



CASE STUDY: KANGOUROU DES MATHÉMATIQUES

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Forms Processing Solution Accurately Captures 9.6 Million Fields in Less than Two Weeks

OVERVIEW

Kangourou des Mathématiques, hosted by Editions ATL, is the world's largest math testing competition for French-speaking students ages 8 to 18. In 2006, nearly 300,000 students representing 37 European, Asian and North American countries took part in the competition. Kangourou des Mathématiques consists of a math quiz containing 24 multiple-choice questions and is complemented by mathematical handouts that simultaneously provide students with culture, entertainment and knowledge.

The completed answer sheet submitted by all participants contained the following information:

- 24 multiple-choice answers, each with five possible choices (A-E).
- Two tie-breaker answers used only in the event of a tie.
- The student's first and last name in freeform handwriting.
- The student's full address in freeform handwriting.
- The student's grade or year of education, containing 19 possible choices.
- The student's gender.
- A yes/no question about the computer equipment used by the student.

CHALLENGE

In past competitions, operators processed the answer sheets using optical reading – a process that was tedious, time-consuming and unreliable. However, for the 2006 competition, Editions ATL needed the 300,000 answer sheets to be accurately processed in less than two weeks in order to meet their deadline for announcing the competition's results.

SOLUTION

For Kangourou des Mathématiques 2006, Editions ATL retained Maerys to automate the processing of the student answer sheets and manage the project. Processing of the 300,000 answer sheets was automated using a solution containing products from Maerys, Kofax (DICOM) and A2iA. Maerys' forms processing and archiving application, Maarch, incorporated Kofax Ascent Capture and A2iA FieldReader™ to automatically extract the information, including the freeform name and address fields, contained on the students' answer sheets.

Two industrial scanners were deployed to capture images of the answer sheets. For each captured answer sheet image, 168 tick boxes were recognized using Intelligent Character Recognition (ICR) technology in Kofax Ascent Capture, and the unconstrained handwritten information, such as the student's name and address, was extracted using Intelligent Word Recognition (IWR) technology in A2iA FieldReader. A2iA FieldReader's IWR technology – which permits the capture of entire words written in cursive handwriting – provided for accelerated data entry, particularly for those fields that did not contain any character separators, such as character boxes or “combs.” Together, the recognition engines in Ascent Capture and A2iA FieldReader were able to extract data from all form fields with the highest levels of accuracy, which reduced the amount of manual data entry required.

The results obtained were then transferred to the Maarch engine, and Maerys sent the results to Editions ATL to be incorporated into their system.

This solution also automatically detected suspicious documents, flagging them for manual verification.

RESULTS

All of the 300,000 student answer sheet forms, containing a total of 9.6 million fields, needed to be processed within two weeks – a deadline the companies successfully met by accelerating the data entry process through the use of ICR and IWR technologies from Kofax and A2iA, respectively.

The new imaging process combined with the automatic recognition technologies from Kofax and A2iA enabled Maerys to simplify and expedite the processing of the answer sheets for Editions ATL.

“To ensure the timely and accurate processing of the answer sheets, Editions ATL required a solution that was simple and intuitive,” said Jean-Louis Fages, Chairman of the Board and CEO of A2iA. “As a result of superior technologies from Kofax and A2iA, Maerys was able to employ a productivity-enhancing solution that saved Editions ATL a significant amount of time on the return of the Kangourou competition results, while still guaranteeing indisputable accuracy. Furthermore, through this project, all companies involved were able to prove their ability to quickly implement an effective forms processing solution for high volumes of forms.”