

Medical Claims Management

**The Ultimate  
Guide To Claims  
Data Management**



How Cognitive Capture solves the  
hardest claims processing problems

# The Ultimate Guide to Claims Data Management



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# Let's Dive In

Health care is a multi-trillion-dollar business in the United States. According to the U.S. Centers for Medicare & Medicaid Services, in 2018 U.S. health care spending reached \$3.6 trillion, or \$11,172 per person. That's almost 18% of the entire nation's Gross Domestic Product.

Even more staggering is the number of medical billing errors that occur each year in the United States. [Experts say](#) that between 30% and 80% of medical bills contain errors.

While doctors and hospitals in the U.S. leave billions of dollars on the table each year due to poor billing practices, it's the patients who are suffering the most.

A study by [NerdWallet](#) found that medical debt is the single largest category of consumer debt in the USA. One in six Americans will have a medical bill turned over to a debt collection agency. In fact, many Americans can barely afford their health care as it is.

They certainly can't afford to overpay due to claims processing errors. Healthcare claims processing is clearly an area that is ripe for improvement.

The true value of health insurance comes when it is time to pay the bills. Many health insurers fall far short of delivering a good customer experience to their subscribers.

With the huge size of expenditures and crushing costs inflicted on patients, even a small, incremental improvement in claims processing could result in hundreds of millions of dollars in savings for all involved.

Recent advancements in the application of AI and Machine Learning technology have led to a new breed of OCR software called Cognitive Capture that can radically improve the final mile, those hard-to-solve scenarios that ruin automation. In this book, we look at these specific challenges and then address how Cognitive Capture Software (CCS) overcomes these challenges.

# The Challenges

## Why is healthcare claims processing still an issue?

After all good progress has been made over the past ten years, as more and more medical claims are handled through a process called auto-adjudication. This is the ability for computers to accept electronically generated claims forms (EDI) and automate the processing using a rules engine. Approximately 90% of claims now go through this process.

But that 10% represents tens of millions of claims. The two most difficult tasks to automate are as follows:

- Adjudication of non-standard claims
- Plan data conversion

## Non-standard Claims Adjudication

This class of claims eludes attempts to handle via auto-adjudication and make up an outsized amount of overall processing costs when compared to fully automated claims. Among these are claims that are sent-in via faxed or scanned forms and claims that require submission of additional supporting documentation, often referred to as “attachments”.

Traditionally, these types of claims are handled by manual processes that include receipt and separation of claims into discrete service encounters, data entry of claim data in the processing system, and locating specific supporting data. Handling non-standard claims is always a challenge and the reality is that most payers don't have a process to handle claims that go “off road”.

*Faxed claim forms are very difficult to process.*

## Plan Data Conversion

Health plans are relatively easy to convert into a set of business rules that can automatically handle most claims. But when it comes to adjudicating claims based upon customized plans such as those with self-insured policies, converting plan policies into data for automated processing is still a time consuming, costly, manual, and error-prone task.

Insurers and third-party administrators must manually review and enter data from each policy which can take up to one week for a single plan. Often the data is hidden within paragraphs of text, while other data is presented in complex and highly variable tables.

The effort to convert unstructured plan information to structured data isn't a one-and-done thing: as plans change annually, the data must be updated too.

## What About RPA?

RPA uses software robots (Bots, for short) to automate repetitive data entry tasks such as screen-scraping data from an open application window and entering that data into a database or another business application. The fundamental value of a bot lies in its programmed ability to run completely unattended and never need a break. We call this Straight Through Processing.

Bots rely on predictable and reliable data inputs. Anyone with experience at claims and other medical file processing knows how hard it can be to achieve, let alone maintain, true straight through processing of data from unreliable and unpredictable documents.

RPA uptime is only as good as the capture software that is feeding the bots. RPA vendors are currently using legacy OCR methods that do not support true straight through processing. It's time to consider a new approach.

# Addressing the Challenges

The errors and delays inherent in claims processing can be drastically reduced using Cognitive Capture. With AI and machine learning innovations, it is now possible to train a system to emulate the actions of human workers in order to automate a high percentage of typical work. This includes the intake of documents, sorting and verifying that the required data is present, then extracting the correct data and entering that data in various systems. Even work that is not routine or requires more sophisticated analysis can be made more efficient.

## Smart Learning-Assisted Adjudication Workflow

Parascript is a leading provider of Cognitive Capture software. With advanced workflows powered by Parascript Smart Learning, the claims process can be handled with a remarkably high degree of automation, leaving only a small number of exceptions for human intervention. It all starts with advanced document identification that considers both text and visual analysis of non-text attributes, including handwriting. This information is used to identify and tag individual documents within a claim, as well as to separate one document from another.

Next, each document is parsed to locate and automate specific data entry. Non-EDI forms are processed as if they were EDI data. Textual analysis, including Natural Language Processing-based analysis, is utilized to process attachments such as medical records and correspondence to identify and extract key medical data including conditions, diagnoses, and prescribed care. As a result, these claims can then be processed via auto-adjudication. For the few remaining claims that fall outside client-specific parameters, a human reviewer is presented with the specific information needed for quick analysis and decisioning.

Errors and delays inherent in claims processing can be drastically reduced using Cognitive Capture.



# Simplify Data Conversion with Parascript

When it comes to converting the wide range of unstructured insurance plan information into structured, actionable data, Parascript is the data expert. The process of converting complex unstructured data starts with sophisticated analysis using a combination of natural-language text analysis and machine learning to quickly locate required plan data. Even data within paragraphs of text can be located, presented, and converted into structured data efficiently and reliably. The system works with both digital documents and plan documents that are scanned into PDFs. There is no need to separate and run through different processes.

Once the plan documents have been analyzed, the required data can either be structured automatically as tagged plan data ready for export to your systems or presented to reviewers who can quickly and easily confirm and convert data. The entire workflow is guided, easy, and highly efficient. The outcome is plan data that is up-to-date and accurate in the shortest amount of time possible.

## The Hard Cases

Some claims forms require additional processing due to challenges associated with imperfect images, especially those submitted via fax which is still common throughout the healthcare industry. To increase the level of automation to the same level as high-quality images or EDI data files, Parascript has developed Virtual Drop-out, a technology powered by deep learning neural networks. Poor-quality, faxed CMS1450 and 1500 forms are analyzed and perfected to the quality of a drop-out ink form, eliminating the underlying form structure and leaving only the data.

Parascript's groundbreaking Virtual Drop-out technology is the most accurate for B&W medical forms such as this.

PARASCRIPT LLC 114.TIF  
VOID\*\*OCR DEVELOPMENT SAMPLE\*\*VOID  
6273 MONARCH PARK PL  
LONGMONT CO 80503-7119

HEALTH INSURANCE CLAIM FORM  
APPROVED BY NATIONAL UNIFORM CLAIM COMMITTEE (NUCC) 02/92

1. MEDICARE MEDICAID TRICARE CHAMPVA COBRA HEALTH PLAN ETC. OTHER

2. PATIENT'S NAME (Last, First, Middle Initial)  
COLLEGE, SAMUEL, P

3. PATIENT'S DATE OF BIRTH (MM/DD/YYYY)  
7 / 9 / 37

4. INSURER'S ID NUMBER  
10181542

5. PATIENT'S ADDRESS (St., County, City, State, ZIP Code)  
2258 N WELLER AVE  
SPRINGFIELD MO 65803-4127

6. OTHER INSURER'S NAME (Last, First, Middle Initial)  
COLLEGE, SAMUEL, P

7. OTHER INSURER'S POLICY GROUP OR PLAN NUMBER  
YRSH O

8. INSURANCE PLAN NAME OR PROGRAM NAME  
MEDICARE

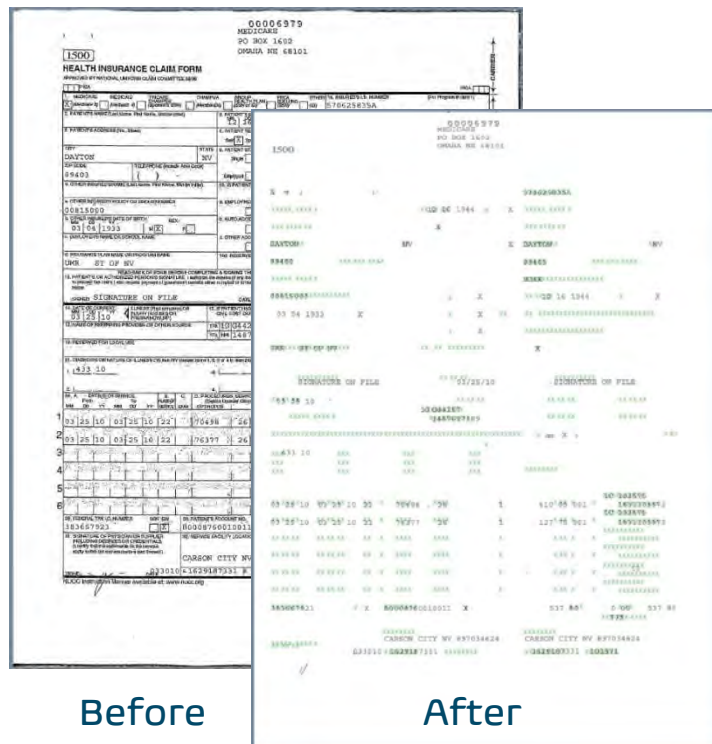
9. SIGNATURE ON FILE  
DATE 2/24/2016

10. DATE OF BIRTH (MM/DD/YYYY)  
7 / 9 / 37

11. SIGNATURE ON FILE  
DATE 2 / 24 / 16



For claims received that are accompanied by handwritten correspondence, Parascript has perfected advanced handwriting recognizers. These automatically transcribe handwriting into machine-readable data and then apply the latest textual analysis methods to aid with either auto-adjudication or manual review. Additionally, medical record attachments can be identified and automatically sorted with data key for review located and added to the file including service dates, providers, and even prescribed care. In this example, important data is preserved and the form structure is removed.



### Managing Automation Better than a Human

It's one thing to enable automation through various features and underlying functions, and it is quite another to configure and manage these complex systems. Parascript's Cognitive Capture software uses a unique Smart Learning method to enable true unattended automation for your complex claims data. The software analyzes data and the location of data to generate models to locate and reliably extract it without requiring active management. Using built-in data science techniques, Parascript software maintains an optimized system by continually measuring the results and adapting.

When the system encounters new document types or variants of documents during your production stream, Parascript software runs in the background. It takes that information and uses it to adjust and optimize the systems. Care and upkeep that used to be time consuming and expensive are now automated.

Parascript software contains most of its intelligence and configuration internally. This reduces the dependency on highly specialized and expensive technical resources. This also eliminates another point of potential human error. The system learns as a function of processing and validation in a feedback loop. Due to this feedback loop, the system eliminates errors over time even when new ones are introduced. Ultimately, what matters is whether your system reliably classifies your documents and extracts the right data. Parascript software automates initial configuration for reliable STP and ongoing adaptability of the system once it is in production.





# Smart vs. Dumb

How to know the difference between Cognitive Capture and Legacy OCR

1

**Does it use trainable machine learning (ML)?**

Many OCR solutions say they use ML but still depend heavily on Subject Matter Experts (SMEs) to assemble document samples. With potentially hundreds of diverse document types, this is resource-intensive, time-consuming and costly. Look for Cognitive Capture tools with highly advanced ML that can automatically learn a new document class with only a few samples, and augment or even replace SMEs. Don't be misled by vendors who fly the AI flag. AI without advanced ML is not productive.

2

**Can it apply multiple document classification techniques?**

Look for a Cognitive Capture solution that organizes documents based not only on features and text, but also on imagery and handwritten information on the document including the presence of signatures. Documents with sensitive information such as handwritten social security numbers can be included in your classification workflow and easily identified. Regardless of how the information is presented, classification should be based upon all the available information in the document, not just a select subset of that data.

3

**Can it be operated by business users?**

Does it provide an accessible and clear-cut user interface for business users? Let's face it: this is a very sophisticated and complex software operation. Look for a solution with a user interface that doesn't require programming skills. Fine-tuning document classes should be as simple as correcting results by dragging and dropping results from one class to another, then re-running the task. A Cognitive Capture solution will hide the complexity without compromising the flexibility.

4

**Does it offer high accuracy with low error rates at top speed?**

Most classification systems become slower and less accurate in cases such as mortgage automation where several hundred document types are involved. Advertised accuracy rates are a bit like the miles per gallon sticker on a new car. Actual mileage will vary with options, driving conditions, driver's habits and vehicle condition. This must be demonstrable in your proof of concept. A Cognitive Capture solution will improve your results and performance.

# Use Cases in Insurance Cognitive Capture

In addition to the Non-standard Claims Adjudication and Plan Data Conversion processes discussed in the Challenges section, there are several other processes where Cognitive Capture can make a difference.

## Revenue Cycle Management

The revenue recognition process is still supported by a patchwork of electronic submissions, document-based information, and manual processes with little standardization. These processes are arduous and can take days to complete and verify. They grind to a halt when document-based information enters the workflow. And when payments arrive, non-standard and highly variable explanation of payment information must be converted into structured data ready to reconcile. Even the most sophisticated RCM software-backed processes are delayed waiting for the critical data trapped within the documents.

With highly variable and complex explanation of payment (EOP) and explanation of benefits (EOB) documents, this effort is time-consuming and fraught with opportunities for error. No two remittances are alike, even from the same payer. Valuable time is spent simply visually scanning the document to locate required data to be entered into a system. Some remittances require more than an hour to process.

When it comes to the complexity of documents associated with payment, most automation vendors focus on the workflow and give short shrift to the automation of document information. CCS offers document automation that can process all data required to support payment reconciliation. CCS can be pre-trained to parse complex EOP documents and, along with pre-trained claims and check processing, enables a high degree of automation reducing the amount of time to intake payment from payers.

## Prior Authorization Automation

One of the most painful parts of delivering medical services is the process of requesting a prior authorization. While there are many current attempts to automate the request process, a large percentage of requests require submission of supporting documentation, often by fax and in unstructured form. This makes the review process a time-consuming challenge.

Using advanced analysis of submitted forms and documentation, CCS automatically identifies and separates each individual document allowing further processing. For instance, once the request form is identified, key data is automatically imported into the review system.

As for supporting documentation, using NLP-based techniques, the text is parsed and interpreted in order to aid the reviewer with locating the specific patient data relevant to completing the review. In many cases, CCS can automatically compare submitted data with plan rules in order to automatically decide which is verified by the reviewer. For other cases where data is more complex, the software identifies key supporting data and presents it to the reviewer, saving significant time.

While a lot of tasks can be 100% automated with no review, value is also realized through “assistive automation” that enables a reviewer to work much more efficiently. The result is a more efficient, faster and controllable process.

## Auditing & Compliance / Records Extraction & Review

When it comes to ensuring and auditing for quality standards of care or to support a claim escalation, nothing is more important than detailed patient data. Even with attempts to standardize data sets used for compliance with quality-of-care standards such as HEDIS, the reality is that the most useful patient information with the most detail is always the hardest to identify and analyze. Most of it is stored in highly variable patient charts including notes and other unstructured information. Locating and reviewing this information is a difficult, costly, and error-prone process.

With Parascript software, large portions of manual processes can be automated. The process first starts with what is called “record extraction” or “record retrieval” where selected patient charts are split into individual records. Parascript CCS can automate over 90% of chart-splitting tasks removing a significant amount of data preparation. In the process, service dates are also identified for each record. Once individual records are created, analysis and review can begin. Text can be analyzed, looking for key phrases that indicate conditions, diagnoses and treatment plans.

## Workers Compensation Claims Processing

Processing workers' comp claims should be straightforward. It rarely is in the real world. Claims typically include medical and litigation documentation that turn a simple process into a slow-motion nightmare of complex data processing and delays.

Verifying documentation and entering the required data needed for formal review both take up a significant amount of time and make it more difficult for cases to be processed error-free.

Using advanced text analysis including natural-language techniques, CCS easily identifies each document within a claim and then locates the specific information required; even data hidden within prose-like data is located and presented to the reviewer. Cases are handled in a fraction of the time compared to a typical unassisted manual process and the data quality is significantly improved.

## Healthcare Price Transparency

Starting on January 1, 2023, health plans in the USA are required to offer an online shopping tool so that consumers can see the negotiated rate between their provider and their plan, as well as a personalized estimate of out-of-pocket costs. The requirements are intended to help anyone understand provider pricing; not just the retail pricing, but the true out-of-pocket costs based upon specific insurance accepted by the provider.

This means the same problems associated with conversion of plan data into structured information will be faced by companies complying with the price transparency regulation.

Since most of this data is stored within payer-provider contracts, the amount of manual review and data entry will be incredibly large and complex. Applying CCS assistive automation that can locate key required pricing data for each procedure, the costs associated with supporting a real-time price comparison engine can be significantly reduced.

# What's Next?

The true value of health insurance comes when it is time to pay the bills. And this is where many health insurers fall far short of delivering a good customer experience to their subscribers.

How does your current capture system rate? Are you still seeing too many exceptions that stop the processing dead in its tracks until a person intervenes? Does your solution continually miss data that is vital for accurate and timely payments to your customers?

The ultimate goal for healthcare claims processing is Straight Through Processing (STP) with minimal human intervention. If you're deploying RPA to assist, then you will need the smartest capture tools.

Now, by harnessing the power of AI and machine learning through Cognitive Capture, the "last mile" of processing – the shortest yet most difficult gap - can finally be addressed.

Why not start a review of your claims capture process today?



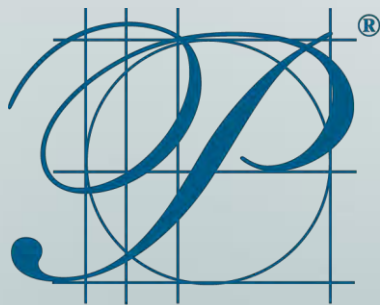
# Cognitive Capture Leveraging Smart Learning

Parascript Smart Learning is a document-focused learning platform that combines decades of document and image expertise with the latest in machine learning technologies. For healthcare claims processing, Parascript can deliver high levels of reliable automation without the need to write a single line of code and without the need to have trained staff.

Discreet machine learning algorithms, tuned to solve specific tasks, are expertly applied to solve the widest range of automation tasks. The result is a significantly faster time to get the system up and running in production. The system is capable of auto-configuration and can run unattended without the need for supervision.

Parascript customers report up to 50% more document automation with seven times (7x) the throughput compared to a competitive solution. Parascript achieves this level of automation at about 1/100th of the cost and effort.

Parascript Smart Learning is also the key to reaching the highest levels of straight through processing. This means that more data is processed by the software and never has to be reviewed by humans. The system can intelligently discern between good data and data that genuinely requires review. The results are improved throughput and lower costs, with greater adaptability, accuracy and certainty.



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