

Overview: Dynamic Product Listing Form Engine

This document outlines the design and operation of a **dynamic product listing form engine** for our seller platform. The system enables our **Insider Team** (formerly called admins) to define product upload experiences tailored to different product types, categories, and brands — all without developer intervention.

Purpose

Our seller platform is designed to support a diverse, global catalog of products — from electronics to fashion, groceries to industrial equipment. Because of this diversity, a one-size-fits-all product upload form is not feasible.

To solve this, we've built a modular system where **Insiders can define custom product upload flows using a structured Excel/CSV file**, with no code required. This approach allows us to:

- Handle a wide variety of product attributes across industries
- Empower non-technical team members to design seller experiences
- Maintain a consistent UI while supporting highly dynamic logic

Who Uses This System?

- **Insiders:** Responsible for researching product requirements and designing product upload flows.
- **Sellers:** End users who fill out the forms defined by Insiders to list their products.
- **System:** Interprets uploaded form definitions and renders full seller-facing forms.

Key Capabilities

- Multi-step product listing flow, rendered in form of tabs
- Fixed base sections (e.g., Basic Info, Pricing, Preview)
- Dynamic mid-sections defined via Excel tabs
- Flexible question types (text, select, file uploads, etc.)
- Support for media-driven select fields (e.g., image or color pickers)

Form Structure & Flow Composition**

Product upload on our platform follows a **multi-step form structure** divided into clearly defined sections (also referred to as "tabs"). Each product upload experience is called a **Form Flow** and is composed of several types of sections:

1. Platform-Defined Base Sections (Always Present)

These sections are predefined and always included in every product upload flow, regardless of product category or brand:

| Tab Name | Purpose |
|------------|---|
| Basic Info | Captures universal fields like product name, SKU, brand, and category |

| Tab Name | Purpose |
|----------|--|
| Pricing | Collects price-related fields: cost, discounts, currency, stock info |
| Preview | Final review step before submission |

These tabs are **fixed in both name and structure** and cannot be overridden by Insiders.

2. Platform-Defined Compliance Sections (Conditional)

For certain products that require compliance with external systems or regulations, an additional **compliance tab** may be inserted by the platform.

- Example: Charge stations that must comply with the country's OCPP platform (e.g. US compliance with Monta).
- These compliance tabs are fixed, like the base tabs, and are inserted **in addition to** the dynamic sections defined by Insiders.
- Presence of these tabs depends on product type and regulatory requirements.

3. Insider-Defined Dynamic Sections (Inserted via Excel)

Between the fixed **Basic Info**, potential **Compliance**, and **Pricing** tabs, the system dynamically inserts **custom tabs** based on an Excel file uploaded by an Insider.

Each **sheet** in the Excel file represents one dynamic section/tab. Examples might include:

- Specifications
- Care Instructions
- Certifications
- Technical Details

These tabs vary by product type and can contain any number of questions.

How a Form Flow is Constructed

When a new form is defined by an Insider:

1. They input the flow's metadata (more on this in the next section)
2. They upload an Excel file defining the dynamic mid-sections
3. The platform parses the file and builds the final upload form:

Example Output Flow

If the Excel file contains sheets:

- Specifications
- Certifications

And the product requires compliance tab (e.g. for OCPP),

Then the resulting upload form will render:

1. **Basic Info** (*fixed*)
2. **Compliance** (*fixed, conditional*)
3. **Specifications** (*from Excel*)
4. **Certifications** (*from Excel*)
5. **Pricing** (*fixed*)
6. **Preview** (*fixed*)

This hybrid structure ensures:

- Consistency across all product flows
- Flexibility to accommodate specialized data
- Support for mandatory external compliance
- Clear distinction between platform governance and custom product attributes

Flow Setup: Metadata Required Before Excel Upload

Before uploading an Excel file to define the dynamic sections of a product upload flow, Insiders must provide essential metadata. This metadata ensures that each form flow is properly categorized, targeted, and identifiable within the platform.



Required Metadata Fields

| Field Name | Description |
|----------------------------|--|
| Flow Name | A unique, descriptive name for the form flow (e.g., "Samsung Phones Listing") |
| Description | A short summary explaining the purpose and scope of the flow |
| Target Platform | Specifies which buyer platform(s) the form is intended for (e.g., Mobile App, Web Store) |
| Product Category | Broad category for the products this flow applies to (e.g., Electronics, Fashion) |
| Product Subcategory | More specific classification within the category (e.g., Smartphones, Jackets) |
| Brand | The product brand this flow is designed for (e.g., Samsung, Nike) |



Purpose of Metadata

- **Categorization:** Helps organize flows so they can be easily searched, maintained, and applied.
- **Targeting:** Ensures sellers only see the relevant form flows based on their product category and platform.
- **Identification:** Makes it easy for Insiders and product teams to manage and update flows over time.



Workflow Recap

1. Insider fills metadata form in the platform UI.
2. Insider uploads the Excel file with form question definitions.
3. The system links the uploaded Excel to the metadata to form a complete product upload flow.
4. The flow is saved and made available for sellers matching the metadata criteria.

Excel File Format: Defining Dynamic Form Sections and Questions

Insiders define the dynamic parts of the product upload form by preparing an Excel file with specific structure and content. This file instructs the system how to build the variable form tabs and their questions.

File Structure

- The Excel file contains multiple **sheets**, each sheet representing a **form section/tab**.
- Each **sheet/tab** corresponds to one dynamic section inserted between the platform's fixed sections (Basic Info and Pricing).
- Sheet names should be descriptive (e.g., `Specifications`, `Care Instructions`).

Sheet Content: One Row per Question

Each row in a sheet defines a single **question/field** in that section.

| Column Name | Description |
|------------------------------------|--|
| Qtn: name | Unique internal key for the question (e.g., <code>battery_life</code>) |
| Qtn: label | Text label shown to sellers (e.g., "Battery Life") |
| Qtn: purpose | Insider-facing explanation of why the question exists |
| Qtn: explanation | Seller-facing helper text explaining how to answer |
| Qtn: Mandatory | Checkbox (<code>yes / no</code>) indicating if this is a required field |
| Ans: input type | Data type of answer: <code>simple text</code> , <code>big text</code> , <code>select</code> , <code>file</code> |
| Ans: Allow Multiple Answers | Checkbox (<code>yes / no</code>) — can seller submit multiple entries for this question? |
| Ans: Options (select) | For <code>select</code> input types: predefined option sets like <code>color-select</code> , <code>image-select</code> , <code>media-select</code> |
| Ans: Options (file) | For <code>file</code> inputs: specify allowed file types, e.g., <code>image-upload</code> , <code>document-upload</code> |
| Ans: Allow Multi-select | Checkbox (<code>yes / no</code>) — if <code>select</code> , can seller pick more than one option? |

Notes on Specific Columns

- **Qtn: name** must be unique per sheet and contain no spaces or special characters.
- **Ans: input type** must be one of the supported types.
- **Ans: Options (select)** controls how the select options are rendered (color swatches, images, or media placeholders).
- For `media-select`, the Insider will upload the media options separately after parsing.
- **Mandatory** and other checkboxes must be explicitly `yes` or `no` to avoid ambiguity.

Example Row

| Qtn: name | Qtn: label | Qtn: purpose | Qtn: explanation | Qtn: Mandatory | Ans: input type | Ans: Allow Multiple Answers | Ans: Options (select) | Ans: Options (file) | Ans: Allow Multi-select |
|-----------|-----------------|--------------------|------------------------------|----------------|-----------------|-----------------------------|-----------------------|---------------------|-------------------------|
| color | Color Available | To filter by color | Choose the colors applicable | yes | select | yes | color-select | | yes |

Handling Media-Select Fields and Media Uploads

Certain questions in the dynamic product upload forms require sellers to select from visually rich options, such as colors represented by swatches, patterns, or icons. To support this, the platform introduces **Media-Select fields**.

What Are Media-Select Fields?

- A special type of `select` input field.
- Instead of plain text options, sellers choose from options represented by **images**, **icons**, or other media.
- Examples:
 - Fabric type displayed as small fabric swatches.
 - Colors shown as color chips.
 - Accessories represented by product images.

How Insiders Define Media-Select Fields

- In the Excel file, the Insider sets the column **Ans: Options (select)** to a value such as `media-select`, `image-select`, or `color-select` for that question.
- This signals the system that the select options will be media-driven.

Media Upload Process

1. After the Insider uploads the Excel file and the system parses it:
 - Media-select fields are identified.
 - The system generates **placeholders** for these media option lists.
2. The Insider is prompted with a UI to **upload media files** (images, icons, etc.) corresponding to the options of each media-select field.
3. Once media are uploaded and linked to the respective options:
 - The seller-facing form renders these options visually.
 - Sellers interact with rich media options instead of plain text.

Key Points

- The Insider must upload the media **after** the Excel file is parsed, not inside the Excel.
- The system associates media files with options using the unique question `name` as a reference.

- Supports multiple media uploads per option if allowed (e.g., multiple images per fabric type).
- This improves seller experience by making selections clearer and more intuitive.

Post-Upload Flow: From Parsing to Seller Form Rendering

Once an Insider completes the form flow setup by providing metadata and uploading the Excel file, the system proceeds through several key steps to make the form available to sellers.

Step 1: Excel Parsing & Validation

- The system reads the uploaded Excel file sheet-by-sheet.
- Each sheet is interpreted as a separate form section.
- Each row is parsed into a question with its defined properties.
- Validation checks ensure:
 - Required columns are present.
 - Data types and checkbox values are valid.
 - Question names are unique.
- Errors or inconsistencies prompt Insider notifications for correction.

Step 2: Media-Select Fields Handling

- During parsing, any media-select questions are flagged.
- The system creates **placeholders** where media files are expected.
- Insider is prompted to upload media files for these fields via the platform UI.
- Uploaded media are linked to their corresponding question options.

Step 3: Storing the Parsed Flow

- The system saves the complete flow, including:
 - Metadata (flow name, category, brand, etc.)
 - Dynamic sections and questions as JSON or equivalent structured data
 - Media option references linked to media files
- The flow is indexed for efficient retrieval by seller product category and platform.

Step 4: Seller Form Rendering

- When a seller initiates product listing, the system:
 - Determines the appropriate form flow based on product category, brand, and target platform.
 - Retrieves the saved flow data.
 - Renders the full multi-tab form:
 - Fixed base tabs (`Basic Info` , `Pricing` , `Preview`)
 - Insider-defined dynamic tabs with questions
 - Displays media-select options as rich media widgets.

Step 5: Validation & Submission

- The seller's input is validated according to the form rules (mandatory fields, answer types, multi-select constraints).

- On successful validation, the product data is saved.
- The seller receives confirmation or guidance for corrections.