

# CAPSYS

eWriter Solutions  
**RICOH**

**FREE YOUR FORMS FROM PAPER – FOREVER**

Eliminating the Paper Pile-Up

## Introduction

The swan song of paper-based business workflows has been replayed over the last 20+ years. Innovators continue to work on ways to close the digital divide that exists between central IT and the edges of the enterprise where paper forms capture stubbornly prevails. Emerging technologies such as EDI, XML, ACH transactions, email, PDFs, TIFFs and eforms have facilitated rapid information exchange and helped automate digital workflows. But none has eliminated our business dependence on paper-based forms in the out-patient clinic, on the shipping dock or delivery truck, or the construction-inspection site. As a result, many paper-based business transactions remain.

**Why do we cling to paper in our business processes?** Well ... on the one hand, we like paper. We tend to consider paper an inexpensive and practical medium for conducting business. And our processes for creating and sharing multiple copies of an original document via printing, copying, faxing, emailing are proven, familiar and legally accepted worldwide. On the other hand, extremists worry that the cost of replacing all these paper processes and systems will be too great and too difficult, or the infrastructure too weak to ensure the posterity and reliability of the data. So we prolong our use of paper.

**Why do we wish we could replace paper in our business processes?** Simply put: as much as we like paper and fear change, we know the cost to process, maintain and dispose of it is greater than the cost of replacement. In time. In trees. In carbon footprint. When we run out the many cost scenarios, we always come to the same conclusion: digital economies have the winning end-game. For example, it's estimated that replacing paper-based forms capture, alone, could save a business thousands of dollars annually.

**What's needed to close the digital divide?** Paper persists, it's true. But primarily in the remote, distributed and mobile reaches of the business organization where much of the data capture is still done using pen-on-paper forms and clipboards. Replacing the paper forms and lightweight clipboards with a digital alternative tied to centralized IT services seems to be the essential ingredient to replacing the last mile of paper in the enterprise workflow.

In this paper, we offer an overview of this digital alternative to paper-based forms capture.

*"In Free Your Forms From Paper – Forever whitepaper, CAPSYS Technologies brings to light the exciting real world possibilities of CAPSYS and Ricoh's innovative electronic data input, storage and retrieval solution.*

Among other areas, in the healthcare field the CAPSYS-Ricoh eQuill solution has the potential to provide healthcare providers with the opportunity to more effectively and efficiently meet HIPAA privacy requirements and American Recovery and Reinvestment Act '*Meaningful Use*' objectives in the electronic health records context."

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## Closing the Digital Divide

### *Eliminate the Paper Pile Up*

The requirements for electronic forms capture are simply this: field workers need a digital alternative to paper-based forms on clipboards.

The based alternative must be:

- A lightweight, portable digital replacement for paper-based forms
- That captures stroke-marks and signatures (basic unstructured data)
- In a format that will ease and speed database intake

The “better than paper” alternative should go further to:

- Capture both structured (typed) and unstructured (written, spoken, image-captured) data
- Plus biometric, GPS and extrinsic evidence for further data authentication
- In a format that will ease and speed intake and back-end content management and processing
- While upholding the security of the data and minimizing risk to the enterprise
- Offering long battery life for extended work cycles and ensuring high availability and redundancy and archival
- And requiring no training time of the end-user and system administrator

That seems simple enough, right? But it’s proven to be a tall order.

Attempts at providing digital forms capture solutions have fallen short in various areas. In medical clinics and hospitals, nursing laptops and computers on wheels (COWs) have proven too cumbersome, power-hungry or interface-intensive to be useful and practical ... and are set aside in favor of the traditional clipboard. In the transportation and emergency response sectors, portable devices that capture the information and store it on-device often fail to deliver information in a timely or secure enough manner to comply with organizational or regulatory requirements.

Tablet computing solutions – such as the Apple iPad and the Amazon Kindle – offer lightweight, flexible alternatives ... but are designed with the consumer in mind and have proven adaptable for the marketing and other knowledge-base workers who must conduct online research, read massive reports, schedule meetings and communicate using many types of media and stay ahead of the latest-breaking news. But neither has been purpose-built for rapid, portable, encrypted intake of typed, written, spoken and image-captured information that ports directly into a lockdown secure back-end server. They are designed largely for the private consumer to read books (the Kindle) or to read email, process calendar schedules, listen to music, browse websites, Tweet, post to blog sites, etc. (the iPad).

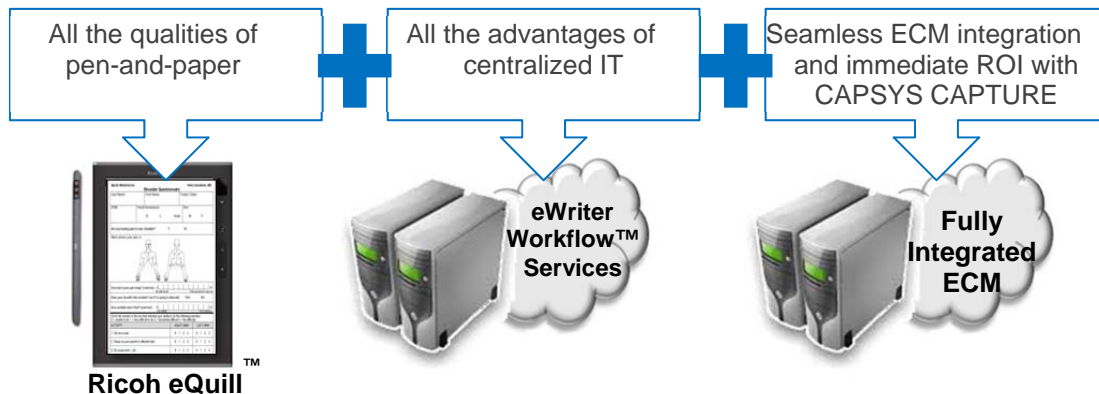
Furthermore, IT departments within the enterprise are required to securely sandbox consumer-based tablets such as the iPad in an effort to limit malware outbreaks and security threats to their organizational network, thus limiting their usefulness.

In business applications, forms associate business data to a real human in a manner that, when signed, implies intent to contractually bind or commit to some transaction, at a specific time and date, inclusive perhaps of a place or person's picture. The legally binding signature is an image that serves as proof of agreement. Its unique characteristics make forgery difficult. But imagine if biometric data and global positioning could be captured to further identify the unique characteristics and date/location of the signer and kept with the document to prove document authenticity if it were ever challenged in court? This would go a long way towards authenticating patient admission, purchase orders (contracts to purchase items), new business underwriting, mortgage applications, inspection reports, credit release forms, credit and financing applications, job applications, and the like.

Tablet computing and forms capture devices have simply failed to adequately address the real need that exists in the business environment. Until now.

The new Ricoh eWriter Solution offers a purpose-built tablet, the Ricoh eQuill™, and back-end services that combines with CAPSYS CAPTURE data and document capture solutions to close the digital divide. With the combined solution, you can free your forms from paper forever while meeting your organizational needs for lockdown-secure and centrally managed information exchange.

Figure 1: Ricoh eWriter Solution – comprised on the Ricoh eQuill Tablet and back-end Workflow Services – combines with the CAPSYS CAPTURE system to deliver fully integrated ECM in your workflow.



## The Business Case

### *Paper versus Electronic Forms*

To illustrate the point, think about the mechanical clipboard containing several pieces of paper and pen that is presented to you the first time you visit your orthodontist, doctor or dentist's office. The clipboard has a structured form on it asking you all kinds of confidential information about yourself: prior medical history, ailments you are experiencing, full name, address, family medical history, billing information, etc. You complete the form and then sign it, followed by providing the administration staff with your health insurance card.

When you hand the clipboard back, your patient information is reviewed for its completeness and entirely read through by someone on the payroll at the doctor's office, usually administration staff (or it may be outsourced). A copy is given to the doctor who ultimately reviews it, the charge nurse, and then someone on the admin staff rekeys all of the info you just inserted on the form into an HIMS (Healthcare Information Management System) so the doctor and charge nurse can accept you in as a new patient, provide you with the services you need, and ultimately get paid by the insurance company. This process is repeated over and over, day after day – it's tedious and prone to errors and potential security breaches.

Alternatively, think of the process in this fashion. Instead of the office administrator handing you several pieces of loose paper, a pen and a clipboard, they hand you an electronic clipboard and a stylus. The electronic clipboard has the new patient form pre-loaded for you, and you proceed to complete it just like you would a traditional paper-based form. (The form looks nearly identical to the clipboard with its paper form. In fact, it is the same form, only in electronic format.) You complete each section of the document as the instructions conveniently included with the electronic form necessitate. You read through the instructions first, and then flip through each of the pages contained within the form just like you do when you are reading through the pages of a book on an Amazon Kindle device.

When you think you are done, you attempt to sign your name in the signature box at the end of the form. BUT, before it allows you to sign, the device lets you know you forgot to complete another box inquiring about the last time you visited with a physician. Something a paper-based form can't do. You probably would have handed the form back thinking it was complete, not knowing you missed some pertinent information the doctor's office at some point in the future would need.

So what is the big deal? All you've done is simply completed an electronic representation of the new patient form, right?

Well, a number of additional things have changed for the better, for everyone concerned:

- 1) With the Ricoh eWriter Solution, your signed and completed PDF/A document was automatically sent to the record keeping system -- in this case a document imaging system creating an Electronic Health Care Record. No equipment or manual labor was involved to perform document preparation, document scanning or OCRing of structured forms and/or data correction. Your data is stored in the health care practitioner's HIMS/ECM system exactly as you completed it, nearly instantaneously.
- 2) The doctor's office prevented you from providing them with a form that was incomplete, because you purposely or inadvertently left out pertinent information. Before you could claim "I'm done" with the process and return the Ricoh eWriter Solution, it prompted you to complete areas of the form where you left out required data.
- 3) The data elements on the form that are necessary for the doctor's HIMS/ECM system were automatically entered into the HIMS/ECM system without the doctor's personnel having to transcribe/type the information from your form. (The technology used to accomplish this automatic transfer to data from disparate systems is based on .NET or JSON, an open JAVA standard (XML like) interface.)
- 4) Some boxes within the form require input using the Ricoh eQuill soft keyboard, and other boxes can be handwritten using the stylus. In a paper-based form, the admin staff attempts to discern your handwriting or handprint in every box contained in the form.
- 5) Because the Ricoh eWriter Solution is secure, your Private Healthcare Information (PHI) is kept confidential and transmitted securely, unlike paper documents which can easily be duplicated, lost or even misused in an identity theft or similar manner.
- 6) The doctor's office has lowered its cost of doing business, increased its productivity, and is handling your PHI in a much more secure manner than previously attainable. Lowering healthcare costs, especially in the current environment, is a concern to all.
- 7) The Ricoh eQuill is not an iPad, and it is not a Windows PC. The device only contains the forms the doctor's office wants to display on the device. No distracting applications, viruses or malware can sneak in because the patient decided to browse the web. The likelihood of someone stealing or walking out of the office unintentionally with the device is rather low because it is of no use to anyone except the staff at the doctor's office you are visiting. If the device is lost or stolen, IT can remotely wipe the unit clean with ease and render it useless.

The Ricoh eWriter Solution contains everything you need to capture content in a 100% electronic, legally acceptable format – right at the point of origin. The Ricoh technology virtually eliminates the need for paper-based structured business forms.

## How the Capture Process Works

### *Real Business Value*

The Ricoh eWriter Solution lets the business user securely capture electronic data, coupled with the form and any necessary signatures, pictures, and/or location information, into an encapsulated PDF/a imaged document – all while exporting metadata to a secured repository for use in further data processing situations.

In addition to encapsulating those three important elements, and perhaps more importantly, the eWriter Solution is capturing and establishing both the context and the intent of a business transaction, something that has not been achieved by consumer-grade tablets. The idea of encapsulating both the context and intent of the transaction is something no ECM or LOB system can realistically provide today.



The Ricoh eQuill allows users to input data on the eform using a supplied stylus similar to that of a pencil with an eraser (to correct handwritten mistakes) and/or input data via a soft keyboard, snap a hi-res picture using its built in 5 megapixel camera feature, include GPS location information data, and digitally sign the documents using the stylus – just like you would sign a piece of a paper.

The Ricoh eWriter Solution offers an authentication service – AuthentiDoc™-- that creates trusted, tamper-proof documents that can be used as admissible evidence in a court of law. To accomplish this, AuthentiDoc meets five stringent requirements for admissible evidence:

- 1) Authentication (biometric stroke – speed and pressure);
- 2) Extrinsic Evidence (time, date, location, username, photo, audio);
- 3) Repeating Processes;
- 4) Long-Term Accessibility; and
- 5) Verifiable Signatures.

The user also has access to a built-in microphone and speakers for making audio annotations to the documents. With these added capabilities, Ricoh is addressing the practical business use cases for such a device as well as being mindful of the requirements of evidentiary and contract law when substituting paper-based transactions with electronic devices and methods.

Other differentiators worth noting:

- Via Ricoh's Cloud Services, business users can dynamically publish or push specific business forms directly to an individual or a fleet of Ricoh eQuill tablets (which are about the size and weight of an Amazon Kindle, and include wireless 3G and/or WiFi capabilities).
- Administrators can use existing internal forms by creating PDF versions of them and then uploading them to their secured Ricoh portal. Or they can create entirely new forms with sophisticated DB lookup capabilities (drop down boxes, business logic, auto-verify features) – functionality you would typically only find in web browser or thick-client based applications.

The ability to push forms directly to the device, rather than having to constantly maintain a connection to the internet in order to pull forms from a server, is what allows Ricoh eWriter Solution to be useful in conducting business transactions regardless of whether an internet connection exists at the time of the actual transaction. No web connectivity is required to open and interact with the forms.

If a Ricoh eQuill tablet doesn't have wireless connectivity at the time the transaction is completed, there are no worries: the device remains fully functional. Forms on the device can still be opened and completed by the users, and will simply sit in a holding queue until 3G or WiFi connectivity is regained.

Think of all of the potential uses across industries that could benefit from such a device:

- Pre-loan Qualification Forms;
- Mortgage Brokers/Mortgage Applications;
- Job Application Forms;
- Crime Scene/Accident Investigation Forms;
- Credit Release Forms;
- Student Loans;
- 401(k) Benefit Enrollments;
- Health Insurance Forms;
- Transportation and Trucking;
- Reference Check Release Forms;
- HIPAA Release Forms;
- Applicant Evaluation Forms;
- Easy Pay Consent Forms;
- Surgical Consent Forms;
- And much more.

## Fully Integrated ECM With the CAPSYS CAPTURE Systems



The Ricoh eWriter Solution integrates seamlessly with CAPSYS CAPTURE document and data capture systems, and fits into your overall ECM strategy. Serving as the ECM “On-Ramp”, the Ricoh eWriter Solution ingests transactional content into the ECM repository or LOB workflow business process. That’s where CAPSYS steps in, offering a well-defined business process and document capture application to appropriately capture the content.

CAPSYS CAPTURE offers the fundamental building blocks that make up an effective and efficient document capture architecture:

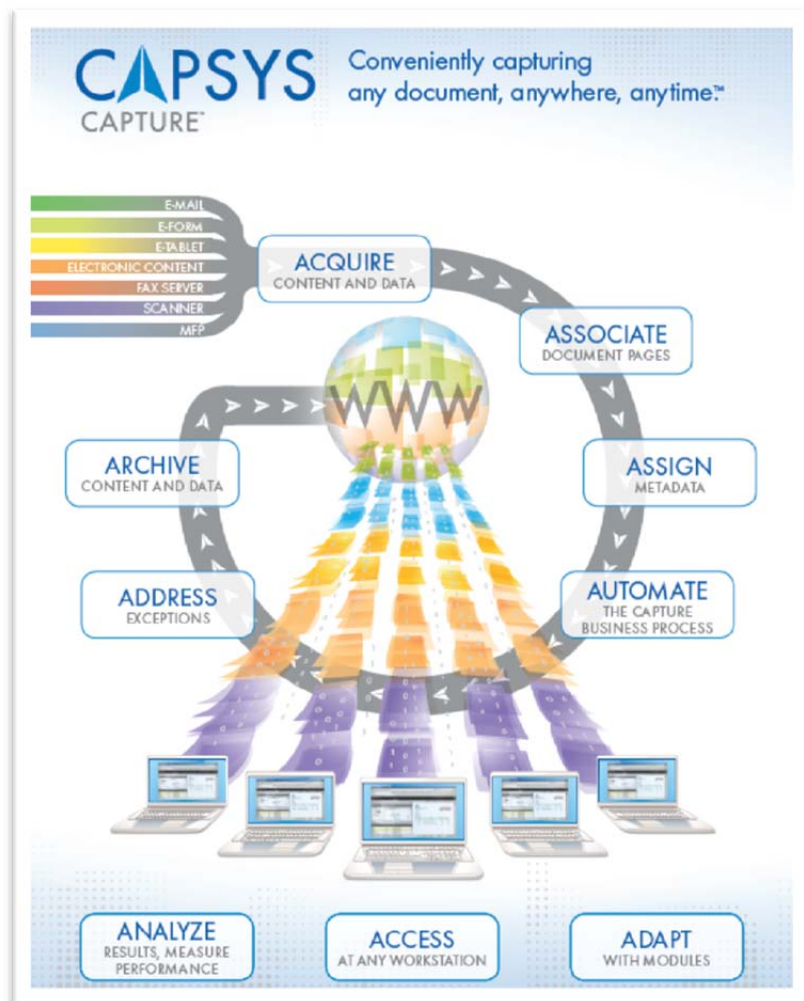


Figure 2: CAPSYS CAPTURE software – offered in Cloud, On-Premise and Network Appliance formats -- provides the ideal gateway for Ricoh eWriter Solution captured content.

CAPSYS CAPTURE provides the fundamental data and document capture building blocks to ...

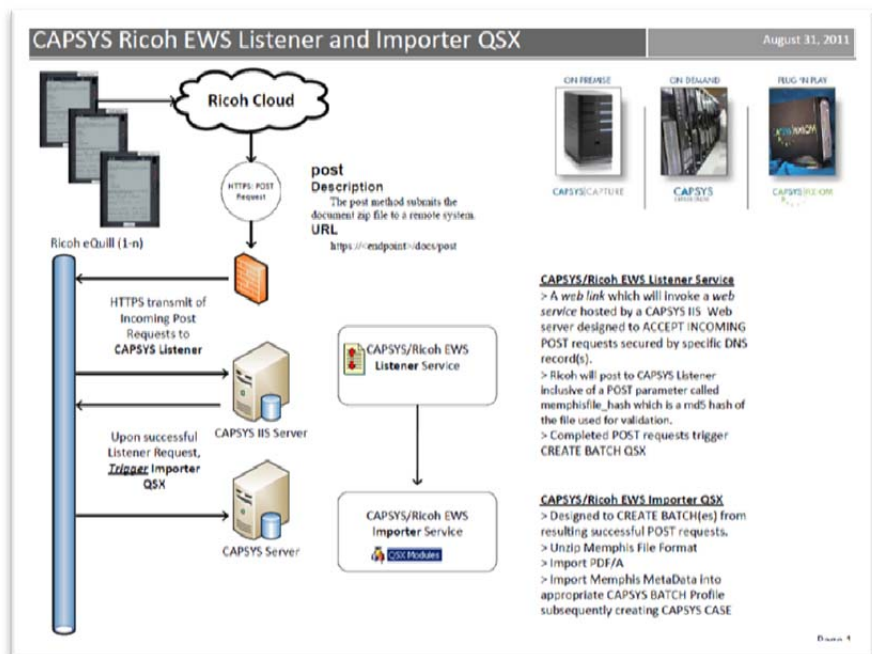
- Process and move content captured with the Ricoh eWriter Solution throughout the organization using predefined data and document processing rules;
- Automate work tasks;
- Address exceptions that will occur;
- Strategically archive data and content to your ECM repository using pre-built connectors;
- Add any required data elements into your LOB systems; and
- Analyze results and measure business process and system performance.

CAPSYS QSX extensible architecture allows the Ricoh Cloud services to deliver content via a web services method to a CAPSYS Server (On-premise, Cloud-based or Network Appliance).

As shown in Figure 3, the Cloud service returns to CAPSYS CAPTURE Services a Ricoh Memphis Layered Form ZIP file (this format contains all of necessary directories, working files and metadata, stored in JSON format). The format breaks down as follows:

- The lowest and most simple layer is the original PDF;
- The next layer is widget and routing of metadata. This includes metadata regarding how and where to route the form and metadata regarding placement and style of input widgets, buttons, signature boxes, etc.;
- Highest is the user input layer, which includes metadata about what the user did with the document, stroke data, widget inputs, locational data, timestamps, etc.;
- Output is either Zipped Memphis files of all of the layers, or a PDF representation of all visible layers.

Figure 3: CAPSYS CAPTURE is the ideal platform to handle the addition of the Ricoh eWriter Solution into an established or prospective enterprise. The new CAPSYS QSX module allows the Ricoh Cloud to deliver content to a CAPSYS Server via a Memphis Layered Form ZIP file.



## Easy and Seamless Integration

### *Adding Ricoh eWriter Solution to an Existing CAPSYS CAPTURE Implementation*

Adding the Ricoh eWriter Solution to an existing CAPSYS CAPTURE system is a relatively simple task. Adding the Ricoh JSON import capability to the CAPSYS configuration requires no programming skills, however you do need to be trained on how to administer the combined solution.

The high-level steps depicted below assume that CAPSYS CAPTURE and Ricoh eWriter Solution implementations have already taken place, unit/system functional testing has been thoroughly completed.

### Fast Set-Up

First, the CAPSYS Administrator logs into the CAPSYS Administration module.

Figure 4: The admin selects the batch profile (business application) in which they desire the Ricoh eWriter Solution documents to be received, injected and processed by CAPSYS CAPTURE.



Next, the CAPSYS Systems Administrator adds and then configures the CAPSYS/Ricoh Listener Service to work with their specific CAPSYS CAPTURE configuration. The Listener Service monitors incoming objects and hands-off verified objects to the CAPSYS/Ricoh QSX Importer Service, which injects the objects into the proper CAPSYS CAPTURE workflow process.

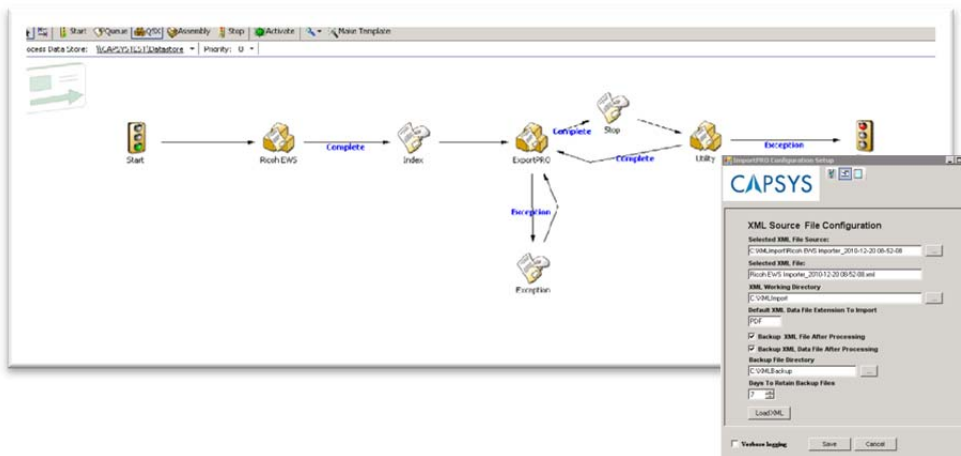


Figure 5: CAPSYS CAPTURE Workflow Designer offers an easy and efficient method for configuring necessary work steps in your Ricoh eWriter Solution content, and serves as the ideal platform for centralized and distributed document scanning, email and fax importing, and more.

Then the Administrator selects the appropriate CAPSYS process map they want to enable to accept incoming Ricoh eWriter Solution data and documents. The Administrator selects the Ricoh QSX from the available selection list.

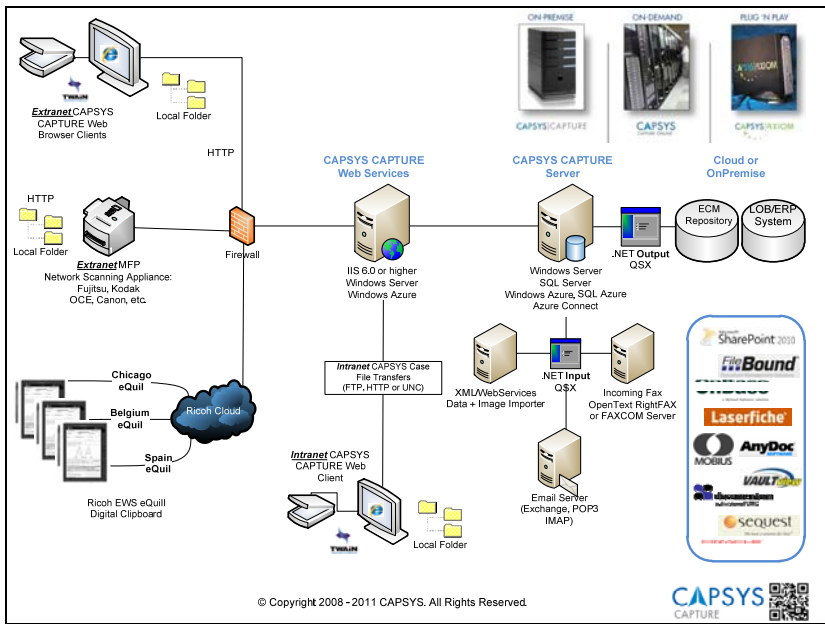


Figure 6: The Ricoh eWriter Solution integrated with the CAPSYS CAPTURE platform and allows users to capture and process forms and other types of content in one seamless system.

After choosing the Ricoh QSX, the Administrator drops the QSX onto the process map, configures the variables and settings contained within the QSX, saves the configuration and applies the changes to the process, and the configuration process is complete.

Once Ricoh eWriter Solution content has been successfully injected into a CAPSYS CAPTURE business process, the content can then be further automated by:

- Reading any barcodes contained within the document;
- Performing OCR on the document;
- Matching the newly injected Ricoh eWriter Solution document with an existing or newly scanned, faxed or emailed document;
- Routing the document to be further indexed by a CAPSYS Indexing or QC Operator;
- And more.

Any exceptions with the document (due to additional metadata needing to be assigned) can be dealt with by the CAPSYS Indexing or QC Operator.

Any additional documents that need to be scanned can also be associated with the newly injected eQuill content. Because CAPSYS is web-based, the indexing, QC or additional appending of documents to the Ricoh eWriter Solution document can occur anywhere in the world the user has secured access to a web-browser.

CAPSYS can also automatically:

- Assign additional metadata to the Ricoh eWriter Solution documents using web-based database lookup capabilities;
- Route documents to different users in different geographical locations; and
- Place Ricoh eWriter Solution documents into a Hold Queue until further supporting documents are received by the CAPSYS system, and much more.

When all business rules and conditions are met, the completed batches and associated documents – called CAPSYS Cases – can then be exported to a wide variety of supported ECM and LOB/ERP systems.

## **Conclusion**

### ***Seamless, Easy-to-Deploy***

The combined Ricoh eWriter Solution and CAPSYS CAPTURE system provide a seamless – and affordable – system for replacing daily paper forms. Users will reap not only the efficiencies and cost-savings inherent in a paperless process, but the added value of automatically:

- Securely capturing the context and intent of every transaction;
- Processing and moving content throughout the organization;
- Completing numerous work tasks previously performed manually; and
- Injecting pertinent data into LOB systems.

From job applications to consent and data-input forms of all types, these technologies are a real answer to the paper problem, simplifying and speeding the way business gets done.

***The Ricoh eWriter Solution and CAPSYS CAPTURE system are sold through authorized Ricoh eWriter and CAPSYS partners.***

***For more information:***

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## **About CAPSYS**

CAPSYS® is the leading developer of Web-based data and document capture software. The company's flagship product, CAPSYS® CAPTURE, can easily and efficiently capture documents from anywhere at any time around the world in a safe and secure environment while eliminating the cost and complexity of supporting additional IT hardware and software environments.

CAPSYS solutions are offered in the form of Software as a Service ("SaaS") hosted in the convenience of Microsoft Windows Azure data centers, our secure data center, as a traditional "on-premise" or network appliance purchase.

To learn more about us or about our proven products, please call 877-322-7797 or visit [www.capsyscapture.com](http://www.capsyscapture.com). CAPSYS CAPTURE fully supports the TWAIN standard for image acquisition devices. For more information, please visit [www.twain.org](http://www.twain.org).

## **About Ricoh eWriter Solutions (EWS)**

At Ricoh EWS, our mission is to address technology gaps in the digital workflow by replacing paper-based writing solutions with efficient digital alternatives. The eWriter product and services eliminate costly inefficiencies – such as photocopy-setup, print/scan/faxing, inter-department transports – saving companies thousands of dollars each month in staff time and paper-based processes, and significantly reducing their carbon footprint.

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