Elis Integration Overview

Technical whitepaper

Summary: This document provides a high-level technical overview of available options regarding third-party integrations of Elis, Rossum’s cognitive data capture platform. Elis is an open platform that can be highly customized using external extensions. In this whitepaper, we outline some common scenarios and refer to further resources.

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Elis Platform Architecture

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

We refer to the AI engine as the **Data Extractor**, while the main Elis platform is represented by the **Elis Document Manager** that also provides the optional verification interface (for operator-based data capture), controls the document workflow and interfaces with external systems. This interface may rely on either predefined Elis capabilities or **Elis Extensions** (Partner API Client & Custom Connector) built around the Elis Document Management API.
Elis Document Workflow

When Elis captures data from documents, they undergo a series of states as they get processed by the system. Elis 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 Elis 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 an Elis Extension may automatically export some of the documents queued for review without human intervention.
4. Users periodically log in to the Elis dashboard, review the queued documents within the verification interface and “export” verified documents.
5. The verification interface allows the user to also capture extra data that is not automated by the AI engine, and its behavior may be customized by an Elis 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 verification.
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 Elis”).

Interfacing with Elis

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

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

At output, Elis 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 and CSV (Excel-compatible).
Other than that, custom I/O methods may be built within Elis Extensions using the Elis Document Management (DM) API. This 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 Elis Extensions (DM API) is documented at https://api.elis.rossum.ai/docs/ - it is an HTTPS RESTful interface.

**Configuring Elis**

By default, your Elis 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 Elis Extension, registering your connector API endpoint with a queue to receive push notifications of events is also a part of the configuration.

Currently, the main recommended configuration method is using the configuration tool elisctl, available at https://github.com/rossumai/elisctl. A web configuration interface is also in the works. More details regarding basic Elis configuration are covered in the Feb 2019 technical webinar:

https://rossum.ai/blog/elis-technical-webinar-recording-and-slides/

**Data Extraction API**

Historically, direct access to the AI engine (referred to as the Data Extraction (DE) API) is also available to third-party developers via the https://rossum.ai/developers page. This API uses a different authentication mechanism and does not offer any of the workflow and verification facilities described above.

As of January 2019, we discourage using the Data Extraction API for new applications. However, we are still in the process of phasing out references to this API from our official materials. Please carefully verify which API a given example or documentation refers to. The (preferred) DM API resides at https://api.elis.rossum.ai/ while the (deprecated) DE API resides at https://all.rir.rossum.ai/.
Integration in RPA Workflows

Elis 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 an Elis 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 Elis as part of it. In the unassisted workflow (recommended), the human operator interacts directly with Elis 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 Elis in a batch. During the night, the Elis neural networks automatically pre-capture the information from invoices. Then, in the day, the AP team logs in the Elis 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.

Elis can interface with the RPA workflow in two ways:

- **Simple integration:** Using ready-made RPA components, simply send documents to Elis 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 Elis, 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 an Elis 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 verification, 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 Elis verification interface by building an Elis Extension. The Elis verification 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 Elis 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 verification 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 verification 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 Elis organizations.

For more details, please refer to the API documentation.
Technical specification

Processing Capabilities

- Documents must be submitted either as a PDF, or a JPEG or PNG for single-page scans
- One PDF per logical document (unless QR splitting is employed), i.e. per invoice, up to a 16 pages limit
- Scan recommendations for best results:
  - At least 300 DPI resolution
  - Minimum font size 6pt

Application Requirements

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

Extended Requirements:

- For verification 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 Elis cloud environment, i.e. with a public unfirewalled IP address (suggested for the embedded scenario)
Take the journey with us

Rossum welcomes new technical partners who are interested in integrating Elis within their product or implementing the Elis data capture for their customers. Stay tuned for a series of new technical materials releases during Q1 2019.

Let’s create a world without manual data entry together.

Please contact us at rossum@rossum.ai for business inquiries. Partners are encouraged to also directly speak to Tobias Rataj (Head of Partnerships) at tobias.rataj@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.

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