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White Paper

Automated Application Processing
Fast, Secure and Efficient

Takeaways

- Learn how capture technology enables effective application processing containing any data type, document type and formats

- Understand the validation process to increase accuracy and protect sensitive customer information

- Appreciate the speed, accuracy and cost efficiencies offered by advanced recognition software

Summary

Applications processing requires capture and recognition of complex forms. These can include contact information - address, phone numbers, email addresses; sensitive personal information such as social security, date of birth and account numbers; and may include information such as security questions. Other documents usually accompany an application such as supporting documentation that can vary significantly in format. Businesses and organizations can achieve fast, accurate and secure application processing by using capture and recognition software that can process and extract all the required data.

What's in this Paper?

Introduction

Account application forms processing is a crucial function for businesses and organizations. Application forms are the information roadway for customers to apply for and purchase all types of products and services. People fill out applications to buy a home, car and other high value items; open a bank account and credit card; apply for loans, receive health care services; apply for a job; and many other transactions. From a business's perspective, the application form may be the first interaction with a customer and so should result in a positive experience for this ubiquitous activity. But while businesses have automated application processing, many still employ manual processing using humans for data input. Not only is this approach expensive and slow, it can also result in higher error rates due to variations in skills and fatigue later in a shift, among other human variables.

Capture and recognition technology automates account application forms processing and is far more efficient and cost-effective with high accuracy rates and security for sensitive customer information.

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Automated Application Processing

Application forms present a particular challenge since they are typically multi-page, and complex documents and are often accompanied by additional documentation. Information on these forms can be completed by providing a mark, or fill-in-the-blank with words and numbers written in machine print, handprint, handwriting (including cursive), or a combination of all. Additional documentation can include anything from structured documents such as tax forms, checks, and ID, to highly unstructured documents such as correspondence or documents with additional notes. In order for companies to take advantage of automated processes, it is critical that document capture solutions employed be able to recognize any data type and document type with multiple formats.
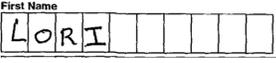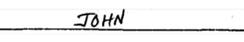
Data Recognition

Manual Data Entry

The most widely used form of recognition is still manual entry performed by data entry specialists or staff involved with the business process itself.. People read information from forms and enter it into computer. Data entry operators, also called keyers, can interpret almost all normal irregularities, including characters that are either stylized or go outside of boxes in a form Research has shown that many elements can impact human performance including mood, boredom, working conditions and even the time of day, with more reduction in speed and accuracy towards the end of a shift. Since manual data entry is labor intensive, it is also an expensive option.

Automated Recognition Software

Automated recognition software has been available for many years. In recent years quality has vastly improved. OCR (Optical Character Recognition), the technology that automatically reads machine printed text has been in use since the 1960's. A more recent technology is ICR (Intelligent Character Recognition) which reads handwriting including hand print and even cursive writing. ICR capabilities have improved dramatically over the past few years. In addition to constrained handprint, more recent advanced ICR programs include the ability to read additional handwriting variations.

OCR	Helen Sutton
ICR	First Name: L O R I
Unconstrained	JOHN
Cursive	Madison
Natural Handwriting	CANYON Country

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Additionally, advanced ICR can read machine print when OCR fails, or in applications where a certain recognition rate is required, for example, checks, addresses, invoices, and others. In contrast to humans, computers work 24/7 and provide a viable and cost effective alternative to manual operations.

Data Security

Another key issue of application processing is the sensitive information it contains. Because these forms contain critical customer information – such as date of birth, social security number, and even payment data – they need to be processed safely. Capturing information from the physical documents presents multiple opportunities for security risks. Reasons include: access to information as it is being entered in by staff performing data entry, sometimes located oversees; and/or in high turnover jobs; and access to information located in imaged archives or access to paper originals. Document capture software offers built-insecurity features that can be used to successfully mitigate these issues.

Restricting Access to Information

Document capture and recognition software solutions can enforce security at the field level, since it allows rules to be set to provide only a snippet of each form to a single operator. The first name field can be given to one validator/keyer, social security numbers to another and diagnostics to still another, so that each piece of information is anonymous. The software can also be set to send information to multiple sites within the same company. By sending only selected data to specific individuals, this process can practically eliminate any chance of a security breach or misuse. These processes ensure that any back-office human validation of these forms restricts personally identifiable information by limiting the context in which it would be useful.

Protecting Content Through Redaction

Businesses have situations where document images must be retained for archival purposes. In these cases, the software can be set to redact or remove sensitive information by digitally obscuring those data fields to make documents secure for distribution. Redaction can often be efficiently achieved during the document capture process, just as sensitive information is entering an organization. Incoming documents are scanned and keyed, then sensitive fields, such as account, drivers' license and social security numbers are automatically located and redacted by capture software and sent to archives through a secure digital workflow. Confidentiality is maintained and security is achieved to protect such information. Accidental or malicious access to redacted information in archives years later is prevented.

Capture and recognition software has broadened its capabilities with notable enhancements that should encourage businesses with high processing application requirements to review and understand these innovative advancements.

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Application Form Design

The design of an application significantly impacts the quantity and quality of information collected from a customer. As a result, design plays an important role in the recognition process. Applications that are well designed encourage customers to complete all required fields as well as improve speed and accuracy for effective data capture and extraction.

There are several elements of good forms design that impact gaining complete information from a respondent and allow recognition software to effectively capture, classify and validate it.

Format Standardization

It is important to place clear directions at the top of the page to encourage users to fill in all required information. Form designers can standardize formatting by using field anchors to identify beginning and ending points.

Field Placement

It is critical to the document capture process that key fields such as name, address, social security number, account number and barcode be located near the top of the page and the same fields be placed in the same location across different forms to reduce field location. It is also essential that fields have enough white space around them to prevent data from one field crowding an adjacent field. This is especially important where data is filled in with handwriting that can go beyond the defined fill in space.

Field Data Sequence

Form designers can use techniques to manage the flow of data requested to "escort" respondents through the form and increase the accuracy of the filled-in data such as maintaining proper flow from left to right and from top to bottom on a form - the natural flow of the human eye. It is important to make the person filling in the form feel comfortable with the information asked and that they can complete the form in a timely manner.

Use of Lines and Format Guides

Lines are a helpful way to maintain proper flow by separating sections on a form. Lines serve as paths that guide the form responder from one section to another and indicate the correct areas to fill in. However, bold and/or double lines within a field are not recommended, since image cleanup within the software would have a difficult time removing these types of lines.

It is recommended that lines and other elements that serve as format guides. These include lines or dashes that directs the respondent where to fill in data. Boxes are also helpful for this purpose.

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Examples include:

Phone (__ __ __) __ __ __ - __ __ __ __

Date _____ / _____ /_____

Amount $ _____ . ____

Use of Keywords (Captions)

Keywords or captions tell the respondent what information needs to be filled in within a particular field. In the following example, the keyword being used is "Street Address". The keyword should be placed to the left of the field. This is important to eliminate interference and to highlight the information being recognized. Such placement identifies the information to be filled in immediately and helps guide the reader.

Street Address

Improperly designed forms can result in inaccuracies, missing data and misinterpretations by the software. All of these defects can require manual intervention that slows down the process and increases costs. If the processor —whether human or machine— cannot interpret the application information, then the end user cannot use this data and automated processing rates are diminished.

Document Capture for All Documents

As mentioned previously, application processing typically requires processing additional documentation. For example, an application for a bank account requires the customer to submit proof of residency, proof of income, photo ID, voided check, and other miscellaneous documents. Document capture and recognition software provides the ability to process all documents in a single batch, and even use information contained in the documents to validate and verify the accuracy of the data. For example, the address on the application can be verified using the proof of residency provided.

Advanced document classification eliminates the need to analyze and manually classify the documentation. After scanning or importing documents in heterogeneous batches, the software can automatically classify all types of documents based on content or structure with minimal human intervention. After recognition is completed, documents can be transferred to other systems, workflows or processes.

Check Recognition

Many services require a check, either to make a deposit or to submit a voided check, in order to complete the sale or process the completed application. Examples include opening a new bank account, applying for a loan or mortgage or acquiring medical care. Therefore businesses benefit by using recognition software that also includes integrated capabilities to read check documents that include cash tickets, deposit

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slips, business checks and personal checks. The software should be able to extract key data including date, amount, and MICR. Additionally, reading the MICR line enables companies to verify account information and support transactions such as direct deposit.

A great example of the value of integrated check recognition is passport processing. A passport application is accompanied by a legal document such as birth certificate that the software can use to automatically verify identity against the information on the application form, as well as perform recognition on the check submitted to pay for the passport. This batch processing capability is very efficient and is also completed with high accuracy rates on all documents.

Signature Verification

Signatures are heavily relied upon by banks, business and governments to both authorize documents and transactions. Signature authorization is a key element of any application. Automated signature verification provides the ability to not only locate any signature on a document but also accurately verify its authenticity. This can be done by comparing the signature to a data base or between the set of documents. Additionally, the software can extract these signatures for future transactions, for example when opening a bank account and the bank can add the signature to its database or create such a database.

Additionally, automated signature verification provides a highly reliable forgery detection system that surpasses manual verification. It streamlines current processes and adjusts to the needs of departments within an organization. The right technology provides efficiencies that remain stable with time, unlike results achieved in high-volume situations with human operators. Relying on automatic signature verification enables institutions to safeguard customers through the most reliable, accurate signature verification practices available today.

Conclusion

Document capture and recognition software is designed to process complex application forms quickly, efficiently and safely. Since application processing is such a large volume requirement, businesses and organizations benefit from using recognition software capable of fast, accurate and secure data capture and extraction from multiple data types, formats and structures. It is especially important that the software can process not only the application form itself, but additional documentation that must accompany it. When compared to manual data entry and early-generation recognition systems, today's software offers significant cost savings, greater recognition versatility and the ability to adapt to any style of application and other form formats.

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About Parascript

A leading document capture company, Parascript develops solutions that read information from forms and documents. The company's advanced recognition technology processes virtually any document format and text type (handprint, machine print, cursive, marks and more), providing fast, reliable access to information and transactions. Fortune 500 companies, postal operators (including the U.S. Postal Service), major government and financial institutions rely on Parascript software, which is distributed through its OEM and value added reseller networks, including partners such as IBM, EMC, Bell and Howell, Fiserv, Selex Elsag, Lockheed Martin, NCR, Siemens, and Burroughs. Visit Parascript online at www.parascript.com.

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