



ROSSUM, OPEN BOX, AND CUSHMAN & WAKEFIELD

**AUTOMATED DATA
CAPTURE FREES UP 70%
OF BUSINESS
MANAGERS' TIME AT
CUSHMAN & WAKEFIELD**

We are extremely proud of our work with Cushman & Wakefield and how it is helping transform the real estate industry. Rossum is an integral part of this solution, automating the management of rates demand documents. We chose Rossum's platform for its user-friendly interface and flexibility, which enabled us to capture data from the unique layout of UK council rates demand documents.



JUSTIN STRYDOM

Director of Automation Services
Open Box

The Cushman & Wakefield project was another successful application of our AI-powered platform to industry-specific documents. Although the format of rates demand documents differs from the invoice formats our solution usually processes, extraction accuracy exceeded 94 percent. This proves that our AI and custom training can adapt to different types of semi-structured documents. A perfect document processing rate - that is, data extraction that doesn't require manual correction - of well over 50 percent indicates that we're on the verge of fully automating a cumbersome manual process.



PETR BAUDIS

CTO and co-founder
Rossum

ABOUT CUSHMAN & WAKEFIELD



Cushman & Wakefield (NYSE: CWK) is a leading global real estate services firm that delivers exceptional value for real estate occupiers and owners. In the United Kingdom, their Business Rates Management (BRM) Area provides a service to clients with large national real estate portfolios that includes management and payment of business rates payable to local councils.

THE CHALLENGE

The annual rates demand documents are predominantly paper-based, resulting in the C&W's Ratings Team processing over 10,000 demands from 400 different Government Departments and Councils over a two-month period. The demands are opened, sorted, manually reviewed, compared to estimates in the Riverlake Rates Management system, and either rejected or approved and paid. Once processed, the paper demands are filed away, making them difficult to retrieve quickly whenever queries arise later in the year.

ABOUT OPEN BOX



Open Box Software delivers software and services to the real estate industry, specializing in the field of Robotic Process Automation (RPA). The company is a partner of Cushman & Wakefield in their RPA program in the EMEA region.

OPPORTUNITY

Cushman & Wakefield Technology and Open Box consulted with Cushman & Wakefield service lines to identify and evaluate opportunities for automation, as well as potential candidates to provide automation. The opportunities are managed through an automation pipeline with three key stages:

- Identification
- Evaluation
- Recommendation

Rates demand management was identified as a high-priority candidate for automation and was one of the first projects approved by the Steering Committee, which consists of the EMEA CIO, COO, and Head of Service Lines.

The format of a rates demand document is similar to that of a vendor invoice, which suggests that the use of invoice scanning artificial intelligence (AI) software would allow for the digitization of rates demand processing. However, while the captured fields are similar in nature to those of a vendor invoice (e.g. property description and address, billing authority, rateable value, and total due), there are significant differences in a practical context. One crucial disparity is the itemization of payment installments, which is sometimes written as a table (similar to line items), a multi-column list, or in other unprecedented formats.

The KPIs for the Ratings Team were efficiency and productivity gains, and the creation of the team's capacity to focus on more value-added activities for clients. Cushman & Wakefield also wanted a solution capable of reducing physical filing and simplifying data retrieval.

THE SOLUTION



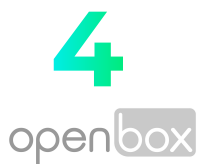
1 The BRM team scans all inbound rates demands and emails them to Rossum's platform as PDF attachments.



2 Rossum processes the scanned PDFs and performs automated data capture, locating data fields in the PDFs and applying optical character recognition (OCR) to read field values.



3 The Open Box automation engine performs a daily retrieval of all exported documents, downloading the scanned rates demand PDFs and uploading copies to SharePoint.



4 Links to the SharePoint copies of each file are added to their respective records in Riverlake.



5 Any rates demand documents that do not match are summarised in a report that is sent to the BRM team.



6 Business Rates Administrators can then review issues in bulk, make corrections, and resubmit documents to the Open Box automation engine for comparison and approval.

IMPLEMENTATION

The Open Box solution team mapped the entire data capture process, supported implementation from a project management perspective. They also implemented the RPA workflow, integrating Rossum, SharePoint, and Riverlake while handling all exceptions.

Rossum's solution engineering team provided consulting sessions to iron out the data capture workflow, identify the fields containing data that Cushman & Wakefield needed to capture, and confirm that the semi-structured documents were a good fit for Rossum's AI engine. Platform setup simply required the team to configure it to capture data in fields defined during consultation.

Installment-related data was identified as an exception not natively supported by the AI engine. But platform's extension environment allowed Rossum's solution experts to develop a seamless plugin to handle these requirements. This plugin contains the necessary business rules to post-process the installment list and generates the required output data (the first item, an item interval, and a total count of items) that is presented for human validation within the platform.

Since Rossum's cognitive data capture solution is not template-based but training-based, there is no need for an expert-driven setup of data capture rules for specific layouts. Instead, roughly 2,000 samples of UK rates demand documents were uploaded to the platform and processed manually using Rossum's built-in validation interface. This review process facilitates user testing of the new automated workflow and can serve as a component of user training. Rossum then handled all subsequent steps of data accuracy verification, extraction model customization and training, a Cushman & Wakefield-specific model deployment within the platform, and the associated configuration. This process is iterative over the course of document annotation so it only took a few weeks to complete.

RESULTS

8 WEEKS

from project approval to production

70%

reduction in man-hours that Business Rates Managers require to process rates demand documents

97.5%

data extraction accuracy (for top 4 fields)

58%

of documents are perfect, requiring no manual corrections

TECHNOLOGY

The technological solution has RPA at its core, features Rossum's AI Computer Vision/OCR Solution, and leverages other applications within the customized Cushman & Wakefield platform.

Open Box and Cushman & Wakefield reviewed technology options, evaluated a number of providers, and selected Rossum's data extraction platform for its user-friendly interface and flexibility. The platform's custom training option ensures accurate data capture from the unique layout of UK council rates demand documents.

Scanned rates demand documents can be emailed to the relevant Rossum queue or uploaded directly to the platform via its user interface. The document management API is used to extract document data with the automation engine, which was trained to handle this specific use case. The web-based user interface features an intuitive document validation screen that facilitates rapid verification with its modern design and simple point-and-click correction functionality.

Open Box developed its automation engine with Blue Prism, a best-of-breed RPA platform. The company offers Robots-as-a-Service (RaaS), developing, hosting, and operating automated processes in the cloud via Azure. This allows Open Box's commercial real estate clients to quickly leverage automated solutions without costly licensing, infrastructure, or in-house development teams.

The automation engine connects to the Riverlake Rates Management application's SQL database directly for validation and insertion of approved rates demand documents into Riverlake's staging table.

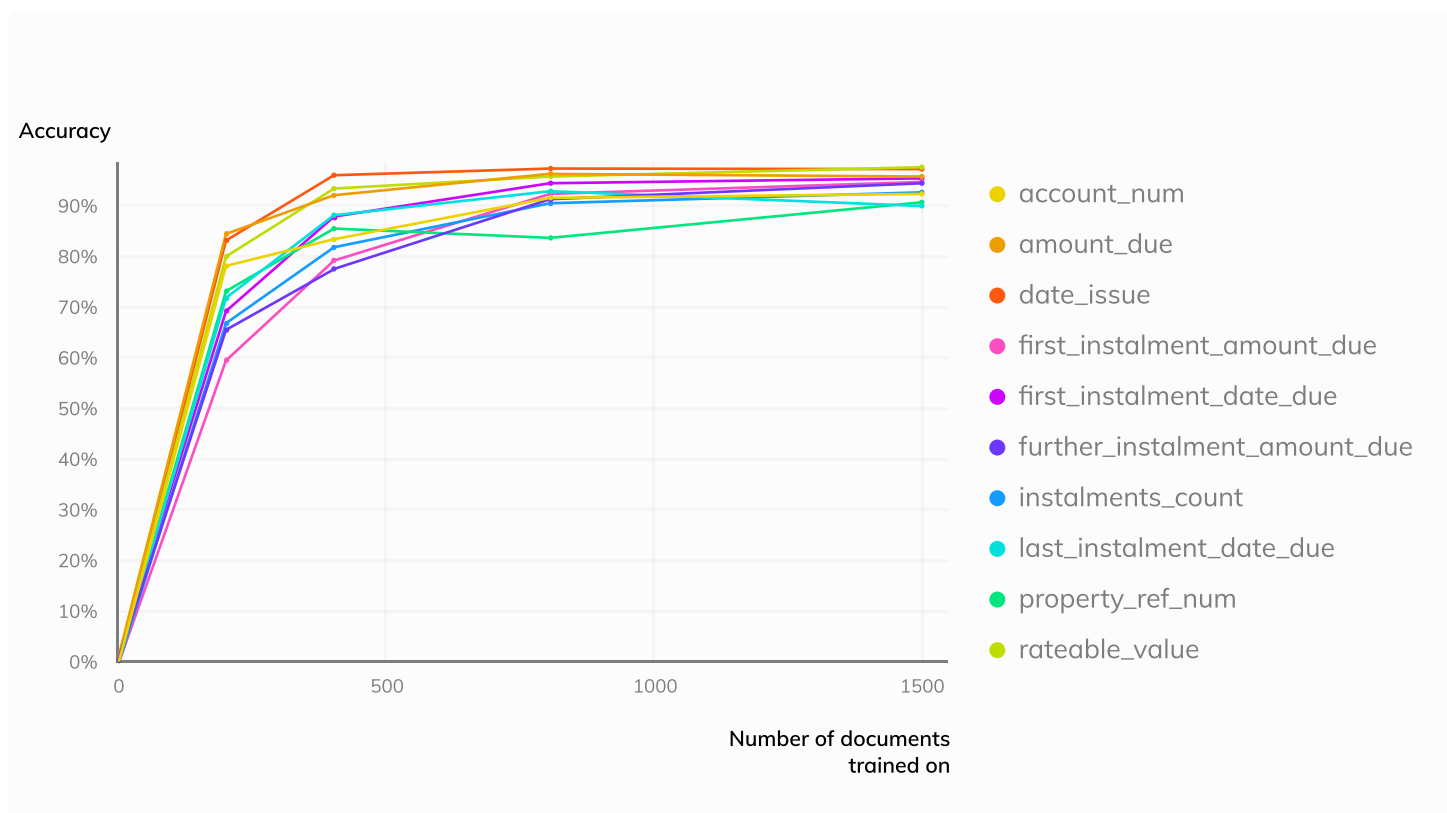
Review and correction of rates demands that have failed validation or cannot be identified are performed via Excel reports that are automatically emailed to the Rates Management team. Managers can then edit the demands and send them back to the automation process to recapture data at the same address.

TECHNICAL SOLUTION

During implementation, Rossum's solution engineering experts evaluated the situation and prepared bespoke features for its platform: customized fields for data extraction and customized platform training through a dedicated AI engine for continuous learning of Cushman & Wakefield data.

Customization: a total of 11 trained fields. The chart below shows how quickly Rossum can learn to read custom fields, indicating improvements in accuracy after processing 200, 400, 800, and 1500 documents.

Custom model training



- Improvement in accuracy after 6 months: **94.15% total**; top 4 fields >**97.5%** accuracy; per-field accuracy breakdown:

accuracy	in_schema_id
98.10	property_ref_num
98.04	issue_date
97.81	reteable_value
97.80	invoice_total
97.37	account_num
95.76	further_installment_value
95.62	first_installment_value
94.32	first_installment_due_date
94.32	propety_description
90.20	property_addrline
89.32	installments_count

- Number of “perfect” documents: **58%** of documents did not require any manual corrections from users

IMPACT

The automated data capture process was delivered into production eight weeks after requirements were approved. This included full automation development and testing by Open Box and delivery and training of the Rossum AI.

IMPACT

4,866

rates demand documents were processed through the new automated data capture process.

2,737 (56%)

were successfully matched and approved for payment by the month's end.

OVER 90%

of demands are being scanned by AI accurately, and the results are continuing to improve.

~550 HRS SAVED

up to 70% of the Business Rates Managers' time across the team has been freed up in the first month alone, enabling them to dedicate more time to focus on high-priority and client-facing work during this busy period.

The ratings team have reported many positive impacts:

- While additional effort is required to scan the demands when they arrive, this is offset by no longer needing to sort, date-stamp, label, and file paper documents. All demands are uploaded to SharePoint and linked to their corresponding items in Riverlake for easy retrieval.
- The downstream impact of having the files digitized was immediately obvious. A client requested copies of all the rates demand documents for their 50 properties in the middle of what is usually the Rates Management team's busiest period. The team was able to retrieve these and respond within 20 minutes, a task that would have taken much longer when sifting through paper copies.
- The bulk validation of the files against the Riverlake estimates enables Business Rates Administrators to check and correct data. This means managers and senior managers no longer have to do on-demand comparisons and approvals; therefore, they can prioritize other activities and optimize the service they give to clients.
- Managers are now only required to review demands that have genuine issues that need to be queried with the councils (about 10% of demands); simple typos and incorrectly entered information can be identified in bulk and corrected by the administrative team.
- The ability to identify causes of validation failure at a high level and in bulk has created insights into the Rates Management team's upstream processes that were not evident when processing files one at a time. The team has already identified process changes that can improve the quality of Riverlake data and drastically improve the number of automatically matched demands in 2020. They will develop and roll out these changes throughout the year.

NEXT STEPS

Cushman & Wakefield will continuously evaluate the automation solution against the original success criteria. Significant downstream positive impacts are expected to become evident later in 2020. These include error reduction, which will reduce costs from penalties for late or incorrect payments; easier retrieval of rates demand documents and data for other business processes; and improved staff and client satisfaction.

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