

MPS IntelliVector

MPS IntelliVector is an award-winning data extraction and workforce transformation solution, especially tailored for the financial, insurance and government sector. MPS IntelliVector transforms traditional paper document and forms processing by utilizing multi-level automation, microtask-based processing and secure enterprise crowdsourcing, to radically improve all major aspects of paper processing. The implementation of MPS IntelliVector results in: cheaper and faster processing, reduced human involvement, and exceptionally high data confidentiality and accuracy even in case of outsourcing or crowdsourcing!

About MPS

Multipass Solutions is an independent software vendor and consultancy with broad experience in ECM. We offer flexible award winning software solutions for document and forms processing, secure data entry, system integrations and business data clean-up to raise business efficiency, lower operating costs and create a unified, secure business IT environment.

Customer challenge

The government IT organization was looking for an efficient forms processing solution for the parliamentary elections, that can process tens of thousands of forms in a very short time frame and automate the validation part of the processing, therefore reduce the chance for errors and lower processing costs. The forms were partly typed, partly handwritten, multiple-page data summaries created at regional locations and containing highly sensitive information. Previously, these forms were sent to regional offices, where they were scanned and forwarded to the central office, where the forms and the results went through a full-page manual validation (numbers and calculations needed to match and add up to the regional total, regional totals to the central total, etc.). This type of validation was slow, error-prone and required massive human resources.

Beside the automation itself, additional difficulties were the large number of forms and the very short time for preparation, solution fine-tuning and the actual forms processing.

Main requirements toward the new solution:

- Automate and speed up form processing and data validation
- Only a few days to plan, prepare and fine-tune the solution for the form templates
- 48 hours to process app. 25 000 forms (total of 55 000 pages)
- 7 different form types (35+ form variations)
- Up to 120 fields/page

The solution

The project was delivered using MPS IntelliVector, which combines automated recognition (OCR/ICR) and microtasking data entry to process forms and documents, reducing necessary human resources and operating costs, while maintaining high level of data accuracy and data confidentiality.

MPS received all form templates for fine-tuning IntelliVector only a few days before the election. It took about 2-3 hours to "teach" the solution to process all the form types including defining the rules for breaking up each form into small fields (microtasks). Up to 120/page. During the processing, these microtasks were automatically processed by recognition engines and sent out to Data Entry (DE) users to validate.

The workflow with MPS IntelliVector:

Forms were manually processed (all necessary data calculated) at local stations and sent to the regional offices. There they were scanned using portable, high volume scanners, with the scanned images securely uploaded to the central server for result verification.

At the HQ MPS IntelliVector broke these images up into small microtasks, which were automatically processed using recognition engines (OCR/ICR) and manually typed in by two separate data entry users (DE1 and DE2). These users use a simplified web-interface, where they process only microtasks, instead of the full-page images. This means faster and more secure manual processing, since users receive only small, anonymous pieces of information out of their original context.

For data validation (especially important in case of handwriting) the three results (OCR/ICR+DE1+DE2) were automatically cross-checked (depending on the confidentiality level 2 or 3 matching results were needed). This approach guarantees high data accuracy and leaves only a few microtasks for traditional full-page Quality Control. To filter out calculation errors the results were also checked against the results of the first count at the local stations.

Because microtasking allows for faster manual data entry, compared to the previous solutions, a much smaller team was enough for the project. 15 data entry and 6 quality control users, compared to the previously planned team of 100 people. Usually MPS IntelliVector requires only 1-2 quality control users every 100 data entry user, but in this case, the client asked for 2 additional levels of quality control.

Results

- **27 000+ forms (55 000 pages, 1 170 000 microtasks) processed**
- **All forms processed 25% faster** (36 hours, instead of the available 48h)
- **79% less human resources used** (21 users instead of the planned 100)
- **Improved level of security, no data leakage**

All in all, MPS IntelliVector automated the previously fully manual validation process, improved processing times, significantly reduced human resource and operating costs, while guaranteed high level data accuracy and data security.