

# Using Advanced Data Mining Techniques in Litigation

## May 18, 2011

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RSM McGladrey, Inc.

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# McGladrey Forensic Accounting Webinar Series

- Upcoming events:
  - **June 22, 2011** “Alternative Approaches to Calculating Reasonable Royalties” Ron Epperson and Sam Wiley
  - **July 20, 2011** “Calculating Damages in Construction Delay and Defect Matters”  
Patrick Chylinski and Shawn Fox
  - **August 24, 2011** “Finding Hidden Assets”  
Debra Thompson and Jennifer Miller

To obtain additional information on these programs, please email Pat Enderson, McGladrey Regional Marketing Manager at [pat.enderson@mcgladrey.com](mailto:pat.enderson@mcgladrey.com)

# Advanced Data Mining Techniques

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# Webinar Agenda

- Enterprise Resource Planning (ERP) Systems
- Financial Statement Universe
- What is Data Mining?
- Incorporating Data Mining into an ERP System
- Case Examples of Data Mining
- Benefits of Data Mining
- When To Use an Expert for Data Mining
- Data Mining Expert Skills

# Enterprise Resource Planning (ERP) Systems

ERP Systems integrate internal and external management information across an entire organization, emphasizing finance/accounting, manufacturing, sales and service functions.

## Characteristics

- Automated activity through an integrated software application
- Combines and coordinates multiple databases
- Consistent look and feel

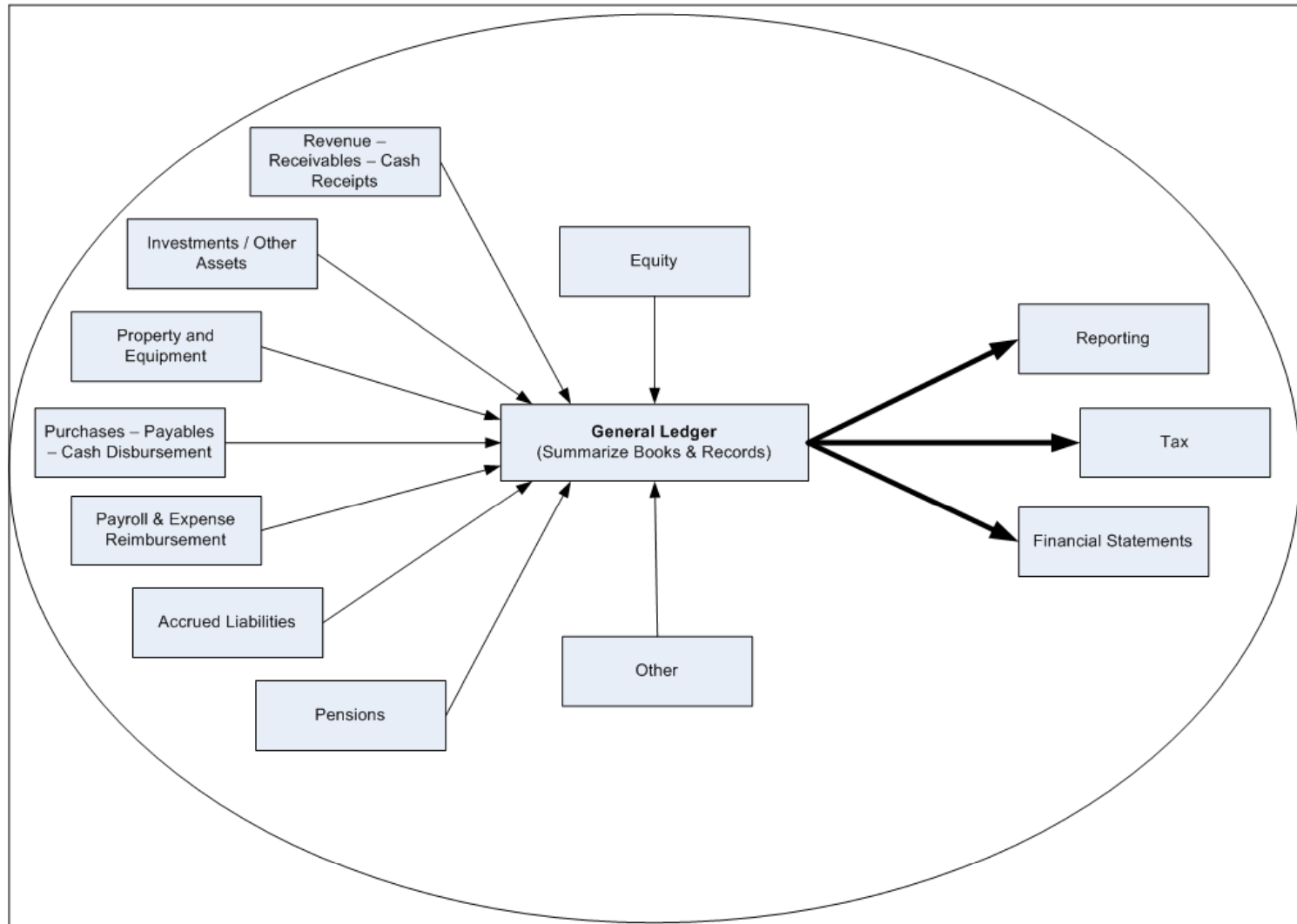


# Enterprise Resource Planning (ERP) Systems (cont.)

Examples:

- **Human Resources:** Payroll, training, benefits, 401K, recruiting, diversity management
- **Customer Relationship Management:** Sales and marketing, service, commissions, customer contact, after sales support
- **Finance/Accounting:** General ledger, payables, cash management, fixed assets, receivables, budgeting, consolidation

# Financial Statement Universe



# What is Data Mining?

- Webster's dictionary defines data mining as: "The automatic extraction of useful, often previously unknown information from large databases or data sets."
- Black's Law Dictionary defines a database as: "A compilation of information arranged in a systematic way and offering a means of finding specific elements it contains, often today by electronic means."

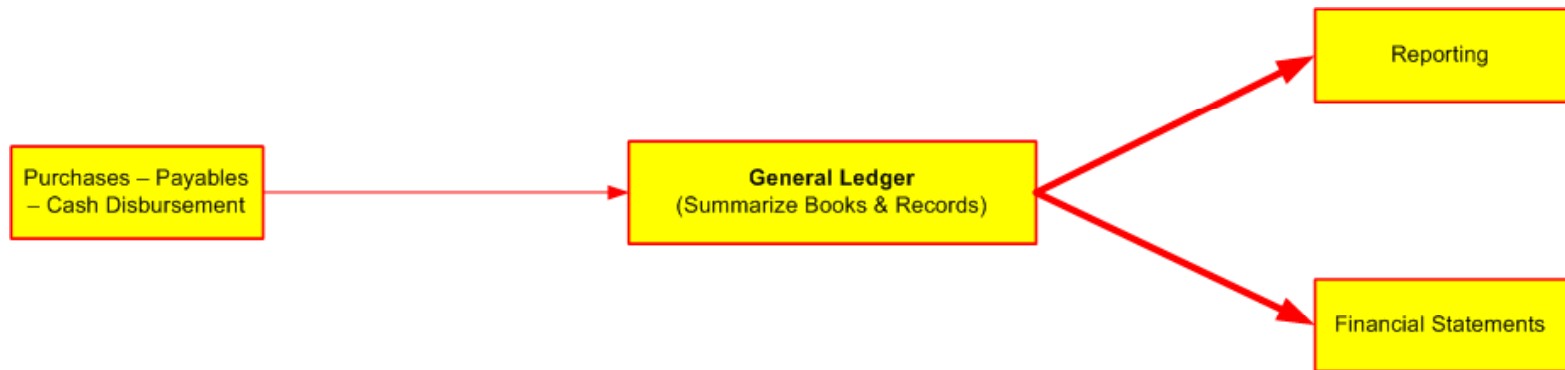
# What is Data Mining? (cont.)

## Types of Information

- Emails
  - Case Example
- Deleted Files
- Accounting Data
  - Journal Entries
  - General Ledger Transactions
  - Cash Disbursements
  - Cash Receipts

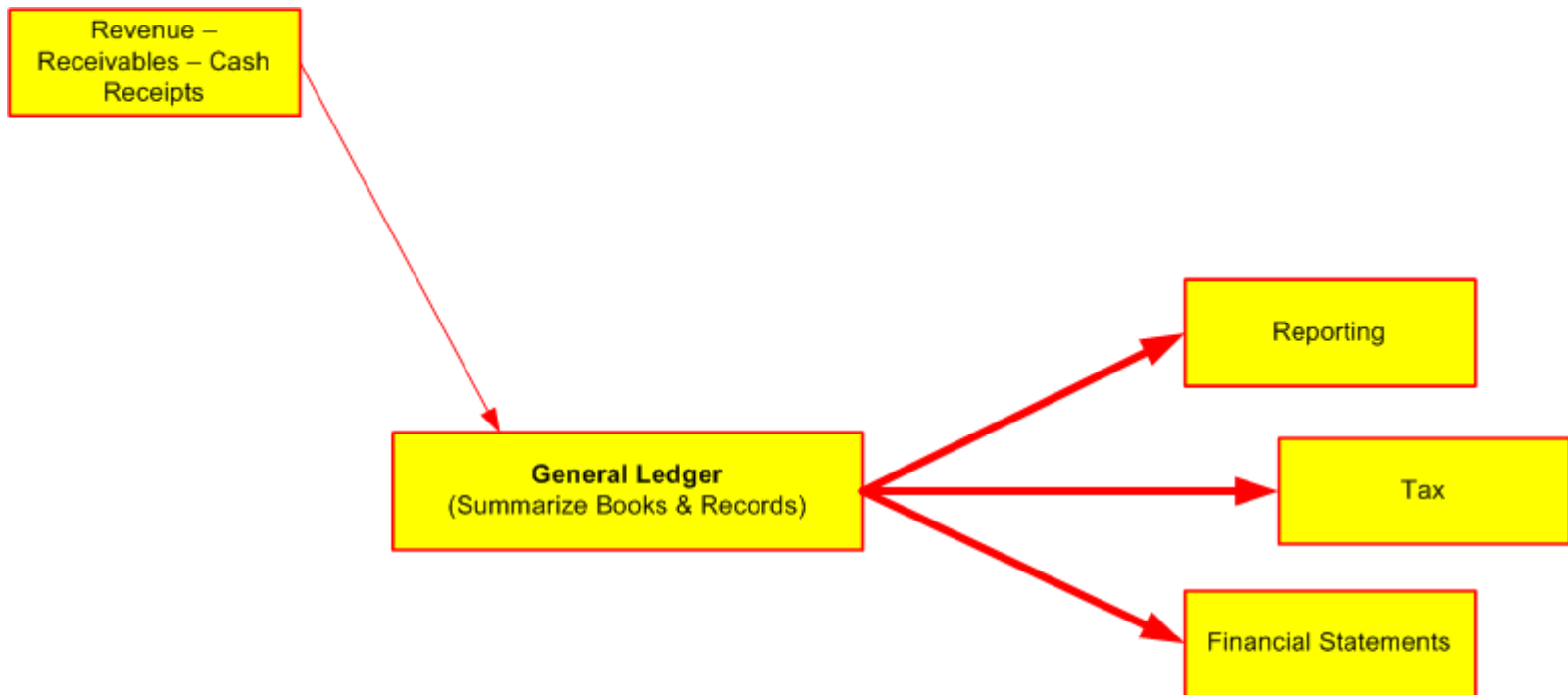
# Incorporating Data Mining into an ERP System

- Simplification of vast amounts of data into understandable information
  - Example: Bankruptcy Preference Claims



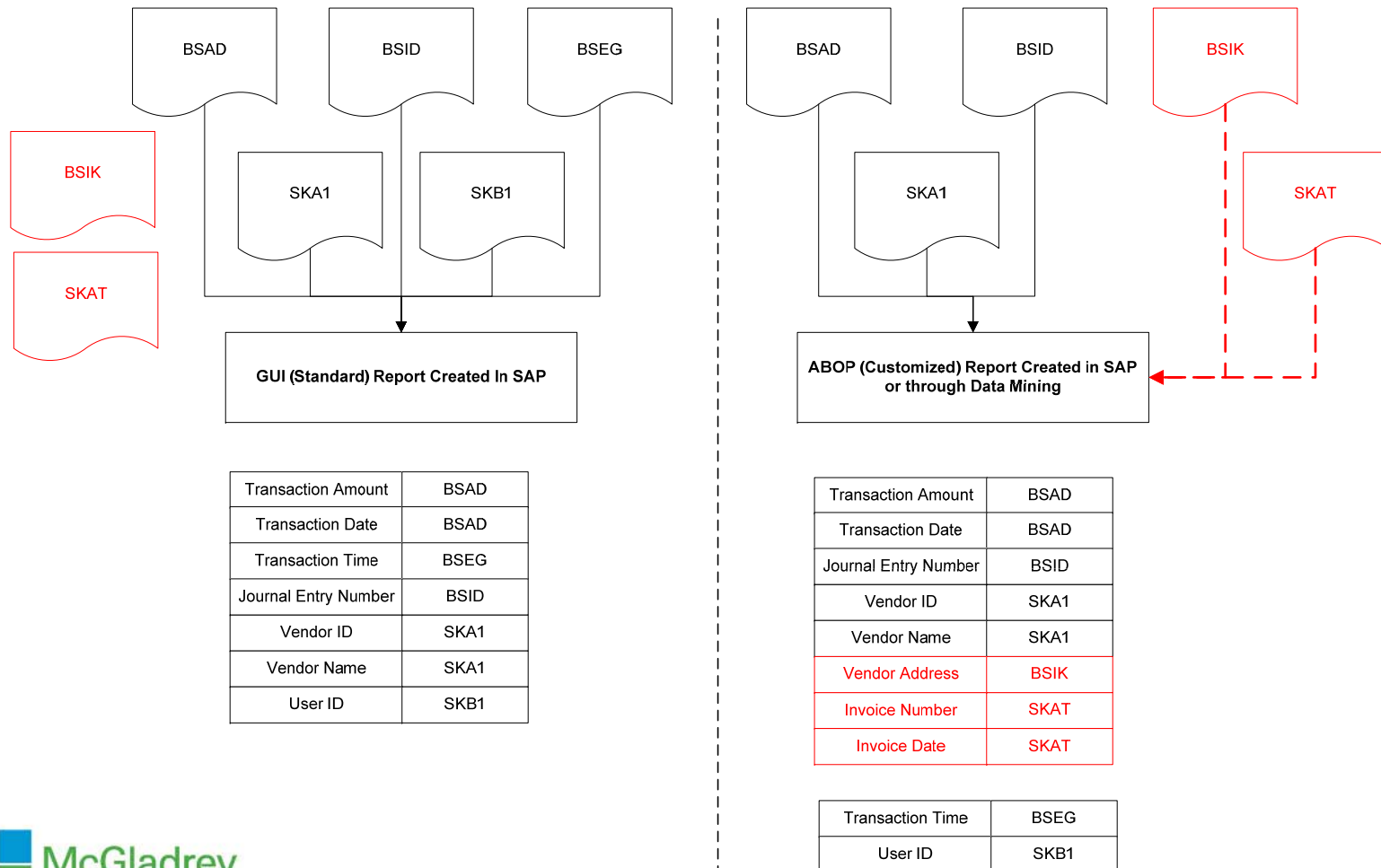
# Incorporating Data Mining into an ERP System (cont.)

- Verification of reported information
  - Example: Revenue Reporting



# Case Example: Creating Customized Reports

- Ability to customize the information extracted from ERP accounting systems to create a report that is most useful for the engagement at hand.



Report Criteria: Daily Report by: Business Day From: 1/1/2007 To: 12/31/2007 Including Days: Mon,Tue,Wed,Thr,Fr,Sat,Sun EZTeller Role(s): All  
 Group By: Accounts Transactions: Cash In and Cash Out Accounts: By All Accounts

Printed: Friday, October 15, 2010 1:01:11PM

Account	Bank #	Branch #	EZTeller Role #	Date	Time	Seq	Description	Cash In	Cash Out
	1	1	1	12/29/2006	3:25:18 pm	9	Buy Cash	\$2,000.00	\$0.00
	1	1	1	12/29/2006	3:38:00 pm	22	Buy Cash	\$2,000.00	\$0.00
	1	1	1	12/29/2006	3:47:09 pm	28	Other Check: No Acct	\$0.00	\$660.31
	1	1	1	12/29/2006	4:03:33 pm	33	Buy Cash	\$1,000.00	\$0.00
	1	1	1	12/29/2006	4:20:32 pm	43	Other Check: No Acct	\$0.00	\$185.18
	1	1	1	12/29/2006	4:28:30 pm	46	Buy Cash	\$1,000.00	\$0.00
	1	1	1	12/30/2006	9:07:20 am	77	Buy Cash	\$1,000.00	\$0.00
	1	1	1	12/30/2006	9:34:35 am	82	Buy Cash	\$1,000.00	\$0.00
	1	1	1	12/30/2006	10:34:23 am	94	Buy Cash	\$500.00	\$0.00
	1	1	1	12/30/2006	10:35:00 am	95	Sell Cash	\$0.00	\$6,400.00
	1	1	21	01/02/2007	2:45:52 pm	4	Sell Cash	\$0.00	\$500.00
	1	1	21	01/02/2007	2:46:12 pm	5	Sell Cash	\$0.00	\$1,000.00
	1	1	21	01/02/2007	2:46:30 pm	6	Sell Cash	\$0.00	\$1,000.00
	1	1	21	01/02/2007	2:46:54 pm	7	Sell Cash	\$0.00	\$1,000.00
	1	1	21	01/02/2007	2:47:11 pm	8	Sell Cash	\$0.00	\$1,000.00
	1	1	21	01/02/2007	2:47:27 pm	9	Sell Cash	\$0.00	\$2,000.00
	1	1	21	01/02/2007	2:47:42 pm	10	Sell Cash	\$0.00	\$2,000.00
	1	1	21	01/02/2007	2:48:00 pm	11	Buy Cash	\$1,500.00	\$0.00
	1	1	21	01/02/2007	2:48:17 pm	12	Buy Cash	\$2,500.00	\$0.00
	1	1	21	01/02/2007	2:48:34 pm	13	Buy Cash	\$1,000.00	\$0.00
	1	1	21	01/02/2007	2:49:07 pm	14	Buy Cash	\$6,400.00	\$0.00
	1	1	21	01/02/2007	2:49:36 pm	15	Buy Cash	\$6,500.00	\$0.00
	1	1	1	01/02/2007	4:02:33 pm	18	Buy Cash	\$1,500.00	\$0.00
	1	1	1	01/02/2007	4:02:50 pm	19	Other Check: No Acct	\$0.00	\$837.35
	1	1	4	01/02/2007	8:38:55 am	19	Sell Cash	\$0.00	\$6,500.00
	1	1	1	01/02/2007	4:13:39 pm	24	Other Check: No Acct	\$0.00	\$637.58
	1	1	1	01/02/2007	10:09:52 am	124	Sell Cash	\$0.00	\$1,000.00
	1	1	1	01/02/2007	12:52:32 pm	153	Buy Cash	\$2,500.00	\$0.00
	1	1	1	01/02/2007	12:52:50 pm	154	Buy Cash	(\$2,500.00)	\$0.00
	1	1	1	01/02/2007	12:52:58 pm	155	Sell Cash	\$0.00	\$2,500.00
	1	1	1	01/02/2007	2:22:02 pm	163	Sell Cash	\$0.00	\$1,500.00



# Case Example: Stratifying Databases

Purpose: To stratify the population and identify anomalies.

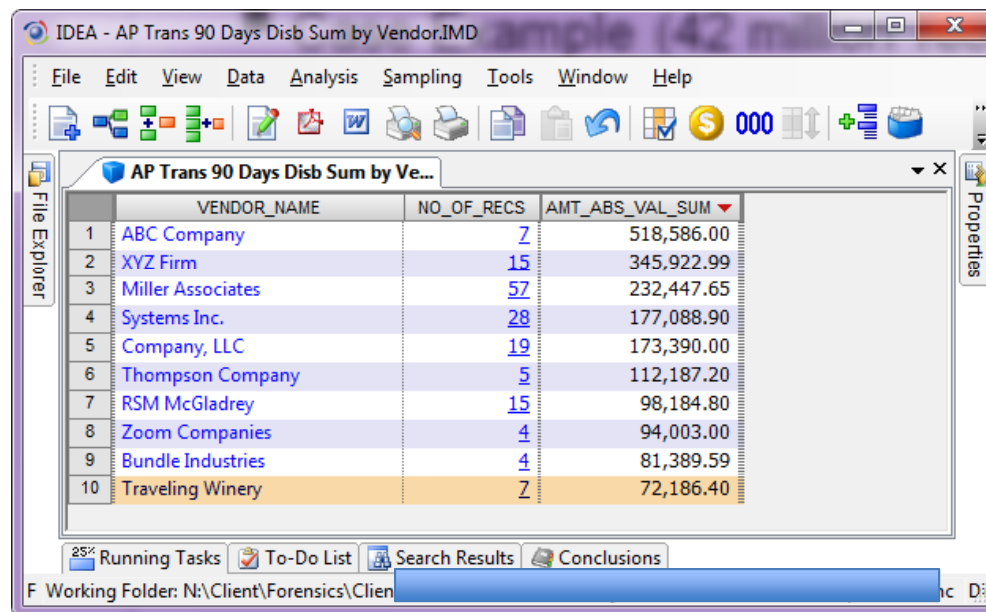
- Combine four years of data (27,766)
- Extracted only Cash Disbursements (1,684)
- Extracted Cash Disbursements  $\geq$  \$500.00 (1,050)
- Identified Cash Disbursements without Explanations (219)
  - Stratified the population:

	COMMENTS_1	NO_OF_RECS	CASH_OUT_SUM
1		63	363,803.60
2		22	34,869.58
3	Advertising	75	153,500.00
4	Charitable Contributions	16	29,000.00
5	Directors Fees	2	7,500.00
6	Janitorial Supplies	40	130,500.00
7	Maintenance & Repair Fee	1	642.58

Anomalies

# Benefits of Data Mining

- Not limited by vast amounts of data
  - Case Example (42 million records in one file)
- Understanding the entire population of data
- Ability to identify anomalies and stratify the population



IDEA - AP Trans 90 Days Disb Sum by Vendor.IMG

File Edit View Data Analysis Sampling Tools Window Help

AP Trans 90 Days Disb Sum by Ve...

	VENDOR_NAME	NO_OF_RECS	AMT_ABS_VAL_SUM
1	ABC Company	7	518,586.00
2	XYZ Firm	15	345,922.99
3	Miller Associates	57	232,447.65
4	Systems Inc.	28	177,088.90
5	Company, LLC	19	173,390.00
6	Thompson Company	5	112,187.20
7	RSM McGladrey	15	98,184.80
8	Zoom Companies	4	94,003.00
9	Bundle Industries	4	81,389.59
10	Traveling Winery	7	72,186.40

Running Tasks To-Do List Search Results Conclusions

F Working Folder: N:\Client\Forensics\Clie...

# Benefits of Data Mining (cont.)

- Preserves data integrity
  - Automatic saving of data
  - Original file remains intact
- Numerous platforms that can be imported directly from the accounting system
- History Log

IDEA - AP Trans 90 Days Disb Sum by Vendor.IMD

File Edit View Data Analysis Sampling Tools Window Help

AP Trans 90 Days Disb Sum by Ve...

Filter

Database	Date	User
N:\Client\Forensics\Client\		
N:\Client\Forensics\Client\		
N:\Client\Forensics\Client\		
N:\Client\Forensics\Client\		
N:\Client\Forensics\Client\		
N:\Client\Forensics\Client\		
N:\Client\Forensics\Client\		
N:\Client\Forensics\Client\		
Control Total Field Changed	05/04/2011 - 09:22	E046696
Record Extraction	05/04/2011 - 09:22	E046696
File Name:	N:\Client\Forensics\Client\ \AP Trans 90 Days.IMD	
Number of Records:	4799	
Control Field:	DOCUMENTAMT	
Control Total:	(602,665.83)	
Extraction from:	N:\Client\Forensics\Client\ \AP Transactions.IMD	
Number of Records:	77143	
Indexed by:	No index	
Extraction Range:	1 - 77143	
Extraction Criteria:	DOCUMENTDATE >= "20090301" .and. DOCUMENTDATE <= "20090601"	
IDEAScript Code:	<pre>Set db = Client.OpenDatabase("AP Transactions.IMD") Set task = db.Extraction task.IncludeAllFields dbName = "AP Trans 90 Days.IMD" task.AddExtraction dbName, "", "DOCUMENTDATE &gt;= ""20090301"" .and. DOCUMENTDATE &lt;= ""20090601"" task.PerformTask 1, db.Count Set task = Nothing Set db = Nothing Client.OpenDatabase (dbName)</pre>	
Index Database	05/04/2011 - 09:22	E046696
Index Database	05/04/2011 - 09:22	E046696
N:\Client\Forensics\Client\		
Control Total Field Changed	05/04/2011 - 09:24	E046696
Record Extraction	05/04/2011 - 09:24	E046696

Running Tasks To-Do List Search Results Conclusions

For Help, Working Folder: N:\Client\Forensics\Client\ Number of Records: 10/277 Disk Space: 94.47 GB

# When to Use an Expert for Data Mining

- Anytime electronic accounting information is available
  - Current environment is the records are electronic
  - New technology and expertise is required
- Capabilities now allow us to analyze millions of records with ease – while maintaining data integrity

# Data Mining Expert Skills

- Basic understanding of:
  - General accounting system
  - IT functions within a general accounting system
- Know the difference
  - Scanned image versus a data report
  - “I can’t” versus “I don’t know how”

# Data Mining Expert Skills (cont.)

- Ability to “Talk the Talk” with IT and accounting individuals
- Ability to present the data as information
  - Exhibits, worksheets, summaries
- Ability for expert to recognize bad data
  - “Garbage in = Garbage out”

# Resources

- Kieso, Donald E. and Weygandt, Jerry J. *Intermediate Accounting*. John Wiley & Sons, Inc. Seventh Edition
- Black's Law Dictionary
- The American Heritage College Dictionary
- <http://www.tech-faq.com/erp.html>
- Bidgoli, Hossein, (2004). *The Internet Encyclopedia*, Volume 1, John Wiley & Sons, Inc. p. 707



# Questions?

# Contact Information

## For more information, contact:

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