

Projects in Internal Audit at CA

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Agenda

- Introductions
- CA Technologies
- CA Technologies and CARLAB Projects
- Expected Outcomes
- Next Steps

Introduction

- Vikas Dutta, Principal Internal Audit, CISA, CIPP/IT, ISO 27001 Lead Auditor
 - Education
 - BBA Operations Management, Zicklin School of Business, Baruch College, New York, NY
- Rob Zanella, VP Internal Audit, CISA
 - Education
 - MBA, Adelphi University, Garden City, NY
 - BS Computer Science, Hofstra University, Home of the Presidential Debates
- Satyajeeet (Saty) Ghosh, SVP and General Auditor, CIA,CISA,CFE
 - Education
 - MBA, Columbia Business School, New York, NY
 - MS Computer Science, Drexel University, Philadelphia, PA
 - MS Engineering, University of Pennsylvania, Philadelphia, PA
 - CAE Panel member for IIA, Research Fellow, Teaching Fellow, Lecturer

CA Technologies

CA Technologies is an IT management software and solutions company with a deep expertise across all IT environments—from mainframe and distributed, to virtual and cloud.

- Our products enable customers to **automate, manage and secure** IT environments and **deliver more flexible IT services**.
- **CA Technologies makes agility possible.**

—*#1 Management Software Vendor

- —**\$4.4 billion** annual revenue and strong profit
- —**~13,400** employees worldwide in 4 regions (NA, LA, EMEA & APJ)
- —Customers in **virtually every country**, including majority of Forbes Global 2000
- —**~\$500 million and ~5,000 people** annually designing and supporting software
- —**30+ years in business** managing complex heterogeneous environments
- —**Ranked among top 50 *Greenest US* companies**

Why Partner with Rutgers Business School

- Innovative applied research work in the area of Accounting and Information Systems
- Audit Innovation thru application of emerging and existing technologies and software solutions
- Rated as #1 in the area of Accounting Information Systems (AIS) Research
- CARLab is truly an industry and academia partnership and research activities are guided by consortium of companies, Big Four, Professional organizations such as AICPA, ISACA etc
- IA staff interact with research staff and has the opportunity to learn from successful practices at other companies
- Enable IA group to enhance analytical and problem solving capabilities

A Flavor of Activities at the CARLab

AUDIT INNOVATIONS

- Continuous Audit
- Continuity Equations (detect anomalies in processes in a continuous assurance setting)
- Multidimensional clustering (e.g. thru visualization and combination of attributes, able to see similarity and differences among claims)
- Process mining (such as event log)
- Predictive auditing
- Conceptualization of the distance audit
- Rule based outlier detection (as opposed to Statistical Methods)

Result

AUDIT APPROACHES

- Rule-based systems
 - ✓ Knowledge engineering of auditor and management rules
- Data mining
 - ✓ Search for relationships
 - ✓ Clustering and exception reporting
- Statistical modeling
 - ✓ Create explanatory models at different transaction and account levels

How

AREAS OF RESEARCH

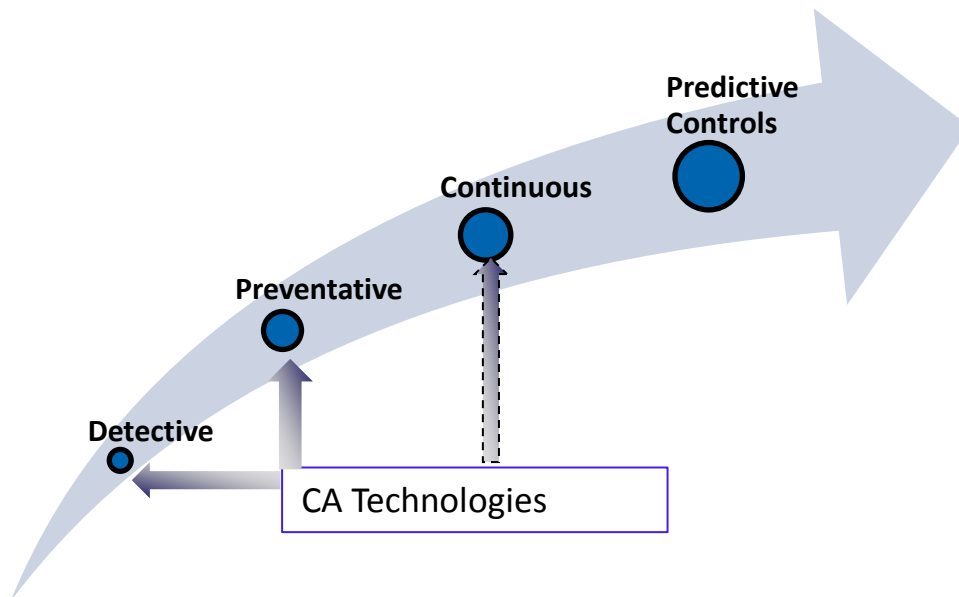
- Creating Control system measurement and monitoring
- Creating standards for Business Process Monitoring and Alarming
- Automatic Confirmation Tools
- Development of a variety of modular Audit bots (agents) to be incorporated into programs of audit automation
- Creation of alternative real-time audit reports for different compliance masters

What

Areas of Interest for CA Technologies

Areas of Interest	Benefit
Continuous Monitoring (CM) and Continuous Auditing (CA)	Continuous audit is used to monitor present transactions Can we use CA to predict the future? <ul style="list-style-type: none">• Audit by exception• Alarm and warning system• Reduce Cost and Improve Audit quality
Controls Maturity Model Development	<ul style="list-style-type: none">• Develop model, process and metrics to quantify maturity of control environment or a business process such as A/P, A/R, Procurement, OTC etc
Improved FCPA compliance algorithm and develop new Key Risk Indicators (KRI)	<ul style="list-style-type: none">• Analysis of vendor and travel and entertainment expenses for indicators or potential indicators of FCPA violation
Improved duplicate payment algorithm as bolt on to SAP instance (working this with Rutgers and CA Technology Partner company)	<ul style="list-style-type: none">• Reduce Cost• Improve Audit Quality and Reduce Cycle time

Evolution of Controls Framework & Future



What to Expect in the next few years.....

- Progressive ubiquity of Continuous Audit/Continuous Monitoring processes
- Progressive definition of monitoring and reliance on IA work
- Substantive increase in technology usage in the audit
- Increased interplay between forensic and continuous audit
- Improvements in modeling of comparison standards, filtering, predictive error detection
- *An Evolution of Audit Framework from Assurance of Reports to Assurance of Key Processes to Assurance Of Data Elements (Data Assurance)*

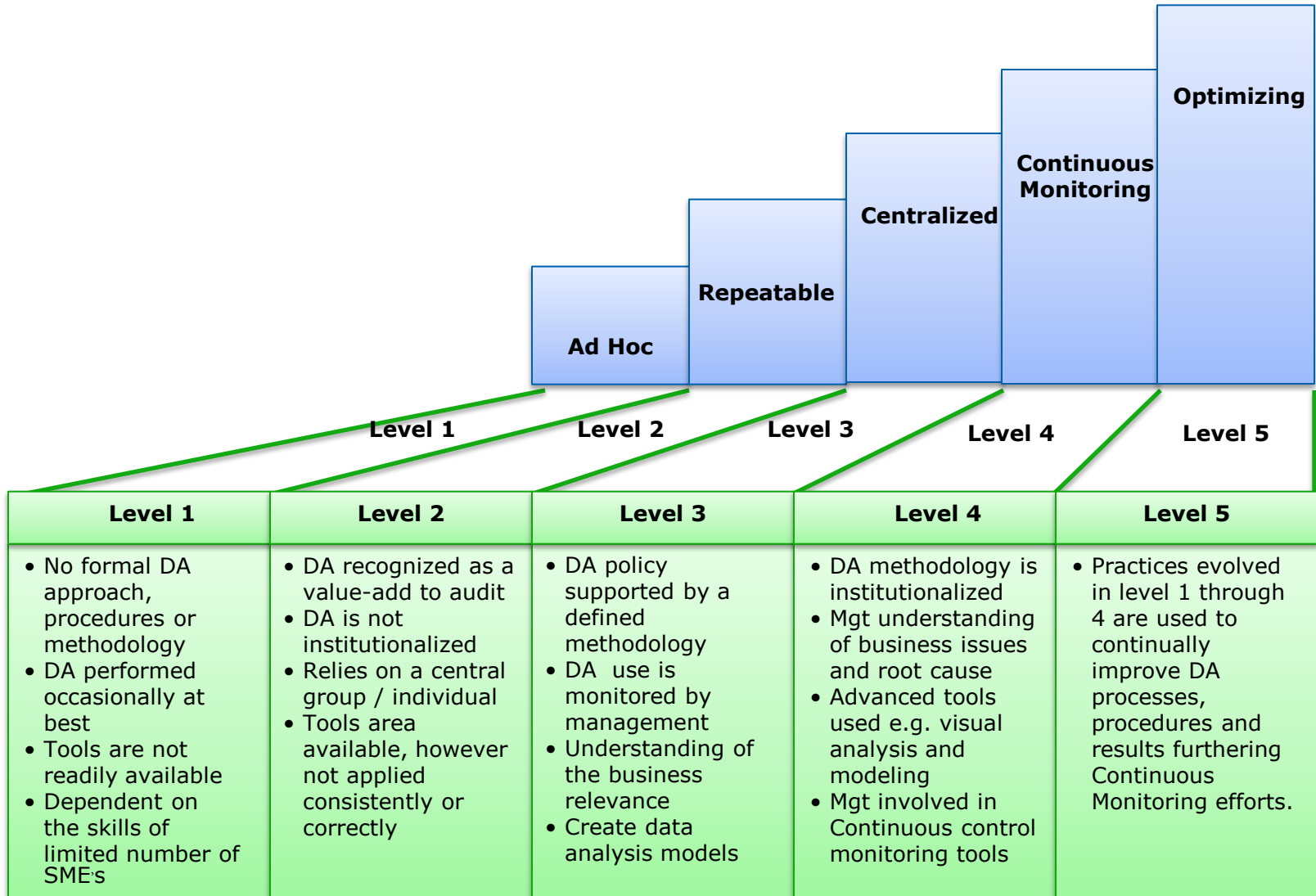
How do we future proof CA's IA function? And one of the steps taken is ...

Control Environment Maturity Model Project

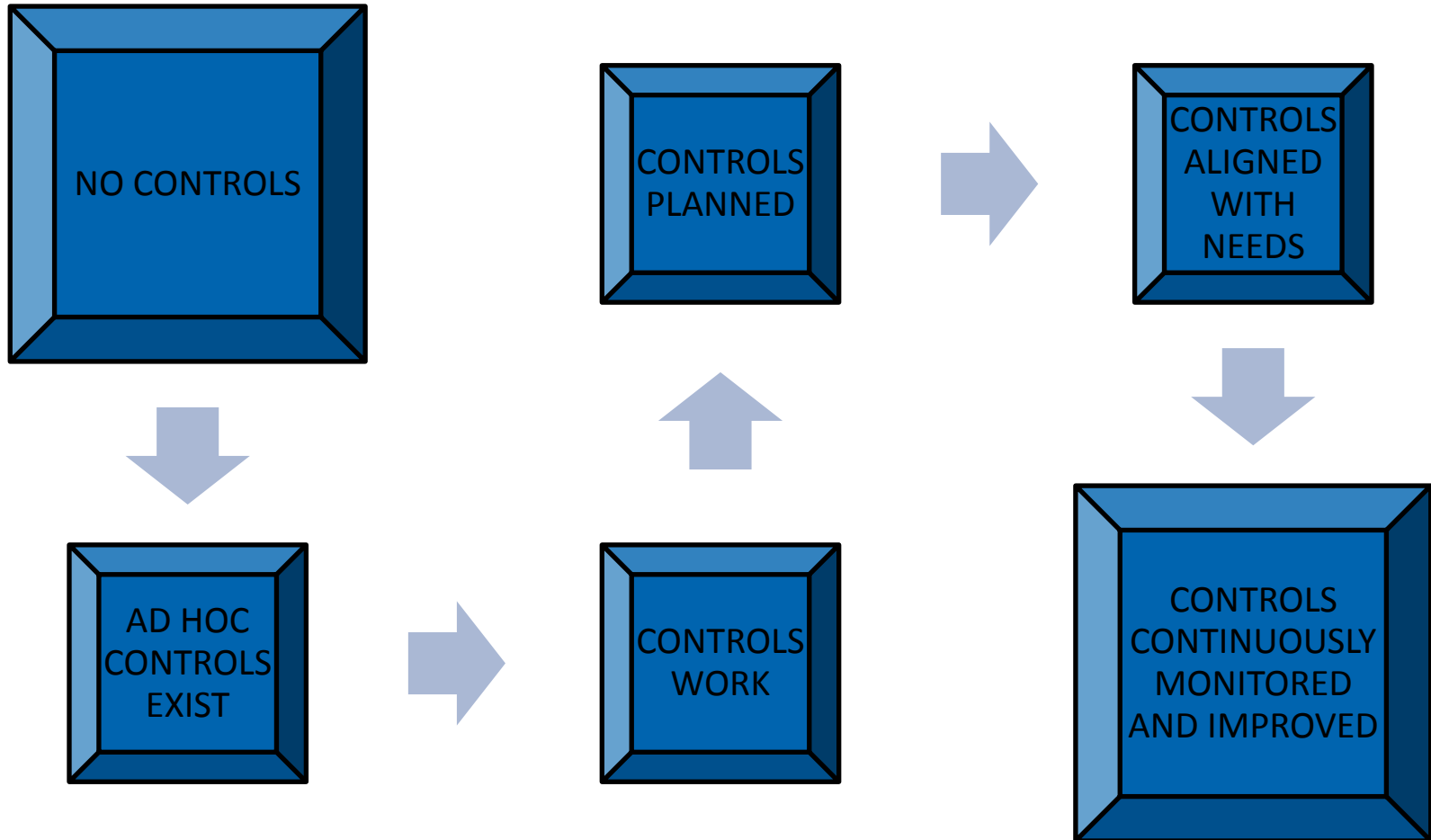
The 5 stages of the Capability Maturity Model

1. Initial (processes are ad-hoc, chaotic, or actually few processes are defined)
2. Repeatable (basic processes are established and there is a level of discipline to stick to these processes)
3. Defined (all processes are defined, documented, standardized and integrated into each other)
4. Managed (processes are measured by collecting detailed data on the processes and their quality)
5. Optimizing (continuous process improvement is adopted and in place by quantitative feedback and from piloting new ideas and technologies)

Data Analytics Maturity Model



IA Maturity Model Phases Roadmap



Elements to Establish Maturity Model Criteria

COSO: “Automated controls tend to be more reliable...since they are less susceptible to human judgment and error, and are typically more efficient.”

→ #1: *Automation*

Most business processes have a mix of manual and automated controls

→ #2: *Level of Automatability*

Should every organization strive to be at the highest level of maturity? What is the optimal level?

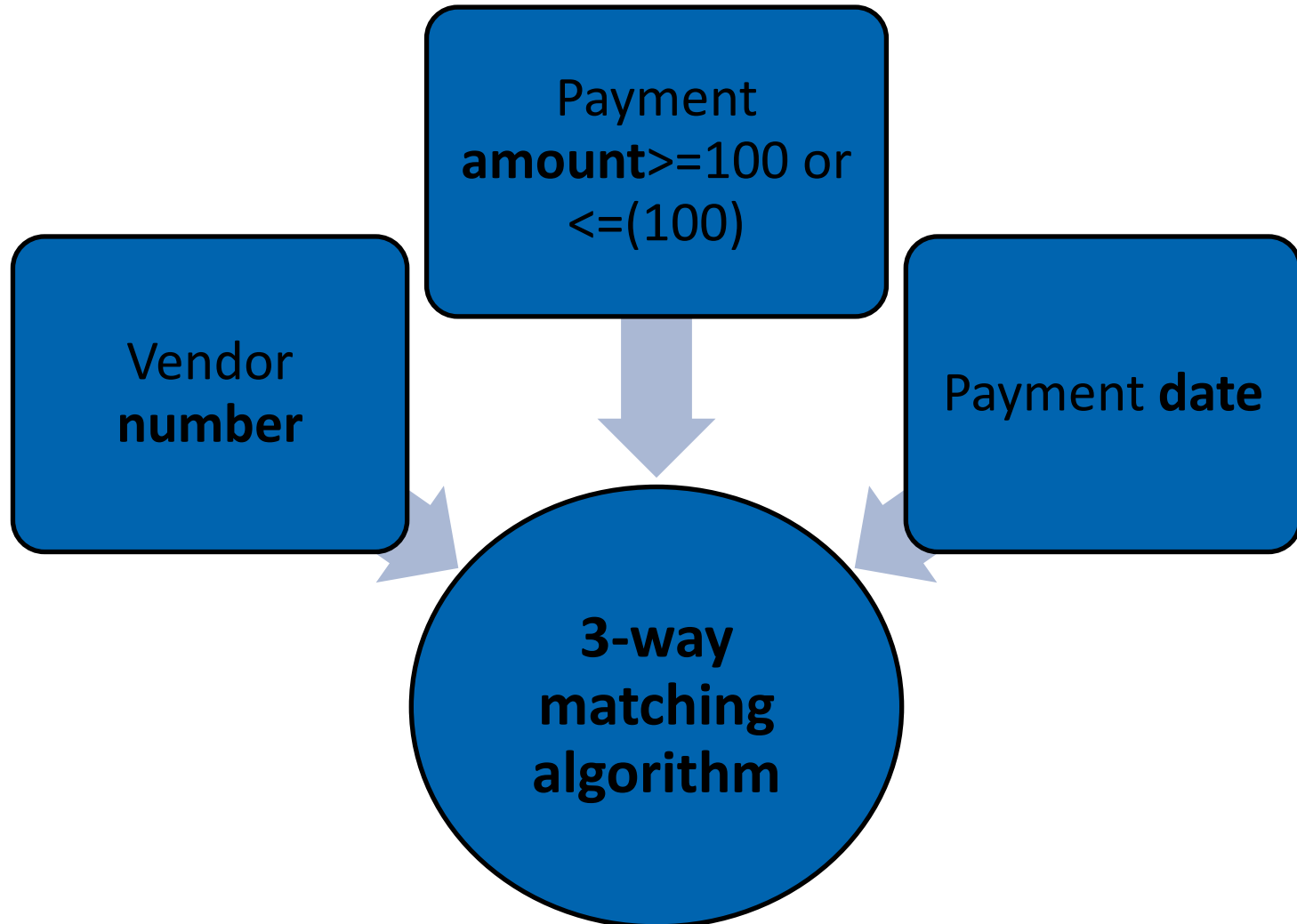
→ #3: *Level of Significance*

Level of Complexity of Automation (Example)

Control: On a quarterly basis, the role owner reviews access to SAP to ensure that only authorized personnel have access to process invoices against Purchase Orders including ability to input, edit or cancel invoices.


1. Are tickets containing the reviews retrieved manually?	YES	NO
If yes, can this be automated?	YES	NO
2. When copying files that evidence the review in order to filter by “passed” or “failed”, are the files copied manually?	YES	NO
If yes, can this be automated?	YES	NO
3. Are these files manually filtered to check for “failed” items?	YES	NO
If yes, can this be automated?	YES	NO
4. When reviewing other users the role owner “passed,” but the user is found to be in a different cost center, is the review performed manually?	YES	NO
If yes, can this be automated?	YES	NO

Duplicate payment detection flowchart illustration



28 potential duplicate records detected

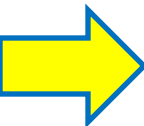
Filter:



	Account	Amount	Payment date	Clearing date	Document date	Net due date	Posting date	Reference	Type	Username
1	2000001	-7799.41	07/20/2012	07/20/2012	07/20/2012	07/20/2012	07/20/2012	SALES TAX	KZ	AVEJE01
2	2000001	-7799.41	07/20/2012	07/20/2012	07/20/2012	07/20/2012	07/20/2012	072012	KR	FARDO02
3	2000162	-3484.00	07/20/2012	07/20/2012	07/20/2012	07/20/2012	07/20/2012	SALES TAX	KZ	AVEJE01
4	2000162	-3484.00	07/20/2012	07/20/2012	07/20/2012	07/20/2012	07/20/2012	072012A	KR	FARDO02
5	1000596	-378.20	04/24/2012	07/18/2012	02/24/2012	04/24/2012	07/13/2012	10560855	RE	WF_BATCH
6	1000596	-378.20	04/24/2012	07/18/2012	02/24/2012	04/24/2012	07/13/2012	10560868	RE	WF_BATCH
7	1000041	-100.00	07/07/2012	07/20/2012	07/07/2012	07/07/2012	07/19/2012	3787334522	KR	FARDO02
8	1000041	-100.00	07/07/2012	07/20/2012	07/07/2012	07/07/2012	07/19/2012	3796564907	KR	FARDO02
9	1000041	-99.00	07/07/2012	07/20/2012	07/07/2012	07/07/2012	07/19/2012	3785992191	KR	FARDO02
10	1000041	-99.00	07/07/2012	07/20/2012	07/07/2012	07/07/2012	07/19/2012	3787319992	KR	FARDO02
11	1001966	-41.43	07/20/2012	07/18/2012	06/20/2012	07/20/2012	06/25/2012	815381567	RE	WF_BATCH
12	1001966	-41.43	07/20/2012	07/18/2012	06/20/2012	07/20/2012	06/25/2012	815381585	RE	WF_BATCH
13	1001966	-41.43	07/20/2012	07/18/2012	06/20/2012	07/20/2012	06/25/2012	815381576	RE	WF_BATCH
14	1001966	-20.00	07/23/2012	07/18/2012	06/23/2012	07/23/2012	06/27/2012	0000V14632	RE	WF_BATCH
15	1001966	-20.00	07/23/2012	07/18/2012	06/23/2012	07/23/2012	06/27/2012	0000W0R817	RE	WF_BATCH
16	1001966	-12.44	07/20/2012	07/18/2012	06/20/2012	07/20/2012	06/25/2012	815297622	RE	WF_BATCH
17	1001966	-12.44	07/20/2012	07/18/2012	06/20/2012	07/20/2012	06/25/2012	815297604	RE	WF_BATCH
18	1000195	-9.00	07/22/2012	07/18/2012	06/07/2012	07/22/2012	07/05/2012	XFT3M4MD8	RE	WF_BATCH
19	1000195	-9.00	07/22/2012	07/18/2012	06/07/2012	07/22/2012	07/05/2012	XFT3M4R45	RE	WF_BATCH
20	1000195	-9.00	07/22/2012	07/18/2012	06/07/2012	07/22/2012	07/05/2012	XFT3M4PX3	RE	WF_BATCH
21	1000041	99.00	07/20/2012	07/20/2012	07/20/2012	07/20/2012	07/20/2012		ZP	KEYEI01
22	1000041	99.00	07/20/2012	07/20/2012	07/20/2012	07/20/2012	07/20/2012		ZP	KEYEI01
23	1000041	100.00	07/20/2012	07/20/2012	07/20/2012	07/20/2012	07/20/2012		ZP	KEYEI01
24	1000041	100.00	07/20/2012	07/20/2012	07/20/2012	07/20/2012	07/20/2012		ZP	KEYEI01
25	2000162	3484.00	07/20/2012	07/20/2012	07/20/2012	07/20/2012	07/20/2012	SALES TAX	KZ	KEYEI01
26	2000162	3484.00	07/20/2012	07/20/2012	07/20/2012	07/20/2012	07/20/2012	072012A	KA	AVEJE01
27	2000001	7799.41	07/20/2012	07/20/2012	07/20/2012	07/20/2012	07/20/2012	SALES TAX	KZ	KEYEI01
28	2000001	7799.41	07/20/2012	07/20/2012	07/20/2012	07/20/2012	07/20/2012	072012	KA	AVEJE01

Default_View

28 Records Indexed



Looking for offsetting transactions

Account	Amount	Payment date	Clearing date	Document date	Net due date	Posting date	Reference	Type	Username
1000041	-100.00	07/07/2012	07/20/2012	07/07/2012	07/07/2012	07/19/2012	3787334522	IKR	FARDO02
1000041	-100.00	07/07/2012	07/20/2012	07/07/2012	07/07/2012	07/19/2012	3796564907	IKR	FARDO02
1000041	-99.00								DO02
1000041	-99.00								DO02
1000041	99.00								EI01
1000041	99.00								EI01
1000041	100.00								EI01
1000041	100.00								EI01
1000195	-9.00								BATCH
1000195	-9.00								BATCH
1000195	9.00								BATCH
1000596	-378.20								BATCH
1000596	-378.20								BATCH
1001966	-41.43								BATCH
1001966	-41.43								BATCH
1001966	-41.43								BATCH
1001966	-20.00								BATCH
1001966	-20.00								BATCH
1001966	-12.44								BATCH
1001966	-12.44								BATCH
2000001	-7799.41								EI01
2000001	-7799.41								DO02
2000001	7799.41								EI01
2000001	7799.41								EI01
2000162	-3484.00								DO02
2000162	-3484.00								EI01
2000162	3484.00								EI01
2000162	3484.00								EI01

Expression: Amount <= -100 OR Amount >= 100

Available Fields:

Name	Title	Start	Cate..
Account	Account	1	N
Amount	Amount	13	N
Clearing...	Clearing_d...	33	D
Docume...	Document...	41	D
Net_due...	Net_due_d...	49	D
Paymen...	Payment_...	25	D
Posting_...	Posting_d...	57	D
Reference	Reference	65	C
Type	Type	76	C
Username	Username	80	C

From Table: revised_3_way_matching_

Refining the algorithm: specify amounts > \$100

The screenshot displays a software interface with several overlapping windows. The primary window is the 'Duplicates' dialog box, which is used for identifying duplicate records based on specific criteria. It features a 'Main' tab and an 'Output' tab. The 'Duplicates On...' section contains a table with columns 'Name', 'Title', 'Start', and 'Cate.'. Below this, there is an 'If...' section with a checked 'Presort' option. The 'Expression' field is populated with the text 'Amount >= 100 OR Amount <= -100'. An 'ACL9' dialog box is overlaid on top of the 'Duplicates' dialog, displaying an information icon and the message 'Expression is valid' with an 'OK' button. The background shows a data table with columns 'posting_date', 'Username', and 'Type'. Other visible elements include a 'List Fields...' dialog, a 'Functions' list, and a 'Variables' list.

Name	Title	Start	Cate.	
1	Account	Account	5	N
2	Amount	Amount	17	N
	Clearing...	Clearing_d...	141	D
	Docume...	Document...	59	D
	Net_due...	Net_due_d...	114	D

Name	Title	Start	Cate..
Account	Account	5	N
Amount	Amount	17	N
Clearing...	Clearing_d...	141	D
Docume...	Document...	59	D
Net_due...	Net_due_d...	114	D
Paymen...	Payment_...	163	D
Posting_...	Posting_d...	177	D
Reference	Reference	93	C
Type	Type	200	C
Username	Username	187	C

posting_date	Username	Type
7/19/2012	JFARDO02	JKR
7/20/2012	JKEYE101	JZP

1000041	6		
1000041	54		
1000041	10		
1000041	2465.00	07/20/2012	
1000041	775.00	07/20/2012	
1000041	1061.03	07/20/2012	
1000041	352.74	07/20/2012	
1000041	69.43	07/20/2012	

Expected outcomes

- Enhanced audit quality and stakeholder value
- Allows IA to be flexible and responsive
- Increased analytical abilities (Hybrid auditors)
- Breaking the cycle of traditional auditing methods
- Continue to look at the organization critically and drive change