



## Case History

# Reliable image quality key to testing accuracy for Data Recognition Corporation

Data Recognition Corporation (DRC) of Maple Grove, MN is in the information business — very important information. DRC partners with state departments of education across the country to develop and administer full-service large-scale student educational assessment programs, such as those required by the No Child Left Behind legislation.

DRC captures, assembles and scores testing data that impacts the futures of thousands of students each year. Educational testing is their largest segment, but the company also provides survey solutions and document services to the Federal government, healthcare, financial and other markets.

### BUBBLES VS. ERASERS

In student assessments, multiple-choice responses are “bubbled in” by pencil, while constructed handwritten responses such as essays or math problems are completed by each student. An elaborate software-based process identifies the constructed

responses and then determines whether “bubbled in” marks were intended or erased. This post-scanning evaluation depends on a very accurate initial capture.

**Image accuracy is at the heart of DRC’s scoring process, and consistent imaging is essential for scoring accuracy. The inability to distinguish a pencil mark from an erased spot could impact a test score.**

For the constructed responses, students must also show their work, and live readers must score these responses. In years past, DRC operators had to separate booklet pages that had constructed reader-scored responses and route those pages to a scoring center.

### THE FIRST STEP IN TEST SCORING AUTOMATION

Today, as the first step in the scoring process, DRC uses IBML ImageTrac IV scanners to capture a complete image of each answer booklet. Student answer books can run as many as 96 8.5”x11” pages. During the prep process, operators cut spines off booklets to scan individual results by page. Barcodes and OCR marks help keep pages in order and maintain booklet integrity.

“We transitioned to image-based scoring in 2000 to capture images of student responses and electronically transmit them to readers who scored them from their desktop workstations. Time, efficiency and security are maximized from the standpoint of control of information and security. The documents never leave our centralized operations facility,” said Doyle Kirkeby, DRC Vice President of Operations.

## IMAGE ACCURACY IS CRITICAL

Image accuracy is at the heart of DRC's scoring process, and consistent imaging is essential for scoring accuracy. The inability to distinguish a pencil mark from an erased spot could impact a test score. Consequently, scans must be flawless.

During the scanning process, the ImageTrac scanner captures multiple image formats (grayscale and black and white), along with barcode values representing the unique number of each booklet and OCR values identifying sequential pages within each booklet. Pristine image quality reduces scoring delays and ensures a clean handoff to human readers and to special response reading software for multiple-choice "bubbled" answers.

Now when each page is scanned, the ImageTrac outputs a black and white image for the live reader for scoring and archiving, and a grayscale image for scoring the multiple-choice items.

The reliable ImageTrac quality also saves time by reducing rescan requests for original documents when the scorer cannot interpret the answer on the screen. The rescan process is extremely time-consuming and costly, but is virtually eliminated by the consistent image quality produced by the ImageTrac.

## ACHIEVING CONSISTENT IMAGE QUALITY

Over time, the brightness of the light source on all camera subsystems diminishes, as the bulbs lose intensity. When processing booklets, this change can

have a dramatic effect on image quality. Previously, a field service engineer had to adjust and recalibrate the cameras, resulting in ten- to 15-minute stops every four to six hours to check the system.

However, the ImageTrac eliminates this problem. Using the latest digital camera technology, the system auto-balances for true white after every scan line and adjusts for changes in brightness. As a result, DRC captures more consistent images over time with less effort. The new camera technology calibrates automatically, eliminating manual steps and dramatically reducing maintenance, improving up time and delivering exceptional image quality.

## NO CHILD LEFT BEHIND INCREASES TESTING VOLUME

The No Child Left Behind legislation created an opportunity for DRC. The company designs, develops and administers standardized tests for grades K-12 to satisfy requirements of this legislation. The eleven new ImageTrac scanners help manage the expanding volume. "In 2007, we scanned about 55 million sheets. In 2008, we will scan 77 million," explained Kirkeby. DRC's volume is cyclical, with 90 percent coming between March and June.

From greater image accuracy to uninterrupted high-volume productivity, ImageTrac IV scanners meet the strict operational requirements of test scoring and the high quality standards of DRC. "It enables us to do an excellent job for our state department of education clients," stated Kirkeby of the IBML technology.



For more information, visit [www.datarecognitioncorp.com](http://www.datarecognitioncorp.com)

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