



Check Fraud Prevention Webinar



Man vs. Machine: Who's Better
at Preventing Check Fraud?

June 20, 2012, 1:00 - 2:00 pm ET

Man vs. Machine: Who's Better at Preventing Check Fraud?

**Hosted by
Joe Gregory, VP Marketing
Orbograph**



**Featuring
Greg Council,
Director of Product Mgmt
Parascript**



For Attending Today's Webinar!

(3) Prize Drawings

Livescribe 4GB Echo Smartpens



Whitepaper:

Increase Security Through Signature
Verification Technology



Type a question for the presenter.

Ask



No questions have been answered yet.

Today's presentation can be
downloaded here.
Brochures and other
information also available.

Today's Agenda

1. ABA 2011 Deposit Acct Fraud Survey analysis



2. Exploration: forgeries, counterfeits, alterations



3. Man vs. Machine: strengths and weaknesses



4. Leveraging “the signature” for authentication



5. Challenges and solutions



Check Processing
Solutions



Fraud
Prevention



Data Mining for
Marketing



Medical HRCM

Company: Orbograph

Company

ABA Study

Fraud Types

Image Analysis

Man vs. Machine

Technology

Sig. Authentication

Workflows

Challenges

Closing

- Check recognition core competency
- Check image analysis
- Multi-Source Correlation Modeling™
- Sereno™ fraud prevention solution providers





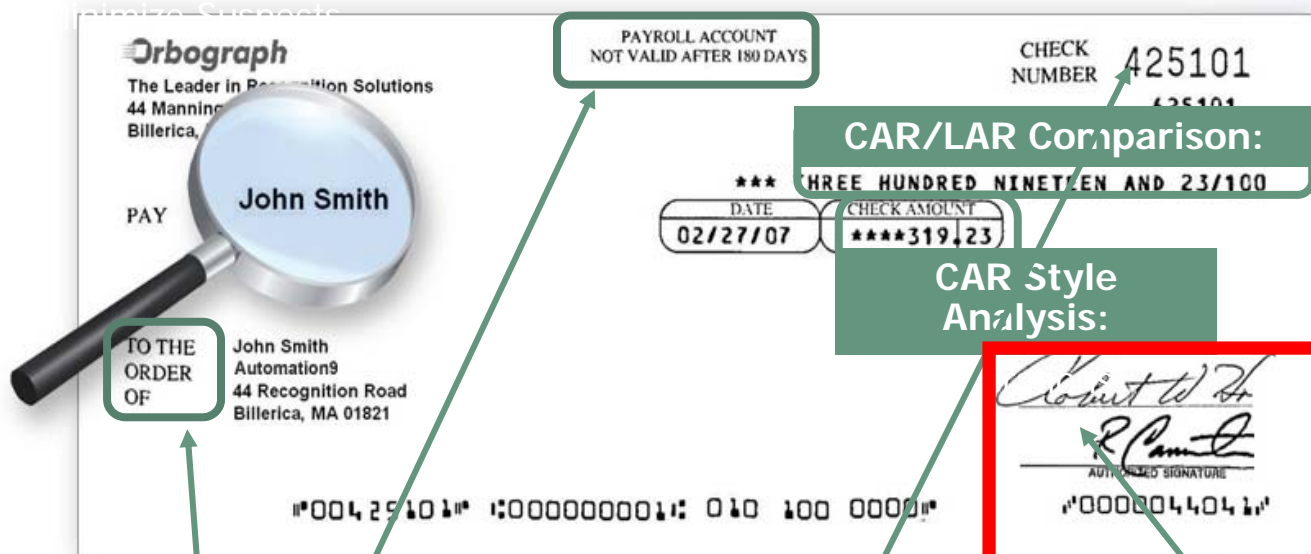
Celebrating 15 Years of Performance

Certified with:



Image Analysis and Automated Signature Verification (ASV)

Payee & Payer Match:



Check Stock
Validation (Field
locations):
Counterfeits

Serial #
Matching:
Counterfeits

Automated
Signature
Verification
(ASV):

Forgeries
(Skilled & Unskilled)



Image Analysis

Man vs. Machine

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Company: Parascript

Company

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Closing

- Software toolkits for automated
 - forms processing, check fraud prevention, medical imaging, Check 21, remittance processing and postal automation
- Captures all character types
 - variety of images, cursive, handprint (ICR) and machine print (OCR)



Company: Parascript

Company

ABA Study

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- **SignatureOnline™**
 - voted best performance for online signature verification at the 10th International Conference on Document Analysis and Recognition
- **SignatureXpert®**
 - awarded best performance for forensic signature verification at 12th International Conference on Frontiers in Handwriting



ABA 2011 Deposit Account Fraud Survey Study “Check” Highlights

Fraud Types

Man vs. Machine

Sig. Authentication

Challenges

- 9th biennial study: check, debit, online, mobile, phone, ACH, wire
- 2011(2010 data) vs. 2009 (2008 data)
- Statistical sampling: 117 full participants, 68 abridged survey
 - <500M
 - \$500M-\$4.9B
 - \$5B - \$49.9B
 - \$50B+
- Attempts: \$11B vs. \$11.4 (⬇️ 3.5%)
- Losses: \$893M vs. \$1.024B (⬇️ 12.8%)
 - Consumer accounts (⬇️ 62% from 74%)
 - Small business accounts (⬆️ 21% from 16%)
 - ID Theft (⬆️ 16% from 4%)



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ABA 2011 Deposit Account Fraud Survey Study “Check” Highlights

ABA Study

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Closing

	<u>Community</u>	<u>Mid Sized</u>	<u>Regional</u>	<u>Superregional</u>
Sample size (117)	22	58	23	14
Unabridged size (68)	51	14	3	0
% with Check Fraud 2010	68%	95%	100%	100%
% with Check Fraud 2008	72%	97%	100%	100%
<hr/>				
Number of cases 2010				
Median	6	17	207	4,425
Mean	19	67	352	14,077
Total losses (\$)				
Median	5,057	31,220	384,331	7,370,980
Mean	8,690	62,670	613,932	24,344,555

\$893M still remains...but averages have dropped

ABA 2011 Deposit Account Fraud Survey Study “Check” Highlights

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Closing

	<u>Community</u>	<u>Mid Sized</u>	<u>Regional</u>	<u>Superregional</u>
Case Difference 2010 vs. 2008 Data				
Median	(8)	(12)	(184)	515
Mean	(4)	(3)	(168)	(1,126)
Total loss Difference (\$)				
Median	(7,497)	(15,791)	(300,129)	(953,317)
Mean	(6,529)	(44,046)	(127,292)	(6,363,448)
Case Difference 2010 vs. 2008 Data (%)				
Median	-57%	-41%	-47%	13%
Mean	-17%	-4%	-32%	-7%
Total loss Difference (\$)				
Median	-60%	-34%	-44%	-11%
Mean	-43%	-41%	-17%	-21%
% of Check Fraud 2010				
	4%	6%	8%	82%
% of Check Fraud 2008				
	8%	9%	7%	76%

Source: ABA 2011 Deposit Account Fraud Survey

ABA Study Highlights

Why The Decline in Check Fraud?

ABA Study

Fraud Types

Image Analysis

Man vs. Machine

Technology

Sig. Authentication

Workflows

Challenges

Closing

- Improved systems
- Product adoption
- Greater awareness
- Faster clearing/rules
- Other payment channels less protected?
- Volume decline? n/a
- Did the fraudsters go downstream or back upstream?



ABA Study Highlights

Why The Decline in Check Fraud?

ABA Study

Fraud Types

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Challenges

Closing

- Did the respondents classify the fraud into the appropriate categories?
 - Check to ACH
 - Deposit fraud (% should be larger)
 - Debit card loss (How much was deposited by a check?)



“Fraud patterns have changed dramatically over the past several years. It’s no wonder large financial institutions are concerned about cross channel fraud. We need a more standard categorization system to better identify the buckets for control purposes.” Jodi Pratt of Jodi Pratt and Associates & The Santa Fe Group.

Fraud Type Losses 2010

Fraud Types

Image Analysis

Man vs. Machine

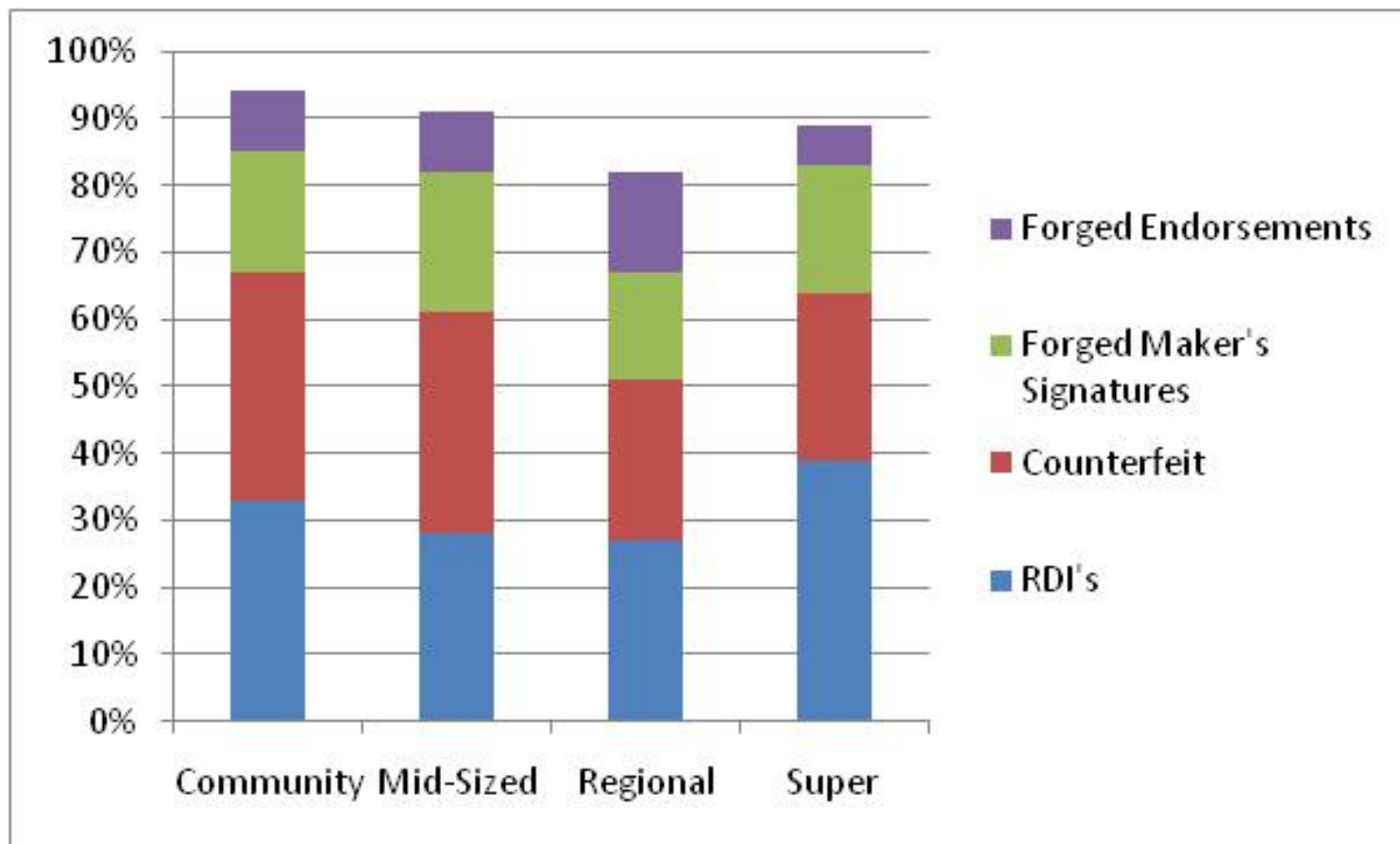
Technology

Sig. Authentication

Workflows

Challenges

Closing



Opportunities for ASV, CSV, automated endorsement & PNV

Source: ABA 2011 Deposit Account Fraud Survey

ABA Study Highlights

Top Risks Next 12 Months

ABA Study

Fraud Types

Image Analysis

Man vs. Machine

Technology

Sig. Authentication

Workflows

Challenges

Closing

- Threats against deposit accounts
 - Signature debit card fraud
 - Customer victimization scams
 - ACH origination
 - Cross channel fraud
 - Deposit, on-us fraud (larger banks)
- Duplicate posting/presentment in RDC
- ⬆ in volumes all new channels
- New account fraud
- Does this mean we solved check fraud?



ABA Study Highlights

Predicting Higher Numbers 2012

Fraud Types

Image Analysis

Man vs. Machine

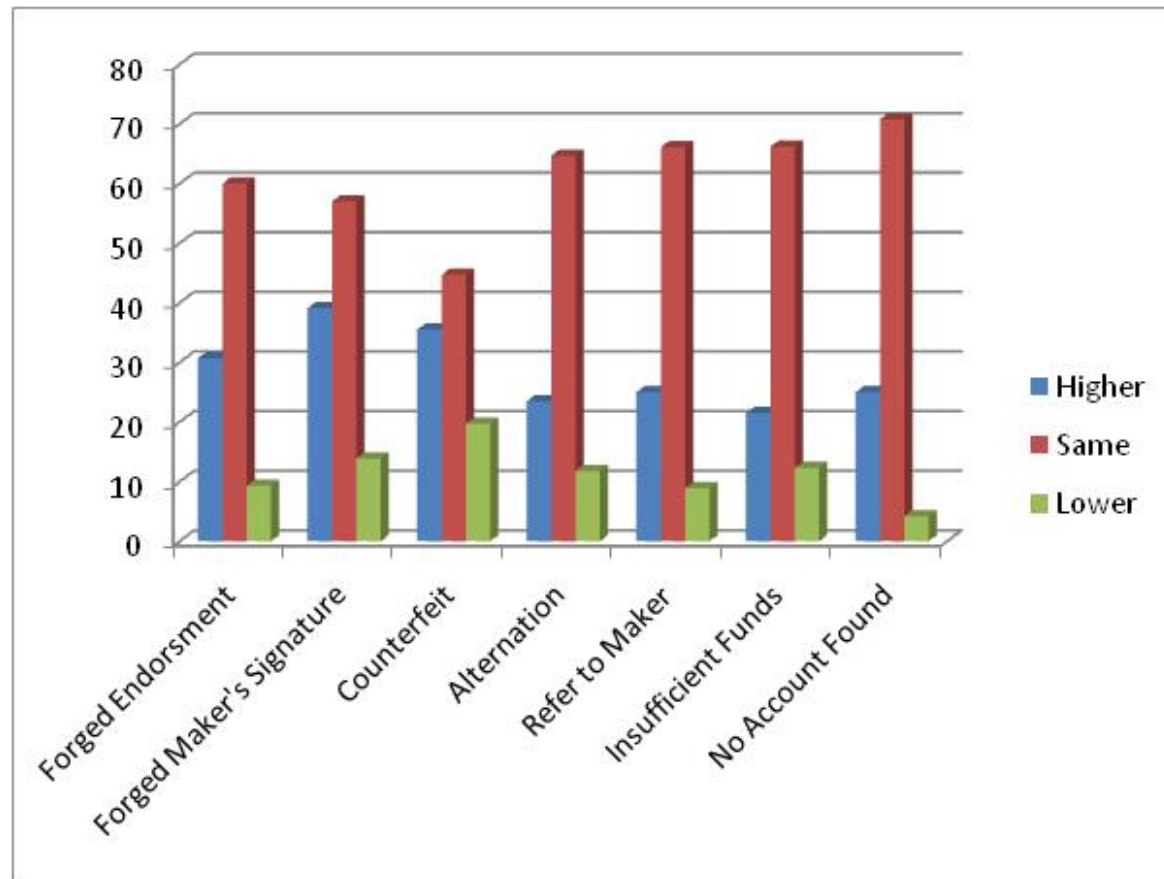
Technology

Sig. Authentication

Workflows

Challenges

Closing



Are checks at greater risk than other payments moving forward?

Source: ABA 2011 Deposit Account Fraud Survey

Polling #1

1. What check fraud is the highest concern for your organization in 2012?

1. Counterfeits
2. Forgeries
3. Deposit fraud (RDI)
4. Alterations
5. Insufficient funds
6. Not concerned

Drawing #1

(3) Prize Drawings
Livescribe 4GB Echo Smartpen



The Solution Starts with the Attributes of Each Fraud Type

Fraud Types

Image Analysis

Man vs. Machine

Technology

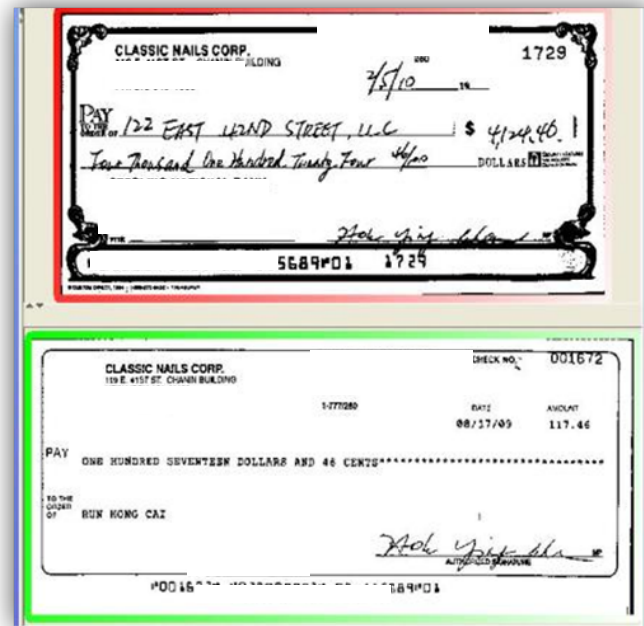
Sig. Authentication

Workflows

Challenges

Closing

- Counterfeit
 - Different check Stock
 - Serial Out Of Range or Duplicate
 - Many times different signature
- Forgery
 - Different signature
 - Same check stock
 - Serial in range
- Amount Alteration
 - Fonts discrepancies or CAR \neq LAR
 - Same check stock
 - Same signature
 - Serial in range



Integration with Fraud Filters (Data Analytics)

Fraud Types

Image Analysis

Man vs. Machine

Technology

Sig. Authentication

Workflows

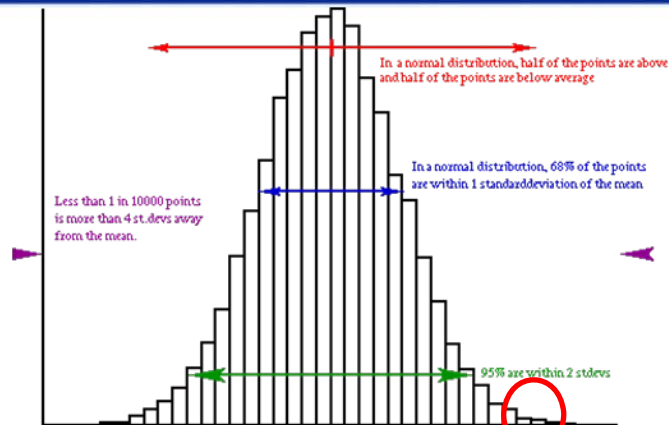
Challenges

Closing

	<u>Counterfeit</u>	<u>Forgery</u>	<u>Alteration</u>	<u>Return/Oper Error</u>
Different check stock	☑	±		
Similar check stock	±	☑	☑	
Different signature	☑	☑		
Same signature		☑		
Indications of Alternation		±	☑	
CAR≠LAR			☑	☑
Duplicate	☑	±		☑
Serial out of range	☑	±		±
Serial in range		☑	☑	
Amount out of range	☑	☑	☑	
Amount in range				
Pre authorized Draft	±			
White list payee				
Black list payee	☑			
Signature match		±	±	
Signature mismatch (profile	±	☑		
Signature missing	±			☑
<hr/>				
	☑	Attribute supports fraud: suspicious		
	±	Evidence present: highly inconclusive		

Challenge: \$31,759.23

Amount out of range



Amount Out Of Range

15

Recent Items				
Group #	#	Serial	Amount	Date
0	171	12931	54928.0	Fri Jan 22 17:00:00 GMT+02:...
2	1	0	48769.15	Thu Jan 14 17:00:00 GMT+02:...
0	192	12942	34287.22	Wed Jan 27 17:00:00 GMT+0...
2	0	12965	31759.23	Mon Feb 01 17:00:00 GMT+0... 002
0	37	12567	25700.3	Wed Sep 16 11:00:00 GMT+0...
0	58	12580	22391.03	Thu Sep 24 11:00:00 GMT+0...
0	95	12659	18658.79	Tue Oct 13 10:00:00 GMT+02...
0	161	12912	16387.79	Thu Jan 14 17:00:00 GMT+02...
0	20	12525	14474.09	Thu Sep 10 11:00:00 GMT+0...
0	110	12661	14474.09	Mon Oct 19 10:00:00 GMT+0...
0	9	12494	13929.73	Tue Sep 08 11:00:00 GMT+0...

Solution: Merge with Image Analysis

Sereno Decision Support Tool

Review | Transactional | Advanced

Sereno Details

MICR: 12600 923

Document Type: Business

Suspect: Fraud **Forgery** IQUA: No

Total Score: 14

Counterfeit: 99

Forgery: 21

Amount Discrepancy: No Match Was Found

Payee Matching: No Match Was Found

Serial Out Of Range: 99

Duplicate: False

Amount Out Of Range: 15

Amount Threshold: False

Two Signers Required: No

Profile Information

Companion Items

9/14

Check 1 (Top): AMERICAN EXPRESS, 902 BROADWAY, NEW YORK, NY 10010, 1-771-2600, 1/26/2010, \$31,759.23, Thirty-One Thousand Seven Hundred Fifty-Nine and 23/100 DOLLARS, MEMO: A/C # 3782-628474-56001.

Check 2 (Bottom): LOOR, CHECK DATE: SEP 10, 2009, CHECK NO.: 107260, PAY THIS AMOUNT: *****522.44, PAY FIVE HUNDRED TWENTY TWO AND 44/100 DOLLARS TO THE ORDER OF: APT 4D, NEW YORK, NY 10029.

00230225_BUNDLE0028_5250010558503 | tid 859478

Opportunities for Image Analysis

- 42% apply random signature verification
- 88.5% apply large dollar signature verification
- Although 53.8% of Super Regional's use CSV
 - Only 17.4 Regionals and 27.6% overall
- Payee Verification
 - 78.6% Super, only 41.8% overall

Image Analysis

Man vs. Machine

Technology

Sig. Authentication

Workflows

Challenges

Closing

Summary

Realities of On-Us vs. Deposit Fraud

ABA Study

Fraud Types

Image Analysis

Man vs. Machine

Technology

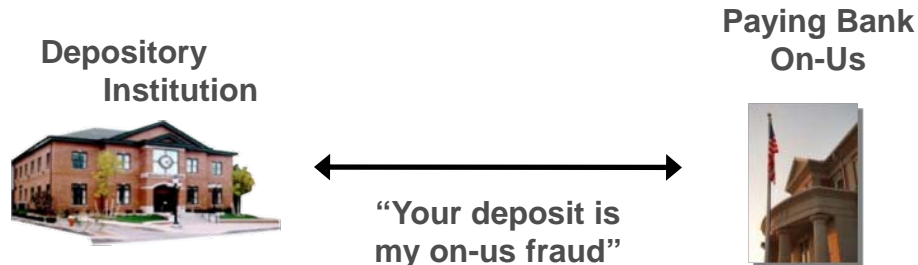
Sig. Authentication

Workflows

Challenges

Closing

- On-Us fraud prevention is easier than Deposit
- Build up your On-Us defenses
 - Inclearing, OTC cashed checks, ATM and RDC
- Use Reg. CC availability schedules to your advantage
 - Returns 1-3 days (disadvantage for Depositing FI)
- Leverage technologies of On-Us for Deposit
- Jodi: Exchange partnerships



Polling #2

1) What is your largest check fraud system concern?

1) Create too many false positives.

2) Do not catch enough fraud (false negative)

3) Antiquated

4) Modest concerns: more features

5) Modest concerns: add image analysis

6) No concerns

Man vs. Machine: Who's Better at Preventing Check Fraud?




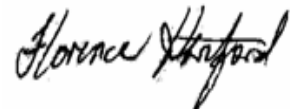

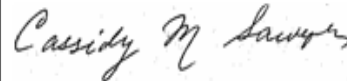
**Featuring
Greg Council,
Director of Product Mgmt
Parascript**



(Representing the Machine)

Examples of Signature Fraud

Person 1

Genuine Signature (Profile Image)	
Random Forgery	
Blind Forgery (Unskilled)	
Skilled Forgery	

Man vs. Machine

Technology

Sig. Authentication

Workflows

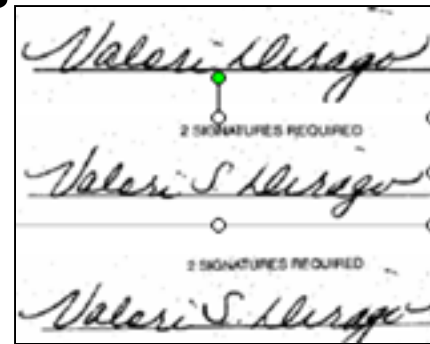
Challenges

Closing

Signature Scenarios

Importance of the Profile Images

- There are often **more deviations** in **genuine** signatures than in skilled forgeries
 - There are other **unstable elements** that may be present or omitted in genuine (profile) signatures
 - Middle initial is often skipped in genuine signatures
- Deviations depend on the environment where the signature is signed
 - At the bank vs. grocery store
 - Local business person in the field



Man vs. Machine

Technology

Sig. Authentication

Workflows

Challenges

Closing

Two largest problems/errors By The ASV Machine

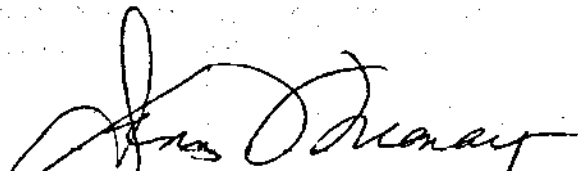
Accepted Forgery

A handwritten signature that has been incorrectly accepted by the ASV machine as genuine.

Customer Genuine
Profile Image

A handwritten signature that has been correctly identified by the ASV machine as a genuine customer profile image.

Rejected Genuine

A handwritten signature that has been incorrectly rejected by the ASV machine as a forgery.

Customer Genuine
Profile Image

A handwritten signature that has been correctly identified by the ASV machine as a genuine customer profile image.

Man vs. Machine

Technology

Sig. Authentication

Workflows

Challenges

Closing

Man Vs. Machine – The Challenge

- Two tests were conducted:
 1. College-educated reviewers trained to understand and analyze key areas to examine with skilled forgeries.
 2. Trained operator test using random and unskilled forgeries.
- The objective: Identify and reject as many forgeries while accepting genuine signatures.

Man vs. Machine

Technology

Sig. Authentication

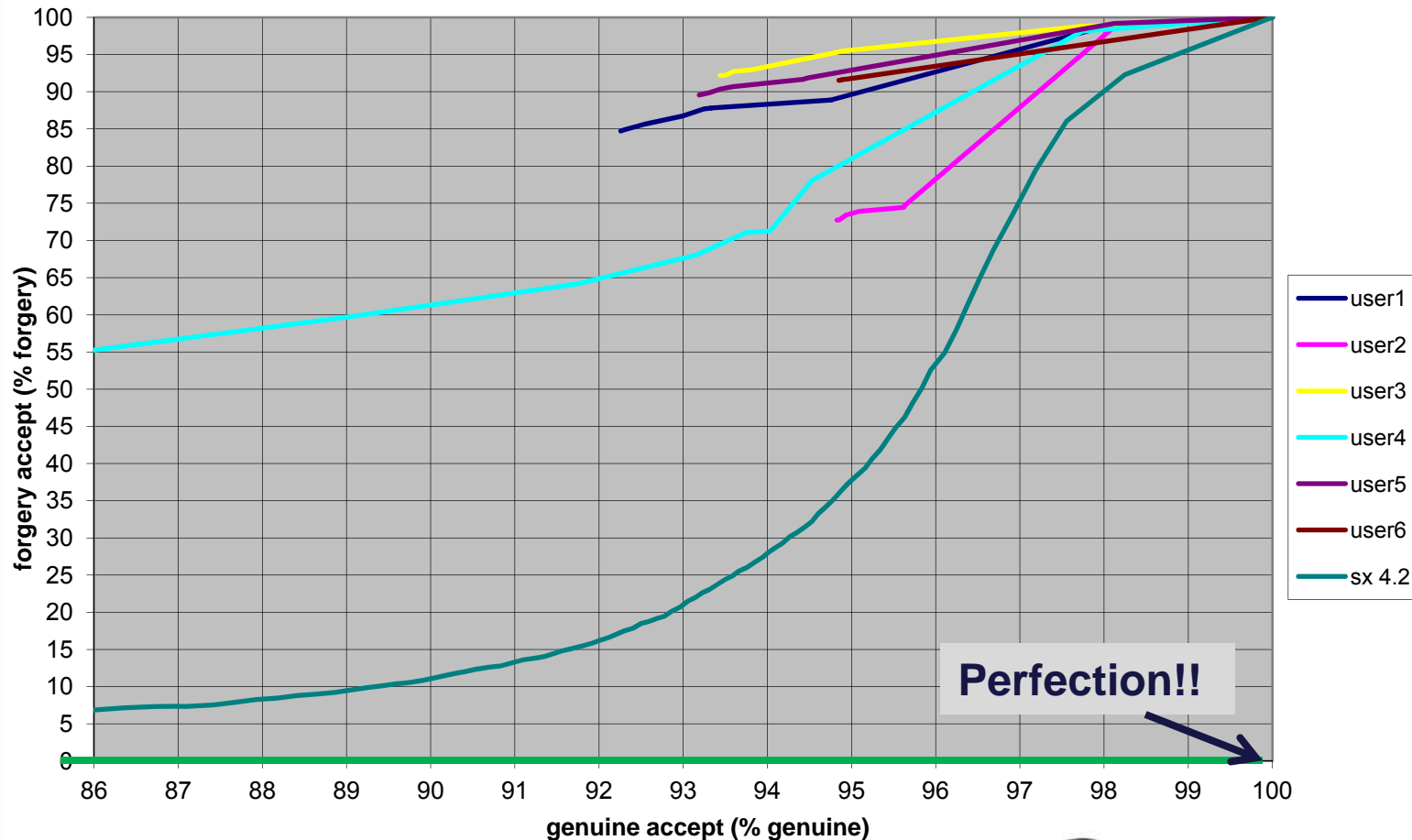
Workflows

Challenges

Closing

Man Vs. Machine – Skilled Forgeries

Verification Results on Skilled Forgeries



Perfection!!

Man vs. Machine

Technology

Sig. Authentication

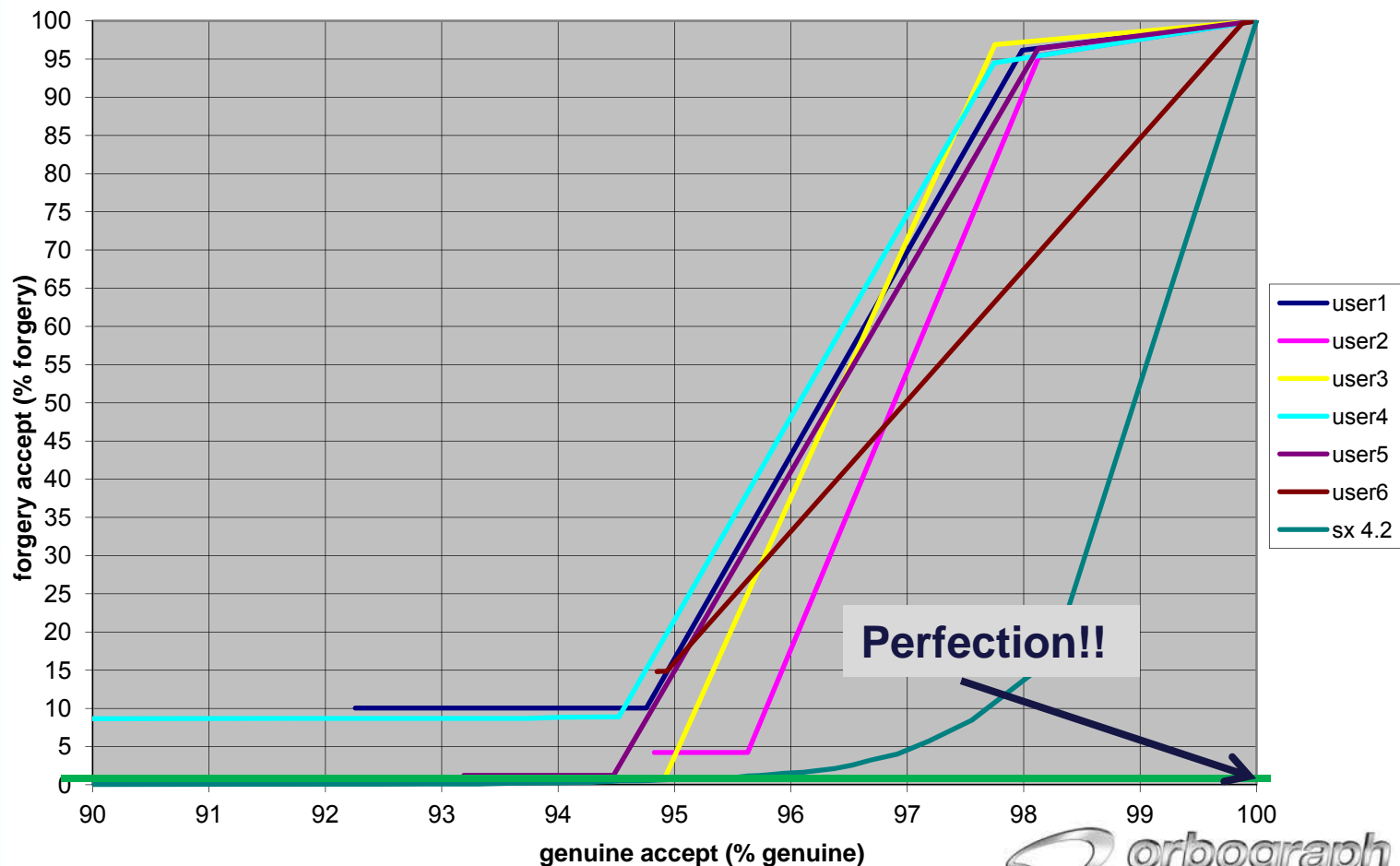
Workflows

Challenges

Closing

Man Vs. Machine – Random Forgeries

Verification Results on Random Forgeries



Real Operation Examples

Rejected Genuine

Chuck Calman Chuck Calman

Man vs. Machine Accepted Random





Technology

Sig. Authentication

Workflows

Challenges

Closing

Man Vs. Machine – Why the Difference?

- Machine performs better. Why?
 - Mathematical calculations
 - Probability of deviation
 - Uses confidence levels
 - Compares to multiple profile images: statistical representation of the account attributes



Result: Superior, consistent performance

- Visual verification (manual) fairs worse.
 - Reasons: expertise, fatigue, mood, state of health, working conditions (light, noise), etc.

Technologies Galore (Illustrate the Top 3)

1. **Parascript's proprietary, patented special descriptive language**
2. **Analytical method:**
 - Signature segmentation and correlations between fragments of reference and suspect signatures.
3. **Global verifier based on neural networks.**
4. Geometrical analysis of suspect and reference signature.
5. A verifier that employs 2D matching of vectorized signature images.
6. Fourier analysis of shape and pen width variations of signature elements.
7. Radon transform verifier.

Technology

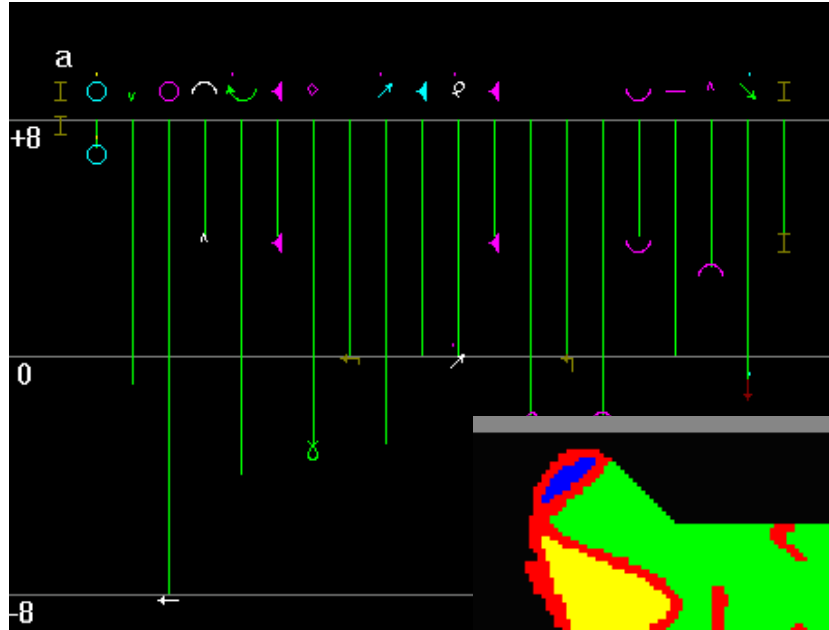
Sig. Authentication

Workflows

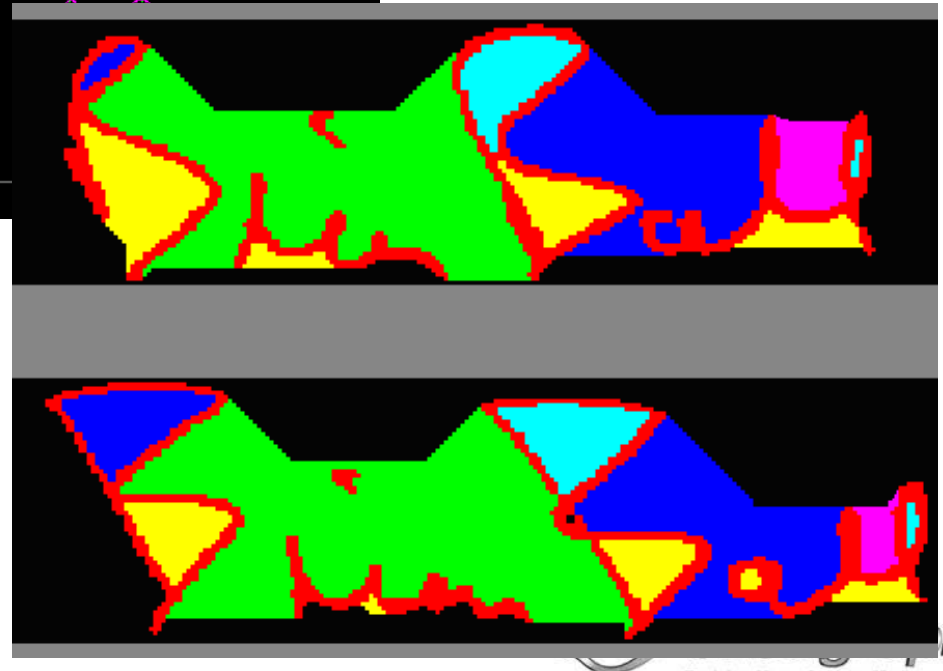
Challenges

Closing

Signature Technologies/Techniques



XR Interpretation – 2
sigs



Fragments
comparison

Technology

Sig. Authentication

Workflows

Challenges

Closing

Signature Technology Improvements

- Technology continues to improve
 - 25% detection boost
 - 50% reduction in false positives
- Signature types:
 - European vs. North American
- Regional styles:
 - One signature, two signatures?
- Image processing:
 - Detection with non-standard forms
 - Image pre-processing



Technology

Sig. Authentication

Workflows

Challenges

Closing

Benefits of the Machine

- Process higher volumes in shorter periods of time
- Target all items
- Reliability
- Set tighter dollar thresholds
- Increase productivity
- FTE reduction vs. coverage



Man vs. Machine

Technology

Sig. Authentication

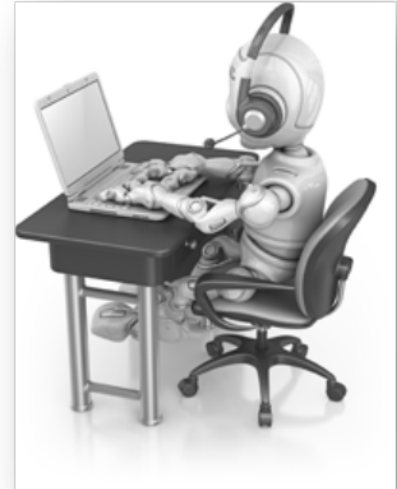
Workflows

Challenges

Closing

And the Winner Is!

- Machine wins:
 - 1: Random Forgeries
 - 2: Skilled Forgeries
 - 3: Complete review
- Human wins:
 - 1: Escalation for skilled forgeries
- Is full automation possible?
- We need each other!



Man vs. Machine

Technology

Sig. Authentication

Workflows

Challenges

Closing

Signature Authentication

"It is interesting to note that the handwritten signature lives a life of contradiction. On one hand, it is a primary authenticator used millions of times daily in finance, health-care, government, and elsewhere and is culturally accepted, non-invasive and lacks all the privacy fears of biometrics. On the other, there is little to no verification in place for practical use in many of these applications. There has never been a better time to fully incorporate automated signature verification (ASV) that assigns full accountability and eliminates identity theft."



**Sig.
Authentication**

Workflows

Challenges

Closing

Robert Siciliano IDTheftSecurity.com

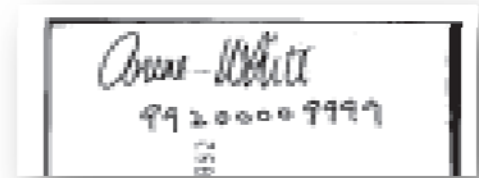
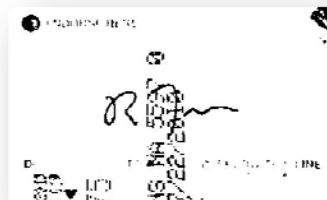
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Sig. Authentication

Challenges

Closing

- OTC Deposits
 - Teller operation
- Back office
 - Inclearings
 - Exception processing
 - Special cases, other workflows
- High dollar focus



Workflow Opportunities Leveraging the Signature

Workflows

Challenges

Closing

Check Workflows

Check Image
Analysis: Inclearing,
POD

RDC, ATM, RPS other

Teller capture

Inter-bank



**Robust
Signature DB
for Enterprise
Authentication
and Verification**

Non-Check

Customer
Authentication (OTC)

Loan and Credit Card
Applications

Contracts, Notaries

Online Verification

Polling Question #3

Has your org. considered extending ASV from checks to loans, applications or other business areas?

1. Yes – we do that now
2. Yes – we are evaluating
3. No – it would be ideal
4. No – it is not a consideration

Challenges & Solutions

Map Capabilities...Consider Silos

	On-Us Fraud	Teller Fraud	Deposit Fraud	Kiting	Loan/CC/ Authenticate	Future
Image Analysis	X	X	X		X	X
-ASV	X		X			
(Signature)	X		X			
-Check Stock	x					
-CAR Style						
Data Analytics	x	x	x			x
- AOOR, SOOR						
Account Monitoring						
Endorsement	x	x	x			x
Payee Recognition, Matching, or PNV	x		x	x		
Payer	x			x		

Challenges

Closing

Challenge: Integrated Functions

Fraud Detection

Image Analysis

- Automated Signature Verification
- Check Stock Validation
- Check Style Analysis
- CAR/LAR Matching
- PAD/RCC Detection
- Payee Matching / PNV*

Data Analytics/ Transaction Analysis

- Serial Out of Range
- Amount Out of Range
- New Account
- Watch List (Account Level)

Deposit Operations Functions

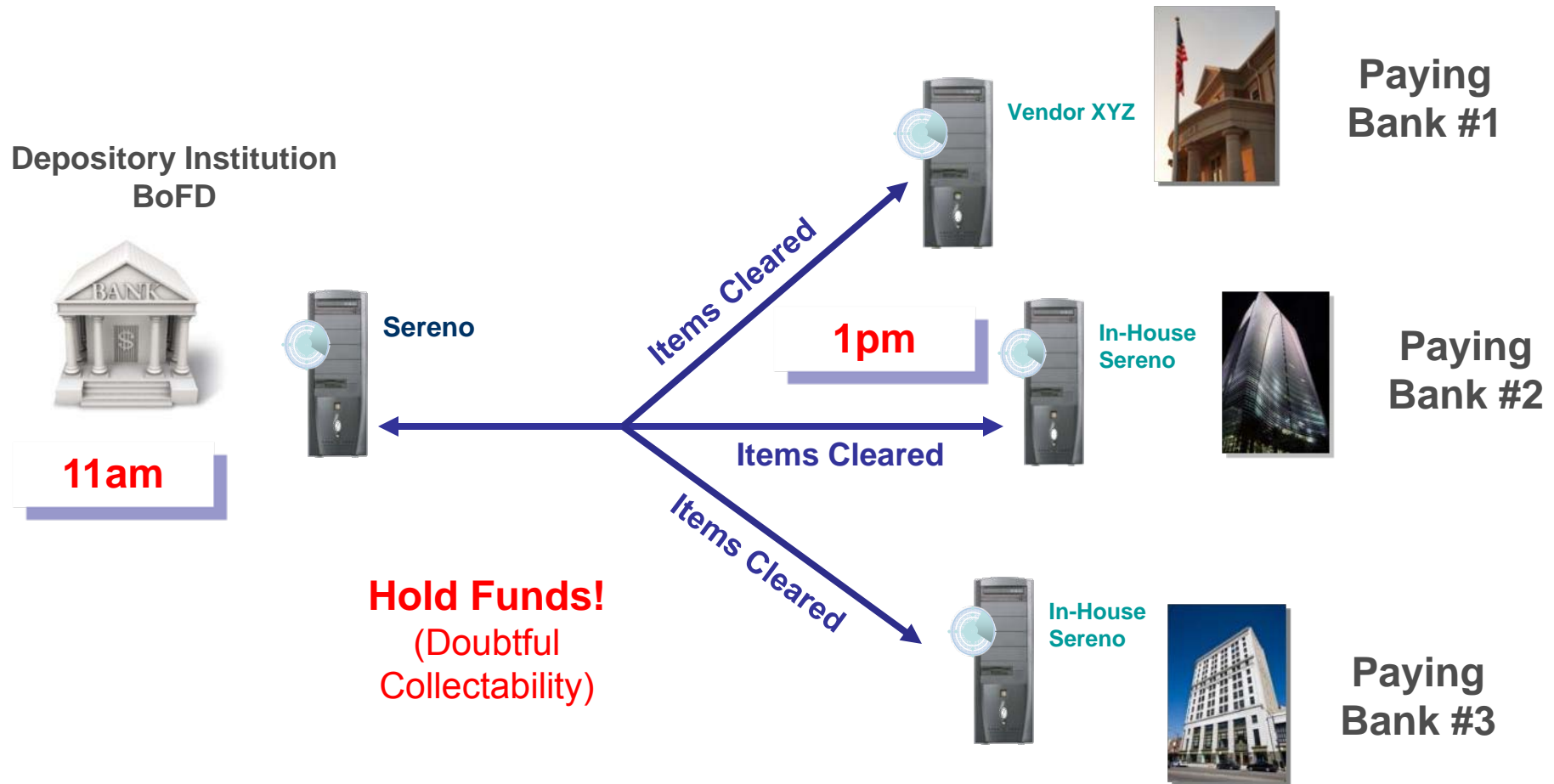
Image Review

- Missing Signature Detection
- Dual Signature Detection
- Image Quality/Usability/Integrity
- Automated Endorsement Analysis*
- Amount Verification

Transaction Monitoring

- High Dollar Review
- Duplicate Detection
- Closed Account
- Inactive Account
- Dormant Account

Inter-Bank: Same Day Exchange Partnerships

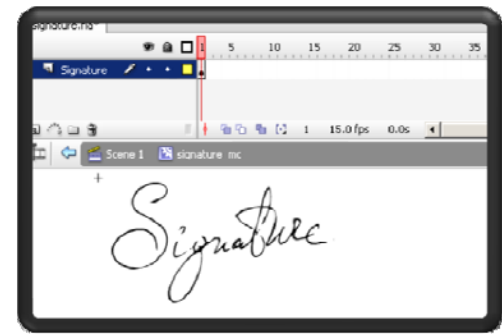


Strategy for Check Workflows



Closing

- The signature is underutilized
- Man and machine together
 - Credit card example: call and verify
 - Many ways to implement and optimize
- Test it out?
- Questions
- Polling & prize drawing



Polling #4

- Please rank today's webinar based on how beneficial it was for you.
1. Awesome: Made my day
 2. Very good: I really enjoyed it
 3. Average: Not a life changing event
 4. Below average: A bit disappointed
 5. Poor: The prize drawing was best

Drawing #2, #3

(3) Prize Drawings
Livescribe 4GB Echo Smartpen



Thank You!

- Q&A
- See our business partners
- Add'l Questions?
 - Joe.gregory@orbograph.com
 - 800-995-2502 x 5046
- Email tomorrow with white paper!



Closing

