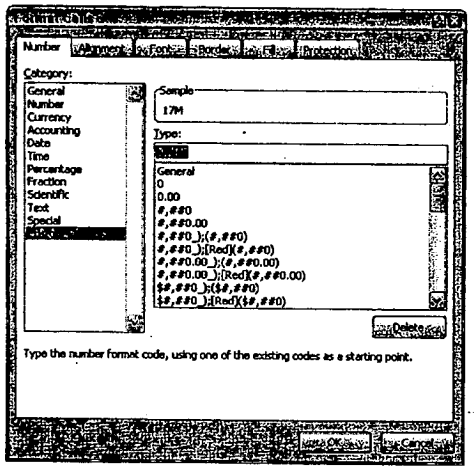


Figure 1-5: Select Custom in the Category list and enter a number format code in the Type input box.

Table 1-1 lists some common format codes and how they affect numbers.

Table 1-1 Number Format Codes

Number Format Code	*How 16,906,714 Would be Displayed*
0,	16907
0,0,	16,907
0.00,	16,906.71
0,"K"	16907K
0,0,"K"	16,907K
0.00,"K"	16,906.71K
$0,0,"K"	$16,907K
0,,	17
0,,"M"	17M
0.0,,"M"	16.9M
0.00,,"M"	16.91M
$0.0,,"M"	$16.9M

Use titles and labels effectively

It's common sense, but many people often fail to label items on dashboards effectively. If your manager looks at your dashboard and asks you, "What is this telling me?," you likely have labeling issues. Here are a few guidelines for effective labeling in your dashboards and reports:

- **Always include a timestamp on your reporting mechanisms.** This minimizes confusion when distributing the same dashboard or report in monthly or weekly installments.
- **Always include some text indicating when the data for the measures was retrieved.** In many cases, timing of the data is a critical piece of information when analyzing a measure.
- **Use descriptive titles for each component in your dashboard.** This allows users to clearly identify what they're looking at. Be sure to avoid cryptic titles with lots of acronyms and symbols.
- **Although it may seem counterintuitive, it's generally good practice to de-emphasize labels by formatting them to hues lighter than the ones used for your data.** Lightly colored labels give your users the information they need without distracting them from the information displayed. Ideal colors to use for labels are colors that are commonly found in nature: soft grays, browns, blues, and greens.

Chapter 2

Building a Super Model

In This Chapter

- Understanding the best data modeling practices
- Leveraging Excel functions to deliver data
- Creating smart tables that expand with data

One of Excel's most attractive features is its flexibility. You can create an intricate system of interlocking calculations, linked cells, and formatted summaries that work together to create a final analysis. However, years of experience has brought me face-to-face with an ugly truth. Although Excel is like the cool gym teacher that lets you do anything you want, a lack of structure in your data models can lead to some serious headaches in the long run.

What's a data model? A *data model* provides the foundation upon which your reporting mechanism is built. When you build a spreadsheet that imports, aggregates, and shapes data, you're essentially building a data model that feeds your dashboards and reports.

Creating a poorly-designed data model can mean hours of manual labor maintaining and refreshing your reporting mechanisms. On the other hand, creating an effective model allows you to easily repeat monthly reporting processes without damaging your reports or your sanity.

The goal of this chapter is to show you the concepts and techniques that help you build effective data models. In this chapter, you discover that creating a successful reporting mechanism requires more than slapping data onto a spreadsheet. Although you'll see how to build cool dashboard components in later chapters, those components won't do you any good if you can't effectively manage your data models. On that note, let's get started.

Data Modeling Best Practices

Building an effective model isn't as complicated as you may think. It's primarily a matter of thinking about your reporting processes differently. Most people spend very little time thinking about the supporting data model

behind a reporting process. If they think about it at all, they usually start by imagining a mockup of the finished dashboard and work backward from there.

Instead of seeing just the finished dashboard in your head, try to think of the end-to-end process. Where will you get the data? How should the data be structured? What analysis will need to be performed? How will the data be fed to the dashboard? How will the dashboard be refreshed?

Obviously the answers to these questions are highly situation-specific. However, some data modeling best practices will guide you to a new way of thinking about your reporting process. These are discussed in the next few sections.

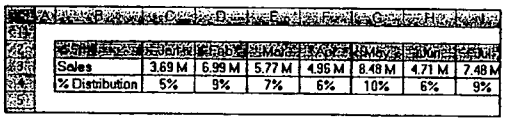
Separating data, analysis, and presentation

One of the most important concepts in a data model is the separation of data, analysis, and presentation. The fundamental idea is that you don't want your data to become too tied into any one particular way of presenting that data.

To get your mind around this concept, think about an invoice. When you receive an invoice, you don't assume the financial data on that invoice is the true source of your data. It's merely a presentation of data that's actually stored in some database. That data can be analyzed and presented to you in many other manners: in charts, in tables, or even on Web sites. This sounds obvious, but Excel users often fuse data, analysis, and presentation together.

For instance, I've seen Excel workbooks that contain 12 tabs, each representing a month. On each tab, data for that month is listed along with formulas, pivot tables, and summaries. Now what happens when you're asked to provide summary by quarter? Do you add more formulas and tabs to consolidate the data on each of the month tabs? The fundamental problem in this scenario is that the tabs actually represent data values that are fused into the presentation of your analysis.

For an example more in-line with reporting, take a look at Figure 2-1. Hard-coded tables, such as this, are common. This table is an amalgamation of data, analysis, and presentation. Not only does this table tie you to a specific analysis, but there's little to no transparency into what the analysis exactly consists of. Also, what happens when you need to report by quarters or when another dimension of analysis is needed? Do you import a table that consists of more columns and rows? How does that affect your model?



Sales	3.69 M	6.99 M	5.77 M	4.96 M	8.48 M	4.71 M	7.48 M
% Distribution	5%	9%	7%	6%	10%	6%	9%

Figure 2-1: Avoid using hard-coded tables that fuse data, analysis, and presentation.

The alternative is to create three layers in your data model: a data layer, an analysis layer, and a presentation layer. You can think of these layers as three different spreadsheets in an Excel workbook. One sheet to hold the raw data that feeds your report, one sheet to serve as a staging area where the data is analyzed and shaped, and one to serve as the presentation layer. Figure 2-2 illustrates the three layers of an effective data model.

As you can see in Figure 2-2, the raw dataset is located on its own sheet. Although the dataset has some level of aggregation applied to keep it manageably small, no further analysis is done on the data sheet.

The analysis layer consists primarily of formulas that analyze and pull data from the data layer into formatted tables (commonly referred to as *staging tables*). These staging tables ultimately feed the reporting components in your presentation layer. In short, the sheet that contains the analysis layer becomes the staging area where data is summarized and shaped to feed the reporting components. Notice in the analysis tab in Figure 2-2, the formula bar illustrates that the table consists of formulas that reference the data tab.

There are a couple of benefits to this setup. First, the entire reporting model can easily be refreshed by simply replacing the raw data with an updated dataset. The formulas in the analysis tab continue to work with the latest data. Second, any additional analysis can easily be created by using different combinations of formulas on the analysis tab. If you need data that doesn't exist in the data sheet, you can easily append a column to the end of the raw dataset without disturbing the analysis or presentation sheets.

Note that you don't necessarily have to place your data, analysis, and presentation layers on different spreadsheets. In small data models, you may find it easier to place your data in one area of a spreadsheet while building your staging tables in another area of the same spreadsheet.

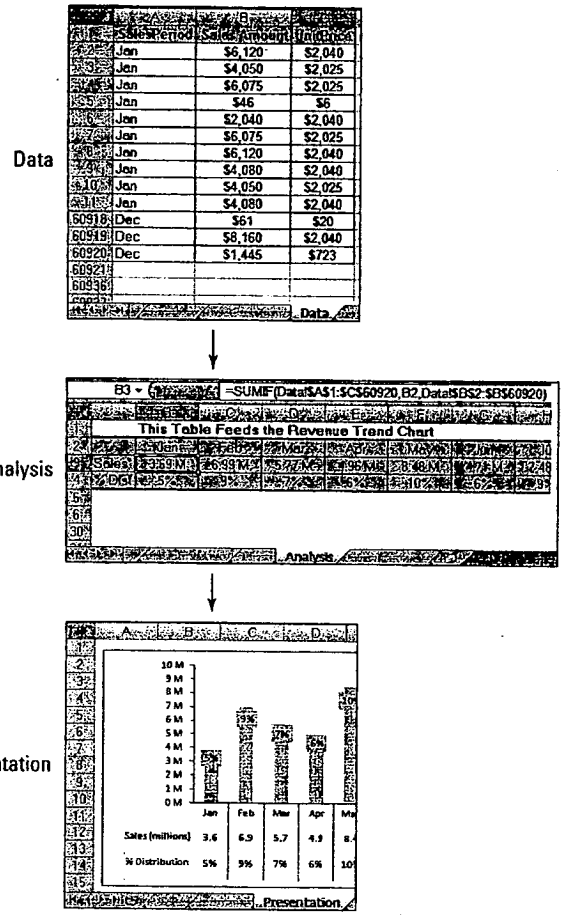


Figure 2-2: An effective data model separates data, analysis, and presentation.

Along those same lines, remember that you're not limited to just three spreadsheets either. That is to say you can have several sheets that provide the raw data, several sheets that analyze, and several that serve as the presentation layer.

Wherever you choose to place the different layers, keep in mind that the idea remains the same. The analysis layer should primarily consist of formulas that pull data from the data sheets into staging tables used to feed your presentation. Later in this chapter, you explore some of the formulas that can be used in your analysis sheets.

Starting with appropriately structured data

Not all datasets are created equal. Although some datasets work in a standard Excel environment, they may not work for data modeling purposes. Before building your data model, ensure your source data is appropriately structured for dashboarding purposes.

At the risk of oversimplification, I assert that datasets typically used in Excel come in three fundamental forms:

- **The spreadsheet report**
- **The flat data file**
- **The tabular dataset**

The punch line is that only flat data files and tabular datasets make for effective data models. I review and discuss each of these different forms in the next few sections.

Spreadsheet reports make for ineffective data models

Spreadsheet reports display highly-formatted, summarized data and are often designed as presentation tools for management or executive users. A typical spreadsheet report makes judicious use of empty space for formatting, repeats data for aesthetic purposes, and presents only high level analysis. Figure 2-3 illustrates what I mean by *spreadsheet report.*

	Europe			North America	
France			Canada		
Sports	Sales Amount	Unit Price	Sports	Sales Amount	Unit Price
Accessories	$48,942	$7,045	Accessories	$119,303	$22,381
Bikes	$3,597,879	$991,098	Bikes	$11,714,700	$3,908,691
Clothing	$129,508	$23,912	Clothing	$383,022	$72,524
Components	$871,125	$293,854	Components	$2,246,255	$865,410
Germany			Northeast		
Sports	Sales Amount	Unit Price	Sports	Sales Amount	Unit Price
Accessories	$35,681	$5,798	Accessories	$51,246	$9,666
Bikes	$1,602,487	$545,175	Bikes	$5,690,285	$1,992,517
Clothing	$75,593	$12,474	Clothing	$163,442	$30,969
Components	$337,787	$138,513	Components	$1,051,702	$442,598
United Kingdom			Northwest		
Sports	Sales Amount	Unit Price	Sports	Sales Amount	Unit Price
Accessories	$43,180	$7,419	Accessories	$53,308	$11,417
Bikes	$3,435,134	$1,094,354	Bikes	$10,484,495	$3,182,041
Clothing	$120,225	$21,981	Clothing	$201,052	$40,055
Components	$712,588	$253,458	Components	$1,784,207	$695,876

Figure 2-3: A spreadsheet report.

Although a spreadsheet report may look nice, it doesn't make for an effective data model. Why? The primary reason is that these reports offer you no separation of data, analysis, and presentation. You're essentially locked into one analysis.

Although you could make charts from the report shown in Figure 2-3, it'd be impractical to apply any analysis outside what's already there. For instance, how would you calculate and present the average of all bike sales? How would you calculate a list of the top ten best performing markets?

With this setup, you're forced into very manual processes that are difficult to maintain month after month. Any analysis outside the high-level ones already in the report is basic at best — even with fancy formulas. Furthermore, what happens when you're required to show bike sales by month? When your data model requires analysis with data that isn't in the spreadsheet report, you're forced to search for another dataset.

Flat data files lend themselves nicely to data models

The next type of file format is flat file. *Flat files* are data repositories organized by row and column. Each row corresponds to a set of data elements, or a *record.* Each column is a *field.* A field corresponds to a unique data element in record. Figure 2-4 contains the same data as the report in Figure 2-3 but is in flat data file format.

2	Europe	France	Accessories	2,628	8,015	3,895	1,803	6,1
3	Europe	France	Bikes	26,580	524,445	136,773	37,958	519,8
4	Europe	France	Clothing	6,075	17,172	6,043	5,152	11,7
5	Europe	France	Components	20,485	178,279	54,262	8,992	103,3
8	Europe	Germany	Accessories	2,769	6,638	2,615	2,862	4,4
7	Europe	Germany	Bikes	136,161	196,125	94,840	151,268	140,9
8	Europe	Germany	Clothing	7,150	12,374	7,159	5,765	8,6
9	Europe	Germany	Components	46,885	56,611	29,216	25,407	35,4
10	Europe	United Kingdom	Accessories	4,205	2,579	5,745	3,732	2,2
11	Europe	United Kingdom	Bikes	111,630	175,522	364,644	86,695	170,3
12	Europe	United Kingdom	Clothing	7,088	6,763	12,884	6,546	4,3
13	Europe	United Kingdom	Components	31,331	39,005	124,030	19,291	22,3
14	North America	Canada	Accessories	3,500	12,356	9,768	3,162	10,8
15	North America	Canada	Bikes	327,476	425,669	501,427	305,118	348,9

Figure 2-4: A flat data file.

Notice that every data field has a column, and every column corresponds to one data element. Furthermore, there's no extra spacing, and each row (or record) corresponds to a unique set of information. But the key attribute that makes this a flat file is that no single field uniquely identifies a record. In fact, you'd have to specify four separate fields (Region, Market, Business Segment, and a month's sales amount) before you could uniquely identify the record.

Flat files lend themselves nicely to data modeling in Excel because they can be detailed enough to hold the data you need and still be conducive to a wide array of analysis with simple formulas — `SUM`, `AVERAGE`, `VLOOKUP`, and `SUMIF`, just to name a few. Later in this chapter, you explore formulas that come in handy in a reporting data model.

Tabular datasets are perfect for pivot table driven data models

Many effective data models are driven primarily by pivot tables. Pivot tables (which I cover in Chapter 3) are Excel's premier analysis tools. For those of you who have used pivot tables before, you know they offer an excellent way to summarize and shape data for use by reporting components, such as charts and tables.

Tabular datasets are ideal for pivot table driven data models. Figure 2-5 illustrates a tabular dataset. Note that the primary difference between a tabular dataset, as shown in Figure 2-5, and a flat data file is that the column labels don't double as actual data. For instance, in Figure 2-4, the month identifiers are integrated into the column labels. In Figure 2-5, the Sales Period column contains the month identifier. This subtle difference in structure is what makes tabular datasets optimal data sources for pivot tables. This structure ensures that key pivot table functions, such as sorting and grouping, work the way they should.

	A	B	C	D	E	F
2	Europe	France	Accessories	Jan	1,706	385
3	Europe	France	Accessories	Feb	3,767	700
4	Europe	France	Accessories	Mar	1,219	251
5	Europe	France	Accessories	Apr	3,091	557
6	Europe	France	Accessories	May	7,057	942
7	Europe	France	Accessories	Jul	5,930	770
8	Europe	France	Accessories	Aug	9,628	1,281
9	Europe	France	Accessories	Sep	4,279	500
10	Europe	France	Accessories	Oct	2,504	528
11	Europe	France	Accessories	Nov	7,493	848
12	Europe	France	Accessories	Dec	2,268	283
13	Europe	France	Bikes	Jan	64,895	24,101
14	Europe	France	Bikes	Feb	510,102	166,174
15	Europe	France	Bikes	Mar	128,806	45,711
16	Europe	France	Bikes	Apr	81,301	26,314

Figure 2-5: A tabular dataset.

The attributes of a tabular dataset are as follows:

- The first row of the dataset contains field labels that describe the information in each column.
- The column labels don't pull double-duty as data items that can be used as filters or query criterion (such as months, dates, years, regions, markets, and so on).
- There are no blank rows or columns — every column has a heading, and a value is in every row.
- Each column represents a unique category of data.
- Each row represents individual items in each column.

Avoiding turning your data model into a database

In Chapter 1, you might have read that measures used on a dashboard should absolutely support the initial purpose of that dashboard. The same concept applies to the backend data model. You should only import data that's necessary to fulfill the purpose of your dashboard or report.

In an effort to have as much data as possible at their fingertips, many Excel users bring into their spreadsheets every piece of data they can get their hands on. You can spot these people by the 40 megabyte files they send through e-mail. You've seen these spreadsheets — two tabs that contain presentation and then six hidden tabs that contain thousands of lines of data (most of which isn't used). They essentially build a database in their spreadsheet.

What's wrong with utilizing as much data as possible? Well, here are a few issues:

- **Aggregating data within Excel increases the number of formulas.** If you're bringing in all raw data, you have to aggregate that data in Excel. This inevitably causes you to exponentially increase the number of formulas you have to employ and maintain. Remember that your data model is a vehicle for presenting analyses, not processing raw data. The data that works best in reporting mechanisms is what's already been aggregated and summarized into useful views that can be navigated and fed to dashboard components. Importing data that's already been aggregated as much as possible is far better. For example, if you need to report on Revenue by Region and Month, there's no need to import sales transactions into your data model. Instead, use an aggregated table consisting of Region, Month, and Sum of Revenue.
- **Your data model will be distributed with your dashboard.** In other words, because your dashboard is fed by your data model, you need to maintain the model behind the scenes (likely in hidden tabs) when distributing the dashboard. Besides the fact that it causes the file size to be unwieldy, including too much data in your data model can actually degrade the performance of your dashboard. Why? When you open an Excel file, the entire file is loaded into memory (or *RAM*) to ensure quick data processing and access. The drawback to this behavior is that Excel requires a great deal of RAM to process even the smallest change in your spreadsheet. You may have noticed that when you try to perform an action on a large formula-intensive dataset, Excel is slow to respond, giving you a Calculating indicator in the status bar. The larger your dataset is, the less efficient the data crunching in Excel is.

- **Large datasets can cause difficulty in scalability.** Imagine that you're working in a small company and you're using monthly transactions in your data model. Each month holds 80,000 lines of data. As time goes on, you build a robust process complete with all the formulas, pivot tables, and macros you need to analyze the data that's stored in your neatly maintained tab. Now what happens after one year? Do you start a new tab? How do you analyze two datasets on two different tabs as one entity? Are your formulas still good? Do you have to write new macros?

These are all issues that can be avoided by importing only aggregated and summarized data that's useful to the core purpose of your reporting needs.

Using tabs to document and organize your data model

Wanting to keep your data model limited to one worksheet tab is natural. In my mind, keeping track of one tab is much simpler than using different tabs. However, limiting your data model to one tab has its drawbacks, including the following:

- **Using one tab typically places limits on your analysis.** Because only so many datasets can fit on a tab, using one tab limits the number of analyses that can be represented in your data model. This in turn limits the analysis your dashboard can offer. Consider adding tabs to your data model to provide additional data and analysis that may not fit on just one tab.
- **Too much on one tab makes for a confusing data model.** When working with large datasets, you need plenty of staging tables to aggregate and shape the raw data so that it can be fed to your reporting components. If you use only one tab, you're forced to position these staging tables below or to the right of your datasets. Although this may provide all the elements needed to feed your presentation layer, a good deal of scrolling is necessary to view all the elements positioned in a wide range of areas. This makes the data model difficult to understand and maintain. Use separate tabs to hold your analysis and staging tables, particularly in data models that contain large datasets occupying a lot of real estate.
- **Using one tab limits the amount of documentation you can include.** You'll find that your data models easily become a complex system of intertwining links among components, input ranges, output ranges, and formulas. Sure, it all makes sense while you're building your data model, but try coming back to it after a few months. You'll find you've forgotten what each data range does and how each range interacts with the final presentation layer. To avoid this problem, consider adding a model map

tab to your data model. The model map tab essentially summarizes the key ranges in the data model and allows you to document how each range interacts with the reporting components in the final presentation layer. As you can see in Figure 2-6, the model map is nothing fancy; just a table that lists some key information about each range in the model.

Figure 2-6: A model map allows you to document how each range interacts with your data model.

Tab	Range	Purpose	Linked Component/s
Analysis 1	A2:A11	Provides the data source for the trend graph component	United States trend 1
Analysis 2	A3:A11	Data source for the List Box Component	List Box 1
Analysis 2	C1	Output range for the selected item in the List Box component.	Conditional Trend Icon
Analysis 2	D1:R1	Vlookup formulas that reference cell C1. This range also serves as the source data for the Combination Chart component.	Combination Chart 1
Data	C4:R48	Main Dataset for this data model	

You can include any information you think appropriate in your model map. The idea is to give yourself a handy reference that guides you through the elements in your data model.

Testing your data model before building reporting components on top of it

This best practice is simple. Make sure your data model does what it's supposed to do before building dashboard components on top of it. In that vein, here are a few things to watch for:

- **Test your formulas to ensure they're working properly:** Make sure your formulas don't produce errors and that each formula outputs expected results.
- **Double-check your main dataset to ensure it's complete:** Check that your data table has not truncated when transferring to Excel. Also, be sure that each column of data is present with appropriate data labels.
- **Make sure all numeric formatting is appropriate:** Be sure that the formatting of your data is appropriate for the field. For example, check to see that dates are formatted as dates, currency values are formatted properly, and that the correct number of decimal places are displayed where needed.

The obvious goal here is to eliminate easily avoidable errors that may cause complications later.

Speaking of documenting your data model . . .

Another way to document the logic in your data model is to use comments and labels liberally. It's amazing how a few explanatory comments and labels can help clarify your spreadsheets. The general idea here is that the logic in your model should be clear to you even after you've been away from your data model for a long period of time.

Also, consider using colors to identify the ranges in your data model. Using colors in your data model enables you to quickly look at a range of cells and get a best indication of what that range does. The general concept behind it's best practices that each color represents a range type. For example, you could use yellow to represent staging tables used to feed the charts and the tables in your presentation layer. You could use gray to represent formulas that aren't to be altered or touched or purple to represent reference tables used for lookups and drop-down lists.

You can use any color you want as up to you to give these colors meaning. The important thing is that you have a visual distinction between the various ranges being used in your data model.

Excel Functions That Really Deliver

As you discover in this chapter, the optimal data model for any reporting mechanism is one where data, analysis, and presentation is separated into three layers. Although all three layers are important, the analysis layer is where the real art comes into play. The fundamental task of the analysis layer is to pull information from the data layer and then create staging tables that feed your charts, tables, and other reporting components. To do this effectively, you need to employ formulas that serve as data delivery mechanisms — formulas that deliver data to a destination range.

You see, the information you need lives in your data layer (typically a table containing aggregated data). *Data delivery formulas* are designed to get that data and deliver it to the analysis layer so it can be analyzed and shaped. The cool thing is that after you've set up you data delivery formulas, your analysis layer automatically updates each time your data layer is refreshed.

Confused? Don't worry — in this section, I show you a few Excel functions that work particularly well in data delivery formulas. As you go through the examples here, you'll start to see how these concepts come together.

The VLOOKUP function

The VLOOKUP function is the king of all lookup functions in Excel. I'd be willing to bet you've at least heard of VLOOKUP, if not used it a few times yourself.

The purpose of VLOOKUP is to find a specific value from a column of data where the leftmost row value matches a given criterion.

VLOOKUP basics

Take a look a Figure 2-7 to get the general idea. The table on the left shows sales by month and product number. The table on the right translates those product numbers to actual product names. The VLOOKUP function can help in associating the appropriate name to each respective product number.

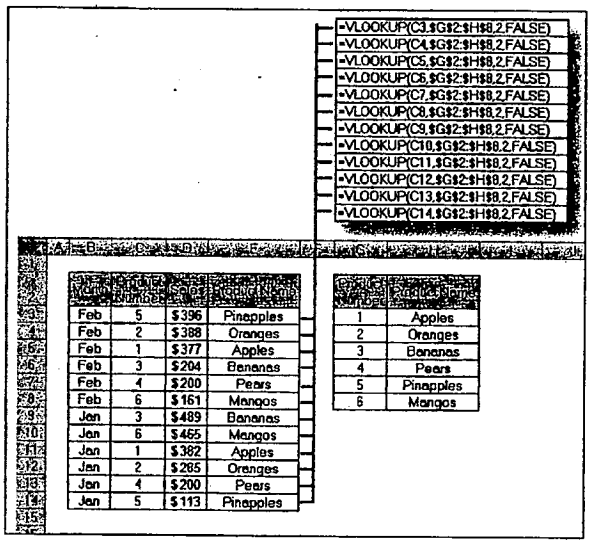


Figure 2-7: In this example, the VLOOKUP function helps to look up the appropriate product names for each product number.

To understand how VLOOKUP formulas work, take a moment to review the basic syntax. A VLOOKUP formula requires four arguments:

***Lookup_value*:** The *Lookup_value* argument identifies the value being looked up. This is the value that needs to be matched to the lookup table. In the example in Figure 2-7, the *Lookup_value* is the product number. Therefore the first argument for all the formulas shown in Figure 2-7 reference column C (the column that contains the product number).

***Table_array*:** The *Table_array* argument specifies the range that contains the lookup values. In Figure 2-7, that range is G2:H8. Here are a couple points to keep in mind with this argument. First, for a VLOOKUP to work, the leftmost column of the table must be the matching value. For instance,

if you're trying to match product numbers, the leftmost column of the lookup table must contain product numbers. Second, notice that the reference used for this argument is an absolute reference. This means the column and row references are prefixed with dollar ($) signs — as in `$G$2:$H$8`. This ensures that the references don't shift while you copy the formulas down or across.

Col_index_num The *Col_index_num* argument identifies the column number in the lookup table that contains the value to be returned. In the example in Figure 2-7, the second column contains the product name (the value being looked up), so the formula uses the number 2. If the product name column was the fourth column in the lookup table, the number 4 would be used.

Range_lookup The *Range_lookup* argument specifies whether you're looking for an exact match or an approximate match. If an exact match is needed, you'd enter FALSE for this argument. If the closest match will do, you'd enter TRUE or leave the argument blank.

Applying VLOOKUP formulas in a data model

As you can imagine, there are countless ways to apply a VLOOKUP formula in your data model. No reason to start bland though. Let me show you one of the more intriguing ways is to implement VLOOKUPs.

With a few VLOOKUP formulas and a simple drop-down list, you can create a data model that not only delivers data to the appropriate staging table but allows you to dynamically change data views based on a selection you make. Figure 2-8 illustrates the setup.

To see this effect in action, get the `Chapter 2 Sample File.xlsx` workbook from this book's companion Web site. Open that workbook to see a VLOOKUP1 tab.

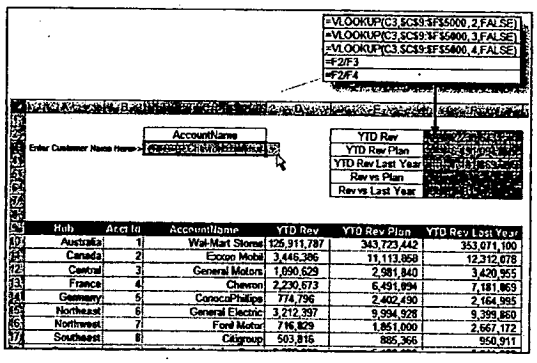


Figure 2-8: Using the VLOOKUP function to extract and shape data.

The data layer in the model shown in Figure 2-8 resides in the range A9:F209. The analysis layer is held in range E2:F6. The data layer consists of all formulas that extract and shape the data as needed. As you can see, the VLOOKUP formulas use the Customer Name value in cell C3 to look up the appropriate data from the data layer. So, if you entered **General Motors** in cell C3, the VLOOKUP formulas would extract the data for General Motors.

You may have noticed that the VLOOKUP formulas in Figure 2-8 specify a Table_array argument of $C$9:$F$5000. This means that the lookup table they're pointing to stretches from C9 to F5000. That seems strange because the table ends at F209. Why would you force your VLOOKUP formulas to look at a range far past the end of the data table?

Well, remember the idea behind separating the data layer and the analysis layer is so that your analysis layer can be automatically updated when your data is refreshed. When you get new data next month, you should be able to simply replace the data layer in model without having to rework your analysis layer. Allowing for more rows than necessary in your VLOOKUP formulas ensures that if your data layer grows, records won't fall outside the lookup range of the formulas.

Later in this chapter, I show you how to automatically keep up with growing data tables by using smart tables.

Using data validation drop-down lists in your data model

In the example illustrated in Figure 2-8, the data model allows you to select customer names from a drop-down list when you click cell C3. The customer name serves as the lookup value for the VLOOKUP formulas. Changing the customer name extracts a new set of data from the data layer. This allows you to quickly switch from one customer to another without having to remember and type the customer name.

Now, as cool as this seems, the reasons for this setup aren't all cosmetic. There are practical reasons for adding drop-down lists to your data models.

Many of your models consist of multiple analytical layers where each shows a different set of analyses. Although each analysis layer is different, they often need to revolve around a shared dimension, such as the same customer name, the same market, or the same region. For instance, when you have a data model that reports on Financials, Labor Statistics, and Operational Volumes, you want to make certain that when the model is reporting financials for the South region, the Labor statistics are for the South region as well.

An effective way to ensure this happens is to force your formulas to use the same dimension references. If cell C3 is where you switch customers, every analysis that is customer-dependent should reference cell C3. Drop-down

lists allow you to have a predefined list of valid variables located in a single cell. With a drop-down list, you can easily switch dimensions while building and testing multiple analysis layers.

Adding a drop-down list is a relatively easy thing to do with Excel's Data Validation functionality. To add a drop-down list:

1. **Select the Data tab on the Ribbon.**
2. **Click the Data Validation button.**
3. **Select the Settings tab in the newly-activated Data Validation dialog box (see Figure 2-9).**
4. **In the Allow drop-down list, choose List.**
5. **In the Source input box, reference the range of cell that contain your predefined selection list.**
6. **Click OK.**

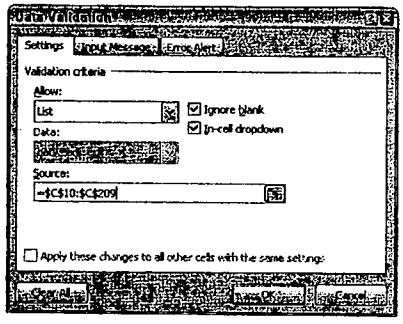


Figure 2-9: You can use data validation to create a predefined list of valid variables for your data model.

The HLOOKUP function

The HLOOKUP function is the less popular cousin of the VLOOKUP function. The *H* in HLOOKUP stands for *horizontal.* Because Excel data is typically vertically-oriented, most situations require a vertical lookup (or VLOOKUP). However, some data structures are horizontally-oriented, requiring a horizontal lookup; thus the HLOOKUP function comes in handy. The HLOOKUP searches a lookup table to find a single value from a row of data where the column label matches a given criterion.

HLOOKUP basics

Figure 2-10 demonstrates a typical scenario where HLOOKUP formulas are used. The table in C3 requires quarter-end numbers (March and June) for 2004. The HLOOKUP formulas use the column labels to find the correct month columns and then locates the 2004 data by moving down the appropriate number of rows. In this case, 2004 data is in row 4, so the number 4 is used in the formulas.

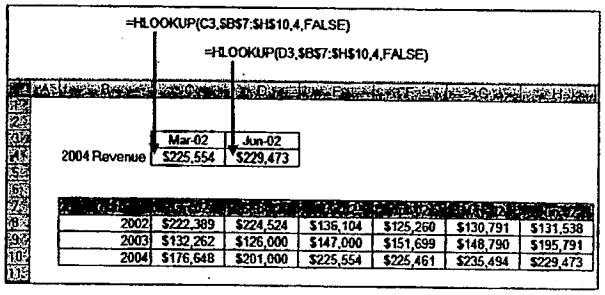


Figure 2-10: HLOOKUP formulas help to find March and June numbers from the lookup table.

To get your mind around how this works, take a look at the basic syntax of the HLOOKUP function.

```
HLOOKUP(lookup_value,table_array,row_index_num,
    range_lookup)
```

Lookup_value: The *Lookup_value* argument identifies the value being looked up. In most cases, these values are column names. In the example in Figure 2-10, the column labels are being referenced for the *Lookup_value*. This points the HLOOKUP function to the appropriate column in the lookup table.

Table_array: The *Table_array* argument identifies the range that contains the lookup table. In Figure 2-10, that range is B7:H10. Like the VLOOKUP examples earlier in this chapter, notice that the references used for this argument are absolute. This means the column and row references are prefixed with dollar ($) signs — as in $B$7:$H$10. This ensures that the reference doesn't shift while you copy the formula down or across.

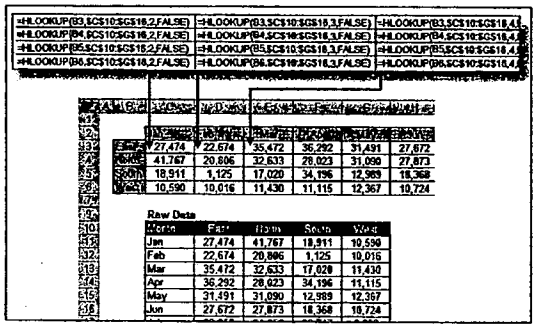
Row_index_num: The *Row_index_num* argument identifies the row number that contains the value you're looking for. In the example in Figure 2-10, the 2004 data is located in row 4 of the lookup table. Therefore, the formulas use the number 4.

Range_lookup: The *Range_lookup* argument specifies whether you're looking for an exact match or an approximate match. If an exact match is

needed, you'd enter FALSE for this argument. If the closest match will do, you'd enter TRUE or leave the argument blank.

Applying HLOOKUP formulas in a data model

HLOOKUPs are especially handy for shaping data into structures appropriate for charting or other types of reporting. A simple example is demonstrated in Figure 2-11. With HLOOKUPs, the data shown in the raw data table at the bottom of the figure is reoriented in a staging table at the top. When the raw data is changed or refreshed, the staging table captures the changes.



Month	East	Main	South	West
Jan	27,474	41,767	18,911	10,590
Feb	22,674	20,806	1,125	10,016
Mar	35,472	32,633	17,020	11,430
Apr	36,292	28,023	34,196	11,115
May	31,491	31,090	12,989	12,367
Jun	27,672	27,873	18,368	10,724

Figure 2-11: In this example, HLOOKUP formulas pull and reshape data without disturbing the raw data table.

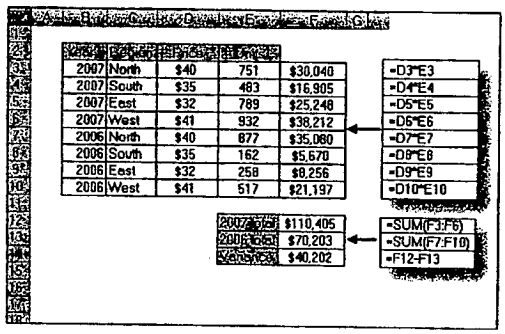
The SUMPRODUCT function

The SUMPRODUCT function is actually listed under the math and trigonometry category of Excel functions. Because the primary purpose of SUMPRODUCT is to calculate the sum product, most people don't know you can actually use it to look up values. In fact, you can use this versatile function quite effectively in most data models.

SUMPRODUCT basics

The SUMPRODUCT function is designed to multiply values from two or more ranges of data and then add the results together to return the sum of the products. Take a look at Figure 2-12 to see a typical scenario where the SUMPRODUCT is useful.

In Figure 2-12, you see a common analysis where you need the total sales for the years 2006 and 2007. As you can see, to get the total sales for each year, you first have to multiply Price by the number of Units to get the total for each Region. Then you have to sum those results to get the total sales for each year.



2007	North	$40	751	$30,040
2007	South	$35	483	$16,905
2007	East	$32	789	$25,248
2007	West	$41	932	$38,212
2006	North	$40	877	$35,080
2006	South	$35	162	$5,670
2006	East	$32	258	$8,256
2006	West	$41	517	$21,197

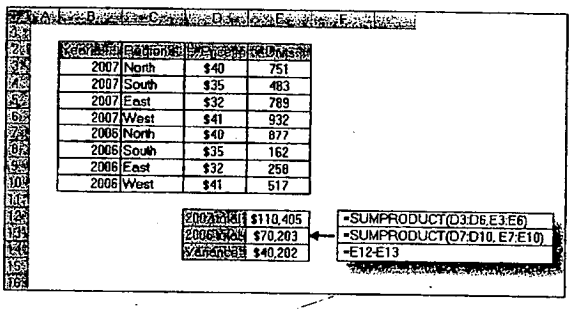
=D3*E3
=D4*E4
=D5*E5
=D6*E6
=D7*E7
=D8*E8
=D9*E9
=D10*E10

$110,405
$70,203
$40,202

=SUM(F3:F6)
=SUM(F7:F10)
=F12-F13

Figure 2-12: Without the SUMPRODUCT, getting the total sales for each year involves a two-step process: first multiply price and units and then sum the results.

With the SUMPRODUCT function, you can perform the two-step analysis with just one formula. Figure 2-13 shows the same analysis with SUMPRODUCT formulas. Instead of using 11 formulas, you can accomplish the same analysis with just 3!



2007	North	$40	751
2007	South	$35	483
2007	East	$32	789
2007	West	$41	932
2006	North	$40	877
2006	South	$35	162
2006	East	$32	258
2006	West	$41	517

$110,405
$70,203
$40,202

=SUMPRODUCT(D3:D6,E3:E6)
=SUMPRODUCT(D7:D10, E7:E10)
=E12-E13

Figure 2-13: The SUMPRODUCT function allows you to perform the same analysis with just 3 formulas instead of 11.

The syntax of the SUMPRODUCT function is fairly simple:

Array: *Array* represents a range of data. You can use anywhere from 2 to 255 arrays in a SUMPRODUCT formula. The arrays get multiplied together and then added. The only hard and fast rule you have to remember is that all the arrays must have the same number of values. That is to say, you can't use the SUMPRODUCT if range X has 10 values and Range Y has 11 values. Otherwise, you get the #VALUE! error.

A twist on the SUMPRODUCT function

The interesting thing about the SUMPRODUCT function is that it can be used to filter out values. Take a look at Figure 2-14 to see what I mean.

The formula in cell E12 is pulling the sum of total units for just the North region. Meanwhile, cell E13 is pulling the units logged for the North region in the year 2006.

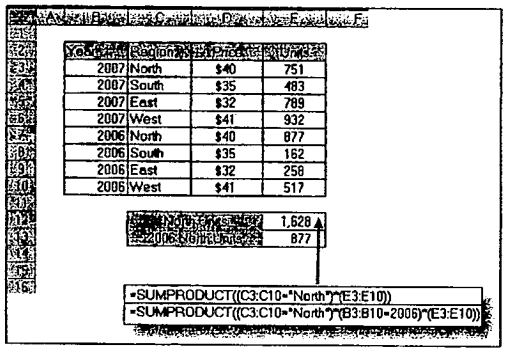


Figure 2-14: The SUMPRODUCT function can be used to filter data based on criteria.

To understand how this works, take a look at the formula in cell E12 shown in Figure 2-14. That formula reads `SUMPRODUCT((C3:C10="North")*(E3:E10))`.

In Excel, `TRUE` evaluates to 1 and `FALSE` evaluates to 0. Every value in Column C that equals `"North"` evaluates to `TRUE` or 1. Where the value is not `"North"`, it evaluates to `FALSE` or 0.The part of the formula that reads `(C3:C10="North")` enumerates through each value in the range `C3:C10`, assigning a 1 or 0 to each value. Then internally, the SUMPRODUCT formula translates to

```
(1*E3)+(0*E4)+(0*E5)+(0*E6)+(1*E7)+(0*E8)+(0*E9)+(0*E10)
```

This gives you the answer of 1628 because

```
(1*751)+(0*483)+(0*789)+(0*932)+(1*877)+(0*162)+(0*258)+(0*517)
```

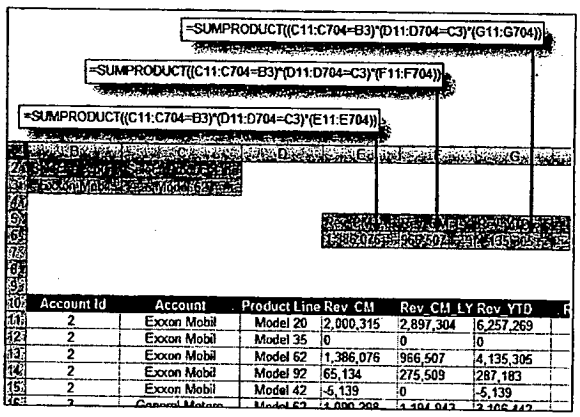
equals 1628.

Applying SUMPRODUCT formulas in a data model

As always in Excel, you don't have to hard-code the criteria in your formulas. Instead of explicitly using `"North"` in the SUMPRODUCT formula, you could reference a cell that contains the filter value. You can imagine that cell A3

contains the word "North", in which case you can use (C3:C10=A3) instead of (C3:C10="North"). This way, you can dynamically change your filter criteria, and your formula keeps up.

Figure 2-15 demonstrates how you can use this concept to pull data into a staging table based on multiple criteria. Note that each of the SUMPRODUCT formulas shown here reference cells B3 and C3 to filter on Account and Product Line. Again, you can add data validation drop-down lists to cells B3 and C3, allowing you to easily change criteria.



Account Id	Account	Product Line	Rev_CM	Rev_CM_LY	Rev_YTD
2	Exxon Mobil	Model 20	2,000,315	2,897,304	6,257,269
2	Exxon Mobil	Model 35	0	0	0
2	Exxon Mobil	Model 62	1,386,076	966,507	4,135,305
2	Exxon Mobil	Model 92	65,134	275,509	287,183
2	Exxon Mobil	Model 42	-5,139	0	-5,139

Figure 2-15: The SUMPRODUCT function can be used to pull summarized numbers from the data layer into staging tables.

The CHOOSE function

The CHOOSE function returns a value from a specified list of values based on a specified position number. For instance, if you enter the formulas CHOOSE (3,"Red", "Yellow", "Green", "Blue") into a cell, Excel returns Green because Green is the third item in the list of values. The formula CHOOSE(1,"Red", "Yellow", "Green", "Blue") would return Red. Although this may not look useful on the surface, the CHOOSE function can dramatically enhance your data models.

CHOOSE basics

Figure 2-16 illustrates how CHOOSE formulas can help pinpoint and extract numbers from a range cells. Note that instead of using hard-coded values, like Red, Green, and so on, you can use cell references to list the choices.

Take a moment to review the basic syntax of the CHOOSE function:

CHOOSE(*index_num*, *value1*, *value2*, ...)

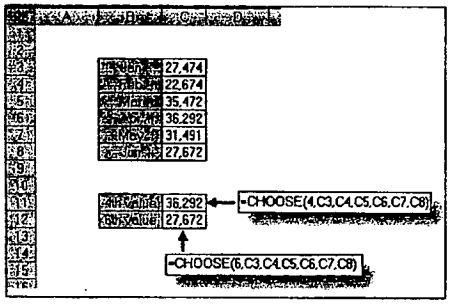


Figure 2-16: The CHOOSE function allows you to find values from a defined set of choices.

Index_num: The *Index_num* argument specifies the position number of the chosen value in the list of values. If the third value in the list is needed, the *Index_num* is 3. The *Index_num* argument must be an integer between one and the maximum number of values in the defined list of values. That is to say, if there are ten choices defined in the CHOOSE formula, the *Index_num* argument can't be more than ten.

Value: Each *Value* argument represents a choice in the defined list of choices for that CHOOSE formula. The *Value* arguments can be hard-coded values, cell references, defined names, formulas, or functions. In Excel 2007, you can have up to 255 choices listed in your CHOOSE formulas. In Excel 2003, you're limited to 29 *Value* arguments.

Applying CHOOSE formulas in a data model

The CHOOSE function is especially valuable in data models where there are multiple layers of data that need to be brought together. Figure 2-17 illustrates an example where CHOOSE formulas help pull data together.

In this example, you have two data tables: one for Revenues and one for Net Income. Each contains numbers for separate regions. The idea is to create a staging table that pulls data from both tables so that the data corresponds to a selected region.

To understand what's going on, focus on the formula in cell F3, shown in Figure 2-17. The formula is `CHOOSE($C$2,F7,F8,F9,F10)`. The Index_num argument is actually a cell reference that looks at the value in cell C2, which happens to be the number 2. As you can see, cell C2 is actually a VLOOKUP formula that pulls the appropriate index number for the selected region. The list of defined choices in the CHOOSE formula is essentially the cell references that make up the revenue values for each region: F7, F8, F9, and F10. So the formula in cell F3 translates to `CHOOSE(2, 27474, 41767, 18911, 10590)`. The answer is 41,767.

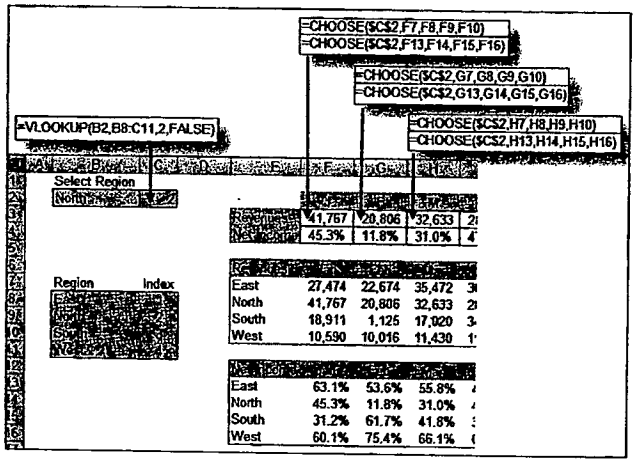


Figure 2-17: The CHOOSE formulas ensure the appropriate data is synchronously pulled from multiple data feeds.

Using Smart Tables That Expand with Data

One of the challenges you can encounter when building data models is a data table that expands over time. That is to say, the table grows in the number of records it holds due to new data being added. To get a basic understanding of this challenge, take a look at Figure 2-18. In this figure, you see a simple table that serves as the source for the chart. Notice that the table lists data for January through June.

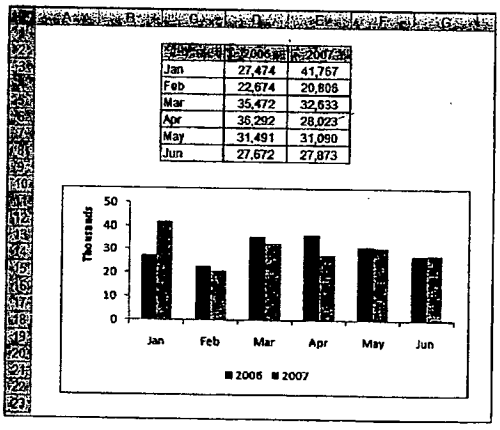


Figure 2-18: As you select a region in cell C2, the CHOOSE formulas ensure the appropriate data is synchronously pulled from multiple data feeds.

Imagine that next month, this table expands to include July data. You'll have to manually update your chart to include July data. Now imagine you had this same issue across your data model, with multiple data tables that link to multiple staging tables and dashboard components. You can imagine it'd be an extremely painful task to keep up with changes each month.

To solve this issue, you can use Excel's Table feature (you can tell they spent all night coming up with that name). The *Table feature* allows you to convert a range of data into a defined table that's treated independently of other rows and columns on the worksheet. After a range is converted to a table, Excel views the individual cells in the table as a single object that has functionality that a normal data range doesn't have.

For instance, Excel tables offer the following features:

- They're automatically enabled with auto filter drop-down headers so that you can filter and sort easily.
- They come with the ability to quickly add a Total row with various aggregate functions.
- You can apply special formatting to Excel tables independent of the rest of the spreadsheet.
- (Most importantly for data modeling purposes), they automatically expand to allow for new data.

The Table feature did exist in Excel 2003 under a different name: the List feature (found in Excel's Data menu). The benefit of this fact is that Excel tables are fully compatible with Excel 2003!

Converting a range to an Excel table

To convert a range of data to an Excel table, follow these steps:

1. **Highlight the range of cells that contain the data you want included in your Excel table.**
2. **On the Insert tab of the Ribbon, click the Table button.**

   This opens the Create Table dialog box, as shown in Figure 2-19.
3. **In the Create Table dialog box, verify the range for the table and specify whether the first row of the selected range is a header row.**
4. **Click OK to apply the changes.**

After the conversion takes place, notice a few small changes. Excel put auto filter drop-downs on your header rows, the rows in your table now have alternate shading, and any header that didn't have a value has been named by Excel.

You can use Excel tables as the source for charts, pivot tables, list boxes, or anything else for which you'd normally use a data range. In Figure 2-20, a chart has been linked to the Excel table.

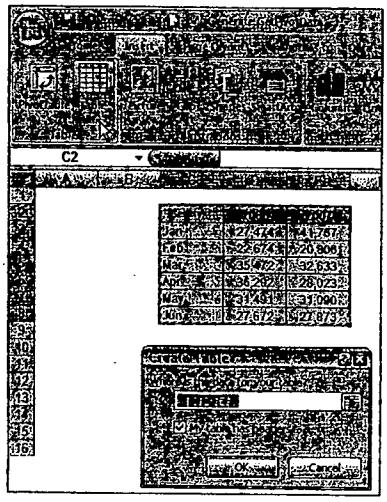


Figure 2-19: Converting a range of data to an Excel table.

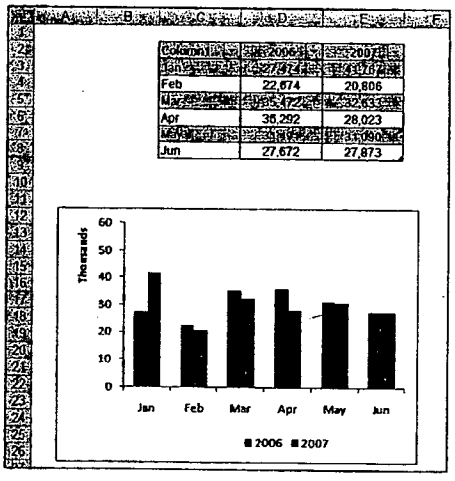


Figure 2-20: Excel tables can be used as the source for charts, pivot tables, named ranges, and so on.

Here's the impressive bit. When data is added to the table, Excel automatically expands the range of the table and incorporates the new range into any linked object. That's just a fancy way of saying that any chart or pivot table tied to an Excel table automatically captures new data without manual intervention.

For example, if I add July and August data to the end of the Excel table, the chart automatically updates to capture the new data. In Figure 2-21, I added July with no data and August with data to show you that the chart captures any new records and automatically plots the data given.

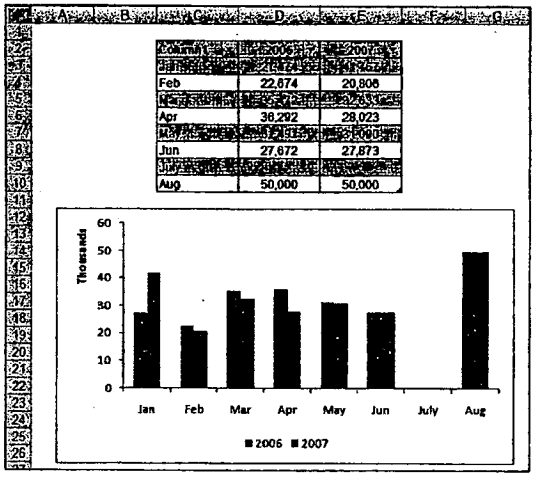


Figure 2-21: Excel tables automatically expand when new data is added.

Take a moment to think about what Excel tables mean to a data model. They mean pivot tables that never have to be reconfigured, charts that automatically capture new data, and ranges that automatically keep up with changes.

Converting an Excel table back to a range

If you want to convert an Excel table back to a normal range, you can follow these steps:

1. **Place your cursor in any cell inside the Excel table and select the Table Tools Design sub tab in the Ribbon.**

2. Click the Convert to Range button, as shown in Figure 2-22.
3. When asked if you're sure (via a message box), click the Yes button.

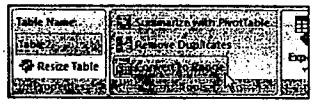
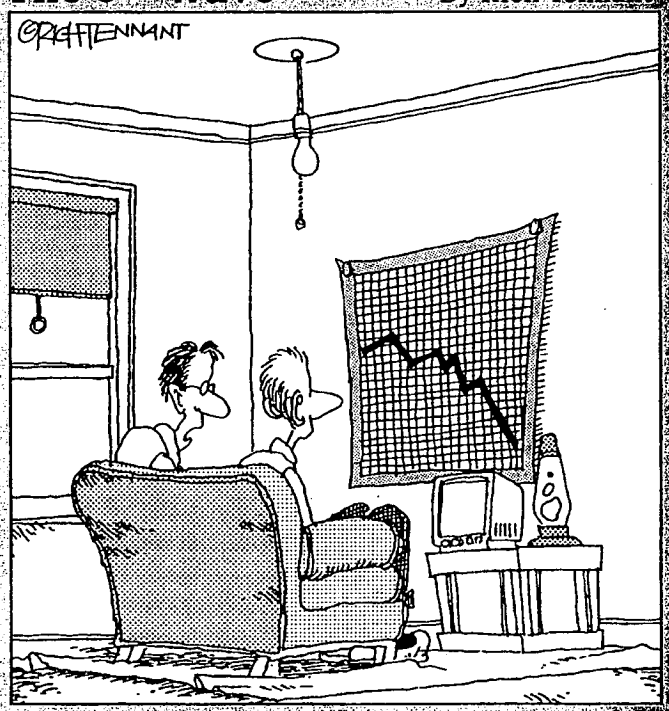


Figure 2-22: To remove Excel table functionality, convert the table back to a range.

Part II
Building Basic Dashboard Components

The 5th Wave By Rich Tennant



"My girlfriend ran a spreadsheet of my life, and generated this chart. My best hope is that she'll change her major from 'Computer Sciences' to 'Rehabilitative Services.'"

In this part . . .

In this section, you take an in-depth look at some of the basic dashboard components you can create using Excel 2007. You start with Chapter 3, where I introduce you to pivot tables and discuss how a pivot table can play an integral role in Excel-based dashboards. Chapter 4 provides a primer on building charts in Excel 2007, giving beginners a solid understanding of how Excel charts work. Chapter 5 introduces you to the new and improved conditional formatting functionality found in Excel 2007. In that chapter, I present several ideas for using the new conditional formatting tools in dashboards and reports. In Chapter 6, I explore the various techniques that can be used to create dynamic labels, allowing for the creation of a whole new layer of visualization.

Chapter 3

The Pivotal Pivot Table

In This Chapter

- Introducing pivot tables
- Building your first pivot table
- Creating top and bottom reports
- Using pivot-driven views

I know what you're thinking. Am I supposed to be jumping right in with pivot tables? My answer is an emphatic yes!

In Chapter 2, you were introduced to the concept of reporting models that separate the data, analysis, and presentation layers. As you will discover in this chapter, pivot tables lend themselves nicely to this concept. With pivot tables, you can build reporting models that not only can be easy to set up, but can be refreshed with a simple press of a button. This allows you to spend less time maintaining your dashboards and reports and more time doing other useful things. No utility in the whole of Excel allows you to achieve this efficient data model better than a pivot table.

For those who are new to pivot tables, relax a bit. After going through this introduction, you'll be pleasantly surprised at how easy it is to create and use pivot tables. Later, you'll find some time-saving techniques to help create some useful pivot-driven views for your dashboards and reports.

An Introduction to the Pivot Table

A *pivot table* is a robust tool that allows you to create an interactive view of your dataset, commonly referred to as a *pivot table report*. With a pivot table report, you can quickly and easily categorize your data into groups, summarize large amounts of data into meaningful analyses, and interactively perform a wide variety of calculations.

Pivot tables get their name from their ability to drag and drop fields within the pivot table report to dynamically change (or *pivot*) perspective and give you an entirely new analysis using the same data source.

Think of a pivot table as an object you can point at your dataset. When you look at your dataset through a pivot table, you can see your data from different perspectives. The dataset itself doesn't change, and it's not connected to the pivot table. The pivot table is simply a tool you are using to dynamically change analyses, apply varying calculations, and interactively drill down to the detail records.

The reason a pivot table is so well suited for dashboarding and reporting is that you can refresh the analyses shown through your pivot table by simply updating the dataset it is pointed to. This allows you to set up your analysis and presentation layers only one time; then, to refresh your reporting mechanism, all you have to do is press a button.

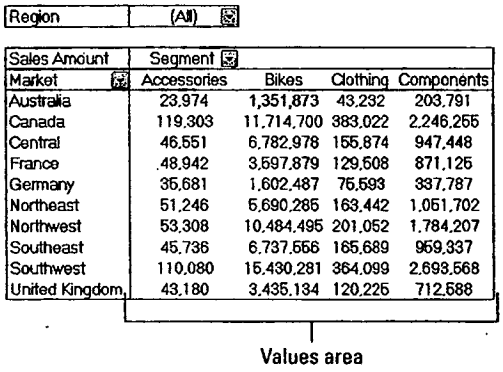
Let's start this exploration of pivot tables with a lesson on the anatomy of a pivot table.

The Four Areas of a Pivot Table

A pivot table is composed of four areas. The data you place in these areas defines both the utility and appearance of the pivot table. Take a moment to understand the function of each of these four areas.

Values area

The *values area*, as shown in Figure 3-1, is the large rectangular area below and to the right of the column and row headings. In this example, the values area contains a sum of the values in the Sales Amount field.



Region	(All)			
Sales Amount	Segment			
Market	Accessories	Bikes	Clothing	Components
Australia	23,974	1,351,873	43,232	203,791
Canada	119,303	11,714,700	383,022	2,246,255
Central	46,551	6,782,978	155,874	947,448
France	48,942	3,597,879	129,508	871,125
Germany	35,681	1,602,487	75,593	337,787
Northeast	51,246	6,690,285	163,442	1,051,702
Northwest	53,308	10,484,495	201,052	1,784,207
Southeast	45,736	6,737,556	165,689	959,337
Southwest	110,080	15,430,281	364,099	2,693,568
United Kingdom	43,180	3,435,134	120,225	712,588

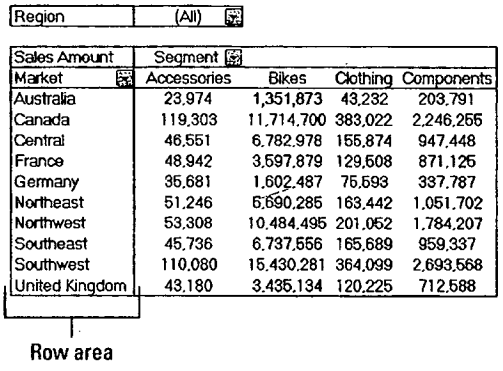
Values area

Figure 3-1: The values area of a pivot table calculates and counts data.

The values area is the area that calculates and counts data. The data fields that you drag and drop here are typically those that you want to measure — fields, such as Sum of Revenue, Count of Units, or Average of Price.

Row area

The *row area* is shown in Figure 3-2. Placing a data field into the row area displays the unique values from that field down the rows of the left side of the pivot table. The row area typically has at least one field, although it's possible to have no fields.



Region	(All)			
Sales Amount	Segment			
Market	Accessories	Bikes	Clothing	Components
Australia	23,974	1,351,873	43,232	203,791
Canada	119,303	11,714,700	383,022	2,246,255
Central	46,551	6,782,978	155,874	947,448
France	48,942	3,597,879	129,508	871,125
Germany	35,681	1,602,487	75,593	337,787
Northeast	51,246	6,690,285	163,442	1,051,702
Northwest	53,308	10,484,495	201,052	1,784,207
Southeast	45,736	6,737,556	165,689	959,337
Southwest	110,080	15,430,281	364,099	2,693,568
United Kingdom	43,180	3,435,134	120,225	712,588

Row area

Figure 3-2: The row area of a pivot table gives you a row-oriented perspective.

The types of data fields that you would drop here include those that you want to group and categorize, such as, Products, Names, and Locations.

Column area

The *column area* is composed of headings that stretch across the top of columns in the pivot table.

As you can see in Figure 3-3, the column area stretches across the top of the columns. In this example, it contains the unique list of business segments.

Placing a data field into the column area displays the unique values from that field in a column-oriented perspective. The column area is ideal for creating a data matrix or showing trends over time.

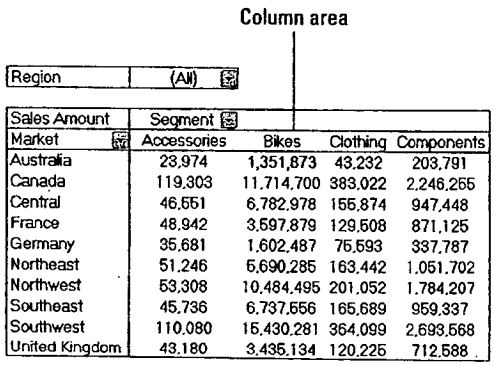


Figure 3-3: The column area of a pivot table gives you a column-oriented perspective.

Filter area

The *filter area* is an optional set of one or more drop-downs at the top of the pivot table. In Figure 3-4, the filter area contains the Region field, and the pivot table is set to show all regions.

Placing data fields into the filter area allows you to filter the entire pivot table based on your selections. The types of data fields that you'd drop here include those that you want to isolate and focus on; for example, Region, Line of Business, and Employees.

Filter area

Region	(All)

Sales Amount	Segment			
Market	Accessories	Bikes	Clothing	Components
Australia	23,974	1,351,873	43,232	203,791
Canada	119,303	11,714,700	383,022	2,246,255
Central	46,551	6,782,978	155,874	947,448
France	48,942	3,597,879	129,508	871,125
Germany	35,681	1,602,487	75,593	337,787
Northeast	51,246	5,690,285	163,442	1,051,702
Northwest	53,308	10,484,495	201,052	1,784,207
Southeast	45,736	6,737,556	165,689	959,337
Southwest	110,080	15,430,281	364,099	2,693,568
United Kingdom	43,180	3,436,134	120,225	712,688

Figure 3-4: The Filter Area allows you to easily apply filters to your pivot table report.

Creating Your First Pivot Table

If you've followed along so far, you now have a good understanding of the basic structure of a pivot table, so let's quit all the talking and use the following steps to walk through the creation of your first pivot table:

You can find the sample file for this chapter on this book's companion Web site.

1. **Click any single cell inside your *data source* (the table you'll use to feed the pivot table).**
2. **Select the Insert tab in the Ribbon. Here, find the PivotTable icon, as shown in Figure 3-5. Choose PivotTable from the drop-down list beneath the icon.**

   This activates the Create PivotTable dialog box, as shown in Figure 3-6. As you can see, this dialog box asks you to specify the location of your source data and the place you want to put the pivot table.

Notice that in the Create PivotTable dialog box, Excel makes an attempt to fill in the range of your data for you. In most cases, Excel gets this right. However, always make sure the correct range is selected.

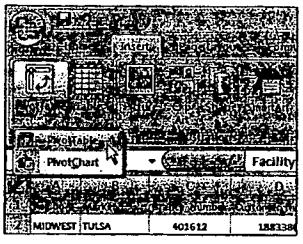


Figure 3-5: Start a pivot table via the Insert tab.

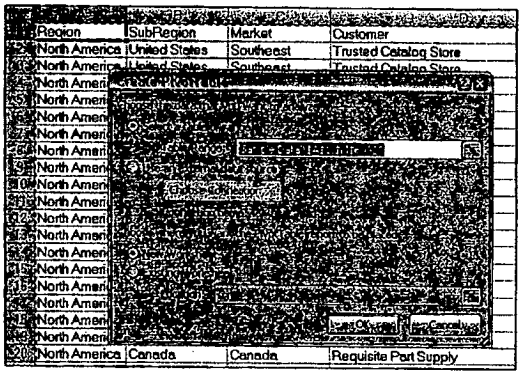


Figure 3-6: The Create PivotTable dialog box.

You will also note in Figure 3-6 that the default location for a new pivot table is New Worksheet. This means your pivot table will be placed in a new worksheet within the current workbook. You can change this by selecting the Existing Worksheet option and specifying the worksheet you want the pivot table to be placed.

3. **Click OK.**

At this point, you have an empty pivot table report on a new worksheet. Next to the empty pivot table, you see the PivotTable Field List dialog box, shown in Figure 3-7.

The idea here is to add the fields you need into the pivot table by using the four *drop zones* found in the PivotTable Field List — Report Filter, Column Labels, Row Labels, and Values. Pleasantly enough, these drop zones correspond to the four areas of the pivot table you review at the beginning of this chapter.

If clicking the pivot table doesn't activate the PivotTable Field List dialog box, you can manually activate it by right-clicking anywhere inside the pivot table and selecting Show Field List.

Now before you go wild and start dropping fields into the various drop zones, it's important that you ask yourself two questions; "What am I measuring?" and "How do I want to see it?." The answer to these questions gives you some guidance when determining which fields go where.

For your first pivot table report, you want to measure the dollar sales by market. This automatically tells you that you will need to work with the Sales Amount field and the Market field.

How do you want to see that? You want markets to go down the left side of the report and sales amount to be calculated next to each market. Remembering the four areas of the pivot table, you'll need to add the Market field to the Row Labels drop zone, and the Sales Amount field to the Values drop zone.

4. **Find the Market field in field selector and place a check next to it, as demonstrated in Figure 3-8.**

   Now that you have regions in your pivot table, it's time to add the dollar sales.

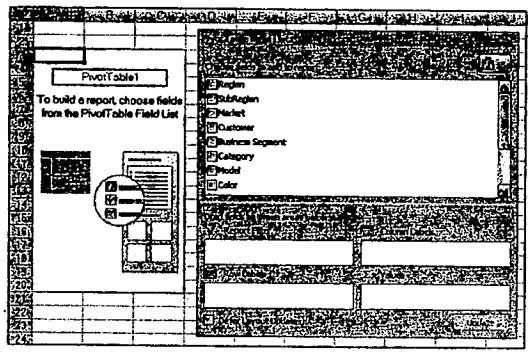


Figure 3-7: The PivotTable Field List dialog box.

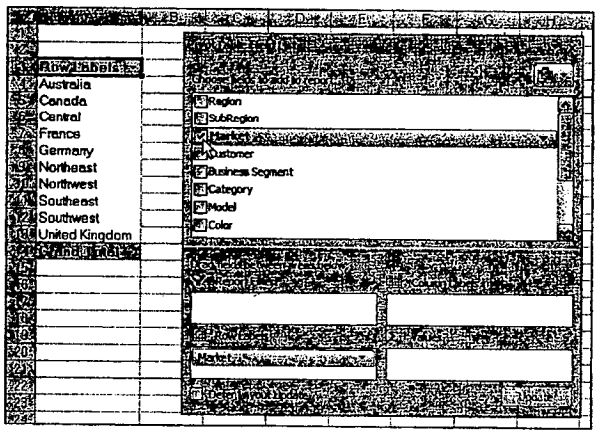


Figure 3-8: Place a check next to the Market field to add it.

5. **Find the Sales Amount field in field selector and place a check next to it, as demonstrated in Figure 3-9.**

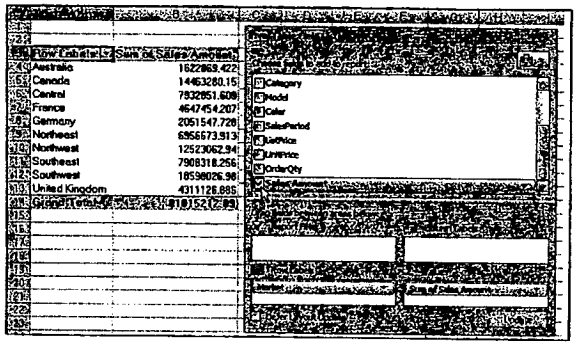


Figure 3-9: Add the Sales Amount field.

Placing a check next to any field that is *non-numeric* (text or date) automatically places that field into the row area of the pivot table. Placing a check next to any field that is *numeric* automatically places that field in the values area of the pivot table.

What happens if you need fields in the other areas of the pivot table? Well, instead of checking the field, you can drag any field directly to the different drop zones.

One more thing; when you add fields to the drop zones, you may find it difficult to see all the fields in each drop zone. You can expand the PivotTable Field List dialog box by clicking and dragging the borders of the dialog box.

As you can see, you have just analyzed the sales for each market in just five steps! That's an amazing feat considering you start with over 60,000 rows of data. With a little formatting, this modest pivot table can become the starting point for a management dashboard or report.

Changing and rearranging your pivot table

Now here's the wonderful thing about pivot tables. You can add as many layers of analysis as made possible by the fields in your source data table. Say that you want to show the dollar sales each market earned by business segment. Because your pivot table already contains the Market and Sales Amount fields, all you have to add the Business Segment field.

So simply click anywhere on your pivot table to reactivate the PivotTable Field List dialog box and then place a check next to the Business Segment field. Figure 3-10 illustrates what your pivot table should look like now.

If clicking the pivot table doesn't activate the PivotTable Field List dialog box, you can manually activate it by right-clicking anywhere inside the pivot table and selecting Show Field List.

Imagine that your manager says that this layout doesn't work for him. He wants to see business segments going across the top of the pivot table report. No problem. Simply drag the Business Segment field from the Row Labels drop zone to the Column Labels drop zone. As you can see in Figure 3-11, this instantly restructures the pivot table to his specifications.

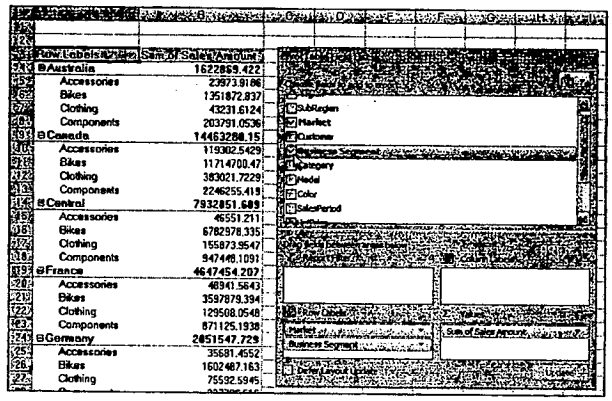


Figure 3-10: Adding a layer of analysis is as easy as bringing in another field.

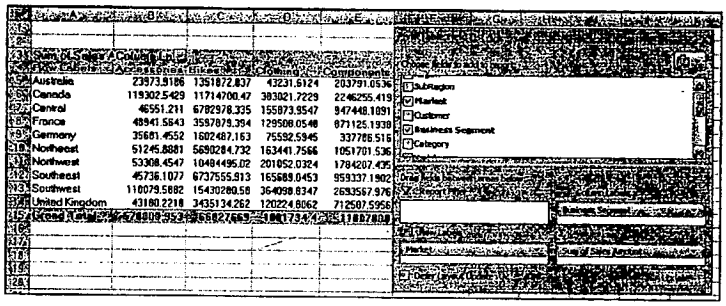


Figure 3-11: Your business segments are now column oriented.

Adding a report filter

Often times, you're asked to produce reports for one particular region, market, product, and so on. Instead of working hours and hours building separate reports for every possible analysis scenario, you can leverage pivot tables to help create multiple views of the same data. For example, you can do so by creating a region filter in your pivot table.

Click anywhere on your pivot table to reactivate the PivotTable Field List dialog box and then drag the Region field to the Report Filter drop zone. This adds a drop-down selector to your pivot table, shown in Figure 3-12. You can then use this selector to analyze one particular region at a time.

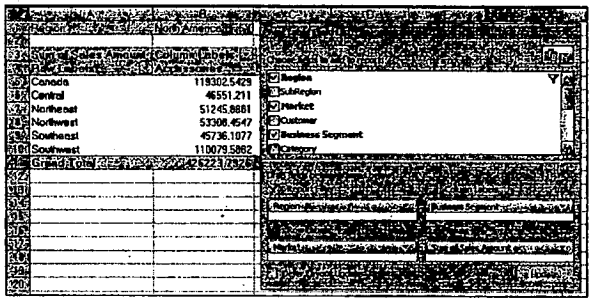


Figure 3-12: Using pivot tables to analyze regions.

Keeping your pivot table fresh

In Hollywood, it's important to stay fresh and relevant. As boring as your pivot tables may seem, they'll eventually become the stars of your reports and dashboards. So it's just as important to keep your pivot tables fresh and relevant.

As time goes by, your data may change and grow with newly-added rows and columns. The action of updating your pivot table with these changes is *refreshing* your data.

Your pivot table report can be refreshed by simply right-clicking inside your pivot table report and selecting Refresh, as demonstrated in Figure 3-13.

Sometimes, *you're* the data source that feeds your pivot table changes in structure. For example, you may have added or deleted rows or columns from your data table. These types of changes affect the range of your data source, not just a few data items in the table.

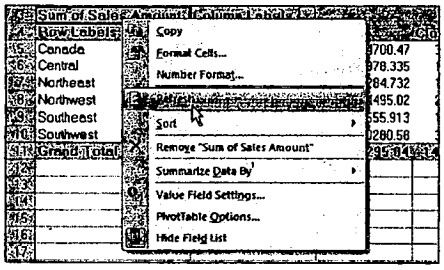


Figure 3-13: Refreshing your pivot table captures changes made to your data.

Pivot tables and spreadsheet bloat

It's important to understand what pivot tables do to your file size and memory implications for your reporting processes. When you create a pivot table, Excel takes a snapshot of your data set and stores it in a pivot cache. A *pivot cache* is essentially a memory container that holds this snapshot of your data set. Each pivot table report you create from a separate data source creates its own pivot cache, which increases your workbook's memory usage and file size. The increase in memory usage and file size depends on the size of the original data source that's copied to create the pivot cache.

Simple enough, right? Well, here's where you often need to create separate pivot tables from the same data source in order to analyze the same data in different ways. If you create two pivot tables from one data source, a new pivot cache is automatically created even though one may already exist for the data set being used. This means that you're bloating your spreadsheet with redundant data each time you create a new pivot table using the same data set.

To work around this potential problem, you can employ Copy and then Paste. That's right, simply copying a pivot table and pasting it somewhere else will create another pivot table *without* duplicating the pivot cache. This allows you to create multiple pivot tables that use the same source data with negligible increase in memory and file size.

In these cases, performing a simple Refresh of your pivot table won't do. You have to update the range being captured by the pivot table. Here's how:

1. **Click anywhere inside your pivot table to activate the PivotTable Tools context tab in the Ribbon.**
2. **Select the Options tab in the Ribbon.**
3. **Click the Change Data Source button, as demonstrated in Figure 3-14.**

   The Change PivotTable Data Source dialog box appears.
4. **Change the range selection to include any new rows or columns. (See Figure 3-15.)**
5. **Click OK to apply the change.**

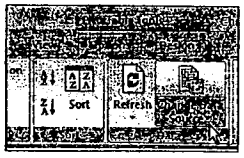


Figure 3-14: Changing the range that feeds your pivot table.

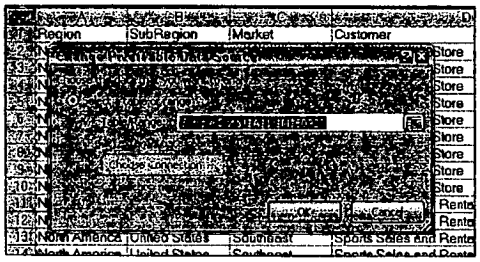


Figure 3-15: Select the new range that feeds your pivot table.

Customizing Your Pivot Table Reports

The pivot tables you create often need to be tweaked in order to get the look and feel you're looking for. In this section, I cover some of the options you can adjust to customize your pivot tables to suit your reporting needs.

Changing the pivot table layout

Unlike the previous versions of Excel, Excel 2007 gives you a choice in the layout of your data in a pivot table. The three layouts, shown side by side in Figure 3-16, are the Compact Form, Outline Form, and Tabular Form. Although no layout stands out as being better than the others, I prefer using the Tabular Form layout because it seems easiest to read, and it's the layout that most people who have seen pivot tables in the past are used to.

Compact Form Layout

Row Labels	Sales
⊟Australia	1622869.422
Accessories	23973.9186
Bikes	1351872.837
Clothing	43231.6124
Components	203791.0536
⊟Canada	14463280.15
Accessories	119302.5429
Bikes	11714700.47
Clothing	383021.7229
Components	2246255.419
⊟Central	7932851.609
Accessories	46551.211
Bikes	6782978.335
Clothing	155873.9547
Components	947448.1091
⊟France	4647454.207
Accessories	48941.5643
Bikes	3597879.394
Clothing	129508.0548
Components	871125.1938
⊟Germany	2051547.729
Accessories	35681.4552
Bikes	1602487.163
Clothing	75592.5945
Components	337786.516

Outline Form Layout

Market	Segment	Sales
⊟Australia		1622869.422
	Accessories	23973.9186
	Bikes	1351872.837
	Clothing	43231.6124
	Components	203791.0536
⊟Canada		14463280.15
	Accessories	119302.5429
	Bikes	11714700.47
	Clothing	383021.7229
	Components	2246255.419
⊟Central		7932851.609
	Accessories	46551.211
	Bikes	6782978.335
	Clothing	155873.9547
	Components	947448.1091
⊟France		4647454.207
	Accessories	48941.5643
	Bikes	3597879.394
	Clothing	129508.0548
	Components	871125.1938
⊟Germany		2051547.729
	Accessories	35681.4552
	Bikes	1602487.163
	Clothing	75592.5945
	Components	337786.516

Tabular Form Layout

Market	Segment	Sales
⊟Australia	Accessories	23973.9186
	Bikes	1351872.837
	Clothing	43231.6124
	Components	203791.0536
Australia Total		1622869.422
⊟Canada	Accessories	119302.5429
	Bikes	11714700.47
	Clothing	383021.7229
	Components	2246255.419
Canada Total		14463280.15
⊟Central	Accessories	46551.211
	Bikes	6782978.335
	Clothing	155873.9547
	Components	947448.1091
Central Total		7932851.609
⊟France	Accessories	48941.5643
	Bikes	3597879.394
	Clothing	129508.0548
	Components	871125.1938
France Total		4647454.207
⊟Germany	Accessories	35681.4552
	Bikes	1602487.163
	Clothing	75592.5945
	Components	337786.516
Germany Total		2051547.729

Figure 3-16: The three layouts for a pivot table report.

The layout you choose not only affects the look and feel of your reporting mechanisms, but it may also affect the way you build and interact with any dashboard models based on your pivot tables.

Changing the layout of a pivot table is easy. Follow these steps:

1. **Click anywhere inside your pivot table to activate the PivotTable Tools context tab in the Ribbon.**
2. **Select the Design tab in the Ribbon.**
3. **Click the Report Layout icon and choose the layout you like. (See Figure 3-17.)**

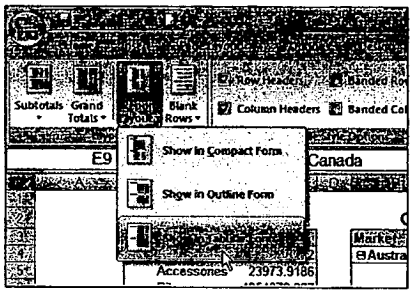


Figure 3-17: Changing the layout for your pivot table.

Customizing field names

Notice that every field in your pivot table has a name. The fields in the row, column, and filter areas inherit their names from the data labels in your source table. The fields in the Values area are given a name, such as Sum of Sales Amount.

There will often be times when you might prefer the name Total Sales instead of the unattractive default name, like Sum of Sales Amount. In these situations, the ability to change your field names is handy. To change a field name, do the following:

1. **Right-click any value within the target field.**

   For example, if you want to change the name of the field Sum of Sales Amount, you right-click any value under that field.

2. **Select Value Field Settings. (See Figure 3-18.)**

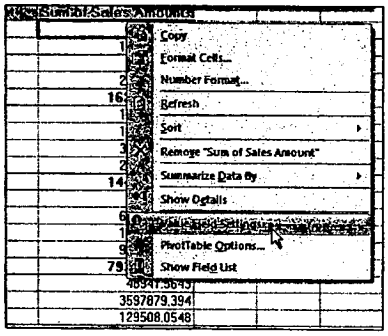


Figure 3-18: Right-click on any value in the target field to select the Value Field Settings option.

The Value Field Settings dialog box appears.

Note that if you were changing the name of a field in the row or column area, this selection is Field Settings.

3. **Enter the new name in the Custom Name input box. (See Figure 3-19.)**

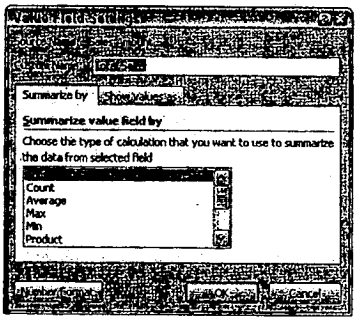


Figure 3-19: Use the Custom Name input to change the name of the field.

4. **Click OK to apply the change.**

If you use the name of the data label used in your source table, you receive an error. For example, if you rename Sum of Sales Amount as Sales Amount, you get an error message because there's already a Sales Amount field in the source data table. Well, this is kinda lame, especially if Sales Amount is exactly what you want to name the field in your pivot table.

To get around this, you can name the field and add a space to the end of the name. Excel considers Sales Amount (followed by a space) to be different from Sales Amount. This way you can use the name you want, and no one will notice it's any different.

Applying numeric formats to data fields

Numbers in pivot tables can be formatted to fit your needs (that is, formatted as currency, percentage, or number). You can easily control the numeric formatting of a field using the Value Field Settings dialog box. Here's how:

1. **Right-click any value within the target field.**

   For example, if you want to change the format of the values in the Sales Amount field, right-click any value under that field.

2. **Select Value Field Settings.**

   The Value Field Settings dialog box appears.

3. **Click the Number Format.**

   The Format Cells dialog box opens.

4. **Apply the number format you desire, just as you normally would on your spreadsheet.**

5. **Click OK to apply the changes.**

   After you set the formatting for a field the applied formatting will persist even if you refresh or rearrange your pivot table.

Changing summary calculations

When creating your pivot table report, Excel will, by default, summarize your data by either counting or summing the items. Instead of `Sum` or `Count`, you might want to choose functions, such as `Average`, `Min`, `Max`, and so on. In all, 11 options are available, including

- **`Sum`:** Adds all numeric data.
- **`Count`:** Counts all data items within a given field, including numeric-, text-, and date-formatted cells.
- **`Average`:** Calculates an average for the target data items.
- **`Max`:** Displays the largest value in the target data items.
- **`Min`:** Displays the smallest value in the target data items.
- **`Product`:** Multiplies all target data items together.
- **`Count Nums`:** Counts only the numeric cells in the target data items.
- **`StdDevP` and `StdDev`:** Calculates the standard deviation for the target data items. Use `StdDevP` if your dataset contains the complete population. Use `StdDev` if your dataset contains a sample of the population.

- **VarP and Var:** Calculates the statistical variance for the target data items. Use `VarP` if your data contains a complete population. If your data contains only a sampling of the complete population, use `Var` to estimate the variance.

You can easily change the summary calculation for any given field by taking the following actions:

1. **Right-click any value within the target field.**
2. **Select Value Field Settings.**

   The Value Field Settings dialog box appears.
3. **Choose the type of calculation you want to use from the list of calculations. (See Figure 3-20.)**
4. **Click OK to apply the changes.**

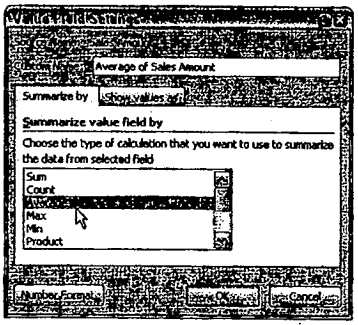


Figure 3-20: Changing the type of summary calculation used in a field.

Did you know that a single blank cell causes Excel to count instead of sum? That's right. If all the cells in a column contain numeric data, Excel chooses Sum. If just one cell is either blank or contains text, Excel chooses Count.

Be sure to pay attention to the fields that you place into the values area of the pivot table. If the field name starts with Count Of, Excel's counting the items in the field instead of summing the values.

Suppressing subtotals

Notice that each time you add a field to your pivot table, Excel adds a subtotal for that field. There may be, however, times when the inclusion of subtotals either doesn't make sense or just hinders a clear view of your pivot table report. For example, Figure 3-21 shows a pivot table where the subtotals inundate the report with totals that serve only to hide the real data you're trying to report.

Region	SubRegion	Market	Business Segment	Sum of Sales Amount
⊟North America	⊟United States	⊟Central	Accessories	$46,551
			Bikes	$8,782,978
			Clothing	$155,874
			Components	$947,449
		Central Total		$9,932,852
		⊟Northeast	Accessories	$51,246
			Bikes	$5,690,286
			Clothing	$183,442
			Components	$1,051,702
		Northeast Total		$5,956,674
		⊟Northwest	Accessories	$53,308
			Bikes	$10,494,495
			Clothing	$201,052
			Components	$1,784,207
		Northwest Total		$12,523,063
		⊟Southeast	Accessories	$45,736
			Bikes	$6,737,558
			Clothing	$165,689
			Components	$959,337
		Southeast Total		$7,908,318
		⊟Southwest	Accessories	$110,080
			Bikes	$15,430,281
			Clothing	$364,099
			Components	$2,693,568
		Southwest Total		$18,598,027
	United States Total			$53,918,934
North America Total				$53,918,934
Grand Total				$53,918,934

Figure 3-21: Subtotals sometimes muddle the data you're trying to show.

Removing all subtotals at one time

You can remove all subtotals at once by taking these actions:

1. **Click anywhere inside your pivot table to activate the PivotTable Tools context tab in the Ribbon.**
2. **Select the Design tab in the Ribbon.**
3. **Click the Subtotals icon and select Do Not Show Subtotals. (See Figure 3-22.)**

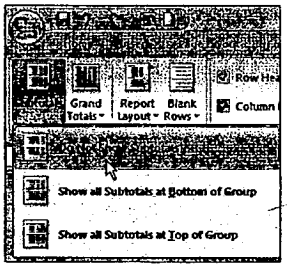


Figure 3-22: Use the Do Not Show Subtotals option to remove all subtotals at once.

As you can see in Figure 3-23, the same report without subtotals is much more pleasant to review.

Region	SubRegion	Market	Business Segment	Sum of Sales Amount
⊟North America	⊟United States	⊟Central	Accessories	$46,551
			Bikes	$6,782,978
			Clothing	$155,674
			Components	$947,449
		⊟Northeast	Accessories	$51,246
			Bikes	$5,690,285
			Clothing	$163,442
			Components	$1,051,702
		⊟Northwest	Accessories	$53,308
			Bikes	$18,484,495
			Clothing	$281,052
			Components	$1,784,207
		⊟Southeast	Accessories	$45,736
			Bikes	$6,737,556
			Clothing	$165,689
			Components	$958,337
		⊟Southwest	Accessories	$118,060
			Bikes	$15,430,281
			Clothing	$364,099
			Components	$2,693,568
Grand Total				$53,818,934

Figure 3-23: The same report without subtotals.

Removing the subtotals for only one field

Maybe you want to remove the subtotals for only one field? In such a case, you can take the following actions:

1. **Right-click any value within the target field.**
2. **Select Field Settings.**

   The Field Settings dialog box appears.
3. **Choose the None button under the Subtotals option, as demonstrated in Figure 3-24.**
4. **Click OK to apply the changes.**

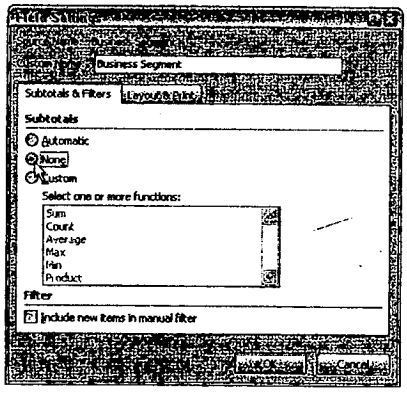


Figure 3-24: Choose the None option to remove subtotals for one field.

Removing Grand Totals

There may be instances when you want to remove the Grand Totals from your pivot table.

1. **Right-click anywhere on your pivot table.**
2. **Select PivotTable Options.**

   The Options dialog box appears.
3. **Click the Totals & Filters tab.**
4. **Remove the check from Show Grand Totals for Rows.**
5. **Remove the check from Show Grand Totals for Columns.**

Showing and hiding data items

A pivot table summarizes and displays all the records in your source data table. There may, however, be situations when you want to inhibit certain data items from being included in your pivot table summary. In these situations, you can choose to hide a data item.

In terms of pivot tables, hiding doesn't just mean preventing the data item from being shown on the report, hiding a data item also prevents it from being factored into the summary calculations.

In the pivot table illustrated in Figure 3-25, I show sales amounts for all Business Segments by Market. In this example, however, I want to show totals without taking sales from the Bikes segment into consideration. In other words, I want to hide the Bikes segment.

Market	Business Segment	Sum of Sales Amounts
⊖Australia	Accessories	$23,974
	Bikes	$1,351,873
	Clothing	$43,232
	Components	$203,791
Australia Total		$1,622,869
⊖Canada	Accessories	$119,303
	Bikes	$11,714,700
	Clothing	$383,022
	Components	$2,246,255
Canada Total		$14,463,280
⊖Central	Accessories	$46,551
	Bikes	$6,782,978
	Clothing	$155,874
	Components	$947,448
Central Total		$7,932,852

Figure 3-25: I want to remove Bikes from this analysis.

I can hide the Bikes Business Segment by clicking the Business Segment drop-down list arrow and removing the check next to Bikes (see Figure 3-26).

After choosing OK to close the selection box, the pivot table instantly recalculates, leaving out the Bikes segment. As you can see in Figure 3-27, the Market totals sales now reflect the sales without Bikes.

I can just as quickly reinstate all hidden data items for my field. I simply click the Business Segment drop-down list arrow and place a check next to the Select All selection (see Figure 3-28).

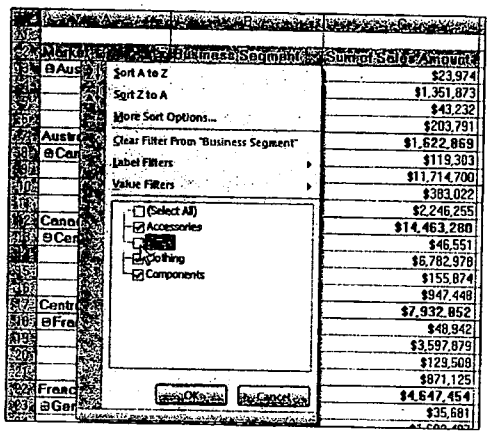


Figure 3-26: Removing the check from the Bikes item hides the Bikes segment.

Market	Business Segment	Sum of Sales Amount
⊟Australia	Accessories	$23,974
	Clothing	$43,232
	Components	$203,791
Australia Total		$270,997
⊟Canada	Accessories	$119,303
	Clothing	$383,022
	Components	$2,246,255
Canada Total		$2,748,580
⊟Central	Accessories	$46,551
	Clothing	$155,874
	Components	$947,448
Central Total		$1,149,873

Figure 3-27: Segment analysis without the Bikes segment.

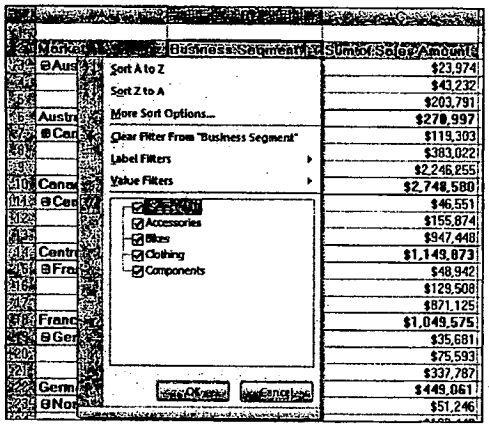


Figure 3-28: Placing a check next to Select All forces all data items in that field to become unhidden.

Hiding or showing items without data

By default, your pivot table shows only data items that have data. This inherent behavior may cause unintended problems for your data analysis.

Look at Figure 3-29, which shows a pivot table with the SalesPeriod field in the row area and the Region field in the filter area. Note that the Region field is set to (All), and every sales period appears in the report.

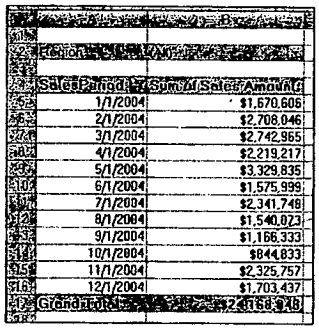
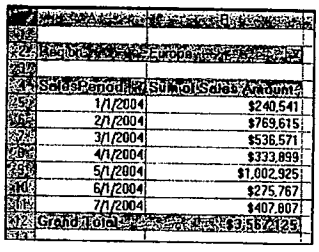


Figure 3-29: All sales periods are showing.

If I choose to filter for only Europe in the filter area, you will notice that only a portion of all the sales periods are now showing. (See Figure 3-30.) The pivot table suddenly shows only those sales periods that apply to the Europe region.



SalesPeriod	Sum of Sales Amount2
1/1/2004	$240,541
2/1/2004	$769,615
3/1/2004	$536,571
4/1/2004	$333,899
5/1/2004	$1,002,925
6/1/2004	$275,767
7/1/2004	$407,807
Grand Total	$3,567,125

Figure 3-30: Filtering for the Europe region causes some of the sales periods to disappear.

The behavior of displaying only those items with data could cause trouble if I plan on using this pivot table as the feeder for my charts or other dashboard components. From a dashboarding-and-reporting perspective, it isn't ideal if half the year disappeared each time customers selected Europe.

Here's how you can prevent Excel from hiding pivot items without data:

1. **Right-click any value within the target field.**

   In this example, the target field is the SalesPeriod field.

2. **Select Field Settings.**

   The Field Settings dialog box appears.

3. **Select the Layout & Print tab in the Field Settings dialog box.**

4. **Place a check next to the Show Items with No Data option. (See Figure 3-31.)**

5. **Click OK to apply the change.**

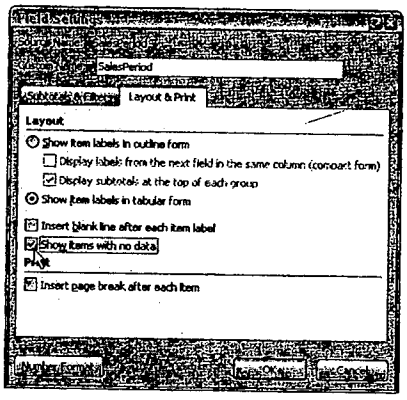


Figure 3-31: Click the Show Items with No Data option to force the display all data items.

As you can see in Figure 3-32, after choosing the Show Items with No Data option, all the sales periods appear whether the selected region had sales that period or not.

Now that I'm confident that the structure of the pivot table is locked, I can use it to feed charts and other components in my dashboard.

Region	Europe
Sales Periods	Sum of Sales Amount
1/1/2004	$240,541
2/1/2004	$769,615
2/29/2004	
3/1/2004	$536,571
3/31/2004	
4/1/2004	$333,899
4/30/2004	
5/1/2004	$1,002,925
5/31/2004	
6/1/2004	$275,767
7/1/2004	$407,807
8/1/2004	
9/1/2004	
10/1/2004	
11/1/2004	
12/1/2004	
Grand Total	$3,567,125

Figure 3-32: All sales periods are now displayed even if there is no data to be shown.

Sorting your pivot table

By default, items in each pivot field are sorted in ascending sequence based on the item name. Excel gives you the freedom to change the sort order of the items in your pivot table.

Like many actions you can perform in Excel, there are lots of different ways to sort data within a pivot table. The easiest way, and the way that I use the most, is to apply the sort directly in the pivot table. Here's how:

1. **Right-click any value within the *target field* (the field you need to sort).**

   In the example shown in Figure 3-33, I want to sort by Sales Amount.

2. **Select Sort and then select the sort direction.**

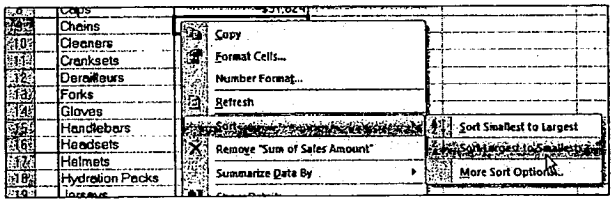


Figure 3-33: Applying a sort to a pivot table field.

The changes take effect immediately and persist while you work with your pivot table.

Creating Useful Pivot-Driven Views

At this point in your exploration of pivot tables, you have covered enough of the fundamentals to start creating your own pivot table reports. In this last section, I share with you a few of the techniques I use to create some of the more useful report views. Although you could create these views by hand, creating them with pivot tables helps save you hours of work and allows you to more easily update and maintain them.

Producing top and bottom views

You'll often find that managers are interested in the top and bottom of things: the top 50 customers, the bottom 5 sales reps, the top 10 products. Although you may think this is because managers have the attention span of a four-year-old, there's a more logical reason for focusing on the outliers.

Dashboarding and reporting is often about showing actionable data. If you, as a manager, know who the bottom ten revenue-generating accounts are, you could apply your effort and resources in building up those accounts. Because you most likely wouldn't have the resources to focus on all accounts, viewing a manageable subset of accounts would be more useful.

Luckily, pivot tables make it easy to filter your data for the top five, the bottom ten, or any conceivable combination of top or bottom records. Here's an example.

Imagine that in your company, the Accessories Business Segment is a high-margin business — you make the most profit for each dollar of sales in the Accessories segment. To increase sales, your manager wants to focus on the 50 customers who spend the least amount of money on Accessories. He obviously wants to spend his time and resources on getting those customers to buy more accessories. Here's what to do:

1. **Build a pivot table with Business Segment in the filter area, Customer in the row area, and Sales Amount in the values area (see Figure 3-34.) For cosmetic value, change the layout to Tabular Form.**

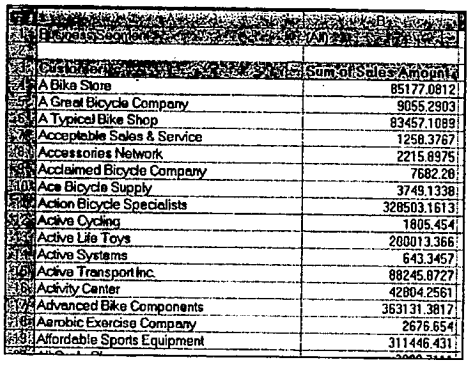
   You can find the sample file for this chapter on this book's companion Web site.

2. **Right-click any customer name in the Customer field, select Filter, and then Top 10 — as demonstrated in Figure 3-35.**

Don't let the label *Top 10* confuse you. You can use the Top 10 option to filter both top and bottom records.

3. **In the Top 10 Filter dialog box, as illustrated in Figure 3-36, you simply have to define the view you're looking for. In this example, you want the bottom 50 items (customers), as defined by the Sum of Sales Amount field.**

4. **Click OK to apply the filter.**



Customer	Sum of Sales Amount
A Bike Store	85177.0812
A Great Bicycle Company	9055.2903
A Typical Bike Shop	83457.1089
Acceptable Sales & Service	1258.3767
Accessories Network	2215.8975
Acclaimed Bicycle Company	7682.26
Ace Bicycle Supply	3749.1338
Action Bicycle Specialists	328503.1613
Active Cycling	1805.454
Active Life Toys	200013.366
Active Systems	643.3457
Active Transport Inc.	88245.8727
Activity Center	42804.2561
Advanced Bike Components	363131.3817
Aerobic Exercise Company	2676.654
Affordable Sports Equipment	311446.431

Figure 3-34: Build this pivot table to start.

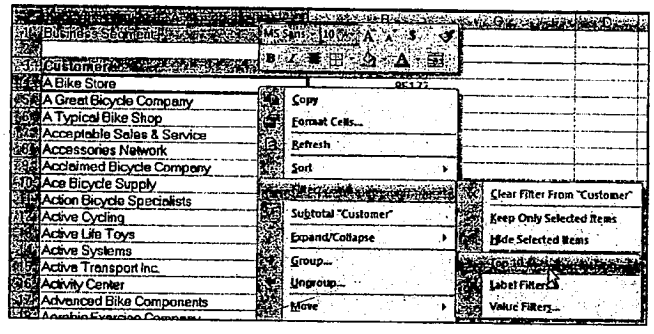


Figure 3-35: Select the Top 10 filter option.

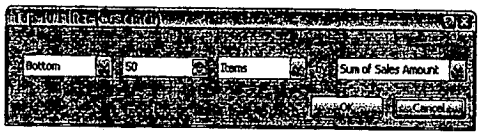


Figure 3-36: Specify the filter you want to apply.

5. **In the filter area, click the drop-down button for the Business Segment field and select Change the Filter area. (See Figure 3-37.)**

   At this point, you have exactly what your manager has asked for — the 50 customers who spend the least amount of money on Accessories. You can go a step further and format the report a bit by sorting on the Sum of Sales Amount and applying a currency format to the numbers. (See Figure 3-38.)

Note that because you built this view using a pivot table, you can easily adapt your newly created report to create a whole new view. For example, you can add the Market field to the filter area to get the 50 United Kingdom customers who spend the least amount of money on Accessories. This, my friends, is the power of using pivot tables for the basis of your dashboards and reports. Continue to play around with the Top 10 Filter option to see what kind of reports you can come up with.

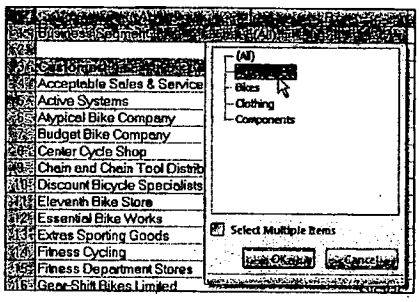


Figure 3-37: Filter your pivot table report to show Accessories.

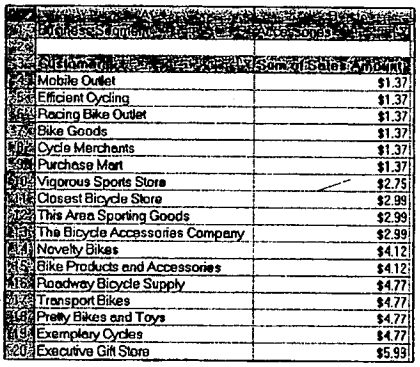


Figure 3-38: Your final report.

You may notice that in Figure 3-39, the bottom 50 report is showing only 23 records. This is because there are fewer than 50 customers in the United Kingdom market that have Accessories sales. Because I asked for the bottom 50, Excel shows up to 50 accounts, but fewer if there are fewer than 50. If there's a tie for any rank in the bottom 50, Excel shows you all the tied records.

You can remove the applied filters in your pivot tables by taking these actions:

1. **Click anywhere inside your pivot table to activate the PivotTable Tools context tab in the Ribbon.**
2. **Select the Options tab in the Ribbon.**
3. **Click the Clear icon and select Clear Filters, as demonstrated in Figure 3-40.**

Customer Name	Sum of Sales Amount
Vigorous Sports Store	$2.75
Closest Bicycle Store	$2.99
Exclusive Bicycle Mart	$15.00
Extended Tours	$20.19
Instruments and Parts Company	$20.99
Tachometers and Accessories	$23.16
Metropolitan Bicycle Supply	$25.76
Number One Bike Co.	$29.73
Nearby Cycle Shop	$35.99
Metro Metals Co.	$46.11
Cycles Wholesaler & Mfg.	$375.53
Cycling Goods	$432.54
Exceptional Cycle Services	$757.72
Channel Outlet	$918.44
Express Bike Services	$1,718.19
Downhill Bicycle Specialists	$1,915.21
Uttermost Bike Shop	$3,606.93
Bulk Discount Store	$4,067.01
Commerce Bicycle Specialists	$4,435.70
Action Bicycle Specialists	$4,861.49
Exhibition Showroom	$5,723.12
Riding Cycles	$6,459.01
Prosperous Tours	$7,486.63

Figure 3-39: You can easily adapt this report to produce any combination of views.

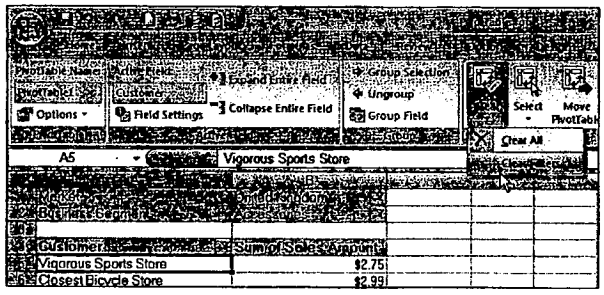
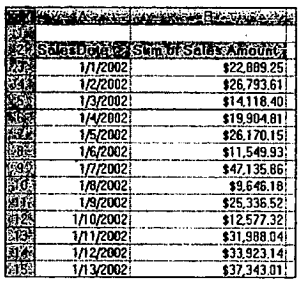


Figure 3-40: Select Clear Filters to clear the applied filters in a field.

Creating views by month, quarter, and year

Raw transactional data is rarely aggregated by month, quarter, or year for you. This type of data is often captured by the day. However, managers often want reports by month or quarters instead of detail by day. Fortunately, pivot tables make it easy to group date fields into various time dimensions. Here's how:

1. **Build a pivot table with Sales Date in the row area and Sales Amount in the values area; similar to the one in Figure 3-41.**
2. **Right-click any date and select Group, as demonstrated in Figure 3-42.**



SalesDate	Sum of Sales Amount
1/1/2002	$22,889.25
1/2/2002	$26,793.61
1/3/2002	$14,118.40
1/4/2002	$19,904.81
1/5/2002	$26,170.15
1/6/2002	$11,549.93
1/7/2002	$47,135.86
1/8/2002	$9,646.18
1/9/2002	$25,336.52
1/10/2002	$12,577.32
1/11/2002	$31,988.04
1/12/2002	$33,923.14
1/13/2002	$37,343.01

Figure 3-41: Build this pivot table to start.

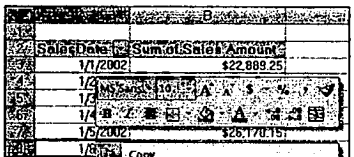


Figure 3-42: Select the Group option.

The Grouping dialog box appears, as shown in Figure 3-43.

3. **Select the time dimensions you want.**

   In this example, you can select Months, Quarters, and Years.

4. **Click OK to apply the change.**

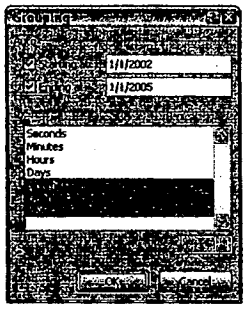


Figure 3-43: Select the time dimensions that suit your needs.

Here are several interesting things to note about the resulting pivot table. First, notice that Quarters and Years have been added to your field list. Keep in mind that your source data hasn't changed to include these new fields; instead, these fields are now part of your pivot table. Another interesting thing to note is that by default, the Years and Quarters fields are automatically added next to the original date field in the pivot table layout, as shown in Figure 3-44.

After your date field is grouped, you can use each added time grouping just as you would any other field in your pivot table. In Figure 3-45, I use the newly created time groupings to show sales for each market by quarter for 2004.

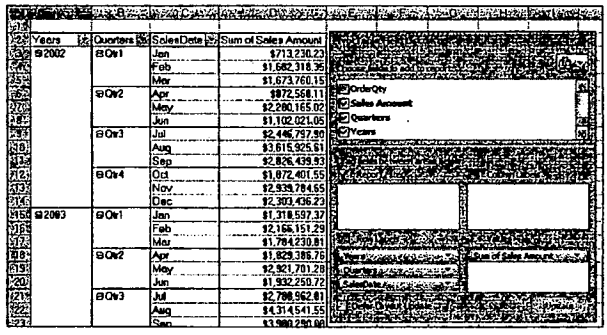
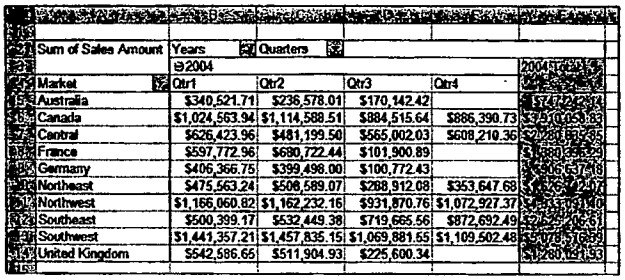


Figure 3-44: Adding Years and Quarters fields.



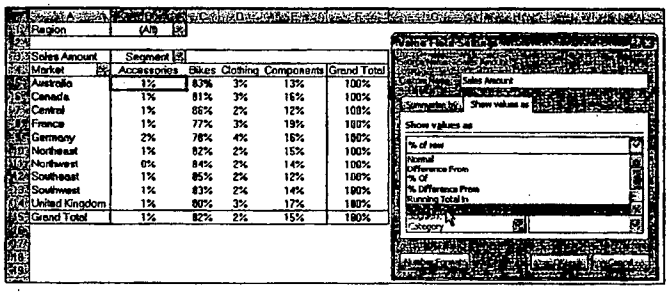
Sum of Sales Amount	Years	Quarters			
	⊖2004				2004 Total
Market	Qtr1	Qtr2	Qtr3	Qtr4	
Australia	$340,521.71	$236,578.01	$170,142.42		$747,242.14
Canada	$1,024,563.94	$1,114,588.51	$884,515.64	$886,390.73	$3,910,058.82
Central	$626,423.96	$481,199.50	$565,002.03	$608,210.36	$2,280,835.85
France	$597,772.96	$680,722.44	$101,900.89		$1,380,396.29
Germany	$406,366.75	$399,498.00	$100,772.43		$906,637.18
Northeast	$475,563.24	$508,589.07	$288,912.08	$353,647.68	$1,626,712.07
Northwest	$1,166,060.82	$1,162,232.16	$931,870.76	$1,072,927.37	$4,333,091.10
Southeast	$500,399.17	$532,449.38	$719,665.56	$872,692.49	$2,625,206.60
Southwest	$1,441,357.21	$1,457,835.15	$1,069,881.55	$1,109,502.48	$5,078,576.39
United Kingdom	$542,586.65	$511,904.93	$225,600.34		$1,280,091.93

Figure 3-45: You can use your newly created time dimensions just like a normal pivot field.

Creating a percent distribution view

A percent distribution (or percent contribution) view allows you to see how much of the total is made up of a specific data item. This view is useful when you're trying to measure the general impact of a particular item.

The pivot table, as shown in Figure 3-46, gives you a view into the percent of sales that comes from each business segment. Here, you can tell that Bikes make up 81 percent of Canada's sales whereas only 77 percent of France's sales come from Bikes.



Region	(All)				
Sales Amount	Segment				
Market	Accessories	Bikes	Clothing	Components	Grand Total
Australia	1%	83%	3%	13%	100%
Canada	1%	81%	3%	15%	100%
Central	1%	86%	2%	12%	100%
France	1%	77%	3%	19%	100%
Germany	2%	78%	4%	16%	100%
Northeast	1%	82%	2%	15%	100%
Northwest	0%	84%	2%	14%	100%
Southeast	1%	85%	2%	12%	100%
Southwest	1%	83%	2%	14%	100%
United Kingdom	1%	80%	3%	17%	100%
Grand Total	1%	82%	2%	15%	100%

Figure 3-46: This view shows percent of total for the row.

You'll also notice in Figure 3-46 that this view was created by selecting the % of Row option in the Value Field Settings dialog box. Here are the steps to create this type of view:

1. **Right-click any value within the target field.**

   For example, if you want to change the settings for the Sales Amount field, right-click any value under that field.

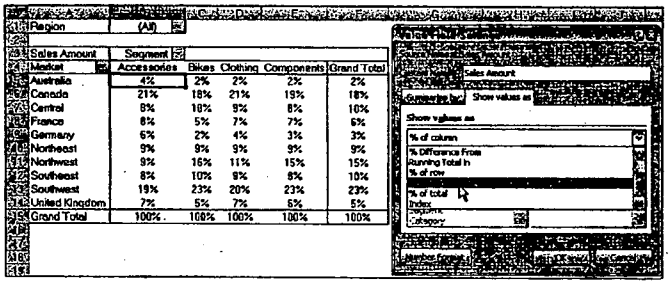
2. **Select Value Field Settings.**

   The Value Field Settings dialog box appears.

3. **Click the Show Values As tab.**

4. **Select % of Row from the drop-down list.**
5. **Click OK to apply your change.**

The pivot table in Figure 3-47 gives you a view into the percent of sales that comes from each market. Here, you have the same type of view, but this time, you use the % of Column option.



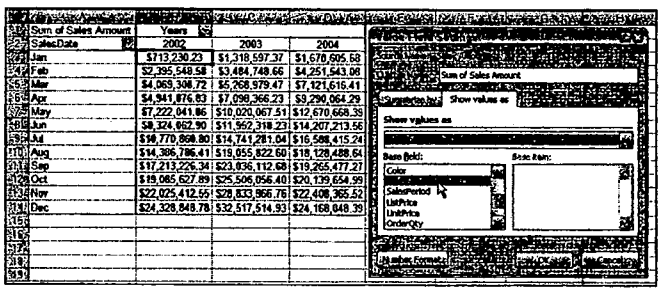
Region	(All)				
Sales Amount	Segment				
Market	Accessories	Bikes	Clothing	Components	Grand Total
Australia	4%	2%	2%	2%	2%
Canada	21%	18%	21%	19%	18%
Central	8%	10%	9%	8%	10%
France	8%	5%	7%	7%	6%
Germany	6%	2%	4%	3%	3%
Northeast	9%	9%	9%	9%	9%
Northwest	9%	16%	11%	15%	15%
Southeast	8%	10%	9%	8%	10%
Southwest	19%	23%	20%	23%	23%
United Kingdom	7%	5%	7%	5%	5%
Grand Total	100%	100%	100%	100%	100%

Figure 3-47: This view shows percent of total for the column.

Again, remember that because you built these views in a pivot table, you have the flexibility to slice the data by region, bring in new fields, rearrange data, and most importantly, refresh this view when new data comes in.

Creating a YTD totals view

Sometimes, it's useful to capture a running-totals view to analyze the movement of numbers on a year-to-date (YTD) basis. Figure 3-48 illustrates a pivot table that shows a running total of revenue by month for each year. In this view, you can see where the YTD sales stand at any given month in each year. For example, you can see that in August 2004, revenues were about a million dollars lower than the same point in 2003.



Sum of Sales Amount	Years		
SalesDate	2002	2003	2004
Jan	$713,230.23	$1,318,597.37	$1,676,605.58
Feb	$2,395,548.58	$3,484,748.66	$4,251,543.06
Mar	$4,069,306.72	$5,768,979.47	$7,121,616.41
Apr	$4,941,876.83	$7,090,366.23	$9,290,064.29
May	$7,222,041.86	$10,020,067.51	$12,670,668.39
Jun	$8,324,662.90	$11,552,318.23	$14,207,213.56
Jul	$10,770,868.80	$14,741,281.04	$16,588,415.24
Aug	$14,396,786.41	$19,055,822.60	$18,128,488.61
Sep	$17,213,226.34	$23,636,112.68	$19,255,477.27
Oct	$19,065,627.89	$25,506,956.40	$20,139,654.99
Nov	$22,025,412.55	$28,833,966.76	$22,408,365.52
Dec	$24,328,849.78	$32,517,514.93	$24,168,848.39

Figure 3-48: This view shows a running total of sales for each month.

In the sample data for this chapter, you don't see Months and Years. You have to create them by grouping the SalesDate field. Feel free to review the section, "Creating views by month, quarter, and year," earlier in this chapter to find out how.

To create this type of view, take these actions:

1. **Right-click any value within the target field.**

   For example, if you want to change the settings for the Sales Amount field, right-click any value under that field.

2. **Select Value Field Settings.**

   The Value Field Settings dialog box appears.

3. **Click the Show Values As tab.**

4. **Select Running Total In from the drop-down list.**

5. **In the Base Field list, select the field that you want the running totals to be calculated against.**

   In most cases, this would be a time series such as, in this example, the SalesDate field.

6. **Click OK to apply your change.**

Creating a month-over-month variance view

Another commonly requested view is a month-over-month variance. How did this month's sales compare to last month's sales? The best way to create these types of views is to show the raw number and the percent variance together.

In that light, you can start creating this view by building a pivot table similar to the one shown in Figure 3-49. Notice that you bring in the Sales Amount field twice. One of these remains untouched, showing the raw data. The other is changed to show the month-over-month variance.

	Years	Values
	2004	
SalesDate	Sum of Sales Amount	Sum of Sales Amount2
Jan	$1,670,606	$1,670,606
Feb	$2,580,937	$2,580,937
Mar	$2,870,073	$2,870,073
Apr	$2,168,448	$2,168,448
May	$3,380,604	$3,380,604
Jun	$1,536,545	$1,536,545
Jul	$2,381,202	$2,381,202
Aug	$1,540,073	$1,540,073
Sep	$1,136,989	$1,136,989
Oct	$874,178	$874,178
Nov	$2,268,711	$2,268,711
Dec	$1,760,483	$1,760,483

Figure 3-49: Build a pivot table that contains the Sum of Sales Amount twice.

Figure 3-50 illustrates the settings that convert the second Sum of Sales Amount field into a month-over-month variance calculation.

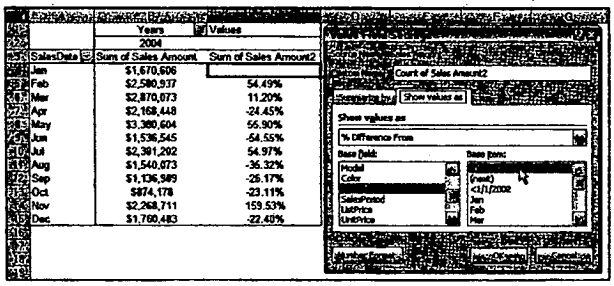


Figure 3-50: Configure the second Sum of Sales Amount field to show month over month variance.

As you can see, after the settings are applied, the pivot table gives you a nice view of raw sales dollar and the variance over last month. You can obviously change the field names (see the section, "Customizing field names," earlier in this chapter) to reflect the appropriate labels for each column.

In the sample data for this chapter, you don't see Months and Years. You have to create them by grouping the SalesDate field. Feel free to review the section, "Creating views by month, quarter, and year," earlier in this chapter to find out how.

To create the view in Figure 3-50, take these actions:

1. **Right-click any value within the target field.**

   In this case, the target field is the second Sum of Sales Amount field.

2. **Select Value Field Settings.**

   The Value Field Settings dialog box appears.

3. **Click the Show Values As tab.**

4. **Select % Difference From from the drop-down list.**

5. **In the Base Field list, select the field that you want the running totals to be calculated against.**

   In most cases, this is a time series like, in this example, the SalesDate field.

6. **In the Base Item list, select the item you want to compare against when calculating the percent variance.**

   In this example, you want to calculate each month's variance to the previous month. Therefore, select the (previous) item.

Chapter 4

Excel Charts for the Uninitiated

In This Chapter

- ▶ Building basic charts
- ▶ Performing common chart tasks
- ▶ Using the best practices to build dashboard charts
- ▶ Using pivot charts

No other tool is more synonymous with dashboards and reports than your old friend, the *chart*. Fast-paced business environments and new technologies have helped move charts from nice-to-have to a vital part of most business analyses. Charts offer instant gratification, allowing users to immediately see relationships, point out differences, and observe trends. No doubt about it; few mechanisms allow you to absorb data faster than a chart.

For those of you who have not yet been initiated to the world of Excel 2007 charting, this chapter gives you the basics of creating and customizing charts in Excel. This chapter also gives you a few best practices when it comes to creating charts for use in dashboards.

Chart Building Basics

Building a chart in Excel in and of itself is not a terribly difficult thing to do. The hard part is getting your mind around what types of chart to use and how best to display your data in a chart. While you go through each chapter of this book, you discover various imaginative ways to give these charts utility and functionality. For now, I start this look at building basic charts by reviewing the most-commonly-used chart types and discussing the customary ways each chart type is employed.

A review of the most-commonly-used chart types

Excel has 11 major chart types with variations on each type. For most business dashboards and reports, you need only a handful of the chart types available in Excel. Take a moment to review some of the chart types most commonly used for reporting:

- **Line chart:** The line chart is one of the most-frequently-used chart types, typically used to show trends over a period of time. Figure 4-1 demonstrates a line chart being used to show revenue by year for three different regions.
- **Pie chart:** Another frequently used chart is the old pie chart. A pie chart represents the distribution or proportion of each data item over a total value (represented by the overall pie). For example, in the pie chart shown in Figure 4-2, you can easily see how much of the total value is made up by each region.

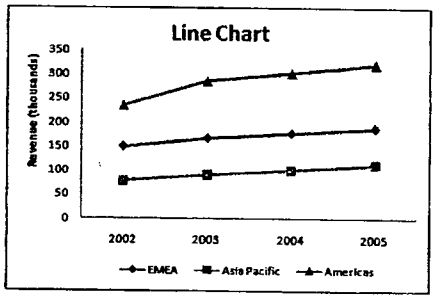


Figure 4-1: Line charts are ideal for showing trends over time.

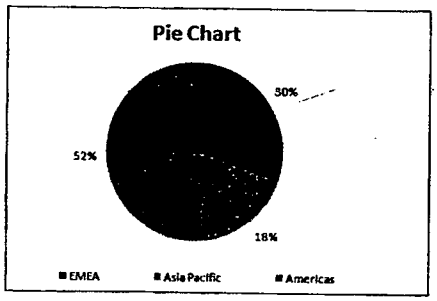


Figure 4-2: Pie charts show the distribution of values within an overall value.

- **Column chart:** Column charts are typically used to compare several items in a specific range of values. Figure 4-3 demonstrates how a column chart could be used to compare the overall revenue performance for each region.
- **Stacked column chart:** A stacked column chart allows you to compare items in a specific range of values as well as show the relationship of the individual sub-items with the whole. For instance, the stacked column chart in Figure 4-4 shows not only the overall revenue for each year but also the proportion of the total revenue made up by each region.
- **Bar chart:** Bar charts are typically used to compare several items in a specific range of values. Figure 4-5 demonstrates how a bar chart could be used to compare the overall revenue performance for a given set of years.

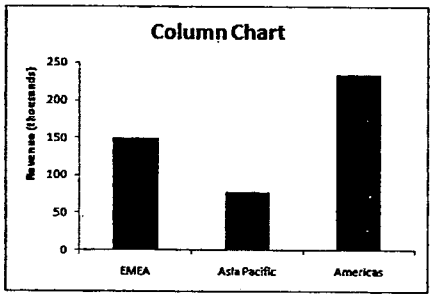


Figure 4-3: Use a column chart to visually compare the values of items.

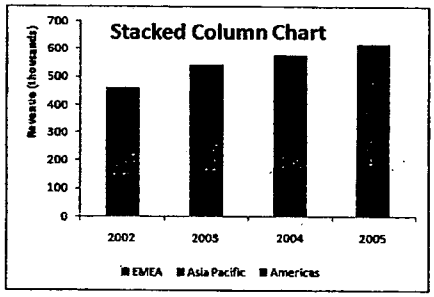


Figure 4-4: Use stacked column charts to show the relationship of sub-items within the compared data values.

- **Stacked bar chart:** Like a bar chart, the stacked bar chart is used for illustrating comparisons between data items. The difference is that a stacked bar chart allows you to show the relationship of individual sub-items in the overall bar that is compared with other bars. For instance, the bar chart in Figure 4-6 shows not only the revenue for each year but also the proportion of the total revenue made up by each region.
- **XY scatter plot chart:** Scatter charts in Excel (also known as XY scatter plot charts) are ideal for showing correlations between two sets of values. The *x* and *y* axes work together to represent data plots on the chart based on the intersection of *x* and *y* values. Figure 4-7 illustrates the correlation between employee performance and competency, demonstrating that employee performance rises when competency improves.
- **Area chart:** Area charts are ideal for clearly illustrating the magnitude of change between two or more data points. For instance, the chart in Figure 4-8 effectively gives a reader a visual feel for the degree of variance between the high and low price for each month.

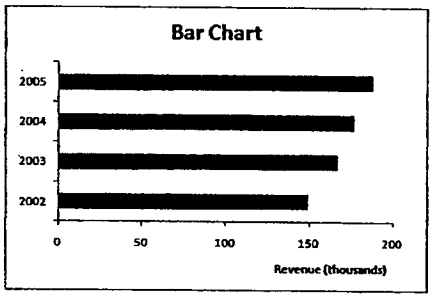


Figure 4-5: Bar charts are ideal for showing differences between data items.

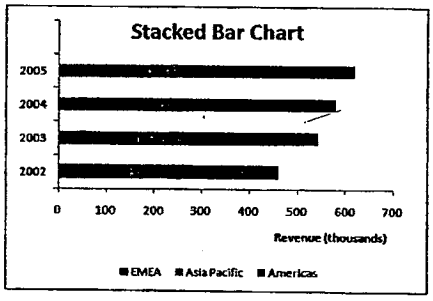


Figure 4-6: Stacked bar charts show the relationship of sub-items within the compared data values.

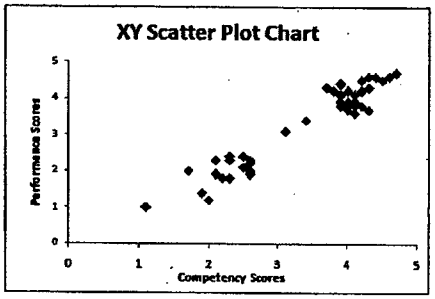


Figure 4-7: Use an XY scatter plot chart to illustrate correlations between two sets of values.

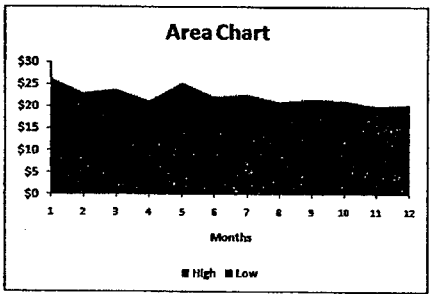


Figure 4-8: Area charts are perfect for illustrating magnitude of change.

To get a detailed review of all chart types available in Excel 2007, pick up a copy of *Excel 2007 Charts* by John Walkenbach (Wiley). This book provides an excellent introduction to every aspect of charting with Excel.

Preparing data for different chart types

The trick to creating a data table to feed your charts is knowing where each value in your table will be used by Excel in the chart. In this section, I show you the appropriate data setup for each chart type and how Excel plots each value in data tables.

Preparing data for line, column, bar, and area charts

Figure 4-9 illustrates the ideal data table for basic line, column, bar, and area charts.

As you can see in Figure 4-9, the ideal data table is laid out in rows and columns — with no blanks within the data range. Also notice that there are both column headers that label each year and row headers that label each region.

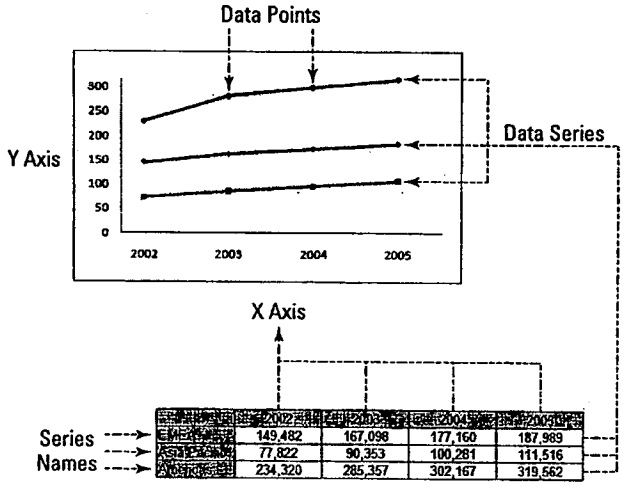


Figure 4-9: The ideal data table for charting line, column, bar, and area charts.

Here is how Excel uses each value in the data table:

- Each **row** in the table becomes a separate data series.
- Each **data value** in the rows is used to create the data point in its respective data series. Excel also creates the *y*-axis scaling based on the data values in your table.
- The **row headers** are used for series names, identifying each series in the legend and other places in the chart.

Preparing data for pie charts

For pie charts, the table setup is a bit different. Because you can have only one data series in a pie chart, the data table would consist of only one column of data with column and row headers. Figure 4-10 illustrates the ideal data table for a pie chart and how each value is used by Excel.

Here's how Excel uses each value in the data table:

- Each **data value** in the table becomes a data point (or slice) in the pie chart.
- The **row headers** are used for category names, identifying each pie slice in the legend and other places in the chart.
- The **column header** is used as the series name.

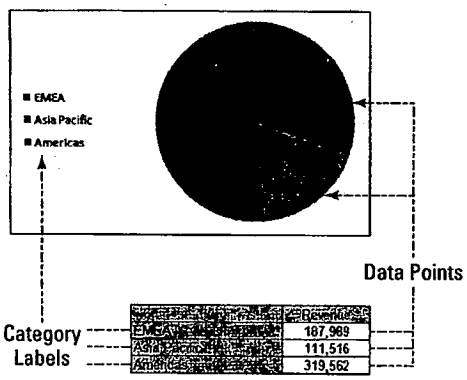


Figure 4-10: The ideal data table for charting pie charts.

Preparing data for XY scatter charts

For XY charts, the table setup consists of two columns, as shown in Figure 4-11. Together, the two columns make up a data point in the scatter chart. The first column holds the *x*-axis coordinates for the data point whereas the second column holds the *y*-axis coordinates for the data point.

Here's how Excel uses each value in this table:

- The **first column** defines the *x*-axis coordinates for each data point.
- The **second column** defines the *y*-axis coordinates for each data point.
- Each **row** in the table is used to plot a data point on the chart.

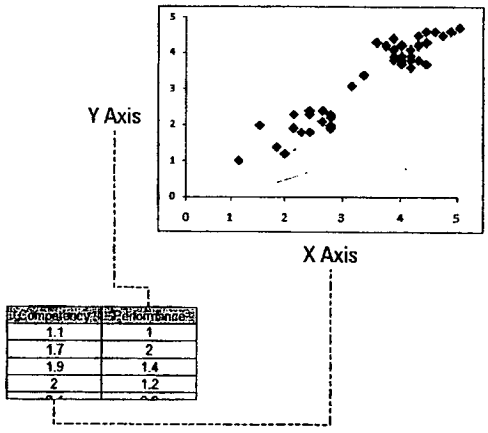


Figure 4-11: The ideal data table for charting XY scatter charts consists of two columns.

Creating a chart from scratch

Enough chitchat. Let's walk through the creation of a basic line chart. Follow these steps:

1. **Start with a data table similar to the one shown in Figure 4-12 (which is conducive to creating line charts, as I discuss earlier in this chapter) and then select the entire range of data.**
2. **Select the Insert tab in the Ribbon.**
3. **In the Charts group, click the drop-down arrow under the Line chart icon and select your desired chart type. (See Figure 4-13.)**

   As soon as you select your desired chart type, Excel creates an embedded chart directly on the same worksheet your data is on. (See Figure 4-14.) From here, you can move, size, and format the chart to suit your needs.

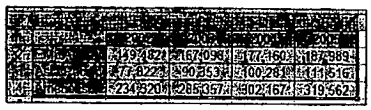


Figure 4-12: Select all the data in your data table.

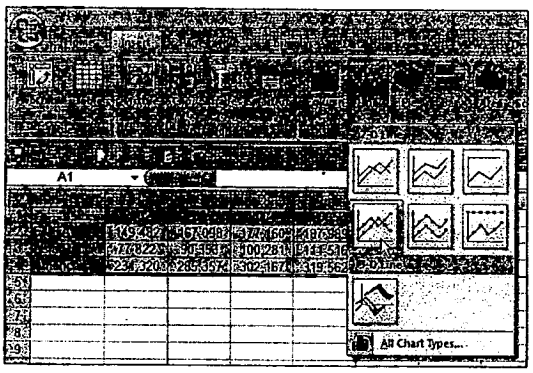


Figure 4-13: Select the desired chart type.

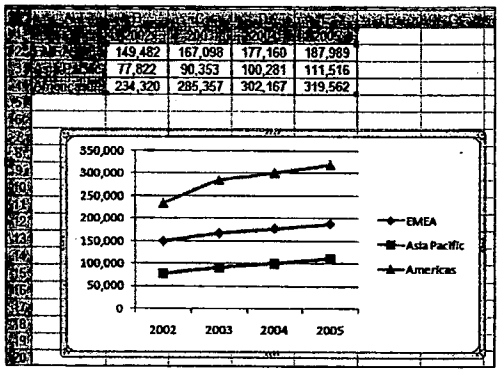


Figure 4-14: By default, Excel creates your charts on the same sheet your data is on.

Charting disparate data

It may not always be convenient to force your data into clean contiguous tables for charting. For example, Figure 4-15 illustrates a table that displays quarter totals along with annual totals for the years 2002, 2003, and 2004.

Imagine you want to use this table to chart only the annual totals (not the quarter totals). It'd be downright inconvenient to create another table that shows only annual totals. That would be one more table you'd have to create and maintain processes for.

The answer to dilemmas like this is to manually select the data you need to chart while holding down the Ctrl key on your keyboard. When you hold down the Ctrl key while you select data ranges, Excel automatically strings the ranges together, recognizing them as one contiguous range.

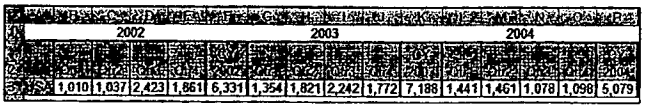


Figure 4-15: What do you do when your data table isn't ideal for charting?

Here are the steps to create a chart using non-standard, disparate data:

1. **Hold down the Ctrl key on your keyboard while you select the data you need to chart.**

   Your goal is to select data that will get you as close to a table that is conducive to charting as possible. Figure 4-16 demonstrates the selection of non-contiguous values.

   From here, you can continue creating your chart as normal.

2. **Select the Insert tab in the Ribbon.**
3. **In the Charts group, select your desired chart type.**

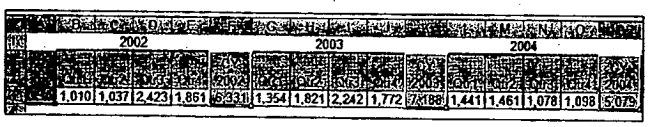


Figure 4-16: Holding down the Ctrl key on your keyboard while selecting data allows you to define a dataset Excel can use for charting.

Common Chart Tasks

It's rare that Excel creates charts so perfect that you don't have to touch them after they're created. In fact, you often have to perform various tasks on your chart to get them looking the way you want them to. This section covers some of those tasks.

Resizing and moving charts

The most common tasks you perform on your charts are to resize and to move them. Here, you find some of the ways you can resize and move your charts.

- **Resizing a chart:** After you create your chart, click it once and a border of sorts appears around it. At certain points around the border, you see chart handles (identified with arrows in Figure 4-17), which you can click and drag to resize your chart in various directions.
- **Moving a chart within the same worksheet:** To move your chart in the same sheet, you can click between the chart handle, as illustrated in Figure 4-17, and drag the chart where you need it.
- **Moving a chart to a different worksheet:** If you need your chart to be placed on a different worksheet within the same workbook, you can use the Move Chart button on the Ribbon. Here's how:

  1. *Click your chart to reveal the Chart Tools context tabs, as shown here in Figure 4-18.*

     These context tabs contain all the commands and functions used to create and format charts.

  2. *Select the Design tab and click the Move Chart.*

     This opens the Move Chart dialog box, as shown in Figure 4-19.

  3. *Use the Object In drop-down list to select the worksheet where you want to move the chart.*

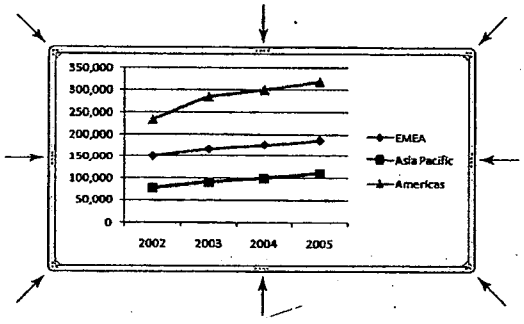


Figure 4-17: Use the chart handles to resize your charts. Click between the handles to move your chart within the same worksheet.

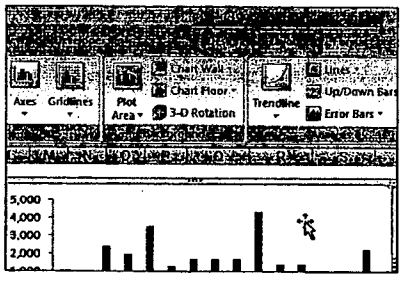


Figure 4-18: Clicking any chart reveals the Chart Tools context tabs.

You can also activate the Move Chart dialog box by right-clicking your chart and selecting Move Chart.

- **Making multiple charts the same size:** When creating multiple charts for a dashboard, you often want to make all charts the same size. Excel makes it easy to resize multiple charts at one time. Here's how:

  1. *Press and hold down the Ctrl key on your keyboard and select all your charts.*

     Interestingly enough, selecting multiple charts activates the Drawing Tools context menu, which exposes formatting options for shapes.

  2. *Under the Format tab, find and adjust the height and width selectors under the Size group, as demonstrated in Figure 4-20.*

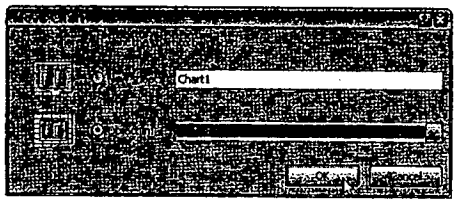


Figure 4-19: Use the Move Chart dialog box to move a chart from one sheet to another.

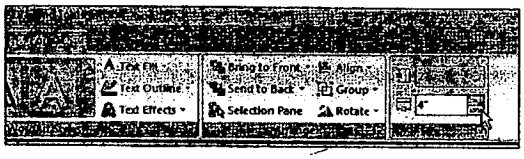


Figure 4-20: Adjust the height and width selectors to resize multiple charts at one time.

Changing chart type

When you create charts, you'll find that it's useful to test how your data looks in various chart types. For example, you may initially create a bar chart but decide a line chart would better display your data. You can easily change the chart type without having to create the chart from scratch.

1. **Click your chart to activate the Chart Tools context tabs.**
2. **Under the Design tab, find and click the Change Chart Type button, as demonstrated in Figure 4-21.**

   The Change Chart Type dialog box appears. (See Figure 4-22.)

   You can also activate the Change Chart Type dialog box by right-clicking your chart and selecting Change Chart Type.
3. **Select the type of chart you want to switch to.**

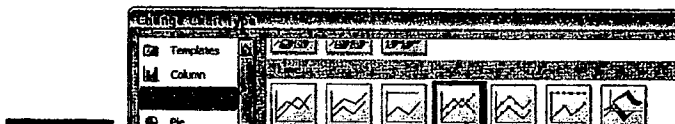


Figure 4-21: Use the Change Chart Type button to change your chart's type.

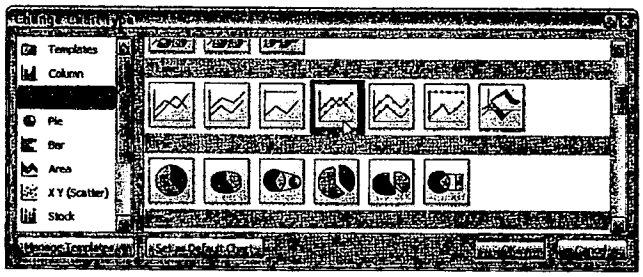


Figure 4-22: The Change Chart Type dialog box.

Creating a combination chart

A *combination chart* is essentially two or more chart types melded into one chart. For example, Figure 4-23 illustrates a combination chart that shows number of households with a computer (column chart) and the number of households with Internet access (line chart).

Why bother with a combination chart? Sometimes showing a data series in a in a different chart type makes it stand out, getting the message across faster and in a more effective way.

Take the example shown in Figure 4-23. The original chart for that example is shown here in Figure 4-24. This chart is okay, but the growth trend for Internet usage is subdued when shown as bars.

To create a combination chart, follow these steps:

1. **Right-click the data you want changed and select Change Series Chart Type. (See Figure 4-25.)**

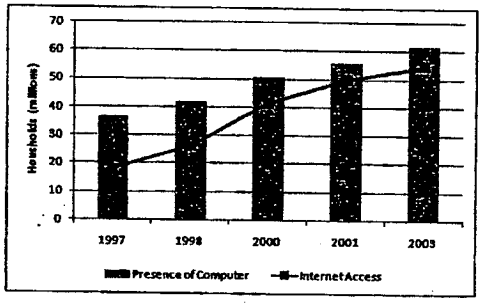


Figure 4-23: A combination chart holds two or more chart types.

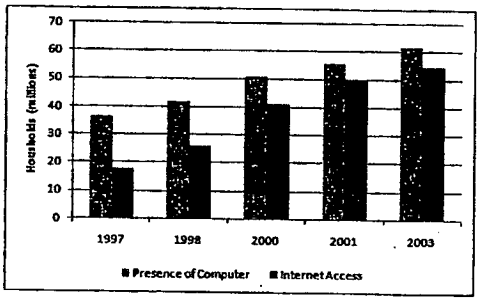


Figure 4-24: This chart shows the same data, but the growth trend for Internet usage is subdued.

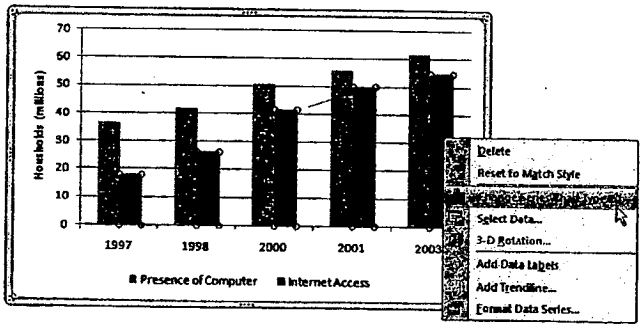


Figure 4-25: To change the chart type of only one data series, right-click that series and select Change Series Chart Type.

The Change Chart Type dialog box appears.

2. **Select the type of chart you want to switch to.**

Selecting and formatting chart elements

All your charts have elements that you can format and customize. Take a moment to review the various ways to get to the formatting options for the elements in your charts.

Selecting elements

The first step in formatting an element of your chart is selecting that element. The easiest way to select an element is to simply right-click it. Why right-click? This way, the shortcut menu that activates gives you a clue to which element you selected and exposes the formatting options for that element. For example, Figure 4-26 demonstrates what you'd get if you right-clicked the gridlines in a chart.

It may sometimes be difficult to physically right-click the chart element you need to format. In this case, you can use Excel's nifty little element selector. To get to it, click your chart and select the Layout tab.

As Figure 4-27 demonstrates, you can use the drop-down list provided to select hard-to-reach elements.

When the desired element is selected, click the Format Selection button (see Figure 4-28) to activate the formatting dialog box for the selected element.

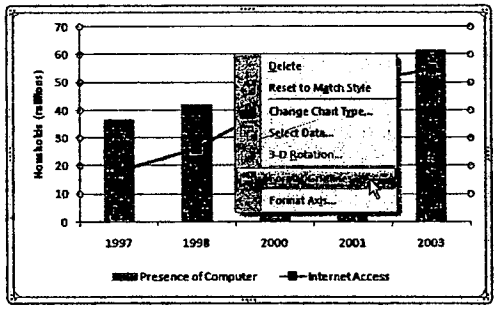


Figure 4-26: Right-clicking a chart element exposes the formatting options for that element.

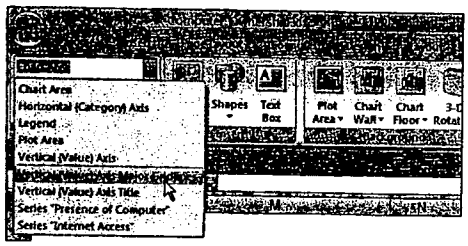


Figure 4-27: Use the Chart Elements drop-down box to select hard-to-reach elements.

Figure 4-28: The Format Selection button activates the formatting dialog box for the selected chart element.

Each data element has its own formatting dialog box that provides various formatting options (that is, fill color, border color, line style, shadow options, 3D options, and so on). Alas, the scope and focus of this book isn't on charting per se, so I don't go through detailed explanations of every formatting option available. To get a detailed review of all formatting options available in Excel 2007, pick up a copy of *Excel 2007 Charts For Dummies* by Ken Bluttman (Wiley). In his book, Ken does an excellent job of reviewing every aspect of charting with Excel.

Using the chart tools context tabs to apply formatting

As I discuss earlier in this chapter, clicking a chart activates the Chart Tools context tabs. In these tabs, a plethora of formatting options allows you to easily customize your charts. Here's a high-level overview of the options on each tab:

- **The Design Tab:** The Design tab (see Figure 4-29) provides tools that allow you to quickly apply predefined layouts and styles to your charts. Although some the available layouts and styles don't comply with standard dashboarding best practices (see Chapter 16), the ability to apply predefined settings can often give you a one-touch head start on applying formatting that can be adjusted appropriately.
- **The Layout Tab:** The Layout tab provides tools that allow for one-touch formatting of major chart elements, such as axes, labels, and backgrounds. For instance, Figure 4-30 demonstrates how you can turn off gridlines simply by using the options under the Gridlines button. Here, you can practically format your entire chart with just a few clicks of the mouse.
- **The Format Tab:** The Format tab (see Figure 4-31) is based on the Format tab used for shapes in Office. The idea behind the Format tab is to choose any chart element and format it as if it was an independent shape, applying effects, such as Glow, Chiseled, and Soft Edges. This tab also holds WordArt effects, allowing you to apply effects to your chart titles and labels. As a matter of design principle, many of the options on the Format tab don't comply with standard charting best practices (see Chapter 16). It's best to avoid this tab when building charts for use in dashboards.

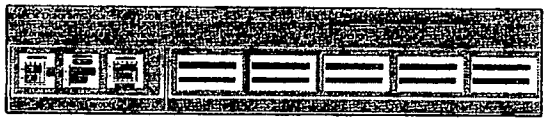


Figure 4-29: The Design tab holds predefined layouts and styles, which you can apply to your charts.

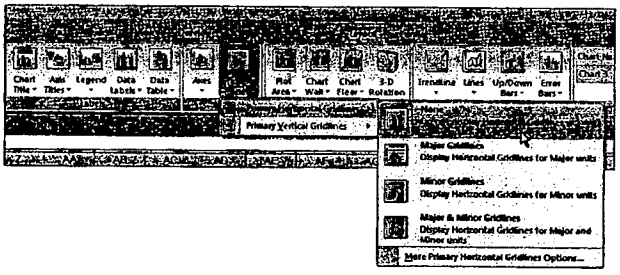


Figure 4-30: The Layout tab allows for one-touch formatting of your charts.

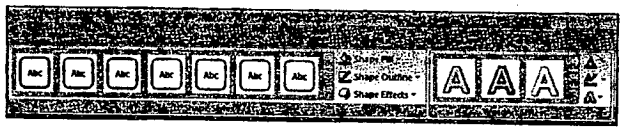


Figure 4-31: The Format tab holds the cosmetic formatting options for shapes and WordArt.

Working with Pivot Charts

No chapter on Excel charts would be complete without a look at one of the more amazing charts in Excel — the pivot chart. As the name implies, a *pivot chart* is a graphical representation of the data in a pivot table. What makes a pivot chart so amazing is that it's directly tied to a pivot table, allowing you to *interactively* add, remove, filter, and refresh data fields inside the chart just as you would do in your pivot table. There's no easier way to create a dynamic reporting tool in Excel than using the powerful combination of pivot tables and pivot charts.

In this section, you explore pivot charts and discover just how easy it can be to build interactive charting into your reporting mechanisms.

If you're unfamiliar with pivot tables, you may find this section on pivot charts a bit confusing. Feel free to visit Chapter 3 for a detailed look at pivot tables and how they work.

Pivot chart fundamentals

To demonstrate how simple it is to create a pivot chart, look at the pivot table in Figure 4-32.

As you can see, this pivot table provides for a simple view of sales by market. The Region and Segment fields in the Filter Area let you parse out sales by region and business segment.

Building a pivot chart on top of this pivot table would do two things. First, it'd allow for an instant view of the performance of each market. Second, it'd create an interactive charting mechanism that allows you to filter by region and business segment.

Region	(All)
Segment	(All)

Market	Sales Amount
Australia	1,622,869
Canada	14,463,280
Central	7,932,852
France	4,647,454
Germany	2,051,548
Northeast	6,966,674
Northwest	12,523,063
Southeast	7,908,318
Southwest	18,598,027
United Kingdom	4,311,127

Figure 4-32: Start with an existing pivot table.

You can find the sample file for this chapter on this book's companion Web site.

Follow these steps to create the pivot chart:

1. **Place your cursor anywhere inside the pivot table and click the Insert tab on the Ribbon.**
2. **In the Charts group, choose the chart type you want to use for your pivot chart, just as you would when charting standard data. (In this example, click the Column chart icon and select the first 2D column chart.)**

   As you can see in Figure 4-33, choosing the chart type immediately causes a column chart to appear on the same sheet as your pivot table.

You now have a chart that's a visual representation of your pivot table. More than that, because the pivot chart is tied to the underlying pivot table, changing the pivot table in any way changes the chart.

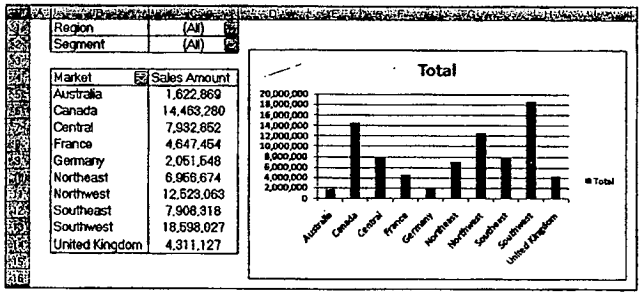


Figure 4-33: A visual representation of your pivot table.

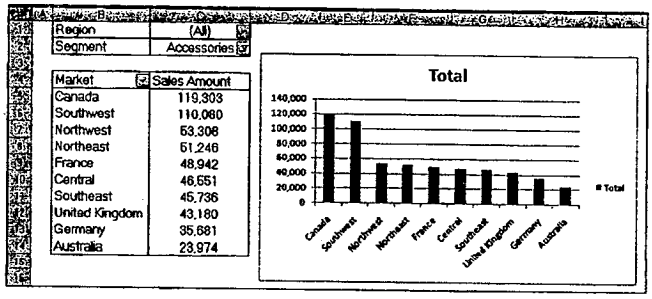
For instance, try sorting the pivot table by Sales Amount and filtering for Accessories in the Segment field. Figure 4-34 illustrates how your pivot chart keeps up with those changes.

Again, if you're unfamiliar with actions such as sorting and filtering in a pivot table, you may find it valuable to check out Chapter 3 for a refresher.

In addition to being able to reflect the existing data in a pivot table, a pivot chart also captures any new data you add to the pivot table. For example, Figure 4-35 demonstrates how adding the Region field to the pivot table adds a region dimension to your chart.

Notice that pivot charts don't display the subtotals shown in their underlying pivot tables. Pivot charts ignore all subtotals and the grand total.

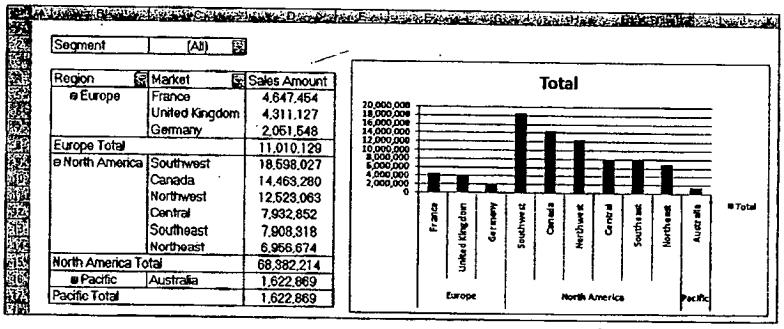
The cool thing is that your pivot table doesn't even have to be visible. Take a look at Figure 4-36. Notice that rows 3–15 are hidden. Those rows hold the pivot table. All I have showing here is the Filter Area and the pivot chart. This gives me the look and feel of an interactive reporting tool.



Region	(All)
Segment	Accessories

Market	Sales Amount
Canada	119,303
Southwest	110,080
Northwest	53,308
Northeast	51,246
France	48,942
Central	46,651
Southeast	45,736
United Kingdom	43,180
Germany	35,681
Australia	23,974

Figure 4-34: Your pivot chart reflects what's in your pivot table.



Segment	(All)

Region	Market	Sales Amount
⊟ Europe	France	4,647,454
	United Kingdom	4,311,127
	Germany	2,051,548
Europe Total		11,010,129
⊟ North America	Southwest	18,598,027
	Canada	14,463,280
	Northwest	12,523,063
	Central	7,932,852
	Southeast	7,908,318
	Northeast	6,956,674
North America Total		68,382,214
⊟ Pacific	Australia	1,622,869
Pacific Total		1,622,869

Figure 4-35: Your pivot chart displays the same fields your underlying pivot table displays, even if the fields are layered.

Going straight to pivot chart

You don't have to build a pivot table before creating a pivot chart. You can go straight from your raw data to a pivot chart by following these steps:

1. Click any single cell in your data source and select the Insert tab.
2. Select PivotTable from the Tables group and choose PivotChart from the drop-down list.
3. When the PivotChart dialog box activates, go through the same steps you'd take if you were building a standard pivot table.

And remember, because pivot charts are essentially a graphical representation of their source pivot tables, they automatically update when you refresh your pivot tables. Think about the possibilities. On the power of pivot tables and pivot charts alone, you can create a fairly robust reporting mechanism without one line of programming.

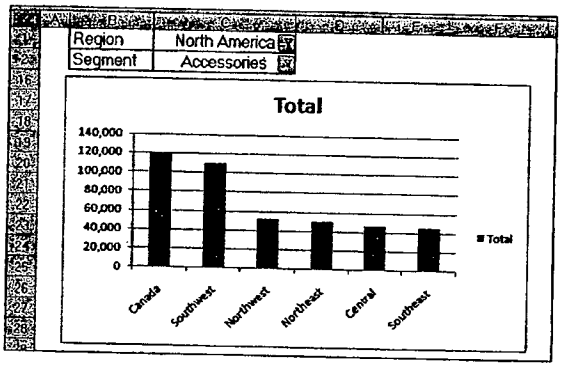


Figure 4-36: You can hide your pivot table to get the look and feel of an interactive reporting tool.

Pivot charts and the x and y axes

One mistake most people naturally make with pivot charts is to assume Excel places the values in the column area of the pivot table in the *x*-axis of the pivot chart. After all, the column area of a pivot table is oriented to go across like the *x*-axis of a chart.

Take Figure 4-37, for instance. The structure chosen shows the SalesPeriods in the column area and the Region in the row area. This structure works fine in the pivot table view.

Now, you would instinctively expect to see sales periods across the *x*-axis and lines of business along the *y*-axis. However, as shown in Figure 4-38, building a pivot chart on top of this format results in the Region in the *x*-axis and the SalesPeriod in the *y*-axis.

So why does the structure in your pivot table not translate to a clean pivot chart? Well in a pivot chart, both the *x*-axis and the *y*-axis correspond to specific areas in your pivot table.

- ✔ ***x*-axis:** Corresponds to the row area in your pivot table and makes up the *x*-axis of your pivot chart.
- ✔ ***y*-axis:** Corresponds to the column area in your pivot table and makes up the *y*-axis of your pivot chart.

Although it may seem counterintuitive at times, following these guidelines ensures you have a clean pivot chart. Figure 4-39 shows the same pivot table rearranged to show SalesPeriod in the row area and Region in the column area. Although this format isn't ideal for a pivot table view, it does allow your pivot chart to give you the effect you're looking for.

This new arrangement generates the pivot chart shown in Figure 4-40.

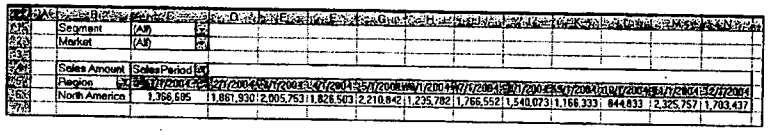


Figure 4-37: The placement of data works in a pivot table.

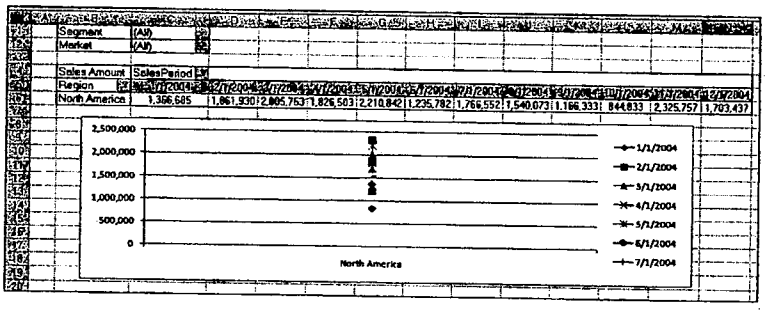
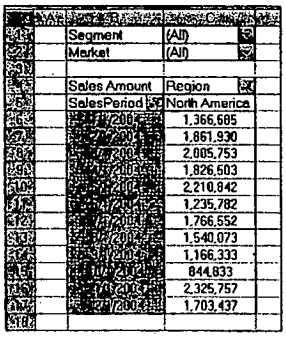


Figure 4-38: Although the pivot table is nicely structured, it doesn't work in a pivot chart.



	Segment	(All)
	Market	(All)
	Sales Amount	Region
	SalesPeriod	North America
	1/1/2004	1,366,685
	2/1/2004	1,861,930
	3/1/2004	2,005,753
	4/1/2004	1,826,603
	5/1/2004	2,210,842
	6/1/2004	1,235,782
	7/1/2004	1,766,552
	8/1/2004	1,540,073
	9/1/2004	1,166,333
	10/1/2004	844,833
	11/1/2004	2,325,757
	12/1/2004	1,703,437

Figure 4-39: Rearranged data to better support pivot charts.

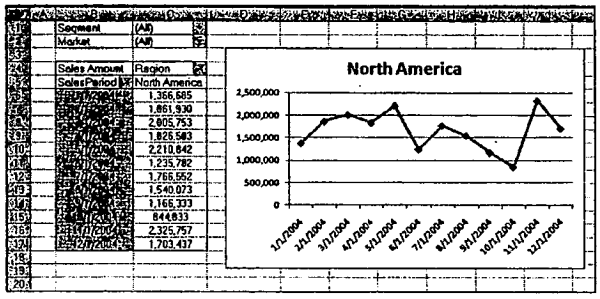


Figure 4-40: You now have a pivot chart that makes sense.

Pivot charts formatting limitations

Microsoft has worked hard to ensure that the overall look and feel of pivot charts in Excel 2007 are very much that of standard charts. As a result, you can customize your pivot charts just as you would a standard chart, formatting each element of a pivot chart using the same actions and commands outlined earlier in this chapter.

That being said, keep in mind a few formatting limitations when working with pivot charts:

- **Chart types:** You can't use XY (scatter) charts, bubble charts, or stock charts when creating a pivot chart.
- **Trend lines:** Applied trend lines are lost when the underlying pivot table changes.
- **Data label:** The data labels in the pivot chart can't be resized. However, you can change the font of a data label, and making the font bigger or smaller indirectly resizes the data label.

Chapter 5

The New World of Conditional Formatting

In This Chapter

- Using predefined formatting scenarios
- Creating custom formatting rules
- Useful ways to implement conditional formatting
- Applying conditional formatting to pivot tables

Conditional formatting is the term given to the functionality whereby Excel dynamically changes the formatting of a value, a cell, or a range of cells based on a set of conditions you define. Conditional formatting allows you to look at your Excel reports and make split-second determinations as to which values are *good* and which are *bad,* all based on formatting.

Microsoft has dramatically enhanced this functionality in Excel 2007. In Excel 2007, conditional formatting includes a more robust set of visualizations and predefined formatting rules. These enhancements allow you to quickly and easily build dashboard-style reporting that goes far beyond the traditional red, yellow, and green designations.

In this chapter, you're introduced to the new world of conditional formatting in Excel 2007, discovering how to leverage this functionality to enhance your dashboards and reports.

Applying Basic Conditional Formatting

Thanks to the many predefined scenarios offered with Excel 2007, you can literally apply some basic conditional formatting with a few mouse clicks. To get a first taste of what you can do with this functionality, click the Conditional Formatting button found on the Home tab of the Ribbon. (See Figure 5-1.)

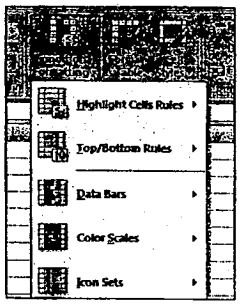


Figure 5-1: The predefined conditional formatting scenarios available in Excel.

As you can see, there are five categories of predefined scenarios: Highlight Cells Rules, Top/Bottom Rules, Data Bars, Color Scales, and Icon Sets.

Take a moment to review what each category of predefined scenarios allows you to do.

Highlight Cells Rules

The formatting scenarios under the Highlight Cells Rules category, as shown in Figure 5-2, allow you to highlight those cells whose values meet a specific condition.

The thing to remember about these scenarios is that they work very much like an `If...then...else` statement. That is to say if the condition is met, the cell is formatted; if the condition is not met, the cell is not touched.

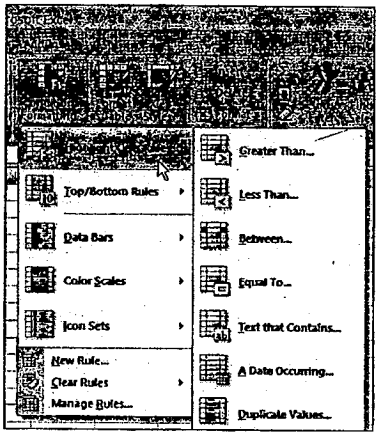


Figure 5-2: The Highlight Cells Rules scenarios apply formats if specific conditions are met.

The scenarios under the Highlight Cells Rules category are pretty self-explanatory. Here's a breakdown of each scenario:

- **Greater Than:** This scenario allows you to conditionally format a cell whose value is greater than a specified amount. For instance, you can tell Excel to format those cells that contain a value greater than 50.
- **Less Than:** This scenario allows you to conditionally format a cell whose value is less than a specified amount. For instance, you can tell Excel to format those cells that contain a value less than 100.
- **Between:** This scenario allows you to conditionally format a cell whose value is between two given amounts. For example, you can tell Excel to format those cells that contain a value between 50 and 100.
- **Equal To:** This scenario allows you to conditionally format a cell whose value is equal to a specified amount. For instance, you can tell Excel to format those cells whose values are exactly 100.
- **Text That Contains:** This scenario allows you to conditionally format a cell that contains any form of a given text you specify as a criterion. For example, you can tell Excel to format those cells that contain the text *North*.
- **A Date Occurring:** This scenario allows you to conditionally format a cell whose contents contain a date occurring in a specified period relative to today's date. For example, Yesterday, Last Week, Last Month, Next Month, Next Week, and so on.
- **Duplicate Values:** This scenario allows you to conditionally format both duplicate values and unique values in a given range of cells. This rule was designed more for data cleanup than dashboarding, enabling you to quickly identify either duplicates or unique values in your dataset.

For your first encounter with conditional formatting, take a moment to go through an example of how to apply one of these scenarios. In this example, you highlight all values greater than a certain amount. Follow these steps:

1. **Start with a set of data similar to the one illustrated in Figure 5-3 and select the range of cells to which you need to apply the conditional formatting.**

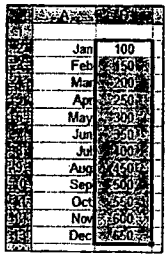


Figure 5-3: Select the cells you need formatted.

Be sure to select all the cells to which you want to apply the conditional formatting rule. Selecting one cell results in only that one cell being conditionally formatted.

2. **Choose the Greater Than scenario found under the Highlight Cells Rules category. (Refer to Figure 5-2.)**

   The Greater Than dialog box appears. (See Figure 5-4.)

3. **Define a value that triggers the conditional formatting.**

   You can either type the value (400 in this example) or you can reference a cell that contains the trigger value. Also in this dialog box, you can use the drop-down list to specify the format you want applied.

4. **Click OK and you immediately see the formatting rule applied to the selected cells. (See Figure 5-5.)**

Now you may be thinking, what's the point? Wouldn't it have been just as easy to manually format the cells greater than zero? Sure, but the benefit of a conditional formatting rule is that Excel automatically re-evaluates the rule each time a cell is changed (provided that cell has a conditional formatting rule applied to it).

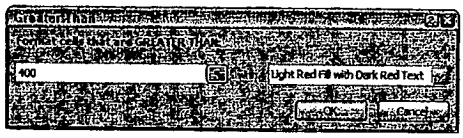
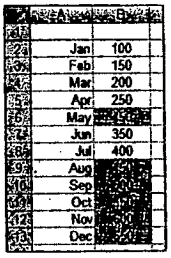


Figure 5-4: Each scenario has its own dialog box that you can use to define the trigger values and the format for each rule.

	A	B
1		
2	Jan	100
3	Feb	150
4	Mar	200
5	Apr	250
6	May	300
7	Jun	350
8	Jul	400
9	Aug	450
10	Sep	500
11	Oct	550
12	Nov	600
13	Dec	650

Figure 5-5: Cells greater than 400 are now formatted.

For instance, if I changed a value in the example dataset to 450, as in the value for May in Figure 5-6, the formatting would automatically change because all the cells in the dataset have the conditional formatting applied to them.



	A	B
1		
2	Jan	100
3	Feb	150
4	Mar	200
5	Apr	250
6	May	450
7	Jun	350
8	Jul	400
9	Aug	
10	Sep	
11	Oct	
12	Nov	
13	Dec	

Figure 5-6: Cells with a conditional formatting rule applied are re-evaluated each time their value changes.

Top/Bottom Rules

The formatting scenarios under the Top/Bottom Rules category, as shown in Figure 5-7, allow you to highlight those cells whose values meet a given threshold.

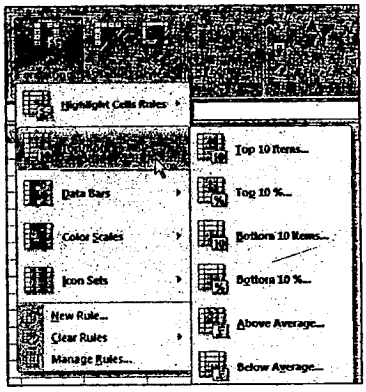


Figure 5-7: The Top/Bottom Rules scenarios apply formats if specific thresholds are met.

Like the Highlight Cells Rules scenarios, these scenarios work like If . . . then . . . else statements — if the condition is met, the cell is formatted; if the condition is not met, the cell remains untouched.

Here's a breakdown of each scenario under the Top/Bottom Rules category:

- **Top 10 Items:** Although the name doesn't suggest it, this scenario allows you to specify any number of cells to highlight based on individual cell values (not just ten). For example, you can highlight the top five cells whose values are among the five largest numbers of all the cells selected.
- **Top 10 %:** This scenario is similar to the Top 10 Items scenario, except the selected cells are evaluated on a percentage basis. Again, don't let the name fool you; the percent selection doesn't have to be ten. For instance, you can highlight the cells whose values make up the top 20 percent of the total values of all the selected cells.
- **Bottom 10 Items:** This scenario allows you to specify the number of cells to highlight based on the lowest individual cell values. Again, don't let the name fool you. You can specify any number of cells to highlight — not just ten. For example, you can highlight the bottom 15 cells whose values are within the 15 smallest numbers among all the cells selected.
- **Bottom 10 %:** This scenario is similar to the Bottom 10 Items scenario, expect the selected cells are evaluated on a percentage basis. For instance, you can highlight the cells whose values make up the bottom 15 percent of the total values of all the selected cells.
- **Above Average:** This scenario allows you to conditionally format each cell whose value is above the average of all cells selected.
- **Below Average:** This scenario allows you to conditionally format each cell whose value is below the average of all cells selected.

In this example, you conditionally format all cells whose values are within the top 40 percent of the total values of all cells.

To avoid overlapping different conditional formatting scenarios, you may want to clear any conditional formatting you have previously applied before applying a new scenario. That is to say, you can delete the conditional formatting you may have already applied.

To clear the conditional formatting for a given range of cells, select the cells and then select Conditional Formatting from the Home tab of the Ribbon. Here you find the Clear Scenarios selection. Click Clear Scenarios and select whether you want to clear conditional formatting for the entire sheet or only the selected cells.

Then follow these steps to apply your first Top/Bottom Rules scenario:

1. **Start with a set of data similar to the one illustrated in Figure 5-8 and select the range of cells to which you need to apply the conditional formatting.**
2. **Choose the Top 10 % scenario found under the Top/Bottom Scenarios category. (Refer to Figure 5-7.)**

   The Top 10% dialog box appears. (See Figure 5-9.)
3. **Define the threshold that triggers the conditional formatting.**

   In this example, I enter **40**. Also, in this dialog box, you can use the drop-down list to specify the format you want applied.
4. **Click OK and you immediately see the formatting scenario applied to the selected cells. (See Figure 5-10.)**

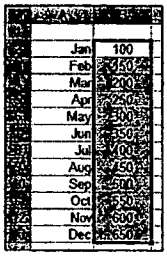
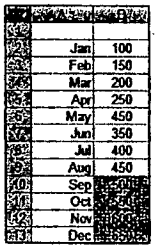


Figure 5-8: Select the cells you need formatted.

Figure 5-9: Each scenario has its own dialog box that you can use to define the trigger values and the format for each scenario.



	Jan	100
	Feb	150
	Mar	200
	Apr	250
	May	450
	Jun	350
	Jul	400
	Aug	450
	Sep	500
	Oct	500
	Nov	1600
	Dec	3500

Figure 5-10: With conditional formatting, you can easily see that September through December makes up 40 percent of the total value in this dataset.

Data Bars, Color Scales, and Icon Sets

Data Bars, Color Scales, and Icon Sets are new to Excel and present you with some new and interesting ways to highlight data. Here are a few examples of the types of formatting you can get from these scenarios:

- **Data Bars:** Data Bars fill each cell you're formatting with mini-bars in varying length, indicating the value in each cell relative to other formatted cells. Excel essentially takes the largest and smallest values in the selected range and calculates the length for each bar. To apply Data Bars to a range, do the following:

  1. *Select the target range of cells to which you need to apply the conditional formatting.*
  2. *Choose Data Bars from the Conditional Formatting menu in the Home tab on the Ribbon. (See Figure 5-11.)*

  As you can see in Figure 5-12, the result is essentially a mini-chart within the cells you selected.

- **Color Scales:** Color Scales fill each cell you're formatting with a color, varying in scale based on the value in each cell relative to other formatted cells. Excel essentially takes the largest and smallest values in the selected range and determines the color for each cell. To apply Color Scales to a range, do the following:

  1. *Select the target range of cells to which you need to apply the conditional formatting.*

2. *Choose Color Scales from the Conditional Formatting menu in the Home tab on the Ribbon. (See Figure 5-13.)*

As you can see in Figure 5-14, the result is a kind of heat-map within the cells you selected.

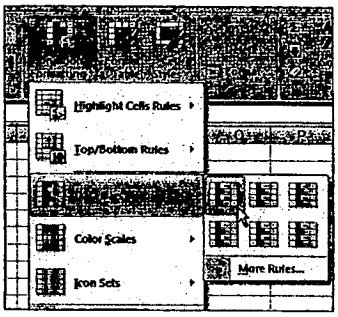


Figure 5-11: Applying Data Bars.

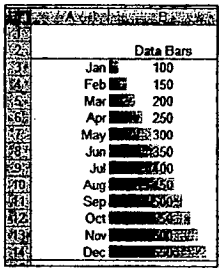


Figure 5-12: Conditional formatting with Data Bars.

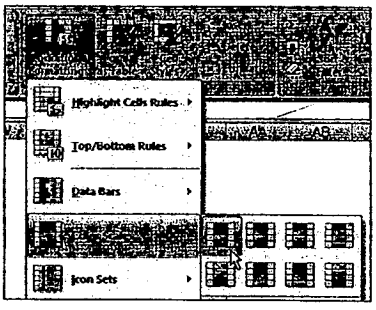


Figure 5-13: Applying Color Scales.

- **Icon Sets:** Icon Sets are sets of symbols that are inserted in each cell you're formatting. Excel determines which symbol to use based on the value in each cell relative to other formatted cells. To apply an Icon Set to a range, do the following:

  1. *Select the target range of cells to which you need to apply the conditional formatting.*
  2. *Choose Icon Set from the Conditional Formatting menu in the Home tab on the Ribbon.*

  As you can see in Figure 5-15, you can choose from a menu of Icon Sets varying in shape and colors.

  Figure 5-16 illustrates how each cell is formatted with a symbol indicating each cell's value based on the other cells.

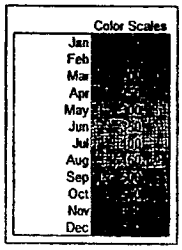


Figure 5-14: Conditional formatting with Color Scales.

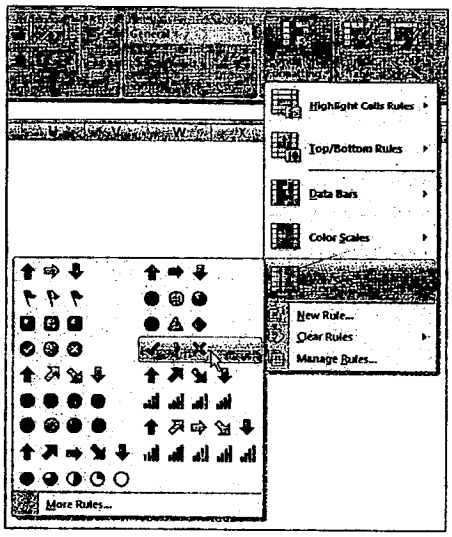


Figure 5-15: Applying Icon Sets.

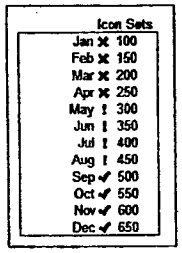


Figure 5-16: Conditional formatting with Icon Sets.

Conditional formatting is one of those functions in Excel that offers countless ways of achieving a result. The examples you just covered only scratch the surface of the myriad of things you can do with conditional formatting. Alas, the focus of this book doesn't include a detailed look into every aspect of conditional formatting.

For a more comprehensive treatment of conditional formatting, take a gander at *Excel 2007 For Dummies* by Greg Harvey (Wiley). There, you find a whole chapter dedicated to the ins and outs of conditional formatting.

Getting Fancy with Conditional Formatting

The title says it all, folks. In this section, you explore a few techniques that allow you to get fancy with your conditional formatting. The next few examples are geared toward using conditional formatting to enhance your dashboards and reports.

Adding your own formatting rules manually

In this first example, I want to show you that you can create your own formatting rules manually. That is to say, you don't have to use one of the predefined scenarios offered by Excel. Why would you want to go through manually creating a formatting rule? Well, creating your own formatting rules helps you better control how cells are formatted and allows you to do things you couldn't do with the predefined scenarios.

For example, a useful conditional formatting rule is to tag all above average values with a check icon, and all below average values get an X icon. Figure 5-17 demonstrates this.

Now, the *above average* and *below average* scenarios built into Excel allow you to format only cell and font attributes; they don't enable the use of Icon Sets. You can imagine why Icon Sets would be better on a dashboard than just color variances. Icons and shapes do a much better job at conveying your message, especially when your dashboard is printed in black and white.

To get started in creating your first custom formatting rule, open the `Chapter 5 Sample File` found among the sample files on this book's companion Web site. When the file is open, go to the Create Rule by Hand tab. Then follow these steps:

1. **Select the target range of cells to which you need to apply the conditional formatting, select** the Conditional Formatting button found on the Home tab of the Ribbon, then **select New Rule (see Figure 5-18).**

   This opens the New Formatting Rule dialog box, as shown in Figure 5-19. When you look through the rule types at the top of this dialog box, you'll recognize some of them from the predefined scenario choices that I discuss earlier in this chapter.

REGION	MARKET		Sales
North	Great Lakes	✗	70,261
North	New England	✓	217,858
North	New York North	✗	157,774
North	New York South	✗	53,670
North	North Carolina	✗	124,600
North	Ohio	✗	100,512
North	Shenandoah Valley	✗	149,742
South	Florida	✗	111,606
South	Gulf Coast	✓	253,703
South	Illinois	✗	129,148
South	Indiana	✗	152,471
South	Kentucky	✓	224,524
South	South Carolina	✓	249,535
South	Tennessee	✓	307,490
South	Texas	✓	180,167
West	California	✓	190,264
West	Central	✗	133,628
West	Colorado	✗	134,039
West	North West	✗	120,143
West	Southwest	✓	248,098
West	Topeka	✓	222,389

Figure 5-17: With custom formatting, you can tag above-average values with a check and the below-average values with an X.

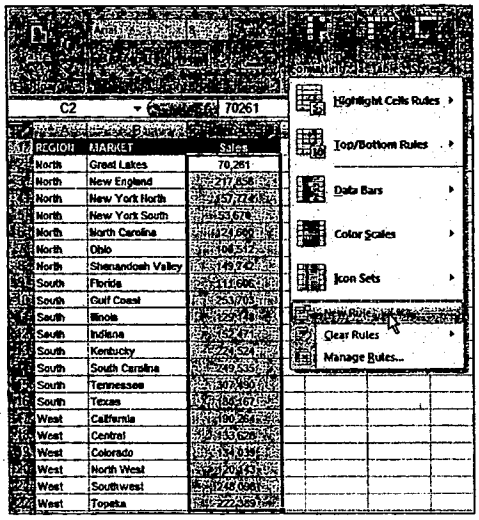


Figure 5-18: Select the target range and then select New Rule.

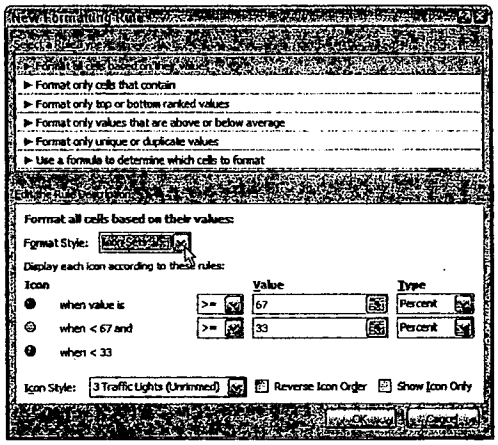


Figure 5-19: Select Icon Sets from the Format Style drop-down list.

Format All Cells Based On Their Values: This selection measures the values in the selected range against each other. This selection is handy for finding general anomalies in your dataset.

Format Only Cells That Contain: This selection applies conditional formatting to those cells that meet a specific criterion you define. This selection is perfect for comparing values against a defined benchmark.

Format Only Top or Bottom Ranked Values: This selection applies conditional formatting to those cells that are ranked in the top or bottom *n*th number or percent of all the values in the range.

Format Only Values That are Above or Below the Average: This applies conditional formatting to those values that are mathematically above or below the average of all values in the selected range.

Format Only Unique and or Duplicate Values: This selection allows you to highlight unique and/or duplicate values in the selected range. This rule comes in handy in the data-cleanup and analysis phase of reporting.

Use a Formula to Determine Which Cells to Format: This selection evaluates values based on a formula you specify. If a particular value evaluates to true, the conditional formatting is applied to that cell. This selection is used typically when applying conditions based on the results of an advanced formula or mathematical operation.

Data Bars, Color Scales, and Icon Sets can be used only with the Format All Cells Based On Their Values rule type.

2. **Ensure that the Format All Cells Based On Their Values rule type is selected and then use the Format Style drop-down list to switch to Icon Sets. (Refer to Figure 5-19.)**

   Use the various inputs and drop-down lists to define exactly what you're looking for, as follows.

3. **Click the Icon Style drop-down list to select your desired Icon Set.**

   In this example, select 3 Symbols (Uncircled).

4. **Change both Type drop-down lists to Formula.**

   At this point, your dialog box should look similar to Figure 5-20.

5. **Put a formula in each of the Value boxes, as shown in Figure 5-20.**

   Let me explain the idea here. Excel assesses every cell in your target range to see if its contents match the logic in each Value box in order (top box first). If a cell contains a number or text that evaluates true to the first Value box, the first icon is applied and Excel moves on to the next cell in your range. If not, Excel continues down each Value box until one of them evaluates to true. If the cell being assessed doesn't fit any of the logic placed in the Value boxes, Excel automatically tags that cell with the last icon.

   In this example, you want your cells to get a check icon only if the value of that cell is greater than (or equal to) the average of the total values. Otherwise, you want Excel to skip right to the X icon and apply the X.

6. **In each Value Box, enter** =Average($C$2:$C$22).

This tells Excel that the value in each cell must be greater than the average of the entire dataset in order to get the check icon.

When a condition is met for a cell, Excel stops evaluating that cell and moves on to the next one.

At this point, your dialog box should look like the one shown in Figure 5-21.

7. **Press OK to apply your conditional formatting.**

If all went well, your table should look like Figure 5-17.

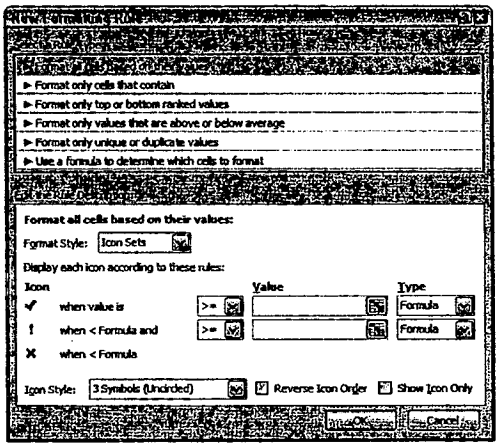


Figure 5-20: The New Formatting Rule dialog box, completed to the end of step 4.

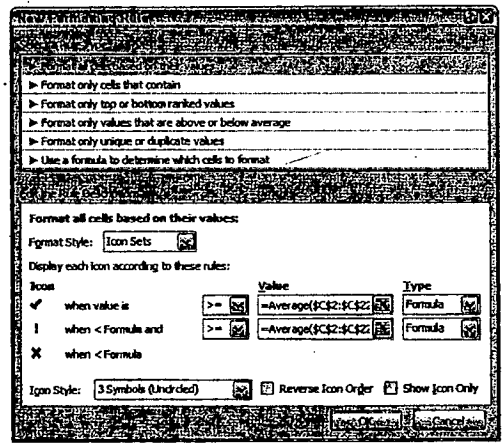


Figure 5-21: Add a formula to check if the value of that cell is greater than (or equal to) the average of the total values.

Showing only one icon

In many cases, you may not need to show all icons when applying the Icon Set. In fact, showing too many icons at one time may only serve to obstruct the data you're trying to convey in your dashboard.

Here's a simple example. The table in Figure 5-22 shows a table that has conditional formatting already applied. Here, all values less than zero are tagged with an X whereas values greater than zero are tagged with a check. Imagine that you only want to show the X icons because those are the ones you want to draw attention to.

12	[illegible]	2003	2004
13	Connecticut	✗	(22,976)
14	Maine	✓	1,068
15	Massachusetts	✓	8,230
16	New Hampshire	✗	(74,195)
17	Rhode Island	✗	(21,130)
18	Vermont	✗	(2,830)
19	Delaware	✗	(10,759)
10	District of Columbia	✓	3,428
11	Maryland	✗	(6,506)
12	New Jersey	✓	31,452
13	New York	✗	(25,166)
14	Pennsylvania	✗	(5,170)
15	Illinois	✓	58,156
16	Indiana	✗	(56,991)
17	Michigan	✓	1,936
18	Ohio	✗	(6,430)
19	Wisconsin	✗	(2,217)

Figure 5-22: Too many icons can hide the items you want to draw attention to.

The trick to showing only one icon is to add a second conditional formatting rule where the items you don't want formatted are given a blank formatting rule.

In this example, you want to remove the check icons. The cells that contain those icons all have values above zero. Therefore, you first need to add a condition for all cells whose values are greater than zero.

1. **Highlight all the cells in the table.**
2. **Choose the Greater Than scenario found under the Highlight Cells Rules category.**

   Refer to Figure 5-2 if you have trouble finding the Greater Than scenario.

   The Greater Than dialog box opens.
3. **Enter 0 in the input, select Custom Format from the drop-down list, and click OK twice to close all dialog boxes.**

4. **Select the target range of cells and then select Manage Rules, as demonstrated in Figure 5-23.**

   This opens the Conditional Formatting Rules Manager dialog box, as shown in Figure 5-24. Here notice that both rules are shown. The idea is to tell Excel to stop evaluating those cells that meet the first condition. This way, they'll never be evaluated by the second condition.

5. **Place a check in the Stop if True check box. (See Figure 5-24.)**

6. **Click OK to apply your changes.**

   As you can see in Figure 5-25, only the X icons are now shown.

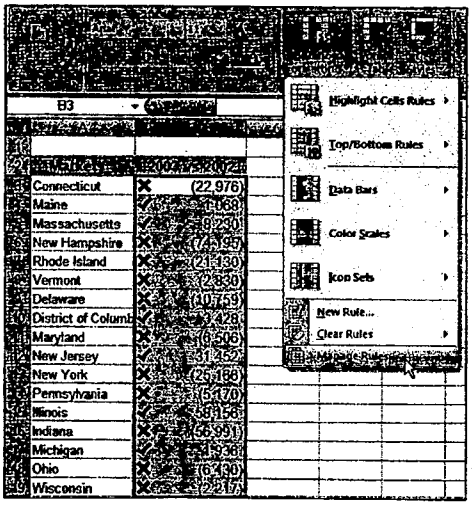


Figure 5-23: Select the target range and then select Manage Rules.

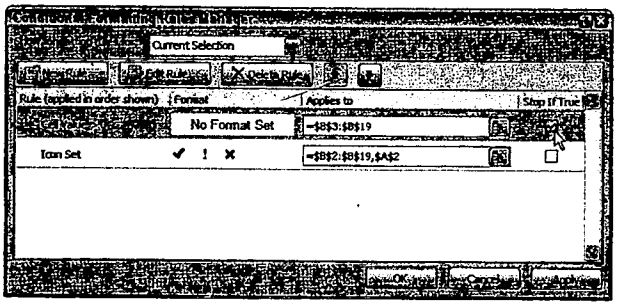


Figure 5-24: Select Stop if True to tell Excel to stop evaluating those cells that meet the first condition.

Connecticut	✗	(22,976)
Maine		1,068
Massachusetts		8,230
New Hampshire	✗	(74,195)
Rhode Island	✗	(21,130)
Vermont	✗	(2,830)
Delaware	✗	(10,759)
District of Columb		3,428
Maryland	✗	(6,506)
New Jersey		31,452
New York	✗	(25,166)
Pennsylvania	✗	(5,170)
Illinois		58,156
Indiana	✗	(56,991)
Michigan		1,936
Ohio	✗	(6,430)
Wisconsin	✗	(2,217)

Figure 5-25: This table is now formatted to show only one icon.

Showing Data Bars and icons outside cells

Although Data Bars and Icon Sets give you a snazzy way of adding visualizations to your dashboards, you don't have a lot of say in where they appear within your cell. Take a look at Figure 5-26 to see what I mean.

Great Lakes	70,261
New England	41,858
New York North	67,774
New York South	53,670
Ohio	100,512
Shenandoah Valley	49,742
South Carolina	80,535
Florida	111,606
Gulf Coast	83,705
Illinois	29,148
Indiana	82,471
Kentucky	22,524
North Carolina	24,600
Tennessee	87,343
Texas	90,167
California	30,264
Central	33,628
Colorado	34,039
North West	20,143
Southwest	48,998
Topeka	22,389

Figure 5-26: Showing Data Bars inside the same cell as your values can make it difficult to analyze the data.

The Data Bars are, by default, placed directly inside each cell, almost obfuscating the data. From a dashboarding perspective, this is less than ideal for two reasons. First, the numbers themselves can get lost in the colors of the Data Bars, making them difficult to read — especially when printed in black and white. Second, it's difficult to see the ends of each bar. It's bad enough that Data Bars end in a gradient, you don't need overlapping numbers to compound the problem.

The solution to this problem is to show the Data Bars outside the cell that contains the value. Let's start with a fresh table with all conditional formatting removed and walk through a few steps:

1. **To the right of each cell, enter a formula that references the cell that contains your data value.**

   For example, if your data is in B2, go to cell C2 and enter =B2.

2. **Apply the Data Bars conditional formatting to the formulas you just created.**

   At this point, you have something that looks like Figure 5-27.

3. **Select the formatted range of cells and then select Manage Rules under the Conditional Formatting button in the Home tab of the Ribbon.**

4. **In the dialog box that opens, click the Edit Rule button.**

   The Edit Formatting Rule dialog box appears.

	A	B	C
1	MARKET	Sales	
2	Great Lakes	70,261	70,261
3	New England	217,858	217,858
4	New York North	157,774	157,774
5	New York South	53,670	53,670
6	Ohio	100,512	100,512
7	Shenandoah Valley	149,742	149,742
8	South Carolina	249,535	249,535
9	Florida	111,606	111,606
10	Gulf Coast	253,703	253,703
11	Illinois	129,148	129,148
12	Indiana	152,471	152,471
13	Kentucky	224,524	224,524
14	North Carolina	124,600	124,600
15	Tennessee	307,490	307,490
16	Texas	180,167	180,167
17	California	190,264	190,264
18	Central	133,628	133,628
19	Colorado	134,039	134,039
20	North West	120,143	120,143
21	Southwest	248,098	248,098
22	Topeka	222,389	222,389

Figure 5-27: Create a new column of data and apply Data Bars to the new column.

5. **Place a check in the Show Bar Only option box, as demonstrated in Figure 5-28.**
6. **Click OK to apply your change.**

The reward for your efforts is a view that is cleaner and much better suited for reporting in a dashboard environment. Figure 5-29 illustrates the improvement gained with this technique.

Using the same technique, you can separate Icon Sets from the data, allowing you to position the icons where they best suit your dashboard. Here in Figure 5-30, the icons are shown to the right of the data.

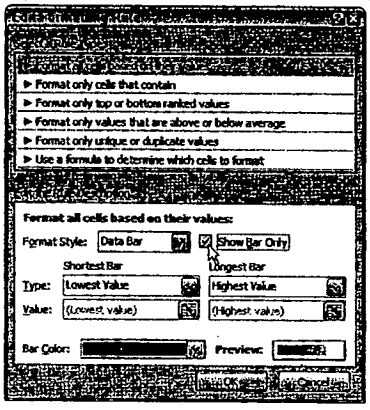
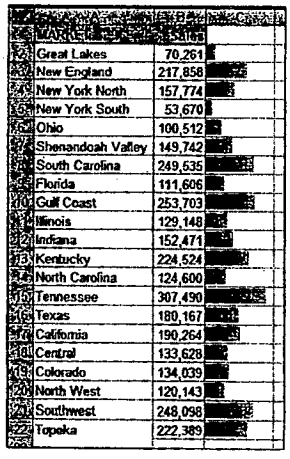
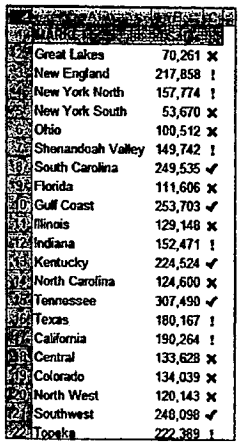


Figure 5-28: Edit the formatting rule to show only the Data Bars, not the data.



	Sales
Great Lakes	70,261
New England	217,858
New York North	157,774
New York South	53,670
Ohio	100,512
Shenandoah Valley	149,742
South Carolina	249,535
Florida	111,606
Gulf Coast	253,703
Illinois	129,148
Indiana	152,471
Kentucky	224,524
North Carolina	124,600
Tennessee	307,490
Texas	180,167
California	190,264
Central	133,628
Colorado	134,039
North West	120,143
Southwest	248,098
Topeka	222,389

Figure 5-29: Your Data Bars are now outside the cell, making them much easier to see.



Great Lakes	70,261	✗
New England	217,858	!
New York North	157,774	!
New York South	53,670	✗
Ohio	100,512	✗
Shenandoah Valley	149,742	!
South Carolina	249,535	✓
Florida	111,606	✗
Gulf Coast	253,703	✓
Illinois	129,148	✗
Indiana	152,471	!
Kentucky	224,524	✓
North Carolina	124,600	✗
Tennessee	307,490	✓
Texas	180,167	!
California	190,264	!
Central	133,628	✗
Colorado	134,039	✗
North West	120,143	✗
Southwest	248,098	✓
Topeka	222,389	!

Figure 5-30: The same technique can be applied to Icon Sets.

Representing trends with Icon Sets

In a dashboard environment, there may not always be enough space available to add a chart that shows trending. In these cases, Icon Sets are an ideal replacement, enabling you to visually represent the overall trending without taking up a lot of space. Take a moment to walk through a simple example of how Icon Sets help display overall trends.

Trending refers to the measuring of variances over some defined interval — typically time periods like days, months, or years.

In the `Chapter 5 Sample File` found among the sample files on this book's companion Web site, you'll find the Represent Trending with Icons tab. In this tab, you'll see a table (as shown in Figure 5-31) that shows numbers for the previous and current months. As you can see by looking at the formula bar, a simple formula calculates the variance between the two months.

In some situations, you'll want to do the same type of thing. The key is to create a formula that gives you a variance or trending of some sort.

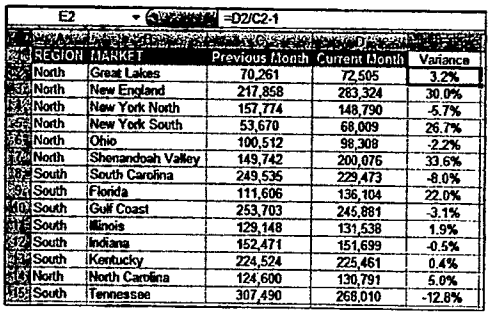
Follow these steps to create that formula:

1. **Select the target range of cells to which you need to apply the conditional formatting.**

   In this case, the target range is the cells that hold your variance formulas.

2. **Choose Icon Set from the Conditional Formatting menu in the Home tab and then choose the most appropriate icons for your situation.**

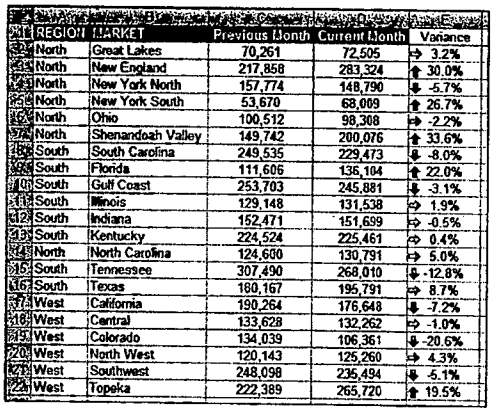
   In this example, the set with three arrows works. (See Figure 5-32.)



E2 =D2/C2-1

REGION	MARKET	Previous Month	Current Month	Variance
North	Great Lakes	70,261	72,505	3.2%
North	New England	217,858	283,324	30.0%
North	New York North	157,774	148,790	-5.7%
North	New York South	53,670	68,009	26.7%
North	Ohio	100,512	98,308	-2.2%
North	Shenandoah Valley	149,742	200,076	33.6%
South	South Carolina	249,535	229,473	-8.0%
South	Florida	111,606	136,104	22.0%
South	Gulf Coast	253,703	245,881	-3.1%
South	Illinois	129,148	131,538	1.9%
South	Indiana	152,471	151,699	-0.5%
South	Kentucky	224,524	225,461	0.4%
North	North Carolina	124,600	130,791	5.0%
South	Tennessee	307,490	268,010	-12.8%

Figure 5-31: Ensure you have a column containing a formula that calculates a variance or trend of some sort.



REGION	MARKET	Previous Month	Current Month	Variance
North	Great Lakes	70,261	72,505	→ 3.2%
North	New England	217,858	283,324	↑ 30.0%
North	New York North	157,774	148,790	↓ -5.7%
North	New York South	53,670	68,009	↑ 26.7%
North	Ohio	100,512	98,308	→ -2.2%
North	Shenandoah Valley	149,742	200,076	↑ 33.6%
South	South Carolina	249,535	229,473	↓ -8.0%
South	Florida	111,606	136,104	↑ 22.0%
South	Gulf Coast	253,703	245,881	↓ -3.1%
South	Illinois	129,148	131,538	→ 1.9%
South	Indiana	152,471	151,699	→ -0.5%
South	Kentucky	224,524	225,461	→ 0.4%
North	North Carolina	124,600	130,791	→ 5.0%
South	Tennessee	307,490	268,010	↓ -12.8%
South	Texas	180,167	195,791	→ 8.7%
West	California	190,264	176,648	↓ -7.2%
West	Central	133,628	132,262	→ -1.0%
West	Colorado	134,039	106,361	↓ -20.6%
West	North West	120,143	125,260	→ 4.3%
West	Southwest	248,098	235,494	↓ -5.1%
West	Topeka	222,389	265,720	↑ 19.5%

Figure 5-32: The up arrow indicates an upward trend, a down arrow indicates a downward trend, and a right-pointing arrow indicates a flat trend.

In most case, you'll want to adjust the thresholds that define what up, down, and flat mean. Imagine that you need any variance above 3 percent to be tagged with an up arrow, any variance below 3 percent to be tagged with a down arrow, and all others to show flat.

3. **Select the target range of cells and then select Manage Rules under the Conditional Formatting button in the Home tab of the Ribbon.**
4. **In the dialog box that opens, click the Edit Rule button.**

   The Edit Formatting Rule dialog box appears.
5. **Adjust the properties, as shown in Figure 5-33.**

In Figure 5-33, notice the Type property for the formatting rule is set to Number even though the data (the variance) you're working with are percentages. You'll find that working with the Number setting gives you more control and predictability when setting thresholds.

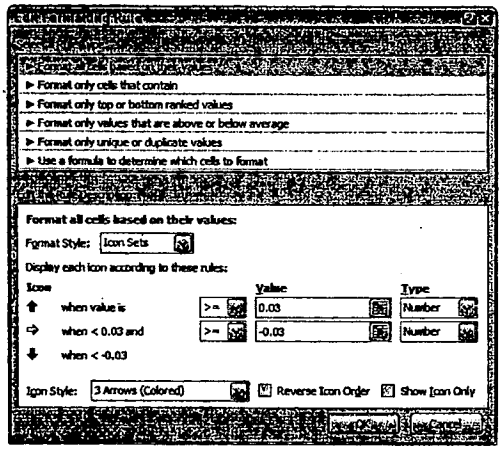


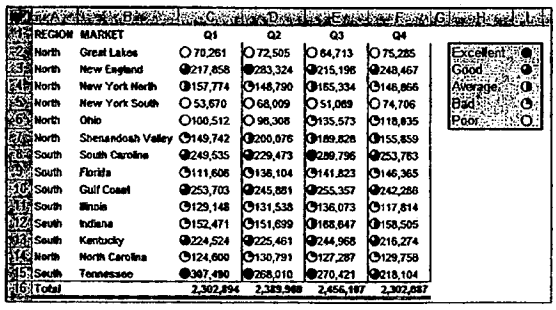
Figure 5-33: You can adjust the thresholds that define what up, down, and flat mean.

Building a legend for your conditional formatting

Many of the icons offered in Excel 2007 are self-describing — you can tell what they mean by virtue of their color or shape. The meaning of some icons, however, will leave your clients confused unless you tell them explicitly. When building a dashboard or report that uses any kind of Icon Set, it's generally good practice to add some sort of legend defining what each icon means. Figure 5-34 demonstrates how a legend can help clear up confusion. Here's how you do it:

1. **Build a legend table.**

   This table should contain a description for each icon in the set you're using and a number that triggers the icon for that description. Confused? Look at Figure 5-35 to see what I mean.



REGION	MARKET	Q1	Q2	Q3	Q4
North	Great Lakes	70,261	72,505	64,713	75,285
North	New England	217,858	283,324	215,196	248,467
North	New York North	157,774	148,790	165,334	146,866
North	New York South	53,670	68,009	51,069	74,706
North	Ohio	100,512	98,308	135,573	118,835
North	Shenandoah Valley	149,742	200,876	189,828	155,859
South	South Carolina	249,535	229,473	289,796	253,783
South	Florida	111,608	138,104	141,823	146,365
South	Gulf Coast	253,703	245,881	255,357	242,288
South	Illinois	129,148	131,538	136,073	117,814
South	Indiana	152,471	151,699	168,847	158,505
South	Kentucky	224,524	225,461	244,968	216,274
North	North Carolina	124,600	130,791	127,287	129,758
South	Tennessee	367,490	268,010	270,421	218,104
Total		2,302,894	2,389,968	2,456,197	2,302,887

Excellent
Good
Average
Bad
Poor

Figure 5-34: A legend can shed light on what your icons mean.

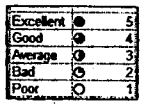


Figure 5-35: Build a legend table and apply the same conditional format you applied to your dataset.

2. **Apply the same conditional formatting to the legend you applied to your dataset.**

   The numbers you use in the legend table don't really matter. The idea is just to trigger the icon that matches associated description. When the conditional formatting is applied to the legend table, you can adjust the numbers to force a match.

   You then want to hide the numbers because they don't really mean anything.

3. **Select the formatted range of cells in the legend table and choose Manage Rules under the Conditional Formatting button in the Home tab of the Ribbon.**

4. **In the dialog box that opens, click the Edit Rule button.**

5. **Place a check in the Show Icon Only option and click OK to apply your change.**

   Voilà! You now have an instant legend for your conditional formatting.

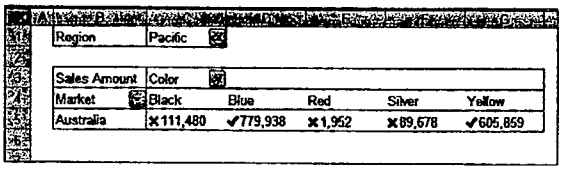
Using conditional formatting with pivot tables

In previous versions of Excel, conditional formatting couldn't be cleanly and predictably used with pivot tables. Oh, you could apply conditional formatting to the cells in and around the pivot table, but if something changed or the pivot table was rearranged, your conditional formatting wouldn't be applied to the correct cells.

In Excel 2007, Microsoft has made a brilliant effort to integrate conditional formatting into pivot tables. This gives you the ability to tie conditional formatting to the actual pivot table itself, not just the cells it occupies. This means you can rearrange, refresh, sort, and adjust your pivot table without affecting the integrity of your conditional formatting. The best part is that you can apply conditional formatting to your pivot table just as you would with standard cells — no special processes.

In the sample file for this chapter on this book's companion Web site, you'll find a simple example of conditional formatting applied to a pivot table. (See Figure 5-36.)

In this example, an Icon Set has been applied to easily pick the most popular colors for each region. As you can see, blue and yellow are the most popular product colors. The Pacific Region Manager may want to take this into account when planning for next year's product line.



Region	Pacific				
Sales Amount	Color				
Market	Black	Blue	Red	Silver	Yellow
Australia	✖111,480	✔779,938	✖1,952	✖89,678	✔605,859

Figure 5-36: Conditional formatting applied to a pivot table.

And because this is a pivot table, you get the benefit of interactively changing regions (via the Filter Area drop-down list) and applying the same conditional formatting to a different set of data without having to adjust the formatting rule.

Chapter 6

The Art of Dynamic Labeling

In This Chapter

- Creating dynamic labels
- Using the Camera tool
- Working with formula-driven visualizations
- Getting fancy with fonts

Up to this point, I've covered the major tools you can use to build basic dashboard components: pivot tables, charts, and conditional formatting. In this chapter, I focus on functionality that is less apparent — *dynamic labeling.*

Dynamic labeling is less a function in Excel than it is a concept. *Dynamic labels* are labels that change to correspond to the data you're viewing. With dynamic labeling, you can interactively change the labeling of data, consolidate many pieces of information into one location, and easily add layers of analysis.

In this chapter, you explore the various techniques that can be used to create dynamic labels.

Creating a Basic Dynamic Label

A common use for dynamic labels is labeling interactive charts. In Figure 6-1, I have a pivot chart that shows the Top 10 Categories by market. When the market is changed in the Filter drop-down list, the chart changes. Now, it'd be nifty to have a label on the chart itself that shows the market for which the data is currently being displayed.

Don't know what a pivot chart is? Feel free to take a gander at Chapter 4 for a discussion of pivot charts.

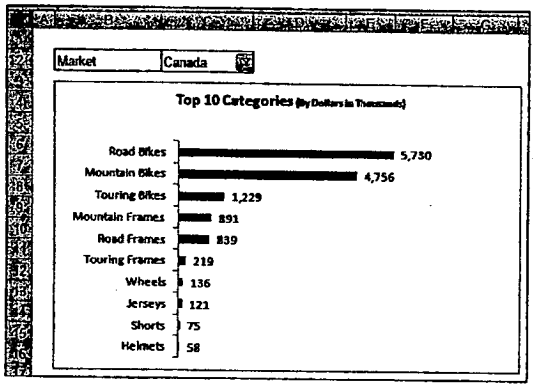


Figure 6-1: Interactive charts, such as this pivot chart, are ideal places to use dynamic labels that change based on current selection.

To create a dynamic label within your chart, follow these steps:

1. **On the Insert tab in the Ribbon, select the Text Box icon, as shown in Figure 6-2.**

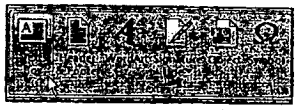


Figure 6-2: Select the Text Box Icon.

2. **Click inside the chart to create an empty text box.**
3. **While the text box is selected, go up to the formula bar, type the equal sign (=), and then click the cell that contains the text for your dynamic label.**

   Again, type the formula into the formula bar, *not* directly into the text box.

   In the example shown in Figure 6-3, the text box is linked to cell C2. You'll notice that cell C2 holds the Filter drop-down list for the pivot table.
4. **Format the text box so that it looks like any other label.**

   You can format the text box using the standard formatting options found on the Home tab.

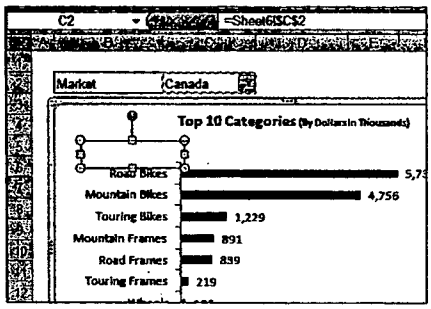


Figure 6-3: Link the text box to the cell that contains the text for your dynamic label.

If all goes well, you'll have a label on your chart that changes to correspond with the cell to which it's linked. Figure 6-4 illustrates how the dynamic label can be made to blend in with your chart.

Be aware that text boxes can't display any more than 255 characters.

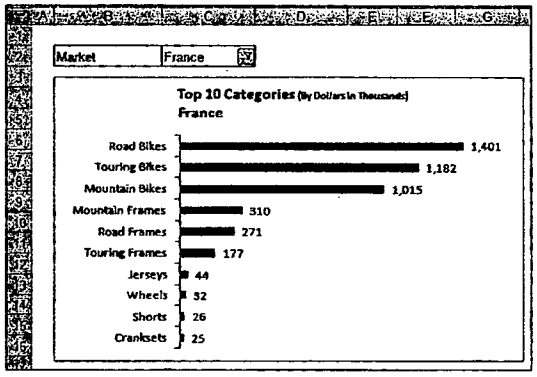


Figure 6-4: The France label within the chart is actually a dynamic label that changes when a new market is selected in the drop-down list.

Adding Layers of Analysis with Dynamic Labels

What would happen if you were to link your text boxes to cells that contained formulas instead of simple labels? A whole new set of opportunities would open up. With text boxes linked to formulas, you could add a layer of analysis into your charts and dashboards without a lot of complex hocus pocus.

Figure 6-5 illustrates a simple example. Here, you see two views of the same pivot chart. On the top, the Northwest market is selected, and you see that the pivot chart is labeled with a layer of analysis around Q4 variance. On the bottom, Southeast is selected, and you can see that the label changes to correspond with the analysis around Q4 variance for the Southeast market.

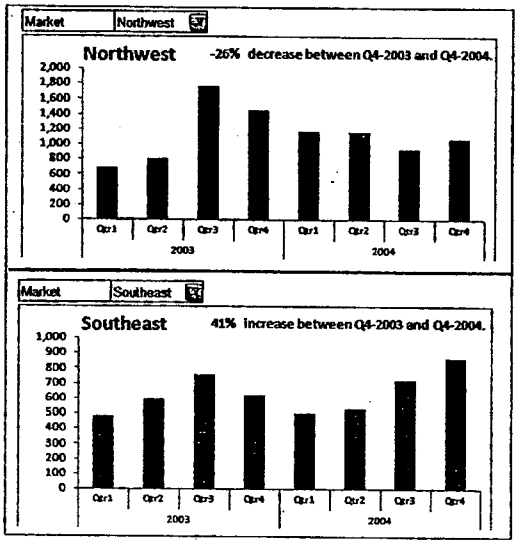


Figure 6-5: This is two views of the same pivot chart; notice how the chart labels change when the market changes.

This example can be found in the Chapter 6 sample file on this book's companion Web site.

The example shown in Figure 6-5 actually uses three dynamic labels. One to display the current selected market, one to display the actual calculation of Q4-2003 versus Q4-2003, and one to add some contextual text that describes the analysis.

Figure 6-6 illustrates the behind-the-scenes links. Take a moment to examine what's happening here. The label showing 41% is linked to cell B13, which contains a formula returning the variance analysis. The label showing the contextual text is linked to cell C13, which contains an `IF` formula that returns a different sentence, depending on whether the variance percent is an increase or decrease.

Together, these labels provide your audience with a clear message about the variance for the selected market. This is one of countless ways you can implement this technique.

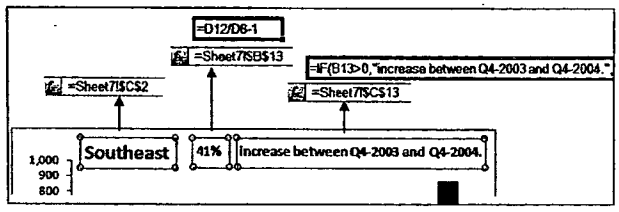


Figure 6-6: This pivot chart actually uses three dynamic labels; each linked to a different cell.

Excel's Mysterious Camera Tool

Excel's Camera tool enables you to take a live picture of a range of cells that updates dynamically while the data in that range updates. I call it the *mysterious* Camera tool because it's been hidden away in the last few versions of Excel. Although Microsoft has chosen not to include this tool in the mainstream Ribbon, it's actually quite useful for those of us endeavoring to build dashboards and reports.

Finding the Camera tool

Before you can use the Camera tool, you have to find it and add it to your Quick Access Toolbar (QAT).

The *Quick Access Toolbar* is a customizable toolbar in which you can store frequently used commands so that they're always accessible with just one click. You can add commands to the QAT by dragging them directly from the Ribbon or by going through the Customize menu.

Follow these steps to add the Camera tool to the QAT:

1. **Click the Office icon in the upper-left corner of Excel.**
2. **Select the Excel Options button to activate the Excel Options dialog box.**
3. **Click the Customize button.**
4. **In the Choose Commands From drop-down list, select Commands Not in the Ribbon.**

5. **Scroll down the alphabetical list of commands (see Figure 6-7) and find Camera; double-click to add it to QAT.**
6. **Click OK to close the Excel Options dialog box.**

When you've taken these steps, you'll see the Camera tool in your Quick Access Toolbar, as shown in Figure 6-8.

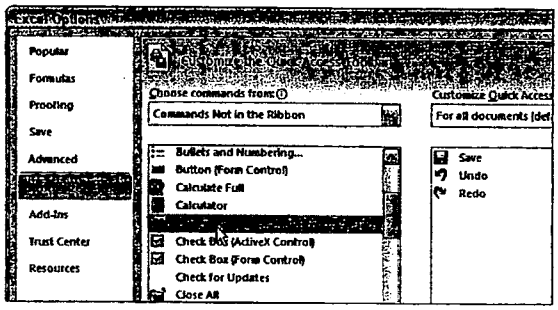


Figure 6-7: Add the Camera tool to the Quick Access Toolbar.

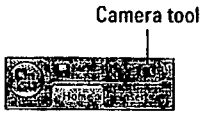


Figure 6-8: Not surprisingly, the icon for the Camera tool looks like a camera.

The basics of using the Camera tool

The idea behind the Camera tool is simple. You highlight a range of cells, and everything in that range is captured in a live picture. When I say "everything," I mean *everything:* charts, conditional formatting, shapes, whatever you see in that range of cells, and so on. The cool thing about the Camera tool is that you're not limited to showing a single cell's value like you are with a linked text box. And because the picture is live, any updates made to the source range automatically change the picture.

Enough chitchat. Let me walk you through a basic example using the Camera tool. In Figure 6-9, I entered some simple numbers and created a chart based on those numbers — nothing fancy. The goal here is to create a live picture of the range that holds both the numbers and the chart.

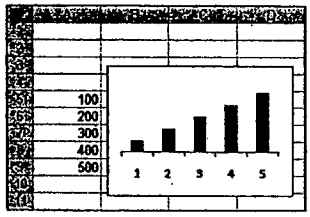


Figure 6-9: Enter some simple numbers in a range and create a basic chart from those numbers.

1. **Highlight the entire range containing all the information you want to capture.**

   In this scenario, I highlight the range spanning from A3–D11.

2. **Click the Camera tool icon (added to the QAT in the preceding section, "Finding the Camera tool").**

3. **Click the spreadsheet in the location where you want the picture to be placed.**

   Excel immediately creates a live picture of the entire range, as shown in Figure 6-10.

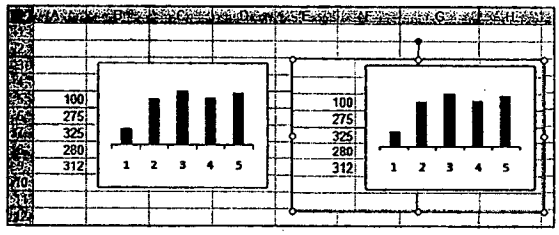


Figure 6-10: A live picture is created via the Camera tool.

Changing any number in the original range automatically causes the picture to update.

By default, the picture that's created has a border around it. To remove the border, simply right-click the picture and select Format Picture. This activates the Format Picture dialog box. In the Colors and Lines tab, you see a Line Color drop-down list. Here you can select No Color, thereby removing the border.

On a similar note, to get a picture without gridlines, simply remove the gridlines from the source range.

Creating a live picture without the Camera tool

Do you know you can create a live picture without actually using the Camera tool? That's right. Excel 2007 has made it relatively easy to mimic the Camera tool functionality manually.

1. Select the target range and copy it.
2. Go to the Home tab on the ribbon and choose Paste ➪ As Picture ➪ Paste Picture Link.

The advantage of using the Camera tool is that you can do the same thing with two clicks. Call me lazy, but two clicks functionality is just too good to pass up.

Cool uses for the Camera tool

In this section, I go beyond the basics and share with you a few of the ways you can use the Camera tool to enhance your dashboards and reports. You can use the Camera tool to perform the following functions:

- ✔ **Consolidate disparate ranges into one print area.**
- ✔ **Rotate objects to save time.**
- ✔ **Create small charts.**

All these are discussed in the following sections.

Consolidating disparate ranges into one print area

Sometimes a reporting model gets so complex that it's difficult to keep all the final data in one printable area. This often forces the printing of multiple pages that are inconsistent in layout and size. Given that dashboards are most effective when contained in a compact area that can be printed in a page or two, complex models prove to be problematic when it comes to layout and design.

The Camera tool can be used in these situations to create live pictures of various ranges that you can place on a single page. Figure 6-11 demonstrates a workbook that contains data from various worksheets. The secret here is that these are nothing more than linked pictures created by the Camera tool.

When you create pictures with the Camera Tool, you can size and move the pictures around freely. This gives you the freedom to test different layouts without the need to worry about column widths, hidden rows, or other such nonsense. In short, you can create and manage multiple analyses on different tabs and then bring together all your presentation pieces into a nicely formatted presentation layer.

Rotating objects to save time

Again, because the Camera tool outputs pictures, you can rotate the pictures in situations where placing the copied range on its side can help save time. A great example is a chart. Certain charts are relatively easy to create in a vertical orientation but extremely difficult to create in a horizontal orientation.

Figure 6-12 shows a vertical bullet graph (on the left). This graph is relatively easy to create in this vertical format. However, creating a horizontal bullet graph involves lots of intricate steps with multiple chart types. It's basically a pain to create a horizontal bullet graph.

The Camera tool to the rescue! When the live picture of the chart is created, all you have to do is rotate the picture using the rotate handle to create a horizontal version.

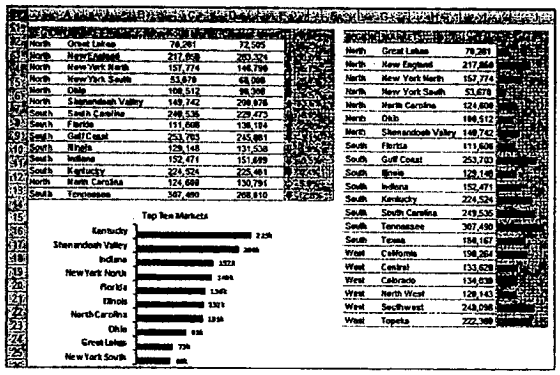


Figure 6-11: Use the Camera tool to get multiple disparate ranges into a compact area.

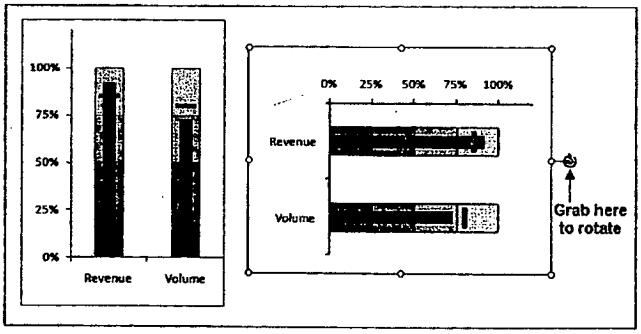


Figure 6-12: You can use the rotation handle to rotate your live pictures to a horizontal orientation, as seen here on the right.

Creating small charts

Another useful thing you can do with the Camera tool is create small charts. Although you can resize charts easily enough through other means, you typically would have to spend time tweaking the scaling, font, and other elements on the chart after you get the chart small enough. Because the Camera tool creates a picture that keeps its pixel ratios intact while you resize, it allows you to achieve small chart sizes without tweaking a single chart element.

Formula-Driven Visualizations

A *formula-driven label* is a label or text resulting from a formula, which can be used to further analysis and reporting. The idea here is that you build some logic into a formula and then use the resulting value as a new dimension of data which can used to sort, conditionally format, and chart.

Take a look at the simple example illustrated in Figure 6-13. Beside each number is a formula that determines whether the number is above 300. If it is, the word *Above* is displayed, else the word *Below* is displayed. The results of the formula can be sorted, conditionally formatted, used in charting, and so on.

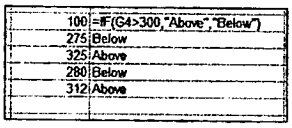


Figure 6-13: Adding the results of the formula next to each number.

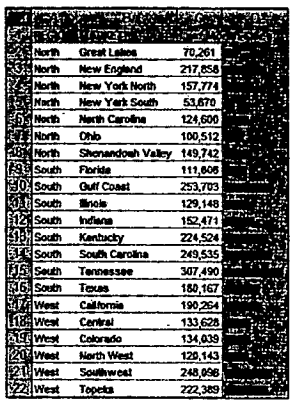
Now I realize that even to the average Excel user this is a fairly intuitive concept. You hardly need me to point out various examples of how you can implement formulas in your analysis and reporting.

I do, however, want to take this concept further and show you a few examples of how you can add a visual element to your formulas, thereby creating a *formula-driven visualization.* That is, creating formulas which return visualizations instead of just text.

In-cell charting without charts or conditional formatting

Figure 6-14 shows a table that contains in-cell charting, providing a visualization of the numbers shown. The cool thing is that the in-cell charting achieved here is the result of a simple formula.

This effect was achieved by using Excel's REPT function. The REPT repeats a given character a specified number of times. For example, if you went to a cell and entered **=REPT("s",10)**, the returned value would be ssssssssss (the "s" character repeated ten times).



86	North	Great Lakes	70,261
87	North	New England	217,858
88	North	New York North	157,774
89	North	New York South	53,670
90	North	North Carolina	124,600
91	North	Ohio	100,512
92	North	Shenandoah Valley	149,742
93	South	Florida	111,606
94	South	Gulf Coast	253,703
95	South	Illinois	129,148
96	South	Indiana	152,471
97	South	Kentucky	224,524
98	South	South Carolina	249,535
99	South	Tennessee	307,490
100	South	Texas	188,167
101	West	California	190,264
102	West	Central	133,628
103	West	Colorado	134,039
104	West	North West	128,143
105	West	Southwest	248,898
106	West	Topeka	222,389

Figure 6-14: The in-cell charting seen here is nothing more than formulas.

The idea is instead of using a letter, you use a character that, when repeated, looks kind of like a chart. The *pipe character* (the | shown above the backslash on your keyboard) is a perfect character for this kind of thing. If you went to a cell and entered **=REPT("|",10)**, the returned value would be ||||||||||. That looks very similar to a bar in a chart.

You may be wondering why you'd even use this. Why wouldn't you just use the Data Bars conditional formatting feature or for that matter, a chart?

First, Data Bars are not *backwards-compatible* — anyone who doesn't have Excel 2007 can't use them. Second, their gradient style may not conform to the overall look and feel of your dashboard. As for standard charts, they take up much more space than in-cell charting. Plus, they add overhead to your file.

In-cell charting gives you an easy-to-implement alternative that doesn't require a lot of real estate or setup.

To push this further, imagine that you had then number 30 in cell A1. You could, in cell B1, enter =**REPT("|", A1)**. This would show 30 pipe characters in cell B1, giving you a visualization of the number in A1.

This is all dandy until you get to really big numbers. For instance, you can imagine that repeating the pipe character 200 times just isn't that useful. In situations where you have large values, you can cut the number down to size by dividing it by 10, 100, 1000, or whatever makes sense.

So if Cell A1 contains 200, you can use `=REPT("|",A1/10)`. This effectively returns 20 pipe characters instead of 200. Figure 6-15 demonstrates this concept; note the formula being used in the formula bar.

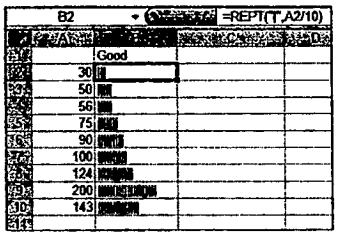


Figure 6-15: When using the REPT function with large values, divide the values into smaller increments that can be used in the REPT function.

Another way to limit the number of times a character is repeated is to define a maximum for the formula. You can do this by getting a bit fancy and using Excel's `MAX` function. To understand this, take a look at Figure 6-16.

In Figure 6-16, note the formula in the formula bar:

Be sure to make the range used in the `MAX` function an *absolute reference*. That is to say, be sure to include a dollar sign ($) in front of the column and row references, such as `MAX($A$2:$A$9)`. With the `$` character, you tell Excel to not increment the column and row references when you copy a range. This ensures that the range being referenced is locked when you copy the formula.

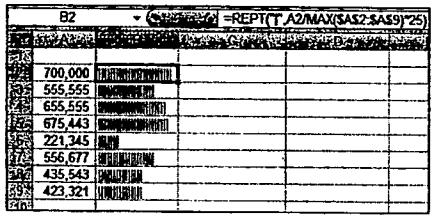


Figure 6-16: You can incorporate a MAX function into your formula to limit the number of characters repeated.

This formula basically tells Excel to take the value being referenced and divide it by the maximum value for entire range. Then take that answer and multiply it by 25. The value shown in A2, 700000, is indeed the maximum value in the entire range. So in the case of Cell A2 the formula essentially translates to `=REPT("|",700000/700000*25)`. Mathematically, `700000/700000*25` gives you 25.

In the case of Cell A3, the formula would translate to `=REPT("|",555555/700000*25)`. Mathematically, `555555/700000*25` gives you 19.84.

Stand back and think about what this means. The maximum number of characters that can possibly be returned by this formula is 25. This formula essentially limits the number of pipe characters no matter how big your numbers are.

Because the value returned by the `REPT` function is nothing more than a text string, you can apply formatting to it just as you would any other text. You can change font, change pitch, add color, apply conditional formatting, and even change alignment. Figure 6-17 demonstrates how you can get fancy with in-cell charting to achieve some nifty looking analysis just by adjusting various formatting options.

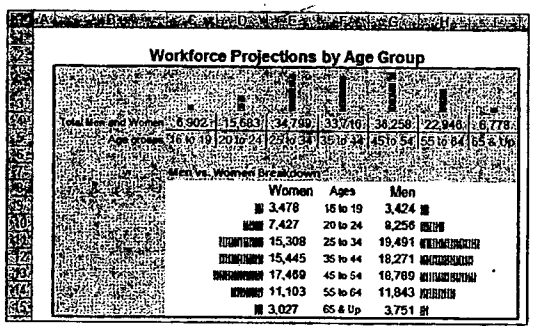


Figure 6-17: Experiment with various formatting options to create different visualizations.

Creating visualizations with Wingdings and things

If you read Chapter 5, you know that Excel 2007 offers some new conditional formatting rules that allow you add icons to your cells. With icons, you can distinguish values from one another by using different shapes and colors. The problem is that Icon Sets aren't backwards-compatible — anyone who doesn't have Excel 2007 can't use them.

A creative alternative to using the Icon Sets offered with conditional formatting is to use the various symbol fonts that come with Office. The symbol fonts are Wingdings, Wingdings2, Wingdings3, and Webdings. These fonts display symbols for each character instead of the standard numbers and letters.

Take a look at Figure 6-18 to see what I mean. Columns A–C list numbers and letters in the standard Arial font. The same numbers and letters are shown in the various symbol fonts. As you can see, a few of the symbols (highlighted in Figure 6-18) look similar to the Icons Sets offered with conditional formatting.

The idea here is simple: Make a formula that returns a character and then change the font so that the symbol for that character is shown based on the font you select. For instance, if you entered the uppercase **P** in cell A1 and then change the font to Windings2, you get a checkmark symbol. Looking at the table in Figure 6-19, see that the equivalent of the uppercase P is indeed a checkmark in Windings2 font.

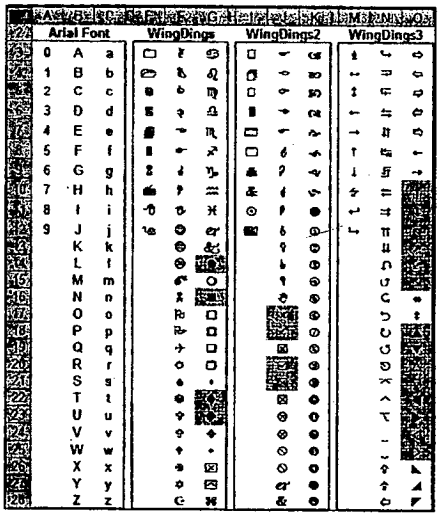
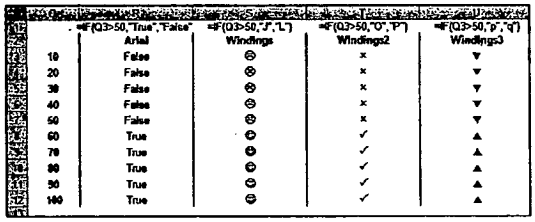


Figure 6-18: You can use symbol fonts to return symbols instead of numbers and letters.



	=IF(Q3>50,"True","False")	=IF(Q3>50,"J","L")	=IF(Q3>50,"O","P")	=IF(Q3>50,"p","q")
	Arial	Windings	Windings2	Windings3
10	False	⊖	×	▼
20	False	⊖	×	▼
30	False	⊖	×	▼
40	False	⊖	×	▼
50	False	⊖	×	▼
60	True	⊕	✓	▲
70	True	⊕	✓	▲
80	True	⊕	✓	▲
90	True	⊖	✓	▲
100	True	⊖	✓	▲

Figure 6-19: Adjust your formulas to return characters formatted into a symbol font.

Here's a simple example of how you use this concept. Imagine you have the number 55 in cell A1. In cell B1, you can enter **=IF(A1>50,"P","O")**. In a standard font, this formula returns the letter P because the value in cell A1 is indeed greater than 50. However, if you change the font to Windings2, you'd see a checkmark.

Figure 6-19 expands this concept, showing you how you can adjust your formulas to return characters that you can then format to show as a symbol.

To change the font, select the cell or range of cells in which you want the visualizations displayed, then choose the appropriate font from the Font group on the Home tab of the Ribbon. Remember that you only need to change the font for those cells in which you want the icons to be shown.

Be aware that not all fonts are available on all systems internationally. If you work for an international company where many people in different countries will use your dashboards, you will want to ensure that the font you use renders properly in each of your users' versions of Excel.

Part III

Building Advanced Dashboard Components

The 5th Wave By Rich Tennant

"Well, shoot! This eggplant chart is just as confusing as the butternut squash chart and the gourd chart. Can't you just make a pie chart like everyone else?"

In this part . . .

The chapters in this section take you beyond the basics to take a look at some of the advanced components you can create with Excel 2007. This part consists of three chapters, starting with Chapter 7, in which I demonstrate how to represent time trending, seasonal trending, moving averages, and other types of trending in dashboards. That chapter also introduces you to Sparklines. In Chapter 8, I explore the many methods used to *bucket* data, or to put data into groups for reporting. Chapter 9 demonstrates some of the charting techniques that help you display and measure values versus goals.

Chapter 7

Components That Show Trending

In This Chapter

- Understanding basic trending concepts
- Highlighting specific periods of time
- Using directional trending
- Smoothing data for trending
- Exploring sparklines

No matter what business you're in, you can't escape the tendency to trend. In fact, one of the most common concepts used in dashboards and reports is the concept of *trending*. A *trend* is a measure of variance over some defined interval — typically time periods, like days, months, or years.

The reason trending is so popular is that trending provides a rational expectation of what might happen in the future. If I know this book has sold 10,000 copies a month over the last 12 months (I wish), I have reasonable expectation to believe sales next month will be around 10,000 copies. In short, trending tells you where you've been and where you might be going.

In this chapter, you explore basic trending concepts and some of the advanced techniques you can use to take your trending components beyond simple line charts.

Trending Dos and Don'ts

As with all aspects of reporting with Excel, building trending components has some dos and don'ts. This section helps you avoid some common trending *faux pas*.

Using chart types appropriate for trending

Yes, you do have the freedom to use any chart type you want when building your trending components. After all, it's your data. But, the truth is, no chart

type is the silver bullet for all situations. As overwhelming as it may sound, for effective trending, you'll want to understand which chart types are most effective in different trending scenarios.

Trending with line charts

Line charts are the kings of trending. In business reporting, a line chart almost always indicates movement across time. Even in areas not related to business, the concept of lines is used to indicate time — consider timelines, family lines, bloodlines, and so on. The benefit of using a line chart for trending is that it instantly is recognized as a trending component, avoiding any delay in information processing.

Line charts are especially effective in presenting trends with many data points — as the chart at the top of the Figure 7-1 shows. You can also use a line chart to present trends for more than one time period, as shown in the chart at the bottom of Figure 7-1.

Trending with area charts

An *area chart* is essentially a line chart that's been filled in. So, technically, area charts are appropriate for trending. They're particularly good at highlighting trends over a large time span. For example, the chart in Figure 7-2 trends over 120 days of data.

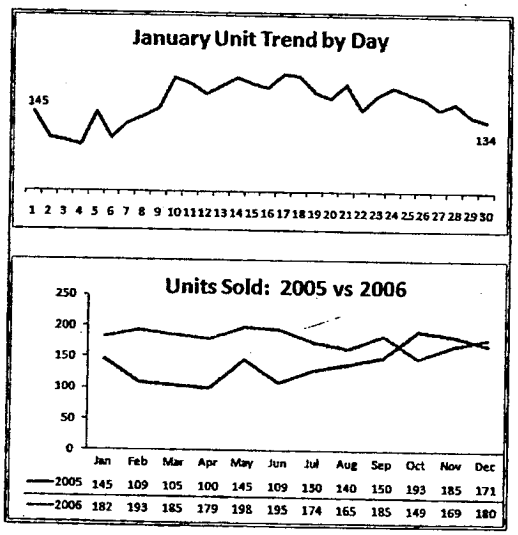


Figure 7-1: Line charts are the chart of choice when you need to show trending over time.

Trending with column charts

If you're trending one series of time, a line chart is absolutely the way to go. However, if you're comparing two or more time periods on the same chart, columns may best bring out the comparisons.

Figure 7-3 demonstrates how a combination chart can instantly call attention to the exact months when 2006 sales fell below 2005. A combination of line and column charts is an extremely effective way to show the difference in trending between two time periods. I show you how to create this type of chart later in this chapter (in the section, "Creating stacked time comparisons").

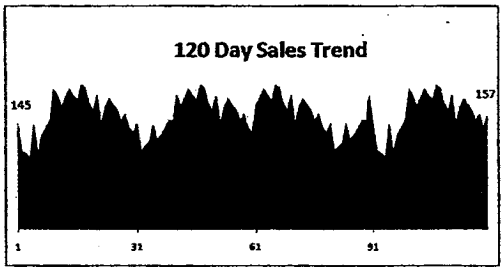


Figure 7-2: Area charts can be used to trend over a large time span.

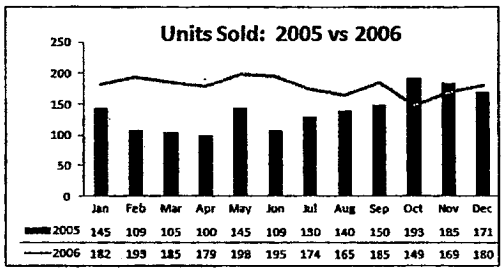


Figure 7-3: Using columns and lines emphasize the trending differences between two time periods.

Starting the vertical scale at zero

This point will no doubt cause a bit of controversy, but I am of the opinion that the vertical axis on trending charts should almost always start at zero. The reason I say *almost,* though, is because you may have trending data that contains negative values or fractions. In those situations, it's generally best to keep Excel's default scaling. However, in situations where there are only non-negative integers, ensure that your vertical axis starts at zero.

The reason is that the vertical scale of a chart can have a significant impact on the representation of a trend. For instance, the two charts shown in Figure 7-4 contain the same data. The only difference is that in the top chart, I did nothing to fix the vertical scale assigned by Excel (it starts at 96), but in the bottom chart, I fixed the scale to start at zero.

Now you may think the top chart is more accurate because it shows the ups and downs of the trend. However, if you look at the numbers closely, you see that the units represented went from 100 to 107 in 12 months. That's not exactly a material change, and it certainly doesn't warrant such a dramatic chart. In truth, the trend is relatively flat, yet the top chart makes it look as though the trend is way up.

The bottom chart more accurately reflects the true nature of the trend. I achieved this effect by locking the Minimum value on the vertical axis to zero.

To adjust the scale of your vertical axis, follow these simple steps:

1. **Right-click the vertical axis and choose Format Axis.**

   The Format Axis dialog box appears. (See Figure 7-5.)

2. **In the Format Axis dialog box, click the Fixed radio button next to the Minimum property, and then set the Minimum value to 0.**

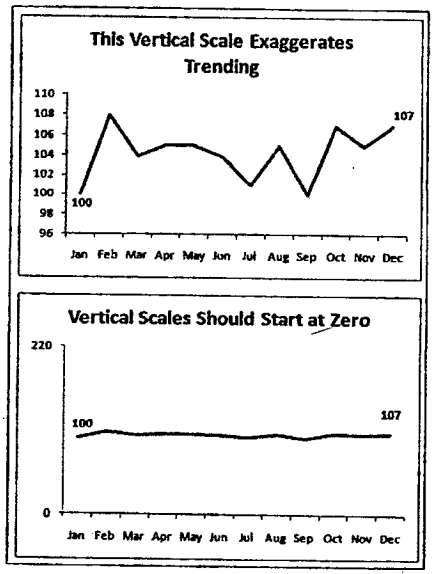


Figure 7-4: Vertical scales should always start at zero.

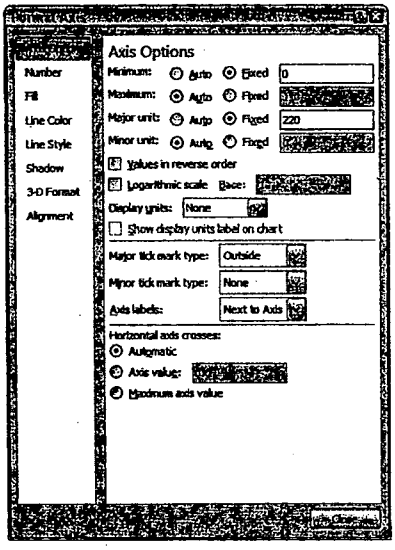


Figure 7-5: Always set the Minimum value of your vertical axis to zero.

3. **(Optional) You can set the Major Unit value to twice the Maximum value in your data.**

   This ensures that your trend line gets placed in the middle of your chart.

4. **Click the Close button to apply your changes.**

Many would argue that the bottom chart shown in Figure 7-4 hides the small-scale trending that may be important. That is to say, a seven unit difference may be very significant in some businesses. Well, if that's true, why use a chart at all? If each unit has such an impact on the analysis, why use a broad-sweep representation like a chart? A table with conditional formatting would do a better job at highlighting small-scale changes than any chart ever could.

Leveraging Excel's logarithmic scale

There may be situations when your trending starts with very small numbers and ends with very large numbers. In these cases, you'll end up with charts that don't accurately represent the true trend. Take Figure 7-6, for instance. In this figure, you see the unit trending for both 2006 and 2007. As you can see in the data table, 2006 started with a modest 50 units. As the months progressed, the monthly unit count increased to 11,100 units through December 2007. Because the two years are on such different scales, it's difficult to discern a comparative trending for the two years together.

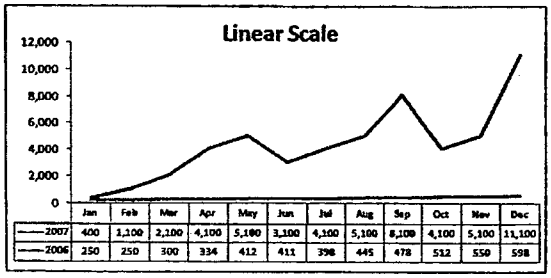


Figure 7-6: A standard linear scale doesn't allow for accurate trending in this chart.

The solution is to use a logarithmic scale instead of a standard linear scale.

Without going into high school math, a logarithmic scale allows your axis to jump from 1 to 10, to 100 to 1000, and so on without changing the spacing between axis points. In other words, the distance between 1 and 10 is the same as the distance between 100 and 1000.

Figure 7-7 shows the same chart as that in Figure 7-6, but in a logarithmic scale. Notice that the trending for both years is now clear and accurately represented.

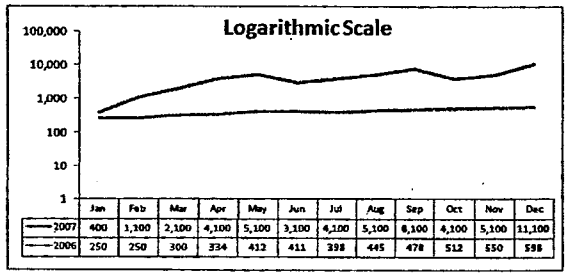


Figure 7-7: Using the logarithmic scale helps bring out trending in charts that contain very small and very large values.

To change the vertical axis of a chart to logarithmic scaling, follow these steps:

1. **Click anywhere on the chart.**

   This activates the Chart Tools tab on the Ribbon.

2. **Select the Layout tab found under the Chart Tools sub tab.**
3. **Click the Axis button and select Primary Vertical Axis.**
4. **Click the Show Axis with Log Scale option. (See Figure 7-8.)**

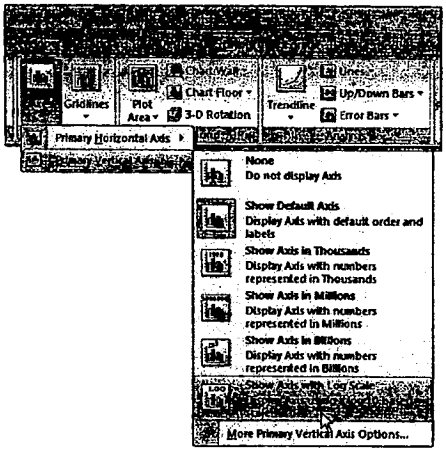


Figure 7-8: Setting the vertical axis to Log scale.

Logarithmic scales work only with positive numbers.

Applying creative label management

As silly as it may sound, one of the sticking points to creating trending components is the labeling. Trending charts tend to hold lots of data points, whose category axis labels take up lots of room. In this section, you find a few tips to help manage the labels in your trending components.

Abbreviating instead of changing alignment

Month names look and feel very long when you have to place them in a chart — especially when that chart has to fit on a dashboard. However, the solution isn't to change their alignment, as shown in Figure 7-9. Words that are placed on their sides inherently cause a reader to stop for a moment and read the labels. This isn't ideal when you want them to think about your data and not spend time reading with their heads tilted.

Although it's not always possible, the first option is always to keep your labels normally aligned. So instead of jumping right to the alignment option to squeeze them in, try abbreviating the month names. As you can see in Figure 7-9, even using the first letter of the month name is appropriate.

Implying labels to reduce clutter

When you're listing the same months over the course of multiple years, you may be able to imply the labels for months instead of labeling each and every one of them.

Take Figure 7-10, for example. In this figure, you see a chart that shows trending through two years. There are so many data points that the labels are forced to be vertically aligned. To reduce clutter, as you can see, only certain months are explicitly labeled. The others are implied by a dot. To achieve this effect, you can simply replace the label in the original data table with a dot (or whatever character you like).

Going vertical when you have too many data points for horizontal

Trending data by day is common, but it does prove to be painful if the trending extends to 30 days or more. In these scenarios, it becomes difficult to keep the chart to a reasonable size and even more difficult to effectively label it.

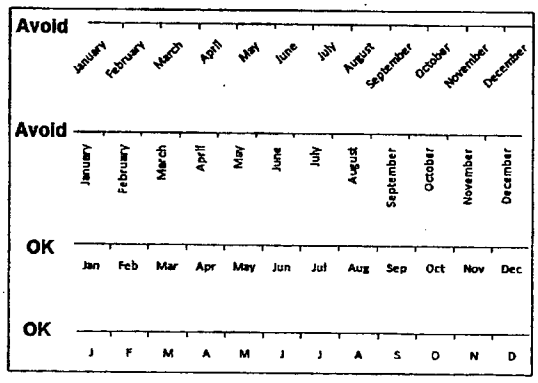


Figure 7-9: Choose to abbreviate category names instead of changing alignment.

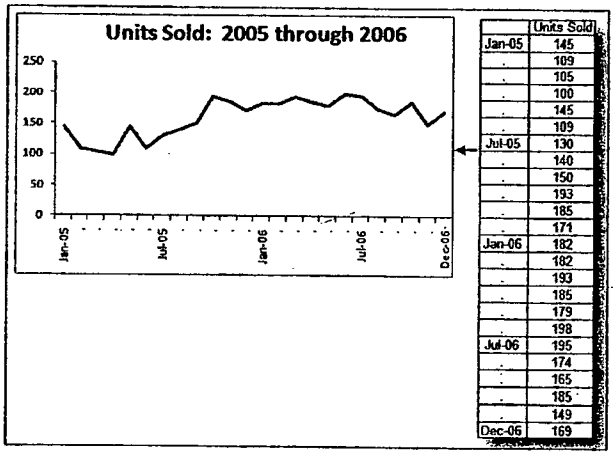


Figure 7-10: To save real estate on your dashboard, try labeling only certain data points.