



ARTIFICIAL INTELLIGENCE & IMAGE ANALYSIS



## BANKING APPLICATIONS

Locate, extract and classify data from payments, forms and handwritten documents



**A**ward-winning and driven by research and development, A2iA, Artificial Intelligence and Image Analysis, is recognized as the worldwide leading developer of handwritten and machine printed text recognition, information extraction and intelligent document classification. By operating the world's largest research center dedicated to extracting information from everyday paper documents, A2iA has been proactive in its developments to meet the needs of the market place, and producing a visible ROI for its users for nearly 20 years.

The following document discusses how A2iA's proprietary toolkits, available in 6-languages and 23-country-specific versions, can be applied to various applications within the banking industry. Although not a comprehensive list of applications where A2iA is successful within this space, this document is an overview of A2iA's capabilities specific to locating, extracting and classifying data from payments, forms and complex / columnar documents.

## **A2iA Toolkits Discussed Within**

### ***A2iA CheckReader™***

*A2iA CheckReader™* is a set of advanced image analysis and intelligent recognition engines that enable software applications to capture handwritten and machine printed information from all areas of checks and related payment documents. With an extremely small footprint and no third-party technology, *A2iA CheckReader* is the only check-processing engine on the market able to detect mismatched Courtesy (CAR) and Legal (LAR) amounts in real-time. Using its own proprietary, advanced neural network and artificial intelligence, *A2iA CheckReader* cleans, de-slants and segments writing into words, numerals and characters while providing recognition and information about check image quality, usability and negotiability, addressing the needs of end-users, as well as those of the financial institutions.

### ***A2iA DocumentReader™***

*A2iA DocumentReader™* is a data extraction and document classification toolkit. It is the only software on the market today able to process all-types of paper documents, regardless of their structure or contents. Unlike traditional OCR and ICR recognition engines, *A2iA DocumentReader* is able to work with data ranging from machine print, through to cursive handwriting on completely unstructured letters, and data found in columns or lists such as that commonly found within lockbox applications or EOB documents. The software also performs classification/indexing based on both the layout/geometry and contents. A2iA's ability to work with this unstructured, complex data, as well as to provide professional services to its users, makes it unique in the market place.



## Remote Deposit Capture/Merchant Capture

### What is Merchant Capture and how will it benefit financial institutions?

Since the creation of Check Clearing for the 21<sup>st</sup> Century Act (Check 21), advanced opportunities have surfaced for financial institutions and remote deposit capture, or more specifically- merchant capture, is one of the common prospects today in image-based check processing. Merchant capture allows for remote check processing so that customers can balance deposits with confidence and convenience. Remote deposit transmission opens the door to a vast range of new market opportunity. By allowing customers to make deposits at their place of business, financial institutions gain better control of processing operations, while reducing the amount of items being processed. Financial institutions can gain better control of customer retention -- bring the bank to their customers, and when they move away from a branch location, merchant capture allows the customer to stay with their financial institution. Other abounding benefits of merchant capture for the financial institution include: potential added fee income, increased workflow -- allowing for additional services to be provided to the customer, and a greater aptitude for growth.

### How does A2iA actively assist in Remote Deposit Capture/Merchant Capture?



A2iA contributes to merchant capture by extracting and processing payment information, fueling the benefits for both financial institutions and businesses. Once a business or person from home scans a check with something as simple as a desktop scanner, the consumer can log into their account to make a deposit. *A2iA CheckReader* can locate and extract all fields from the payment document including the Payor/Payee Name, Date, Courtesy Amount (CAR), Legal Amount (LAR), and MICR code to verify the check is valid and negotiable. *A2iA CheckReader* also contains built-in image quality and image usability detection features that aid in the recognition process, as well as the ability to detect the presence of a signature on the front of the check and the endorsement on the back. *A2iA CheckReader* allows for a reduction of fraud and provides enhanced security/data protection to its customers by eliminating third party interaction and allowing for transactions to be handled solely by the customer and financial institution. Because of its small footprint, *A2iA CheckReader* leaves computer resources available for other applications and operations.

### Why A2iA in Merchant Capture is a worthy investment?

Businesses and financial institutions are familiar with the need for faster processing of all types of documents. Merchant capture is a banking application that can cut costs in account maintenance, propel growth without the need to expense branches, and is sure to produce an ROI. Despite its extremely small footprint, A2iA is the only engine on the market able to detect mismatched Courtesy (CAR) and Legal (LAR) amounts in real-time. The proprietary extraction and detection results foster the fight against check fraud while bringing additional customer relationship management (CRM) data and automating the process of check transactions. Merchant capture is ideal for both large businesses and small (SOHO) businesses because it can be integrated into standard processing systems.



## Positive Pay

### **What is Positive Pay and how will it benefit financial institutions?**

The 2010 'AFP Payments Fraud and Control Survey' found that 73 percent of organizations experienced attempted or actual payments fraud in 2009 and 39 percent of respondents reported that incidents of fraud went up in 2009 compared to in 2008. In response to the rise in check fraud, financial institutions have implemented Positive Pay, a solution to protect businesses against check fraud by creating a file of issued checks to be verified at the time of payment by key check information.

The process works in the following way: The issued check ID information, such as account number, check number, dollar amount and date, are filed with a bank. When the checks are submitted for payment, the key information is compared for verification. If the check is not a match, payment is rejected, and could be a fraudulent check that was never issued by the business. The benefit here is obvious; Positive Pay prevents check fraud before it transpires, giving financial institutions added security and allowing them to provide advanced protection for their customers. Financial institutions can eliminate manual keying and automate workflow for Positive Pay processes with A2iA.

### **How does A2iA provide the security element in Positive Pay?**

*A2iA CheckReader* is a software toolkit that uses proprietary recognition engines (OCR, OMR, ICR, IWR- Intelligent Word Recognition) to capture key information, both handwritten and machine printed, from all check fields. With the ability to work with a user-defined dictionary, *A2iA CheckReader* can flag specific Payor/Payee names from a blacklist or fraud list, for example. The Payee name recognition features of *A2iA CheckReader* may be applied to both business and personal checks, handwritten or machine-printed checks. This feature compares the Payee name on the check to the issue file and determines if there are any modifications or changes. If there are, the check is flagged for manual review and possible fraudulent activity. The toolkit also provides information about check image quality, usability and negotiability in one simple call. *A2iA CheckReader* boasts extremely high read rates and unparalleled accuracy. Implemented in a Positive Pay system, *A2iA CheckReader* can provide the capture, detection and security element that it requires.



### **Why is A2iA in Positive Pay Solution a worthy investment?**

Where some technologies have made it easier for people to commit check fraud, others have been created to prevent it. Check fraud is on the rise but A2iA's software toolkit can help protect financial institutions against fraud, using its proprietary image analysis, intelligent recognition engines, and ability to read freeform cursive handwriting.



## Check Fraud Prevention

### How does A2iA work to prevent Check Fraud?

To determine suspicious activity or known fraudulent customers, A2iA will detect checks with Payee names that are found on a user-defined blacklist. Although able to read and extract Payee name, while performing black list detection, *A2iA CheckReader* not only recognizes this field, but also looks to see if the Payee name is belonging to the blacklist. This is the reason why *A2iA CheckReader* performs the blacklist detection and Payee name recognition in two separate steps. The Payee name recognition features of *A2iA CheckReader* may be applied to both business and personal checks, handwritten or machine-printed checks. This feature compares the Payee name on the check to the issue file and determines if there are any modifications or changes. If there are, the check is flagged for manual review and possible fraudulent activity.

Check Fraud Detection is based on Check Stock Analysis. The check-image's characteristics, such as the check stock and handwriting, are compared to a reference database of the same account number containing the extracted characteristics of valid checks. Those characteristics are stored inside the Check Identity Record (CIR). Because of the information stored in the CIR, financial institutions no longer have to compare images to identify counterfeit checks. *A2iA CheckReader* looks at various fields when analyzing the check-stock for counterfeit documents.

In addition to the values of each field, *A2iA CheckReader* can identify counterfeit checks by looking at the location of check fields, fonts and handwriting styles. A2iA's proprietary artificial intelligence and image analysis software specializes in handwriting recognition, helping to eliminate check fraud by identifying all fonts and cursive handwriting styles. In one simple call, *A2iA CheckReader* provides information about check image quality, usability and negotiability, helping to identify fraud at the source.





## ATM Check Processing

### **A2iA and ATM Check Processing:**

According to the 2010 '*ATM Software Trends and Analysis Report*,' about 43 percent of respondents plan to upgrade their current ATM software and within this group, 25 percent state envelope-free check deposit as a desired new feature. Consumers and banking customers are demanding more from their financial institution's ATMs; self-service devices are no longer just a convenience, but they have become a way of life to most. A2iA's proprietary technology assists in ATM advances.

### **How does *A2iA CheckReader* work with Image-Enabled ATMs?**

When a check transaction takes place at an image-enabled ATM, check-images are captured and data is securely transmitted to the financial institution. Deposits may also be memo-posted to the ATM processor. An encrypted file is then sent to the server, where *A2iA CheckReader* seamlessly provides a verification of the check-image quality and usability, as well as performs recognition on all data-points to determine if the check is negotiable. It is here, at the point of presentment, that mandatory information is deemed invalid or missing, such as Payor/Payee name, Courtesy Amount (CAR), Legal Amount (LAR), Date, MICR code, etc.



All checks captured at ATMs are uploaded to the financial institution for reconciliation with little to no input from the customer, instead of being stored in the ATM and imaged at a later time. This significantly shortens processing and posting times and virtually eliminates the risk for "empty envelope" fraud, one of the top types of fraud affecting ATMs. Banking customers are also given the convenience of making secure deposit transactions at any time of the day or night, despite teller hours.

### **A2iA's proprietary solution for ATMs:**

*A2iA CheckReader* is a proven solution for ATM check-processing applications and is used by major financial institutions in 23-countries and embedded in over 10,000 units in the United States and United Kingdom alone. Both financial institutions and their customers benefit from *A2iA CheckReader*. Customers can deposit checks directly at an ATM, no longer having to succumb to bank hours. Financial institutions are able to improve their quality of service by providing extended hours, credit a customer's account immediately, limit their risks, minimize the cost of post-scanning, and provide a secure proof of deposit. A2iA's capabilities with image-enabled ATMs accelerates timelines, reduces operating costs such as courier and paper-handling fees, combats fraud at the point of deposit, and allows community banks and credit unions to enhance their customer service and provide additional benefits to their patrons, similar to those of the larger financial institutions.



## Lockbox Applications

### What is a Lockbox and how will it benefit businesses and financial institutions?

A lockbox is a service provided by financial institutions to businesses for payment receipt processing. Lockboxes are effective for organizations that process high volumes of payments with a standardized coupon. Examples of such companies are utility companies like phone, gas, electric, water and cable companies. There are two types of lockboxes; wholesale for larger companies, and retail for smaller companies whose payment processes may be more detailed. Companies benefit from lockbox services because it cuts down the time of processing and eliminates in-house sorting and delivery. In lockboxes, payments are sent to the financial institution after collection, where envelopes are opened, and payments are deposited directly into the business' bank account, saving time and operation costs.

### How does A2iA actively assist in Lockbox solutions?

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Check Nbr	Check Type	Vendor ID	Vendor Number	Doc Nbr	Term	Invc Nbr	Invoice Date	Status	Pay Date	Due Date	Discount Amt	Invoice Amt	Orig Taken	Amount Paid
0905574	CK	SOLDIWAAC	48815684											
8849	GB	96355	120208	Z	120208	120208	0.00		0.00	0.00	0.00	14.89	0.00	14.89
98175	GB	96356	120208	Z	120208	120208	0.00		0.00	0.00	1235.00	0.00	0.00	1235.00
42965	GB	96357	120208	Z	120208	120208	0.00		0.00	0.00	95.14	0.00	0.00	95.14
42965	GB	96358	120208	Z	120208	120208	0.00		0.00	0.00	14.89	0.00	0.00	14.89
22563	GB	96359	120208	Z	120208	120208	0.00		0.00	0.00	234.59	0.00	0.00	234.59
12954	GB	96360	120208	Z	120208	120208	0.00		0.00	0.00	55	0.00	0.00	55
74596	GB	96361	120208	Y	120208	120208	0.00		0.00	0.00	95.34	0.00	0.00	95.34
42264	GB	96362	120208	Y	120208	120208	0.00		0.00	0.00	395.55	0.00	0.00	395.55
12987	GB	96363	120208	Y	120208	120208	0.00		0.00	0.00	75.57	0.00	0.00	75.57
8821	GB	96364	120208	Y	120208	120208	0.00		0.00	0.00	95.32	0.00	0.00	95.32
82382	GB	96365	120208	A	120208	120208	0.00		0.00	0.00	350.14	0.00	0.00	350.14
74563	GB	96366	120208	A	120208	120208	0.00		0.00	0.00	1235.00	0.00	0.00	1235.00
13545	GB	96367	120208	A	120208	120208	0.00		0.00	0.00	954.14	0.00	0.00	954.14
				A	1202108	121008	0.00		0.00	0.00	14.89	0.00	0.00	14.89
				A	1202108	121008	0.00		0.00	0.00	234.59	0.00	0.00	234.59
				A	1202108	121008	0.00		0.00	0.00	55.45	0.00	0.00	55.45
				A	1202108	121008	0.00		0.00	0.00	395.47	0.00	0.00	395.47
				A	121108	121108	0.00		0.00	0.00	95.34	0.00	0.00	95.34
				A	121108	121108	0.00		0.00	0.00	395.55	0.00	0.00	395.55
				A	121108	121108	0.00		0.00	0.00	75.57	0.00	0.00	75.57
				A	121208	121208	0.00		0.00	0.00	95.32	0.00	0.00	95.32
				A	122208	122208	0.00		0.00	0.00	350.14	0.00	0.00	350.14
				A	122208	122208	0.00		0.00	0.00	1235.00	0.00	0.00	1235.00
				A	122208	122208	0.00		0.00	0.00	954.14	0.00	0.00	954.14

*A2iA DocumentReader™* can be integrated into lockbox solutions to automate the processes. When financial institutions receive payments, the data must be extracted and entered into the system for deposit. *A2iA's* proprietary artificial intelligence and image analysis technology can locate and extract complex columnar data from all fields of mixed-documents including checks, invoices, remittance coupons and payment stubs. *A2iA DocumentReader* may read rubberbanded information and allow an operator to perform a versatile and interactive recognition on complex documents with minimal effort to configure the recognition process. *A2iA* performs intelligent classification/document routing based on content and layout of payment documents. The

classification is especially useful in Lockbox banking because remittance coupons are often included with a payment and *A2iA DocumentReader* eliminates the need for manual sorting of those documents. *A2iA DocumentReader* is award-winning and has been recognized by industry experts and analysts worldwide for its capabilities.

### Why is A2iA in Lockbox solutions a worthy investment?

There are over 30 million lockbox payments being processed each month. Businesses, both large and small, benefit from *A2iA DocumentReader's* integration into lockboxes. By virtually eliminating manual keying, businesses cut internal processing costs, ensure customer privacy and minimize fraud. *A2iA's* proprietary toolkits help businesses gain better control of customer check float times, and accelerate collections, deposits and credit memos. Financial institutions can also take advantage of *A2iA DocumentReader* because it provides automation so that banks can reduce the cost of their services, as well as allow all types businesses to use lockbox systems and see a visible ROI.

