

Requirements Ingestion Agent - User Guide

Overview

The **Requirements Ingestion Agent** is a **Task Assistant Agent** within the **InnovatorEdge AI** framework.

It enriches the digital thread by transforming requirements contained in unstructured PDF documents into structured, governed Items within **Aras Innovator Requirements Engineering (RE)**.

What the Requirements Ingestion Agent Does

The agent operates directly inside the system of record to normalize incoming document data. Its purpose is to:

- **Extract** requirement statements from PDF documents.
- **Separate** engineering content from document presentation and formatting.
- **Convert** extracted content into governed **Requirement Items** under a **Requirements Document Item**.
- **Reduce** manual transcription effort for large technical specifications.

Important

The agent is user-invoked and human-validated. No data is committed to Aras Innovator until the user confirms the import summary.

Preparing the Document for Import

The quality of extraction depends on the structural conventions of the source PDF file.

The agent analyzes structural patterns, including:

- **Requirement Boundaries:** Whether requirements are clearly separated by numbering and/or headings.
- **Directive Phrases:** Presence of action-oriented statements (e.g., "Add," "Replace") indicating modification actions.



- **Integrated Content:** Identifying whether lists, tables, or images are part of requirement statements.
- **Document Commentary:** Distinguishing between core requirements and notes, justifications, or general commentary.

Constraints:

- **Format:** Supports a single **.pdf** file.
- **Size:** Maximum file size is **10 MB**.

The screenshot displays the 'Requirements Import' interface. At the top, a progress bar shows four steps: 1. Upload (active), 2. Processing, 3. Review, and 4. Import. A 'Start Import' button is located to the right of the progress bar. Below the progress bar, the 'Upload Requirements' section is visible. It contains two main areas: 'Requirements Document' and 'Extraction Instructions (Optional)'. The 'Requirements Document' section prompts the user to 'Choose a PDF file containing requirement specifications.' and includes an 'Upload file' section with a dashed box for dragging and dropping a file, a 'Max size: 10MB' label, and a file upload button. A file named 'Requirements.pdf' (0.65 MB) is shown as uploaded. The 'Extraction Instructions (Optional)' section prompts the user to 'Provide additional instructions for the Requirements Extraction Agent to get the best results from your specific requirements document format.' and includes a text area for 'Custom parsing instructions' with a character count of '0 / 10000'. At the bottom left, there is a link to 'Aras Legal Terms and Privacy Policies'. At the bottom right, it says 'Aras Innovator Instance: edge-ai-agents-demo'.

Agent Instructions - Defining Ingestion Rules

Agent Instructions configure how the AI interprets the document during the ingestion phase. These apply globally across the document and shape how boundaries and titles are determined.

Examples:

- **Section-Based Rules:** "Start a new requirement at each hierarchical section number such as 6.1.1. Use the section number as the Requirement Title."



- **Action-Based Rules:** "Create a separate requirement for each action sentence that begins with Add, Replace, or Delete."
- **Exclusion Logic:** Instructions can specify what content to ignore, such as "Do not treat Notes as requirements".

What the Agent Extracts

During parsing and segmentation, the agent identifies and segments the following content types:

- **Text:** Paragraph-based statements extracted as structured text, which is fully editable during review.
- **Tables:** Tabular content associated with a requirement is preserved. Table content is not editable during review but can be adjusted later in Aras Innovator.
- **Graphics:** Images and diagrams are identified and prepared for import as **Requirement Item** content.

The Processing Phase

Once the import is initiated, the agent enters a multi-stage technical extraction process:

1. **Parsing:** Analyzing structural elements like headings, numbering schemes, and paragraph blocks.
2. **Content Detection:** Identifying specific segments that contain requirement-relevant data.
3. **Formalization:** Constructing candidate Requirement entities containing derived titles, text, and related element references.



 Requirements Import

 Logout

1 Upload

2 Processing

3 Review

4 Import

Upload Requirements

Uploaded requirements are being processed. This may take a few moments depending on the document size and complexity.

Parsing document

Requirements.pdf0.65 MB

 Please wait: Closing this window or navigating away during this process will cancel the upload and discard all extracted requirements data

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Important

Closing the browser window or navigating away during the processing phase will cancel the upload and discard all extracted data.

Error Handling during Processing

If the agent encounters complex formatting or connection issues it cannot resolve, it will report an **Import failed** status.

In the event of a failure, the specific cause is displayed (e.g., "Failed to classify page n").

Selecting **Try again** returns you to the Upload screen to attempt ingestion again with adjusted instructions.

Reviewing Requirements

After processing is complete, the agent presents the **Review Requirements** interface. This phase allows engineers to apply domain expertise to the AI's interpretation, ensuring the structured model is accurate before it is committed to Aras Innovator.

The Review Interface Layout

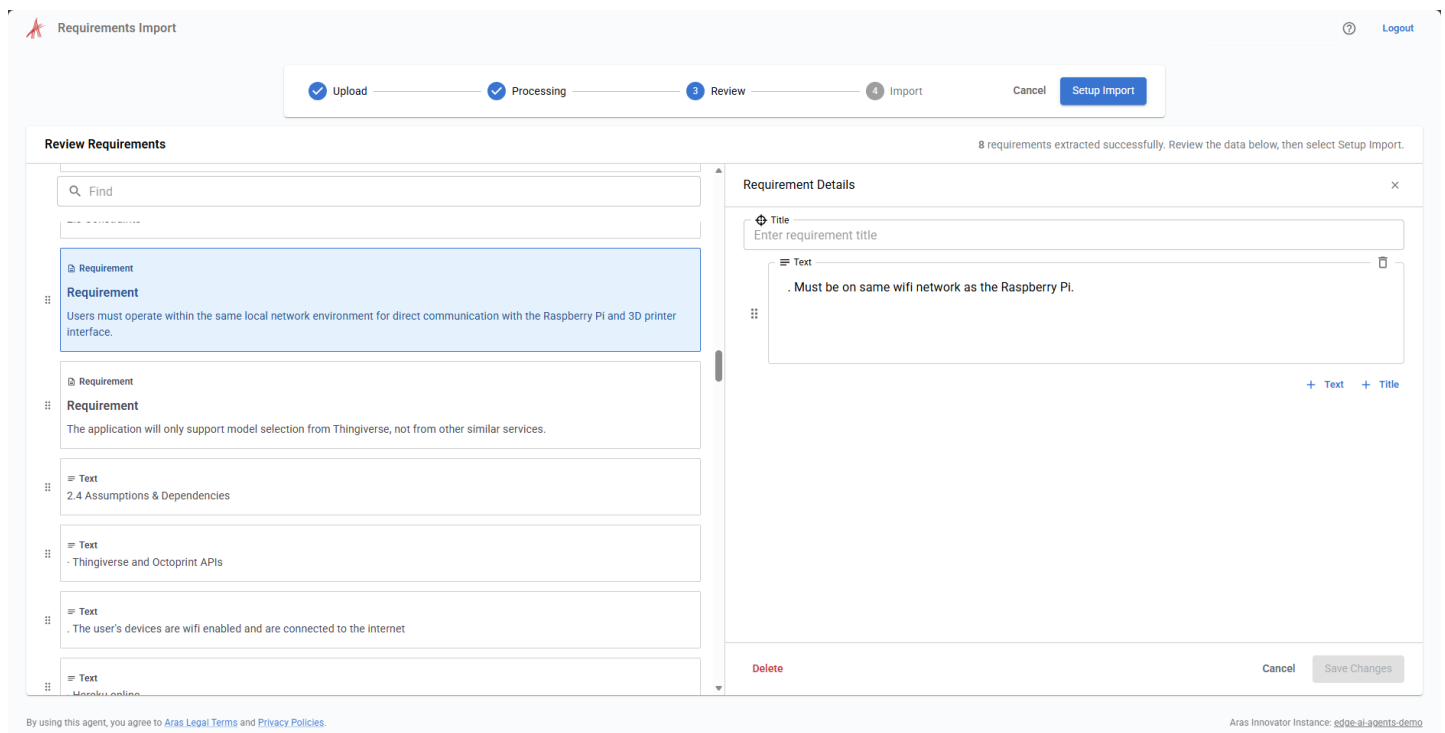
The interface uses a split-view layout designed for high-volume auditing:

- **Navigation Pane (Left):** A vertical, scrollable list of all extracted items.
- **Persistent Search:** A **Find** bar remains docked at the top of the navigation pane, allowing you to filter items by keyword even while scrolling through long documents.
- **Element Details (Right):** A contextual pane that displays the full content of the item currently selected in the navigation list.

Item Classification and Organization

Each extracted item in the list is explicitly labeled with its identified type and a corresponding icon to help users quickly distinguish between different content blocks:

- **Requirement (Bullseye icon):** Formal engineering requirements.
- **Text (Three-line icon):** Standard paragraph text or section headers.
- **Table (Grid icon):** Data structured in rows and columns.
- **Graphic (Picture icon):** Visual elements, which the agent identifies as either photos/pictures or UML Diagrams.



Human-in-the-Loop Actions



The interface provides several tools for refining the extracted data model:

- **Drag-and-Drop Reorganization:** Each item in the navigation pane features a handle icon on the far left, allowing you to drag and drop items to reorder them or change the document hierarchy.
- **Inline Editing:** Selecting a **Requirement** or **Text** item opens an editable view in the Element Details pane. You can manually update **Requirement Titles** and body text to correct any AI parsing errors.
- **Adding Content:** Within the details pane for Text elements, you can select **+ Title** or **+ Text** to add new headers or paragraphs that may have been missing from the initial extraction.
- **Deleting Elements:** Any irrelevant content—such as headers, footer text, or discarded notes—can be permanently removed by selecting the **Delete** option at the bottom of the details pane.
- **Inspecting Graphics and Tables:**
 - **Graphics:** You can view high-resolution previews of extracted images and diagrams to ensure they are associated with the correct requirement.
 - **Tables:** The details pane renders the extracted grid for visual verification. While table content is not editable in this view, the structure is preserved for the final import.

The screenshot displays the 'Requirements Import' application interface. At the top, a progress bar shows four steps: 'Upload' (completed), 'Processing' (completed), 'Review' (active), and 'Import' (disabled). A 'Cancel' button and a 'Setup Import' button are also present. Below the progress bar, the 'Review Requirements' pane on the left lists extracted items, including 'Graphic 19.1', 'Text Bed Leveling Instructions', 'Graphic 19.2' (selected), 'Text Ethical snackwave bitters hashtag four dollar toast...', 'Text F', 'Text >', 'Text O', and 'Graphic 19.3'. Each item has a handle icon on the left. The 'Element details' pane on the right shows a high-resolution preview of the selected 'Graphic 19.2', which is an image of a hand holding a small electronic component. Below the preview, the text 'Step 1: Paper Setup' is visible. At the bottom of the details pane, there are 'Delete', 'Cancel', and 'Save Changes' buttons. A footer banner at the bottom of the interface reads 'Important'.



Changes made in the detail view must be saved within the preview to be included in the final import.

Importing into Aras Innovator

Once validation is complete, you provide a **Requirement Document Title** and initiate the formal import sequence.

Item Creation and Governance

The agent creates the following native objects:

1. **Requirements Document Item:** Exactly one parent container is created per session.
2. **Requirement Items:** Individual items are generated for every validated extraction.
3. **Relationship Binding:** Structured links connect the document to its requirements in the correct sequence.
4. **Graphic Commitment:** Images and diagrams are uploaded as **File Items** and associated with the corresponding records.

Verification in Aras Innovator

Upon successful completion, an **Import Summary** is displayed.



 Requirements Import

Upload

Processing

Review

Import

Process another

Import Summary

Import completed successfully.

Requirement Document Created

The document Requirements has been linked to Innovator.

Open in Innovator

Import details

8 Requirements Imported

Original file

Requirements.pdf

0.65 MB

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Selecting **Open in Innovator** opens the standard interface, where the document and requirements participate in standard governance, including lifecycle management and versioning.



The screenshot shows the Aras Innovator web application. The top navigation bar includes the 'aras INNOVATOR' logo, a search bar, and the date 'Tuesday, April 14, 2026 6:34 AM'. The left sidebar is titled 'Contents' and lists various system components. The main workspace is titled 'RD-00012 Requirements' and shows a tree view of requirements on the left. The right pane displays the details for 'REQ-000000279', which includes a description, assumptions, and two tables of functional requirements.

REQ-000000279
Must be on same wifi network as the Raspberry Pi.

REQ-000000280
Constrained to just Thingiverse, can't use similar sites.

2.4 Assumptions & Dependencies
- Thingiverse and Octoprint APIs
- The user's devices are wifi enabled and are connected to the internet
- Heroku online

3. FUNCTIONAL REQUIREMENTS

3.1 User Account Management

DESCRIPTION	PRIORITY
Account Creation	High
Login	High
Logout	Low
Delete Account	Low

3.2 Setting up printer profile within app

DESCRIPTION	PRIORITY
Build Volume	High
MakeModel	High
Heated Bed checkbox	High

Guidelines & Best Practices

- **Human-in-the-Loop:** All AI-generated extractions must be reviewed and confirmed by an engineer before system commitment.
- **Structural Consistency:** Extraction quality is highest when documents follow consistent section and numbering conventions.
- **Permission Awareness:** The import process respects your native Aras Innovator permissions and assigned roles.
- **Error Handling:** If an ingestion job fails (e.g., a classification failure), the system provides a specific error message and a **Try again** option to restart the process.

