GET THE BENEFITS OF MOBILE DOCUMENT CAPTURE WITH MOTOROLA'S ADVANCED DOCUMENT IMAGING TECHNOLOGY

MOTOROLA

EXECUTIVE SUMMARY

While the world is migrating to a paperless society, there are still many types of paper documents in use in a wide variety of business processes around the world. For example, in transportation and logistics, there is a paper form for proof of delivery or a bill of lading. In field service, there is a work order and an invoice for every job. In direct store delivery (DSD), there is proof of delivery and an invoice at every stop. And in healthcare, there are prescriptions that must be maintained as part of the prescription record. Processing these paper forms is time-intensive, error prone and costly — field workers must manage the paperwork and either stop to send it by fax to the office during the business day or pass it on to the proper department when they arrive back at the office. Either way, the information finds its way into your business systems through workers who key the data from images into the computer or scan the documents.

What if you could move that information right from the point of work to your business systems in the time it takes to press a button? With Motorola's advanced document imaging technology, you can. While practically every mobile computer manufacturer provides some type of document capture capability, the truth is that capturing legible electronic versions of documents is challenging. Paper sizes may be different. You may need only some areas of a form. Documents may not even be standardized, presenting everything from handwritten to typed copy in many different colors. And forms with multiple copies will likely have the one thing that can make it exceedingly difficult to consistently and reliably capture a legible document — a color background. With Motorola's advanced document imaging technology loaded on your mobile computers, you can handle it all. In the following pages, we'll discuss the challenges of electronic document capture and how our advanced document imaging technology addresses each and every one, paving the way for time-saving and cost-saving mobile document capture in your business.

THE BIG BUSINESS BENEFITS OF ADVANCED DOCUMENT IMAGING TECHNOLOGY

Motorola brings you major advancements in imaging technology that make it easier than ever to electronically capture documents to streamline everyday business processes, allowing you to achieve a new level of efficiency that speeds information through your business. Drivers no longer need to stop to fax paperwork, freeing up time for more deliveries per day. Workers inside your business dedicated to processing paper forms are free to handle more crucial business tasks. And the major increase in operating efficiency:

- Reduces your billing cycle times.

- Improves your cash flow.

- Reduces the cost of capturing required documents by integrating the document capture in the workflow at the point of activity — from pharmacies who need to maintain a record of handwritten prescriptions to police officers who need to capture a driver's license while issuing a citation.

- Allows your company to substantially improve its "green score" by reducing the use of paper.

THE MOTOROLA DIFFERENCE: TRULY ADVANCED DOCUMENT CAPTURE CAPABILITIES

Our advanced document imaging technology offers a number of capabilities that set it apart from the competition. While new Motorola mobile devices that you purchase will likely have the Advanced Document Imaging Technology integrated, you can also easily add this new functionality to your existing supported Motorola mobile computers with a simple software upgrade.

Competitive differences include:

- Now, you can fully integrate electronic document capture into your application workflow. No more tracking, faxing, entering or filing paper documents. Instead, with just a press of a button, the electronic image of a document is not only captured, but also automatically attached to the right record.

- An Application Programming Interface (API) in the Motorola Enterprise Mobility Developer's Kit (EMDK) enables the easy integration of all document capture features into your application.

- Workers can use either the on-board color camera or the 2D imager to capture documents. For example, while color cameras can capture bar codes, they do not provide the same high-performance bar code scanning that a dedicated 2D imager can provide. If you have workers that need to capture a lot of bar codes and documents throughout the day, workers can accomplish both with the 2D imager.

- There are two modes of operation to ensure that your workers capture a high quality usable document:

  – In snapshot mode, the user is in control of the moment in time when the document is captured. The resulting image is immediately displayed.

  – Preview mode takes the guesswork out of the process. In preview mode, the worker simply aims at the document to be captured. The software automatically determines when the conditions are ideal to capture an optimum quality image and snaps the picture.

- The technology is easy to use — regardless of whether your workers are using the color camera or the imager to capture a document, no training is required. To capture documents with the camera, workers look through the viewfinder and align the

CAN YOUR BUSINESS BENEFIT FROM ADVANCED DOCUMENT CAPTURE?

The following businesses are typically paper-rich, able to achieve substantial benefits by implementing mobile document capture:

Transportation and Logistics
- Proof of delivery/ signature capture
- Bill of lading

Government
- Passport capture for border control
- Driver's license for citation support

Field Service
- Invoicing
- Completed work order

Direct Store Delivery (DSD)
- Invoicing
- Proof of delivery/ signature capture

Healthcare
- Prescriptions

aiming reticule that appears with the document. To capture documents with the 2D imager, workers press a button to project the bright laser-aiming pattern (crosshairs) onto the target document. Either way, users will hear a beep tone to indicate that a quality image of the document was captured.

- You can capture a wider variety of document sizes than the typical competitive document capture solution — including Legal, Letter, A4 and A5 in either portrait or landscape.

- Capture unstructured documents just as easily as structured documents. Structured documents are forms where placement of the various fields is predictable. Unstructured documents do not follow a defined template — the fields and field placement varies.

- You can specify the area of interest that you want to capture — the entire document or specific fields on that document, such as the package contents on a packing slip, a signature box on a bill of lading or a stamp of approval or rejection.

- In addition to capturing a document, you can also simultaneously capture and decode a bar code on the document — all in one press of a button. The document can then be automatically associated with the record that the bar code represents.

- You can easily capture documents with color backgrounds, such as those commonly found on multi-part forms.

- Capture the image of any specific zone of your document, such as a signature field, a check mark or text field. And the contents in each field can be typed or handwritten, in any color.

AUTOMATIC IMAGE PROCESSING FEATURES

Capturing documents out in the field can be very challenging. There are different lighting conditions that can impact the ability to capture a good image of the document — the image may come out dark or part of the image may appear dark. There could be an undesirable obstruction in the field of view, such as a finger or mobile computer handstrap. A document might

MOTOROLA ADVANCED DOCUMENT IMAGING TECHNOLOGY
A LOT OF FUNCTIONALITY WITH THE PRESS OF A BUTTON
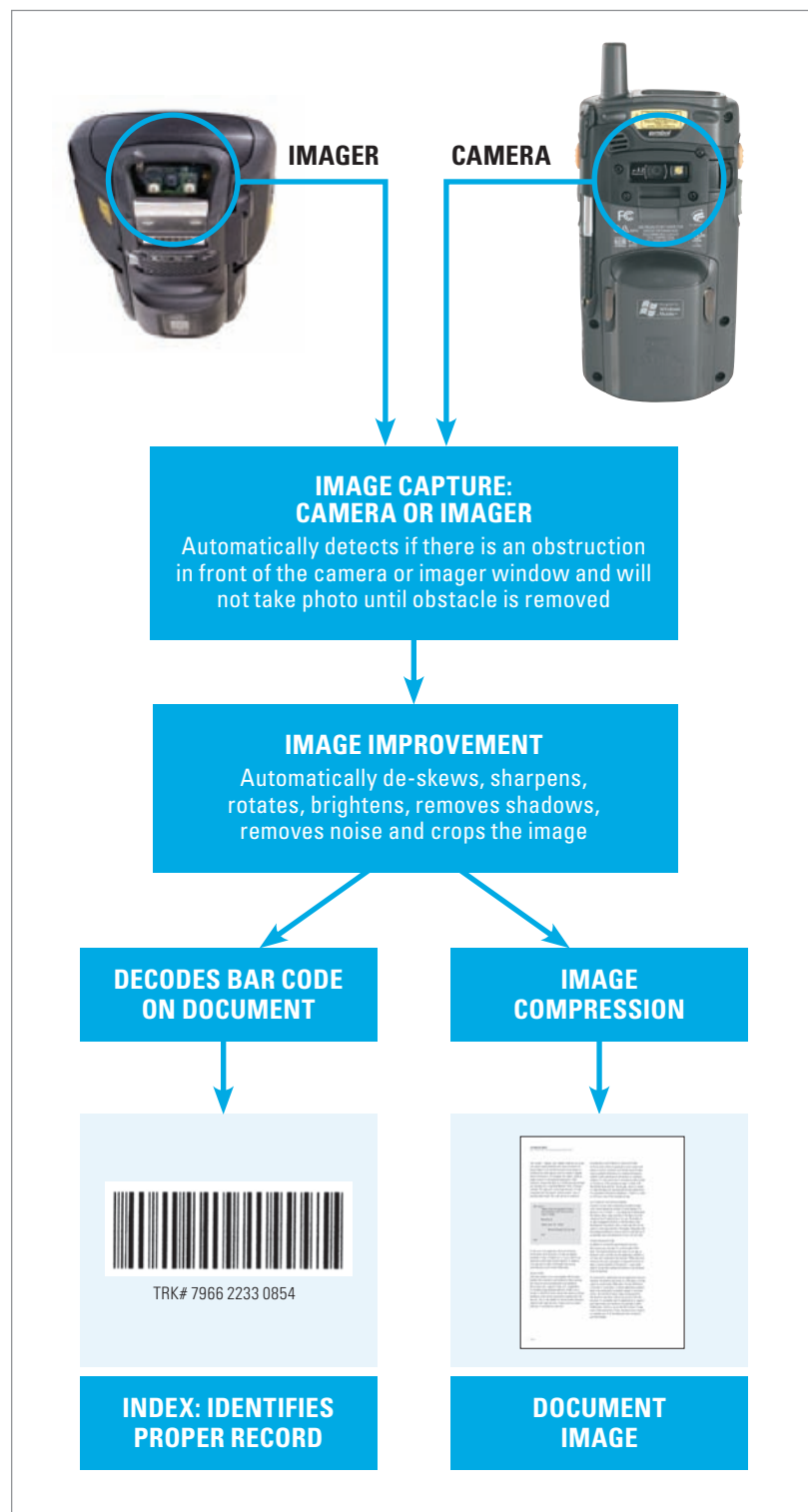
The press of one button: captures the document image; processes the image to ensure legibility; compresses the image to the smallest file size possible without impacting legibility; and if a bar code is present, decodes the bar code to automatically identify, locate and attach the document to the proper record.

be small, resulting in an image with a lot of background around it. And then there is the file size associated with high-resolution documents that can sap battery power.

Our advanced document imaging technology is loaded with features to address these issues and more. Once the document has been captured, the software automatically assesses the image and utilizes the features below to create the best image possible, eliminating the need for users to assess the document image before they capture it — or view the document image to check its quality after it is captured. Features include:

- **Auto De-skew:** Any image skew (off-angle) is automatically detected and corrected, so the document is the proper size and shape.

- **Auto Rotate:** Whenever there is a bar code on a document, workers can capture the document in any orientation and the software will automatically rotate the document to present the correct orientation.

- **Auto Brighten:** Brightens the image as a whole for optimal readability.

- **Auto Shadow Removal:** Any shadows that are cast across the document are automatically removed.

- **Auto Noise Removal:** Any type of noise in the image — for example, caused by grain in the paper — is identified and removed.

- **Auto Sharpen:** Automatically assesses text and graphics and sharpens as needed to ensure improved legibility.

- **Obstacle Detection:** If there is an obstacle in the field of view between the mobile computer and the document, such as a finger holding the document, the software will not allow the image to be captured until the obstacle is removed.

- **Auto Crop:** Automatically detects document edges and eliminates unneeded background areas. The edges of the document are automatically detected and the extraneous background area cropped out of

MOTOROLA'S ADVANCED DOCUMENT IMAGING IN ACTION
THESE ACTUAL 'BEFORE AND AFTER' PHOTOS ILLUSTRATE THE POWER OF MOTOROLA'S ADVANCED DOCUMENT IMAGING TECHNOLOGY

Raw image
This is the raw image that was captured before processing — note that the image is skewed, dark in general with a shadow on the bottom right of the document.
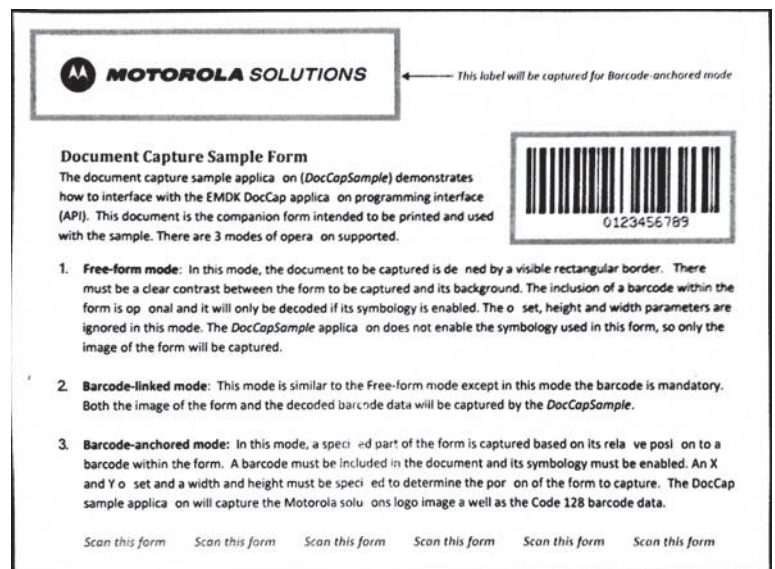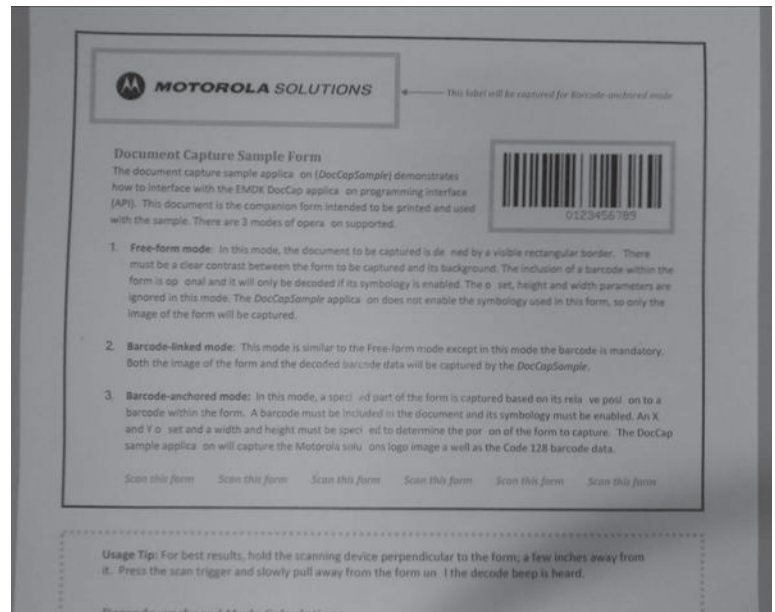
Final image
In a split second, with no action required by the user, all document visual issues were addressed: the skewing was corrected, the document was brightened overall, the shadow in the bottom right was removed, the area of the document that is desired was cropped (in this instance identified by the bounding box around the area) and any fuzzy text and graphics were sharpened. The resulting image is crisp and legible. In addition, since this document contains a bar code, the bar code information enabled the software to identify, display and attach the document to the corresponding record.

the image. Even if a document is missing a corner, the software extrapolates where that corner should be and crops appropriately so that the document is still sized correctly — critical in the capture of structured documents.

- **Auto Compression:** After all image processing has been completed, the software automatically compresses the document to a configurable small file size of your choosing. As a result, your workers can transmit smaller files that will protect device performance, battery power and possibly the cost of transmission (dependent upon the data plan).
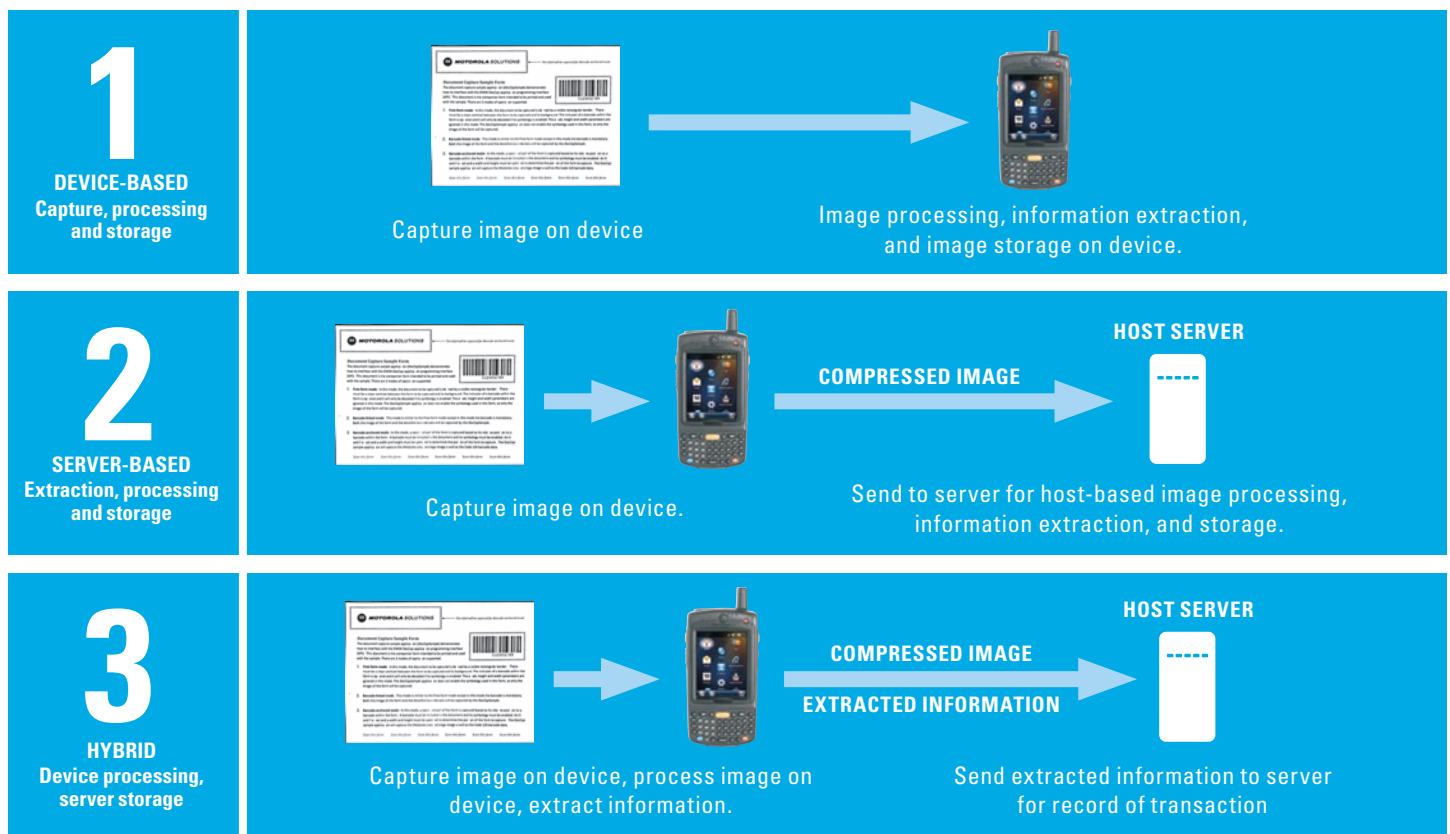
FLEXIBLE INFORMATION PROCESSING

Once a high-quality document image has been captured, the most important phase begins — extraction of the information you need from that document. Our flexible advanced document imaging software enables three methods for end-to-end capture and processing of documents to allow you to select the method that works best for your technology environment:

- **Pure device-side processing:** The mobile device processes image, extracts data and stores the extracted data in the right record on the device.

WHAT HAPPENS TO THE IMAGE?
THREE METHODS FOR IMAGE CAPTURE, PROCESSING AND STORAGE

1

DEVICE-BASED
Capture, processing and storage

Capture image on device

Image processing, information extraction, and image storage on device.

2

SERVER-BASED
Extraction, processing and storage

Capture image on device.

COMPRESSED IMAGE

HOST SERVER

Send to server for host-based image processing, information extraction, and storage.

3

HYBRID
Device processing, server storage

Capture image on device, process image on device, extract information.

COMPRESSED IMAGE

EXTRACTED INFORMATION

HOST SERVER

Send extracted information to server for record of transaction

Our flexible advanced document imaging software enables three methods for end-to-end capture and processing of documents to allow you to select the method that works best for your technology environment

– **Advantage:** if workers lose wireless network access, they can continue to work. They are not dependent upon wireless network access to get the job done — ideal for workers who are in areas with spotty coverage.

• **Pure server-side processing:** The image is sent to the server. All processing, extraction and storing of data in the appropriate record occurs on the server.

– **Advantage:** There is more processing power available on the server to handle more sophisticated processing. The only disadvantage is that there is no local image test, so users would not hear the beep that verifies an acceptable quality image was captured.

• **Hybrid device- and server-side processing:** The mobile computer extracts the information and sends the information to the server to store in the appropriate record.

– **Advantage:** The extracted information exists on the device and the server, providing backup and enabling continuity of work when a wireless connection is lost — the information is uploaded when the wireless connection is restored. In addition, the workers will hear the beep tone that announced the capture of a good image.

FLEXIBLE DOCUMENT CAPTURE METHODS TO MATCH YOUR APPLICATION AND USER NEEDS

IMAGER-BASED DOCUMENT CAPTURE

• Highly visible Laser Aiming Pattern

• Intuitive and rapid aiming of the document

• Front shooting

• Low-resolution grey-scale Image

• Ideal for document size up to A5

CAMERA-BASED DOCUMENT CAPTURE

• Display Aimer with reticule

• Autofocus color camera with user-controlled flash illumination

• Back shooting

• High resolution color or grey-scale Image

• Ideal for document sizes A4, A3, Letter and Legal

For more information on how you can reap the benefits of document capture in your organization, please visit www.motorolasolutions.com/mobilecomputers or locate your local Motorola representative in our global contact directory at www.motorolasolutions.com/contactus

ABOUT MOTOROLA SOLUTIONS
END-TO-END MOBILITY SOLUTIONS FOR DEPLOYMENT SIMPLICITY AND SUCCESS

Every day, organizations of all sizes all over the world count on our Enterprise Mobility Solutions to maximize personnel effectiveness, improve services and increase revenue potential. When you choose Motorola for your mobility solution, you get the peace of mind that comes with choosing an industry leader as your technology partner. We offer the proven expertise and technology you need to achieve maximum value and a fast return on investment — as well as first hand experience in virtually every size organization in nearly every major industry. And our end-to-end solutions offer the simplicity of a single accountable source — regardless of the number of vendors involved.

Our comprehensive product offering includes: rugged and enterprise class mobile computers with extensive advanced data capture and wireless communications options; rugged two-way radios for always on voice communications; private wide area and local area wireless and outside the four walls — and to network multiple locations; comprehensive RFID infrastructure, including fixed, mobile and handheld RFID readers; a partner channel delivering best-in class applications; software solutions that enable centralized and remote management of every aspect of your mobility solution; and a complete range of pre-and post-deployment services to help get and keep your mobility solution up and running at peak performance every day of the year.

(M) MOTOROLA