ROSSUM

TECHNICAL WHITEPAPER

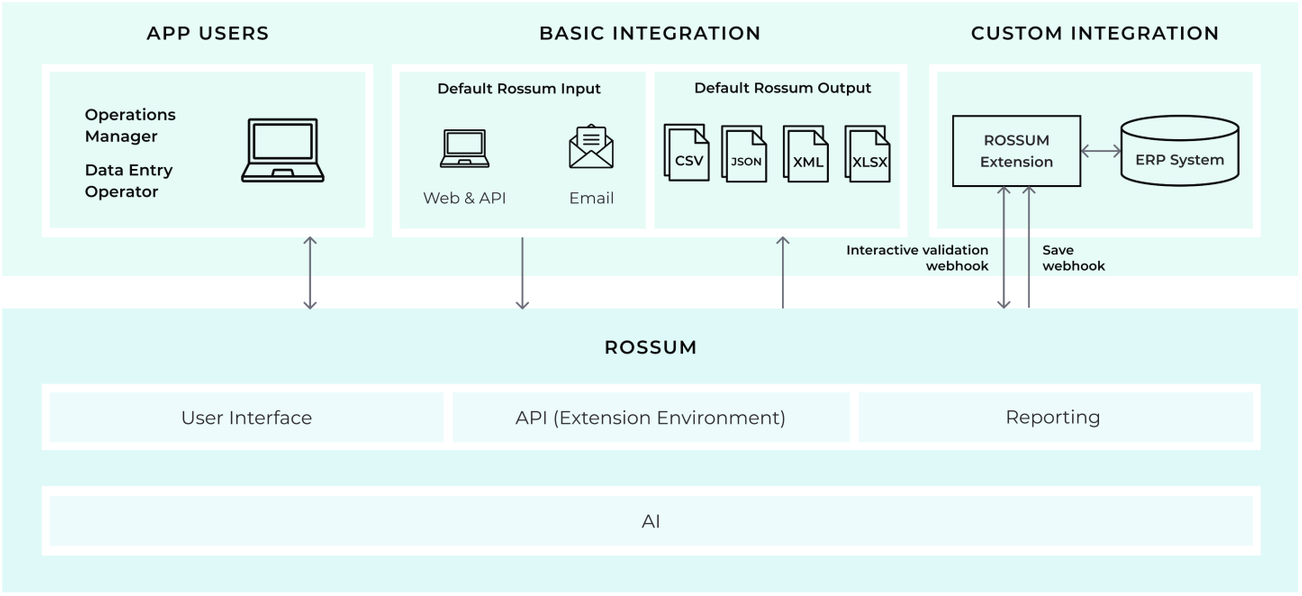
ROSSUM INTEGRATION OVERVIEW

LAST UPDATED: 2020-04-15

ROSSUM PLATFORM ARCHITECTURE

Rossum, as a platform for AI-based cognitive data capture from documents, consists of several modules spanning from the AI engine through the validation interface and workflow components to the extension API and default input/output interfaces.

At a high level, Rossum platform consists of four main components: **the AI Core Engine** that can automatically detect data fields, **the Validation User Interface** for data verification, correction and training, **the Extension Environment** that allows custom business rules to be plugged in and applications built around Rossum, and **the Reporting Engine** for process analysis and efficiency improvements.



ROSSUM DOCUMENT WORKFLOW

When Rossum captures data from documents, they undergo a series of states as they get processed by the system. Rossum is optimized for batch processing of documents, applying the AI-based capture asynchronously and then encouraging a periodic user batch review of all documents received so far. The typical workflow is as follows:

1. Documents are received by Rossum over time as they arrive. Each document is associated with a particular queue, while multiple queues may exist.

2. Documents stay in the “processing” state while data is automatically captured by the AI engine on background - then, they move to the “to review” state.
3. Custom business logic provided by a Rossum Extension may automatically export some of the documents queued for review without human intervention.
4. Users periodically log in to the Rossum web app, review the queued documents within the validation interface and “export” validated documents.
5. The validation interface allows the user to also capture extra data that is not automated by the AI engine, and its behavior may be customized by a Rossum Extension e.g. to provide on-the-fly consistency checks or interactive Vendor or PO Matching.
6. The user may also “postpone” or delete documents during validation.
7. Exported documents are then available for further processing on a queue basis - e.g. bulk download of the captured data.

While this is the most proven workflow for most applications, other workflow models are possible and covered later in the document. Most notably, it is possible to control when and which documents are reviewed by the user externally (see “embedded Rossum app”).

INTERFACING WITH ROSSUM

Rossum provides default input and output methods out of the box.

At **input**, Rossum can accept documents either through an **email gateway** (each queue comes with a unique inbox email address on Rossum servers which can receive documents) or by **browser upload**.

At **output**, Rossum allows users to **export** captured document data from a given queue. Documents can be selected using a flexible filter system (in particular based on their status and time range). Multiple formats are supported - **JSON**, **XML**, **CSV** and **XLSX**.

Other than that, custom I/O methods may be built within Rossum Extensions using the Rossum API. The API provides a way to upload documents as well as to access captured data for specific exported documents, and its usage can be freely mixed with the default I/O methods above. Push notifications for processing an exported document immediately are available through the **connector API**.

The API for Rossum Extensions is documented in the Rossum API reference - it is an HTTPS RESTful interface.

CONFIGURING ROSSUM ACCOUNT

By default, your Rossum organization comes with a single queue, single user and a pre-defined example definition of captured fields (a schema). All these aspects are customizable, including which fields are captured. When building an Rossum Extension, registering your connector API endpoint with a queue to receive push notifications of events is also a part of the configuration.

Most of the configuration, such as creating a new queue or configuring your extraction schema, can be done from within the application. Additionally, we recommend using our configuration tool elisctl, for more advanced actions that are not available in the application. Some more details regarding basic Rossum configuration are covered in the Feb 2019 technical webinar.

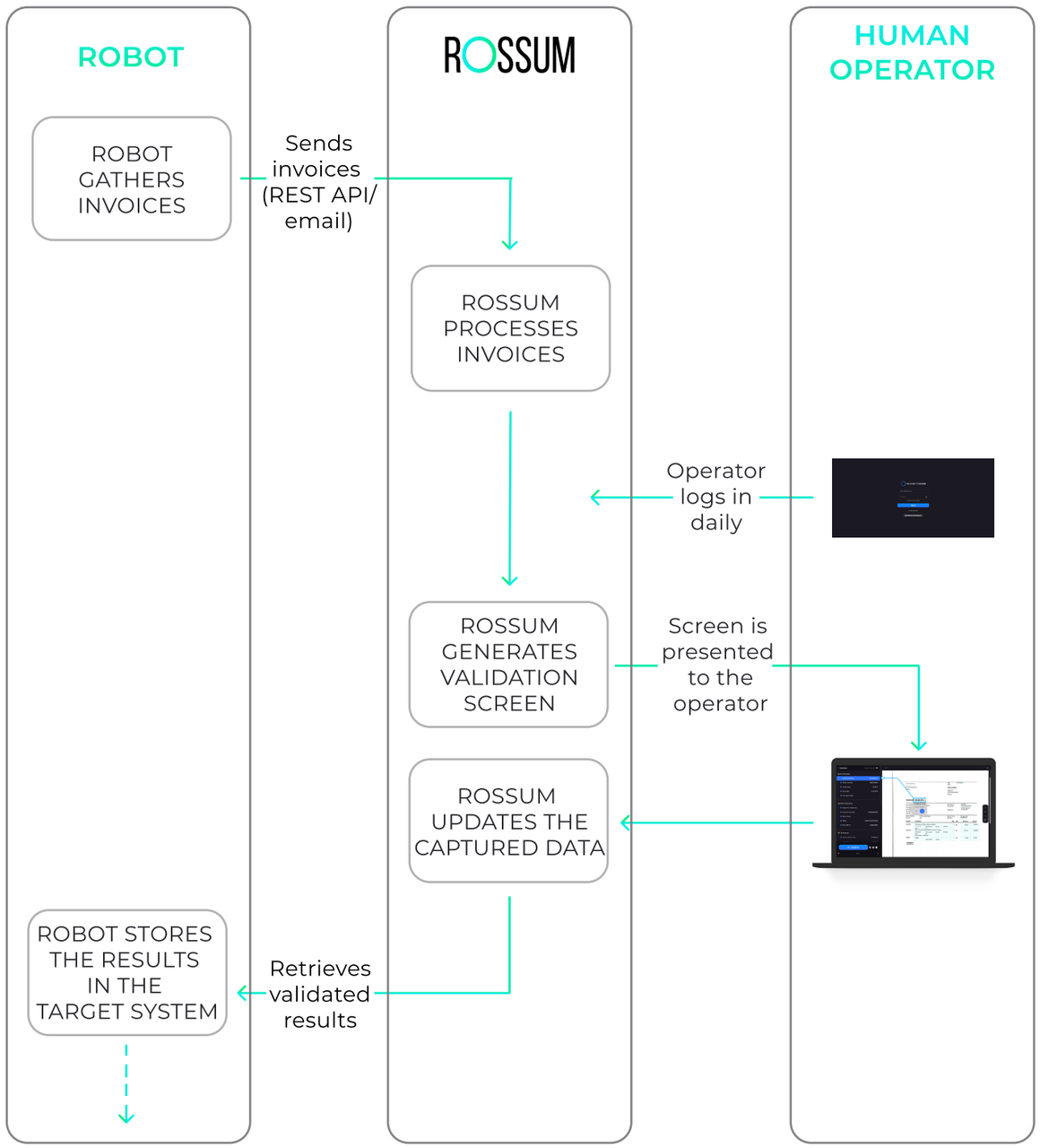
HISTORICAL NOTES

Historically, we have referred to the current API as the Document Management (DM) API, while a now-deprecated Data Extraction (DE) API served as a less powerful alternative interfacing directly the AI Core Engine. Also, the Rossum platform may be referred to by its development codename Rossum Elis in some legacy materials.

INTEGRATION IN RPA WORKFLOWS

Rossum is designed to be compatible with popular Robotic Process Automation platforms like UIPath and BluePrism. The default I/O methods make basic integration easy, while the API allows integrators to plug in further functionality as a Rossum Extension.

From user perspective, the RPA workflow may be either assisted or unassisted. In the **assisted workflow**, a human operator is present during the RPA workflow execution and interacts with Rossum as part of it. In the **unassisted workflow (recommended)**, the human operator interacts directly with Rossum at their convenience, while the RPA workflow executes asynchronously and unattended.



The unassisted RPA workflow is split in two parts (typically run the night before and the night after). Consider invoice data capture: The first part of the workflow gathers the invoices and submits them to Rossum in a batch. During the night, the neural networks within Rossum's AI Core Engine automatically pre-capture the information from invoices. Then, in the day, the AP team logs in the Rossum web application, verifies the captured data and "exports" the invoices. In the evening, the second part of the RPA workflow downloads the batch of exported invoices and continues processing them to post them in the client's ERP.

Rossum can interface with the RPA workflow in two ways:

- **Simple integration:**
  Using ready-made RPA components, simply send documents to Rossum by email, then later download the captured data for all documents and use existing RPA components to parse the data (e.g. a CSV parser).

  In Rossum, a fixed schema describing the captured data is set up one-time. If a document cannot be processed and is skipped, the user team is notified by an email message to handle these special cases.
- **Tight integration:**
  In addition to the simple integration, integrators are welcome to build a Rossum Extension that uses the Connector API for two-way communication. The main advantage is the ability to add a customer-specific interactive verification to the user interface - suppliers and POs may be matched on the fly during the data capture process, feedback about business rules violation is shown directly to the operator during the validation, and cost centers and GL code selectors may be loaded dynamically.

  In some scenarios, using the HTTPS interface for document submission is also more appropriate than relying on the email gateway. An API-based mode of integration may also allow for assisted RPA workflows (see the "embedded scenario" in the software vendor section below).

INTEGRATION FOR SOFTWARE VENDORS

Vendors wishing to extend their user-facing products with document data capture capability may present their users with the Rossum validation interface by building a Rossum Extension. The Rossum validation interface would typically completely replace the invoice data entry form in the invoice posting process.

Two basic document processing scenarios may be considered:

- **Simple scenario:**
  Submit documents to be processed in a batch, ask the user to login to the Rossum web application, process all waiting documents from the user dashboard, then download the batch of processed documents programmatically.
- **Embedded scenario:**
  Submit documents to be processed, monitor their status from vendor's application, then for each document open the validation interface directly from the vendor's application and download capture results one by one.
    - For smooth operation, pre-queuing a larger batch of documents to be processed is still recommended.
    - The validation interface is a web app - a special URL opening directly the particular document is generated within the API.

Rossum partners may be issued with API keys that allow for programmatic creation of new organizations on a bulk basis. An organization is the basic permission unit as well as a usage count and billing unit (but this does not preclude all organizations created by the partner to be billed to the partner). Rossum recommends compartmentalization of customers of the vendor to separate Rossum organization accounts.

For more details, please refer to the API documentation.

TECHNICAL SPECIFICATION

Processing capabilities:

Two basic document processing scenarios may be considered:

- Documents must be submitted either as a PDF, or a JPEG or PNG for single-page documents
- One PDF per logical document (unless document splitting is employed), i.e. per invoice, up to a 32 pages limit. Uploads and requests must not exceed rated outlined in Rossum's Acceptable Use Policy (part of Rossum's terms at rossum.ai/terms)
- Scan recommendations for best results;
    - At least 300 DPI resolution
    - Minimum font size 6pt

Application requierements:

- Public internet connectivity in the user-facing product operation environment
- Ability to issue arbitrary HTTPS requests
- Browser support
    - Chrome is recommended, but Rossum also supports Edge, Firefox and Safari
    - Please note that IE11 browser specifically is not supported
- Abbility to parse either JSON (recommended), CSV or XML to retrieve captured data

Extended Requirements:

- For validation interface usage in the "embedded scenario", ability to open websites in the vendor's application.
- *Optional*: Ability to expose an authenticated HTTPS API for the connector API interface, reachable by the Rossum cloud environment, i.e. with a public unfirewalled IP address.

TAKE THE JOURNEY WITH US

Rossum welcomes new technical partners who are interested in implementing cognitive data capture for their customers, or even want to build new applications around the Rossum platform. The best next stop in your journey is Rossum's Developer Portal which contains many more detailed guides and other resources.

Let's create a world free of manual data entry together.

Please contact us at rossum@rossum.ai for business inquiries. Partners are encouraged to also directly speak to Georgi Shartava (Partnership Manager) at giorgi.shartava@rossum.ai.

For technical inquiries, contact our support channel at support@rossum.ai. You are also invited to reach out directly to Rossum's CTO Petr Baudis at petr@rossum.ai.