



## Document Re-engineering Case Studies

### Flexibility, Process Improvement and Savings

#### **Document re-engineering is both an opportunity and a challenge for most organizations.**

No matter the market or the industry, companies depend on documents as essential tools to run business everyday and their effectiveness has a direct influence on the bottom line. At the same time, the process of creating, producing and distributing high-volume documents is often burdened with costly inefficiencies. Paper, postage and processing expense take an ever-increasing toll. And with recent and upcoming changes in postal regulations, companies stand to spend even more if they are not attentive to the process.

*The Crawford Technology PRO Series of document re-engineering solutions eliminates the obstacles that prevent companies from taking advantage of document re-engineering.*

Crawford Technologies' [PRO Series of document re-engineering solutions](#) eliminates the obstacles that prevent companies from taking advantage of document re-engineering. We provide the tools and flexibility needed to achieve substantial savings, exceed customer expectations and optimize the operation of your shop. Below you will see a series of case studies that demonstrate how CrawfordTech brings about real world document processing improvements.

#### **What's Document Re-engineering?**

High volume document production has traditionally been dependent upon a variety of proprietary "print streams." As a result, making enhancements to large document production runs has also been traditionally problematic. Companies often lack the resources, the ability, or the will to re-engineer legacy programs and mainframe-based applications and subsystems. Newer line of business projects frequently need tweaking when the time or personnel are not available to make the required

composition engine changes. Consequently, important document re-engineering efforts aimed at saving money and improving production processes are placed at the bottom of the "to-do" list or overlooked entirely.

#### **Consider these common document re-engineering enhancements:**

- Replace a PostNet barcode with an Intelligent Mail Barcode (4 state barcode) to get a better postal discount.
- Add electronic 'inserts' into a PDF file to match the inserts placed into the envelope.
- Add a new 2D barcode to more efficiently drive your mail inserters.
- Add or modify a custom one-to-one marketing message on an account statement.
- Convert a Metacode print stream to an AFP print stream (or vice versa) so it can be printed on any available printer for better load balancing.
- Add an enhanced hot link into a PDF file to drive your click-through rate higher on on-line viewed statements.
- Take several smaller production print streams, commingle them, resort them to get your best postal discount, and then add appropriate barcodes to the new unified stream.

The benefits of document re-engineering include reduced postal costs, more efficient use of equipment and staffing, better reliability, comprehensive mail piece tracking, and more personalized customer communication. Organizations struggle to obtain these benefits, however, since legacy document applications are not easily or affordably modified.

*Regulations frequently drive document re-engineering efforts. The Health Insurance Portability and Accountability Act (HIPAA), the Sarbanes-Oxley Act (SOX) and the introduction of USPS Intelligent Mail Barcode (IMB) are just a few of the reasons companies must tackle document re-engineering*



The [PRO Series of document re-engineering solutions](#) from Crawford Technologies changes all that by removing the barriers to document re-engineering. We provide flexible, fast and reliable tools for print stream conversion, document enhancement and process optimization – all without the need to modify existing programs and coding. We help you take advantage of advancements in document technology and optimize your existing operations.

## ***Document Re-engineering Categories***

At CrawfordTech, we see three broad categories of document re-engineering. These categories are not mutually exclusive; one line of business application could involve one or more categories.

- **Hardcopy** - Modifying individual document content destined to be printed.
- **Electronic** - Modifying individual document content destined to be electronically displayed.
- **Print Stream** - Modifying one or more production print streams after composition (e.g., sorting, commingling).

Below is a series of brief case studies that demonstrates how the CrawfordTech [PRO Series](#) of document re-engineering solutions brings about real world improvements in each of these categories.

## ***Hardcopy Document Re-engineering***

The re-engineering of hardcopy documents generally focuses on adding, deleting and/or modifying elements on individual pages. These elements can include anything from text and graphics to advanced barcodes and modified address blocks. For many organizations, mail stream optimization is the most compelling reason for hardcopy document re-engineering. With postage expense typically representing the highest single cost in any mailing, trimming those expenses is one clear and present return on investment. And with Postal Services driving new standards and techniques like intelligent mail barcodes and delivery point validation, companies will need to keep pace or pay the price. Inserter efficiency and printer load balancing also prompt document re-engineering aimed at automated factory-like effectiveness.

*Mail stream optimization is the most compelling reason for hardcopy document re-engineering.*

## ***Case Study - Replace PostNet with IMB***

### ***The Situation:***

Like many companies, this large financial services provider used the venerable USPS PostNet barcode in order to qualify for pre-sort mail discounts. However with the pending requirement by the Postal Service to migrate to the new Intelligent Mail Barcode (IMB) to maintain the maximum postage discounts, the company sought to re-engineer their documents to the new standard and continue to ensure the highest possible postal discounts.

### ***The Challenge:***

The Intelligent Mail Barcode (IMB), formerly known as the 4-State customer barcode, is a new USPS barcode which replaces both the PostNet and PLANET barcodes and will be required to maintain the highest level of postage discounts. With these changing postal regulations, the company needed a solution that would allow them to convert from PostNet to IMB. Along the way, the company looked to leverage greater visibility into their mail streams by gaining the ability to track individual pieces throughout the entire mail delivery process.

### ***The Solution:***

The company chose [Pro Document Enhancer](#) by CrawfordTech to remove the current PostNet barcode from the address block and replace it with an IMB. Pro Document Enhancer also applies intelligence to the process by mining the data on each page, locating the ZIP code, and applying the appropriate IMB.

### ***The Results:***

Postal discounts were maintained at maximum levels which would have been significantly reduced without these important modifications. This was accomplished without making any changes to the application programs that create the documents. Mail piece tracking was also greatly improved with the help of the more sophisticated facility provided by the IMB. As a result, this customer can track the progress of each mail piece through the postal system all the way to final delivery to their customers.

[Contact us](#) today to find out how Crawford Technologies can help your company with similar document enhancement and re-engineering strategies.

## Case Study – Replace OMR with 3 of 9

### **The Situation:**

A small service bureau receives output from their customer that is already formatted with OMR marks. The service bureau inserters do not support OMR, however, and as a result processing the job is costly, time consuming and error prone.

### **The Challenge:**

The company needed the ability to remove the existing OMR marks and replace them with 3 of 9 barcodes, the method consistent with their mail production equipment. Since they receive pre-composed print streams from their clients, they were unable to effect changes in the composition step.

### **The Solution:**

[Pro Document Enhancer](#) by Crawford Technologies was chosen to re-engineer the customer print stream. The existing OMR marks are removed and replaced with a 3 of 9 barcode for set matching and inserting. In order to construct the correct 3 of 9, Pro Document Enhancer employs intelligent data mining and extracts the information needed on the fly directly from the text of each mail piece.

### **The Results:**

The 3 of 9 barcode contains more information than the OMR it replaced. As a result, the accuracy of the inserters is far better and the number of incomplete mail pieces and error feeds has been reduced significantly. The service bureau can now rest assured that the correct pages of each document set make it into the correct envelope. As a result, their customers are highly satisfied with the change, the service provided and the confidence that their customers do not receive pages from other customer's documents in their mailings.

[Contact us](#) today to find out how Crawford Technologies can help your company with document enhancement strategies.



## Electronic Document Re-engineering

The re-engineering of electronically delivered documents typically focuses on adding missing content such as terms and conditions or inserts, removing hardcopy-oriented objects such as barcodes, and adding enhanced marketing messages through targeted URLs. Repurposing legacy printed documents for electronic presentment is perhaps the most compelling reason for companies to take on electronic document re-engineering. The savings in paper, processing and postage are often more than enough to justify the effort. And with customers expecting more and varied communications, many companies seek to leverage enterprise information in new and more dynamic ways. Electronic document re-engineering provides a marriage of data and documents simply unmatched in the paper-only world.

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## Case Study – Electronic Statements to Web

### **The Situation:**

When a leading health insurer, Blue Cross Blue Shield, set out to enhance its key account services by Web enabling their billing reporting information the company encountered many challenges. One of the biggest was how to convert existing Xerox Metacode print streams into a format that would facilitate Web presentment. After extensive research, they decided on PDF to maintain document fidelity.

### **The Challenge:**

BCBS needed to maintain fidelity and match the color and typeface of printed and electronic documents. The amount of data that they printed each month was substantial and created large files. So, the next challenge was to find a way to compress the PDF files so that they did not hinder Web delivery and take up an excess amount of long-term storage space. Finally, they needed to develop a way to separate and secure each account's many billing reports.

**The Solution:**

The solution consists of two components. First, [PRO Splitter](#) from Crawford Technologies was selected to split the incoming billing reports by group and account identifications. This program also builds a standard CSV file which acts as an index for the split files, containing key information about the reports.

Next, [PRO Meta to PDF](#) was used to convert Xerox Metacode print streams into compressed PDF files. BCBS selected the software because the transformation process utilizes superior font management. Crawford achieves excellent font fidelity by mapping Xerox fonts to standard Acrobat fonts. Custom fonts are automatically converted to PDF fonts. PRO Meta to PDF has the flexibility to map fonts to either standard PostScript/PDF Type 1 fonts or embedded Type 1 fonts for the finest look possible. And highlight color functionality is fully supported making the solution even more valuable.

Further, BCBS enjoys process optimization with the PRO Metacode to PDF product because it compresses all the related resources and creates small and compact PDF files. The company can quickly download or route its various billing reports to customer accounts as a result.

**The Results:**

The CrawfordTech solution allows this major insurance provider to service premier accounts via the Web. So far, the company has converted and Web-enabled reports for over 250 accounts. As one business unit team leader put it, "Customer satisfaction has been great, and our customers couldn't be more pleased with the results overall."

Another IS team leader adds: "We were able to integrate the Crawford products without any difficulty. And even though their products are not the largest or most complex pieces of the total project, they are very important and vital because they create the individual account PDF files that this Web project is centered on. Without the support and professional service of CrawfordTech this project would have been much more difficult."

[Contact us](#) today to find out how Crawford Technologies can help your company with similar re-engineering strategies.

**Case Study – Electronic Inserts and Pre-print****The Situation:**

A large service bureau wanted to convert paper statements into electronic format and provide online access to their clients' customers. The service bureau client wanted the resulting electronic statements to have the same content as the hardcopy.

**The Challenge:**

The statements were produced on a pre-printed stock that included terms and conditions on the back. Also, since the service bureau had a sophisticated automated document factory in place, multiple full color inserts were placed in each envelope that were dependent on various business rules.

**The Solution:**

The service bureau chose three CrawfordTech products to achieve their goals: PRO [Meta to PDF](#) and PRO [AFP to PDF](#) products are used to convert the statements into PDF format. PRO [Document Enhancer](#) is used to insert additional pages into the statement files to match the pre-printed terms and conditions. Additionally, the service bureau converted their individual inserts into one page PDF files and used PRO Document Enhancer to insert the converted inserts into the online electronic statements.

**The Results:**

The resulting electronic statements very closely match the printed equivalent. When customers compare a printed statement (with inserts) to the electronic version they see the same content in the same page sequence. This allows the service bureau to provide the same targeted trans-promotional marketing messages in electronic delivery as it provides with its hardcopy delivery option.

[Contact us](#) today to find out how Crawford Technologies can help your company with similar re-engineering strategies.



## Case Study – Data Mining

### **The Situation:**

A telecommunications company with 8 million subscribers, is a country's national leader in communications. In order to cut costs and bolster customer service, the phone giant set out to find a way to put their subscriber bills online. The challenges to doing this were many; with a variety of different services and a host of international languages to support, the bills are very complex and the monthly volumes are staggering. They turned to a service provider to find a solution.

To meet the demands of the Telco's project, the service provider needed to build an application to extract meaningful information from the AFP print streams generated by the billing system. Furthermore, they needed to make that information available to their customers via a Web based mechanism. The service provider had the platform to do the online presentment but they knew that their success depended on a consistently formatted print stream. They needed the right software to extract the data for presentment. With the help of CrawfordTech, the service provider was able to put a winning solution in place.

### **The Challenge:**

The complexity of the phone bills was a significant challenge to overcome. The company has 55 different section types, covering a myriad of services and third party billing plans. To make matters more challenging, the bills come in three different languages – English, French and Bilingual – and they contain a variety of special codes, superscripts and short forms which needed to be interpreted correctly. If they were to rely on the original data, it would literally have taken years to create a parallel billing system. Plus, the company did not want the daunting task of keeping two billing systems synchronized.

### **The Solution:**

Electronic invoicing software is used to present the data on the Telco's Web site while [PRO AFP to Text](#) and [PRO Indexer](#) from Crawford Technologies are used to extract data from the original print files. Using PRO Indexer, a designer can define the extraction rules for each section using whatever algorithm works best for that particular section. Since many sections can run from one page to the next, and can begin or end in many different ways, a scripting capability makes it possible to program the necessary logic.

In order to meet a very tight development schedule, Crawford Technologies provided a team of consultants to work with the service provider's team. As a result, testing and implementation was completed on schedule despite the aggressive milestones and challenging requirements.

### **The Results:**

The Telco sent the following note to the Crawford Team at the conclusion of the project. "As you know the project was successfully launched on Friday November 29th following an aggressive delivery schedule. This project was particularly complex as several groups were involved in delivering very important elements. The AFP conversion was of course one of those crucial elements, and critical to the success of the project. We wish to personally thank everyone at Crawford for their commitment, dedication and hard work that enabled us to not only deliver this project on time but to also deliver a quality product that we are sincerely pleased with. It was a pleasure working with the Crawford organization and we look forward to working with you again."

The Vice President of Sales at the service provider characterized the results this way: "This partnership is valuable to us as we move forward. When we need help with complex print stream applications, we know we have the best available in the world at our fingertips. We could never have done this without Crawford and we are very fortunate to have them on our team."

[Contact us](#) today to find out how Crawford Technologies can help your company with similar re-engineering strategies.

## **Print Stream Document Re-engineering**

The re-engineering of print streams is focused on enhancing and improving the performance of production process downstream without the need for expensive and time consuming application reprogramming upstream. Even with the awareness that improvements could be made, many companies simply lack the resources needed for the recoding effort or the focus required for truly meaningful improvements. In any case, enhancements for document production systems seem always to fall to the bottom of the pile. But as increases in postal rates continue to challenge operating budgets and regulatory requirements prompt the need for tighter mail piece tracking, companies seek the flexibility and ability to re-engineer existing print streams to meet the changing demands.

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## Case Study – Print Stream Conversion

### **The Situation:**

Sun Life Financial and Clarica Insurance were merging and had to combine both their systems and infrastructure for the most efficient operation. Each entity produces approximately 150 million print impressions each year. And while both organizations employ similar MVS/JES2 mainframe computing systems, each had a different “flavor” print stream; Clarica had standardized on AFP, while Sun Life used Metacode.

### **The Challenge:**

The organization sought to align all of their printing operations to run using a consistent hardware and software platform. But since IT resources were stretched to the limit, no application changes were permitted. Even making modifications to the JCL was beyond the scope of available resources. Executives viewed mail room automation as an important cost saver, however, so the company needed a way to achieve process efficiencies while avoiding costly and time consuming legacy programming.

### **The Solution:**

AFP was selected as the print stream of choice and [PRO Meta to AFP](#) from Crawford Technologies was chosen to convert the Metadata print streams to AFP. To avoid changes to existing JCL, print jobs are extracted for conversion after they complete processing and enter the JES spool. To ease operator intervention, [PRO JES Spool Extraction](#) constantly monitors JES, recognizes that Metacode job has entered the queue, and converts each job to AFP on the fly.

### **The Results:**

While other architectural options were estimated at 7 figure price tags; CrawfordTech software provided a very short ROI. The company converts over quarter million Metacode impressions every day using Pro Meta to AFP. Five months after the install they have transformed approximately 15,000 different jobs and modified 275 different job setups. Most importantly, they have removed all their Metacode printers and unified their operations without the need for lengthy application changes or tedious JCL modifications. Load balancing is a way of life; jobs are interchanged between any printer in any of their five major print centers as well as all distributed print locations.

[Contact us](#) today to find out how Crawford Technologies can help your company with print stream conversion and other re-engineering strategies.

## Case Study – Printer Load Balancing

### **The Situation:**

A large service bureau receives files in a variety of pre-formatted print streams from a variety of customers. During peak times, however, they do not always have a printer available that supports a particular print stream. This causes delays in production turnaround and increases overtime demands.

### **The Challenge:**

The service bureau needed a way to convert customer print streams as needed to accommodate whatever resources become available within their shop. Without this flexibility the service bureau struggled to meet service levels. They also suffered from low equipment utilization, which was impacting their profitability. Complicating the situation was the fact that the equipment is not all in the same shop, as the organization has print shops in various cities across the US.

### **The Solution:**

The company uses the [PRO transform suite of products](#) from CrawfordTech to convert customer print streams to whatever format is needed in order to take advantage of available printer resources. For less expensive printing with a higher throughput, many customer jobs are converted to AFP in order to take advantage of more efficient and cost effective 2-up continuous printing. Printer resources required to print the jobs are managed in the transforms, allowing the products to be deployed across their entire organization, automatically delivering the resources when and where they are needed.

### **The Results:**

The company is now able to more evenly distribute the load across printers in multiple locations. Better printer resource management has reduced the number of jobs that require manual intervention, increased throughput and eliminated production delays. Finally, costs have decreased as a result of migrating jobs to 2up continuous printers. This increased the service bureau’s margins and allowed them to meet more of their SLAs with their customers.

[Contact us](#) today to find out how Crawford Technologies can help your company with load balancing and other re-engineering strategies.



## Case Study – Splitting

### **The Situation:**

This regional service bureau employed cut-sheet printers using Metacode print streams. An opportunity to bid for additional business presented itself and the service bureau was intent on winning the contract. The trouble was that the mortgage company's statements were very high volume, and in AFP format which was not compatible with their existing hardware. To gain the work, the service bureau needed to find a way to convert the print stream to Metacode and break down the huge file into multiple jobs that would more readily accommodate their cut-sheet environment.

### **The Challenge:**

In addition to the print stream conversion and the job splitting, the service bureau needed also to implement a number of important document re-engineering modifications in order to bring increased efficiency to the process. These included adding OMR codes for the inserting equipment, implementing PostNet and PLANET codes for additional postal discounts, and putting into action an automated reprint system for damaged pieces.

### **The Solution:**

First, the company chose [PRO Splitter](#) from CrawfordTech to "split" the print files at appropriate break points. Each set must remain intact to ensure the integrity of each complete mail piece. Pro Splitter segments the large AFP file into batches of 5,000 mail pieces, with each file containing complete sets. Since it accounts for every page in each mail piece, PRO Indexer creates an audit log file so the service bureau can charge back their customer per page. Insert information is picked up on the fly from the AFP NOP structured fields, and OMR marks are added to the print files to allow the inserter machines to select the proper inserts.

[PRO AFP to Metacode](#) is used to convert the AFP print stream to Xerox Metacode. AFP printer fonts are automatically converted to Metacode fonts and embedded in the print file. AFP overlays are converted as well, allowing any number of overlays on each page. PRO AFP to Metacode optimizes the print stream, creating small and compact files that can quickly be routed to a printer and processed at rated print speeds.

[PRO Document Enhancer](#) is used to add a key line inside the envelope window that includes the job name, the batch/segment number and the envelope number. This key line is used to enhance the audit ability and tracking of the jobs through the service bureau. A PLANET barcode is added based on client-specific conventions, enabling post office tracking services. Data extracted from NOP fields is used to select different paper stocks at the printer – a pre-printed cover page and plain white on the subsequent pages of the set. This data also allows OMR marks to be added driving the proper inserts to be selectively placed in the envelopes for each recipient.

Finally, the company employs [PRO Reprint and Recovery](#) to automatically recover and reprint damaged pieces. As the file is being processed, PRO Indexer creates an index file that includes a unique account number. On those occasions when documents are damaged by the inserter, an operator simply enters the corresponding account numbers into the recovery system which then cross references the primary input file and selects only those documents needed for reprint. The OMR marks are re-applied and the documents are reprinted from the master file in a single pass.

### **The Results:**

The service bureau won the business based on its ability to meet the clients' SLA needs. Additionally, the service bureau provides significant added value to the customer by enabling in-route tracking of mail by the USPS. This provides estimated delivery information to the customer, allowing them to better judge 2-3 day future cash flows and predict needed staffing levels at the lockbox.

[Contact us](#) today to find out how Crawford Technologies can help your company with job splitting, conversion and other re-engineering strategies.

## Case Study – Commingling

### **The Situation:**

This regional service bureau wanted to win the business of a potential customer that used Microsoft Word to generate thousands of individual PostScript files. The files were concatenated together as one very large Postscript file, however, with no thought to postage optimization or processing efficiencies. As a result, the current production process required a lot of manual processing and was prone to errors. The service bureau felt it could improve the process and gain the customer.

**The Challenge:**

The company was confident they could improve the process with thoughtful document re-engineering. But to gain the business they needed a way to consolidate the various print files effectively, re-sequence the documents for the inserters, and sort the mail pieces to optimize postage discounts.

**The Solution:**

The company found the solution they needed by using CrawfordTech's document re-engineering products in a two pass system. They first rely on [PRO Indexer](#) to extract name and address information from the print stream. This data is then sorted and the addresses are cleansed using third party CASS/PAVE software. With that accomplished the next pass employs [PRO Document Enhancer](#) to re-sequence the documents according to the sort order specified by the CASS/PAVE software. The system removes old address and barcodes and applies new (cleansed) address and PostNet barcodes. PRO Document Enhancer adds barcodes for the inserter controls as well.

**The Results:**

The service bureau won the business. Benefits to the customer included not only significantly lowered cost thanks to postage reductions but also a greatly reduced error rate due to mishandled or misaddressed mail.

[Contact us](#) today to find out how Crawford Technologies can help your company with commingling and other re-engineering strategies.

***Crawford Technologies – Built for the Real World of Document Processing***

These are just a few examples of how Crawford Technology document re-engineering solutions eliminate the obstacles preventing companies from making important improvements to high volume document production processes. Document re-engineering can provide many benefits – from saving money and bolstering operating efficiencies, to gaining new customers and adhering to changing postal regulations. CrawfordTech solutions are flexible and agile, and make document re-engineering a viable benefit in the real world of document processing.

CrawfordTech document re-engineering products can help you build efficiencies, save money, boost revenue, and bolster customer service. Crawford's deep understanding of not only the technologies surrounding mission-critical document processing, but also the strategic and business implications of information management help customers transform legacy print applications into new and advanced document processing systems.

Customers around the globe rely on us for the tools they need to enable mission-critical document strategies. [Contact us](#) today to find out how Crawford Technologies can make a difference for your organization.

***About Crawford Technologies Inc.***

Founded in 1995, Crawford Technologies, Inc. (CrawfordTech) is a leader in document manipulation and re-engineering solutions, including data mining of print streams, archiving and retrieval, print stream conversion, and workflow processing. The wide range of robust and flexible CrawfordTech products allows companies to boost revenue, build efficiencies and bolster customer service. Their committed and knowledgeable technical teams provide unparalleled development, design and support, and their flexible transform technology is recognized as the fastest, most flexible and most accurate available.

Customers around the globe rely on CrawfordTech to enable mission-critical document strategies that result in tactical savings and efficiencies as well as strategic improvements in revenue generation and customer service. Their native format archive systems and transform tools work with all print stream formats and make CrawfordTech a highly sought after partner in both the OEM and user communities.

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