

SOLUTION ENABLEMENT

Product Lifecycle Management (PLM)

Release 9.2-MP3 (October 25, 2019)

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PLM Solution Enablement

The Product Lifecycle Management (PLM) solution enablement documentation provides different solutions for various PLM needs. The following documentation includes information and use cases in the following PLM areas:

- PLM Private Label Food Solution
- Change Reports
- Multi Reference Editor

Note: It is recommended that users be familiar with the online help topics for STEP and PLM, in addition to being well-versed in using STEP, before beginning to work with PLM solution components.

PLM Private Label Food Solution Enablement

Product Lifecycle Management (PLM) private label food solution simplifies your development process for products when capturing concepts and choosing suppliers.

To use the solution implementation, please see:

- [PLM Private Label Food Solution Overview](#)
- [PLM Private Label Solution Implementation Guidelines](#)

Note: This document is intended for administrators of the target system.

Pre-installation Requirements

- Version 9.1 or later must be running on your STEP system in order to install Stibo Systems PLM 9.1 Private Label Food Solution.
- It is recommended that users be familiar with the online help topics for STEP and PLM, in addition to being well-versed in using STEP, before beginning to work with PLM private label food solution components.

PLM Private Label Food Solution Overview

PLM private label food solution provides product development teams with a central repository where they can manage product specifications, ensures alignment of product specifications with ingredients parameters, and manage labeling and packaging requirements. This comprehensive solution enables and accelerates the process from capturing concepts, evaluating designs, and the final awarding of recipes.



In the competitive and highly regulated Food and Beverage industry, Product Lifecycle Management can provide a competitive edge that marks the difference between product success and failure.

PLM Private Label Food Implementation Guidelines

This guide introduces the PLM private label food solution available for STEP 9.1 or later. It covers the necessary actions that an admin user must take to set up the solution, as well as provide an overview of the end user functionality.

The PLM private label food solution supports the recipe specification process, ingredients validations, and supplier's responses. To support these functionalities, new components have been developed. The new components are available once the PLM license has been applied. For additional questions about PLM licenses, contact your Stibo Systems account manager.

This user guide offers several PLM resources to aid in the implementation of the private label food solution:

- Food terminology used throughout the PLM private label food solution. For more information see the **Food Terminology for PLM Private Label Food Solution** topic in this section of the PLM enablement documentation.
- The data model used for PLM private label food solution. See the **Data Model for PLM Private Label Food Solution** section of this PLM enablement documentation.
- The asset types used in PLM private label food solution. See the **Asset Object Types for PLM Private Label Food Solution** topic in this PLM enablement documentation.
- The reference types used in PLM private label food solution. See the **Reference Object Types for PLM Private Label Food Solution** topic in this PLM enablement documentation.
- Workflows used throughout the private label food solution process. See the **Workflows for PLM Private Label Food Solution** topic in this PLM enablement documentation.
- An example use case for PLM private label food solution. See the **Use Case for PLM Private Label Food Solution** section of this PLM enablement documentation.
- Components and configurations needed for Web UI. See the **Web UIs used for PLM Private Label Food Solution PLM** topic in the PLM enablement documentation.

Note: It is recommended that users be familiar with online help topics for STEP and PLM, in addition to being well versed in using STEP, before beginning to install any PLM private label food solution components. See the **Product Lifecycle Management** documentation for more information on setup and use of the private label food solution.

Food Terminology for PLM Private Label Food Solution

The following are terms commonly used in the private label food industry:

Private Label

Private label products or services, which include a wide range of goods and services such as food, cosmetics, web hosting, etc., are often manufactured or provided by one company but are for sale under another company's brand. The agreement between the manufacturer and the retailer governs their relationship.

The appeal of private label products to private-label buyers is that they are easy to produce in large volumes and are fairly inexpensive to manufacturer, generating extra profit without a lot of extra work. Should sales begin to drop, the private-label buyer can stop buying and re-selling the product.

The greatest challenges of the food industry are the competitive market, the fact that each food product needs to meet a set of sanitary and quality requirements, and the need for each ingredient to satisfy specific quality testing parameters.

Recipe

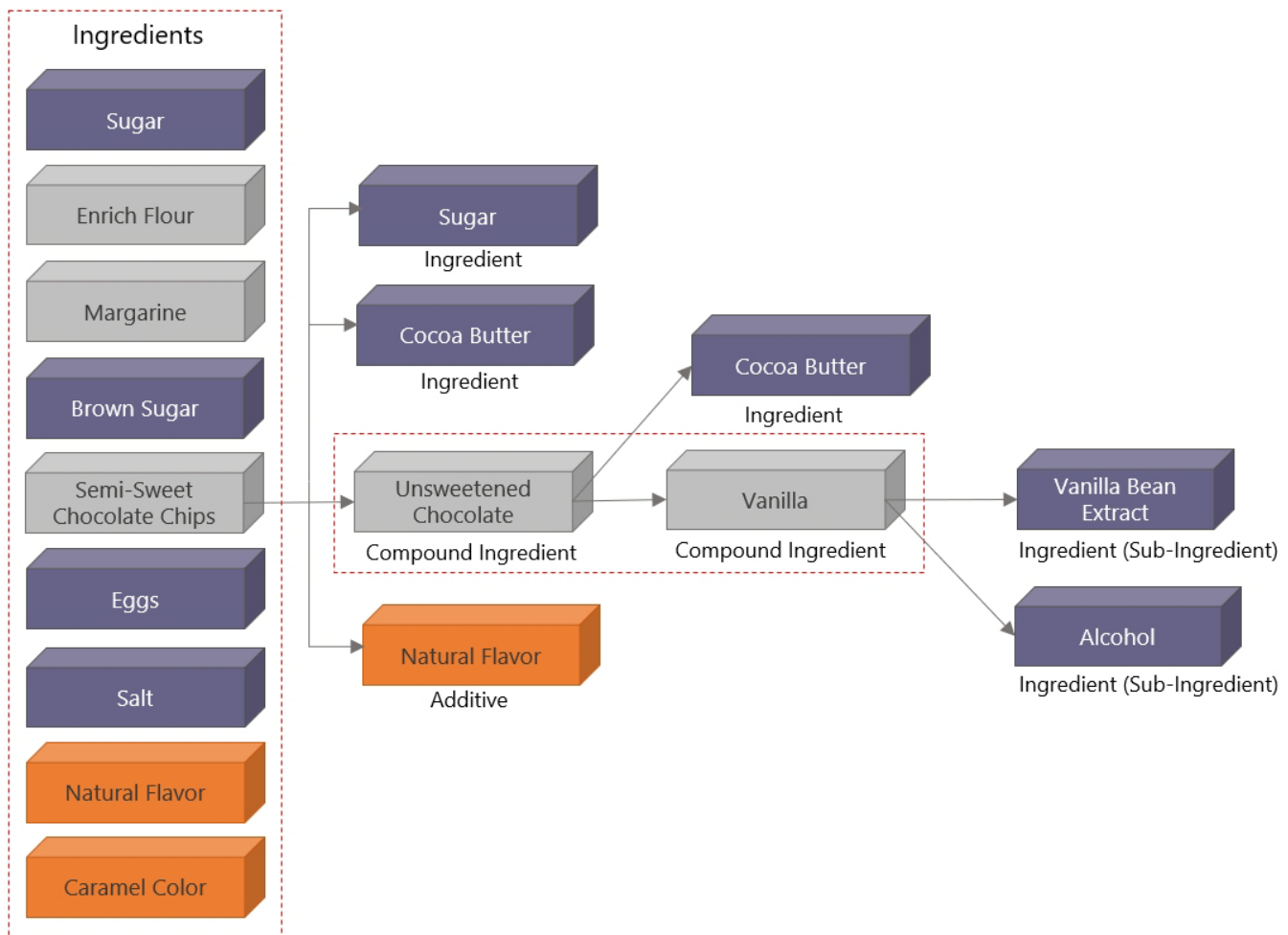
There are different concepts and definitions about a food recipe. For example, a recipe is a list of food ingredients and a sequence of instructions that describe how to combine them to obtain a new product or an ingredient. When using the term 'food ingredient,' it includes food additives, which are substances added to foods for specific technical and/or functional purpose during processing, storage or packaging.

There are different types of ingredients in the food area. To explore each ingredient type review the following food recipe example.

Recipe for Chocolate Chip Cookie ingredients

- Semi-Sweet Chocolate Chips (Sugar, Unsweetened Chocolate, Cocoa Butter, Milkfat, Natural Flavor)
- Enriched Flour (Bleached Wheat Flour, Malted Barley Flour, Niacin, Thiamine Mononitrate, Riboflavin, Folic Acid)
- Margarine (Palm Oil, Water, Soybean Oil, Salt, Whey, Mono and Diglycerides, Soy Lecithin, Vitamin A Palmitate, Beta Carotene [Color])
- Sugar
- Brown Sugar
- Egg
- Contains 2% or Less: Natural Flavor, Leavening (Baking Soda, Sodium Acid Pyrophosphate, Corn Starch, Monocalcium Phosphate)
- Salt
- Caramel Color

Chocolate Chip Cookie Recipe



Additives

Additives are substances, either occurring naturally or are manmade, that are intentionally added to food – usually in small quantities – to assist in its processing or to improve certain characteristics. Some characteristics it can improve are:

- aroma
- color
- consistency
- taste
- texture
- packaging
- shelf life.

Normally, they are never consumed as a food itself, nor are they used as individual food ingredients. Additives are not considered nutritional even if they have some nutritive value, and the same additive can be used for many different purposes.

A few additive examples are:

- **Preservatives:** ascorbic acid, calcium sorbate, and sodium nitrite
- **Color additives:** fruit and vegetable juices, yellow 5, and beta-carotene
- **Flavors and spices:** 'real' vanilla or 'artificial' vanilla

E Numbers

E numbers, where the 'E' stands for 'Europe,' are codes for substances that are permitted to be used as food additives within the European Union and European Food Safety Authority (EFSA). Commonly found on food labels, their approval and safety assessment is the responsibility of the European Food Safety Authority.

INS Number

International Numbering System (INS) numbers are an international numerical system agreed upon and assigned by the Codex Alimentarius committee to identify each food additive. INS numbers generally correspond to E numbers for the same compound, for example, INS 102, Tartrazine, is also E102. INS numbers are not unique, and in fact, one number may be assigned to a group of like compounds.

Use Case for PLM Private Label Food Solution

The following use case is used to illustrate how the PLM private label food solution can help to specify and source your products as well as how to sell them with your own label.

CIBUS Company's Private Label Project Use Case

The CIBUS company is a global food brand which markets and sells largely to North America, Europe, and Latin America. CIBUS sells directly to its consumers via local supermarkets, convenience stores, and various channels.

The Merchandiser team has conducted market research about favorite and popular snack food trends. CIBUS findings were that Chips, Dark Chocolate, and Crackers were positioned in slots 4 and 5 of the consumer preferences. After evaluating the market research results, the merchandiser team decided to add a new private label product, entitled *Chocolate Cookies*, to their Biscuits and Cookies product line.

1. The initial phase is programmed to sell the *Chocolate Cookie* products in the United States and Canada. In a future phase, the *Chocolate Cookie* product will be introduced to Europe and Latin America markets.

To continue with the private label *Chocolate Cookie* project, the merchandiser team will complete a competitive analysis to identify competitor product characteristics as:

- Competitor Product Price
- Net Content Options
- Competitor Product Claims
- Competitive Product Ingredient
- Competitive Product Packaging Description

After five competitive products were analyzed, the merchandising and quality teams decided to continue with the private label *Chocolate Cookie* project.

1. They then consider offering the *Chocolate Cookie* in two flavors *Dark Chocolate Chip* and *Double Dark Chocolate Chip*. Each flavor will be offered in two packaging sizes: 8 oz and 12 oz.
2. To ensure that defined *Chocolate Cookie* products will capture consumer preferences, the merchandising and quality team have identified the following differential factors that will impact the consumer decision:
 - Need to improve competitors' products quality
 - Competitor product pricing
 - Specify package size and label
 - Packaging detailed description
 - Specify if a product is suitable for a diet
 - Specify all organic ingredients
 - Identify if a product contains fair trade chocolate
3. As part of the initiative to improve product quality, the merchandising team decided to adopt a system to specify product ingredients, labels, and package requirements for the project. This system will provide a detailed view

of each of the specifications needed for the product and act as a source to validate and guarantee that all regulations are satisfied.

The product specification system will include the following functionalities:

- Create a detailed recipe specification and be able to select which ingredient can or cannot be contained in the product recipe, as well as be able to specify the minimum or maximum quantities to be allowed in the product recipe.
- Specify food physical – chemical properties and microbiological limits for testing parameters for the recipe.
- Specify the requirements for the recipe, packages, and labels.

Adopting the product specification system will also provide a tool to enhance the supplier selectivity process and:

- Have a coordinated and detailed sampling, process, and functionality to request a recipe specification, label specification, and packaging specification to prospects supplier.
 - Have the ability to compare and rank supplier responses, and award the product that meets the quality and standard food requirements.
 - Collect from the supplier additional product information such as: Nutritional Values, Declaration of allergens, Certificates (Non-GMO, Organic Certified), Preparation Instructions, and Handling Statements.
 - Establish a response period, and be able to request further information from the supplier when it is needed.
4. To accomplish label regulations established in some of the countries where CIBUS plans to sell the private label *Chocolate Cookie* product, and to achieve cost efficiencies for the production of the packaging in countries where they are planning to sell the private label *Chocolate Cookies* product, labels will be printed in multiple languages
- A food label needs to describe specific amounts contained in each package, and display information printed in one or more languages for each market where the cookies will be sold. As a competitive advantage, products sold in the United States will have labels printed in English and Spanish, whereas products sold in Canada will have labels in English and French to accommodate law requirements.
- A Quality Manager and Purchasing Manager will review and validate that all necessary label requirements are specified.
5. Another important factor to ensure compliance is to have a traceability record for each ingredient in the recipe. Knowing the country of origin will help to validate, search, and follow-up recall.
6. Once all specifications are completed, prospect suppliers can be selected and specifications (recipe, label, and packaging) will be sent to each prospective supplier selected.
- Suppliers will need to answer specified requirements and parameters.
 - Suppliers will have the ability to specify recipes, packages, and labels.

- Suppliers will begin defining the product based on project specifications after they have reviewed all requirements and parameters.
 - The Solution will provide suppliers with a feature to execute quick validations between their specified ingredients and ingredients detailed in the project. This reduces the back and forth communication time and helps the supplier to respond with the best offering that will meet the needs of the company.
 - An initial and follow-up stage in the supplier collaboration process will be established.
7. With the implementation of the Private Label Food solution, the merchandising and quality team expect the following benefits once the new specification process has been implemented:
- Increase sourcing efficiencies
 - Increase product quality
 - Standardize recipe specifications
 - Reduce cost
 - Fast time to market
 - Have a product ingredients traceability
 - Reduce process time, since suppliers can do an ingredients quick validation
 - Select supplier through an evaluation process
 - Have visibility of the status of each specification and the corresponding supplier response
 - Ability to cancel any requests to suppliers who have not responded in time
 - Ability to cancel one or more of the specifications because of changing business needs

Data Model for PLM Private Label Food Solution

New product development from the firm's own research and development team refers to original products, product improvements, product modifications, and new brand development. For the private label food solution, the work process starts after ideation, beginning with a competitive analysis and ending after one or more suppliers are selected to produce the products.

The PLM private label food solution provides a tool to manage the product development process with a central repository for product specifications. It also ensures the alignment of product specifications with ingredients, requirements, quality testing parameters, labeling, and packaging requirements. A series of objects are defined to handle the different pieces of information required in the food product development process. To see a detail definition of each object please review the following data model documentation topics.

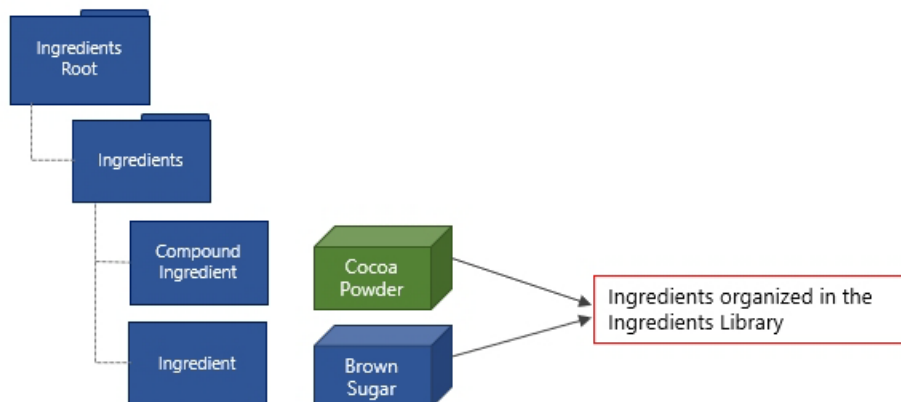
- Recipe Specification and Recipe Response Object Types
- Specified Ingredients
- Supplier Responses Ingredients
- Additive Object Types
- Parameters
- Requirements
- Competitive Product Food
- Design Specification
- Variant Object Types
- Sample Object Types
- Primary Product Classification
- Alternate Classification Hierarchies
- Suppliers
- Asset Object Types for PLM Private Label Food Solution
- Reference Object Types for PLM Private Label Food Solution

Note: Additional data may very well be applicable to include in a PLM Private Label solution but is not covered by these guidelines.

Recipe Specification and Recipe Response Object Types

The PLM private label food solution has two different uses for the food recipe concept:

1. A recipe specification is where the customer specifies ingredients and a set of requirements and quality standards.
2. A supplier response is where suppliers will list all ingredients that are used to make up a finished product and where they will respond to the set of requirements and quality standards specified by the customer.

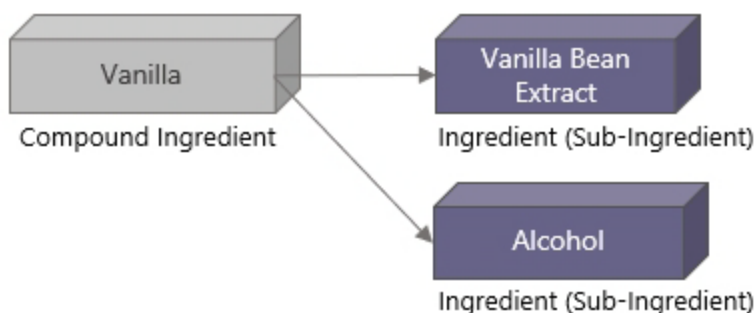


Ingredient

A 'food ingredient,' is any substance or foods added together to achieve the desired effect, such as a mixture. The term 'food ingredient' includes food additives, whole substance ingredients, or compounds. Many commercial products contain secret ingredients that are intended to make them better than competing products.

Compound Ingredient

A compound ingredient is a substance made up of two or more ingredients. For example, Semisweet chocolate chips are made up of many ingredients with the compound ingredient unsweetened chocolate where the unsweetened chocolate is made up of cocoa solids and cocoa butter.



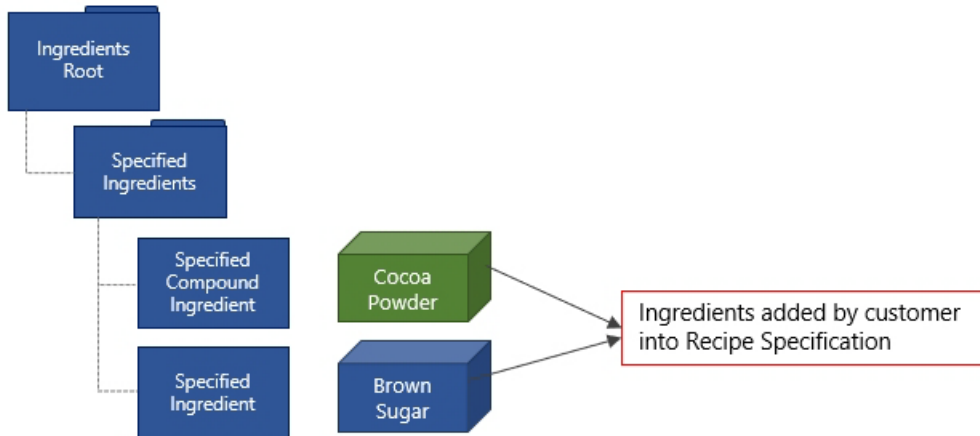
Sub-Ingredient

A sub-ingredient is a part or compound of another ingredient.

Specified Ingredients

Specified ingredients are ingredients added by a customer to a recipe specification. It is used to list the ingredients that must be included or excluded in the product recipe provided by the supplier.

- For any specified ingredient, the 'Allowance,' 'Ingredient Precision,' and 'Ingredient Quantity' must be filled out. Any other configurable attributes, such as 'Country of Origin' or if it is 'Organic' are optional to specify.



Specified Compound Ingredient

When a user specifies ingredients for a recipe, they search the ingredient library. When a compound ingredient is chosen, a copy of it is made as a specified compound ingredient so that each instance can add its own unique sub-ingredients to it, and parameters can be attached to it without permanently attaching that parameter to the library compound ingredient. Since parameters may be different based on how the compound ingredient is used, this keeps the library ingredients neutral.

Specified Ingredient

When a user specifies ingredients for a recipe, they search the ingredient library. When an ingredient is chosen, a copy of it is made as a specified ingredient so that each instance can add its own unique sub-ingredients to it, and parameters can be attached to it without permanently attaching that parameter to the library ingredient. Since parameters may be different based on how the ingredient is used, this keeps the library ingredients neutral.

Specified Ingredients					
Ingredient	Ingredient Type	Ingredient Allowance	Ingredient Precision	Ingredient Quantity (%)	Specification Details
Sequestrant: Citric Acid	Additive	-	-	-	-
Egg	Ingredient	May Contain	Minimum	10.0	-
∨ Cocoa Powder	Compound ingredient	Must Contain	Minimum	35.0	Specify country of origin
Water	Ingredient	Must Contain	Minimum	85.0	-
Sugar	Ingredient	Must Contain	Maximum	15	-

Supplier Responses Ingredients

Supplier response ingredient types are listed below.



Supplier Response Compound Ingredient

When a supplier adds ingredients to a recipe, they search the ingredient library. When a compound ingredient is chosen, a copy of it is made as a supplier response compound ingredient so that each supplier can add their own sub-ingredients to it and so that parameters can be attached to it without permanently attaching that parameter to the library compound ingredient. Since parameters may be different based on how the compound ingredient is used, this keeps the library ingredients neutral.

Supplier Response Ingredient

When a supplier adds ingredients to a recipe, they search the ingredient library. When an ingredient is chosen, a copy of it is made as a supplier response ingredient so that parameters can be attached to it without permanently attaching that parameter to the library's ingredient. Since parameters may be different based on how the compound ingredient is used, this keeps the library ingredients neutral.

Recipe Ingredients			
Ingredient	! Ingredient Quantity (%)	Country Of Origin	Organic
Brown Sugar	25.0	Guatemala	No
Butter	4.0	United States	No
∨ Dark Chocolate	10.0	Brazil	-
Enriched Wheat Flour	20.0	Brazil	-
Colour: Caramels	30.0		-
All-Purpose Flour	8.0	United States	No
Cocoa Powder	15.0	Brazil	No
Wheat	-	United States	-

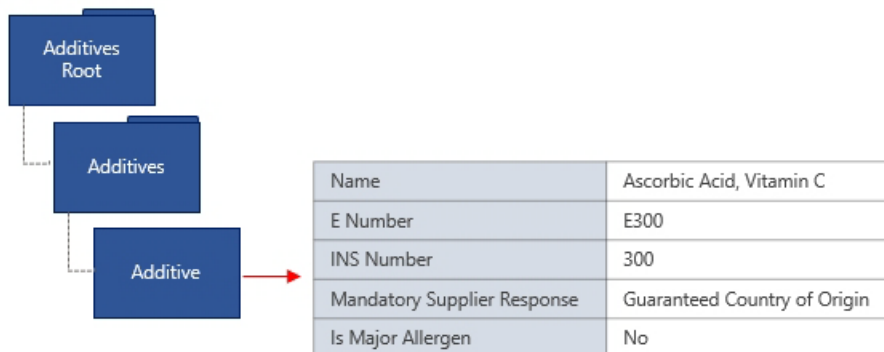
Note: The private label food solution includes an ingredients classification, where ingredients are classified into groups based on the food type.

Additive Object Types

In the PLM private label food solution, the additives (ingredients) are defined by the following objects types.

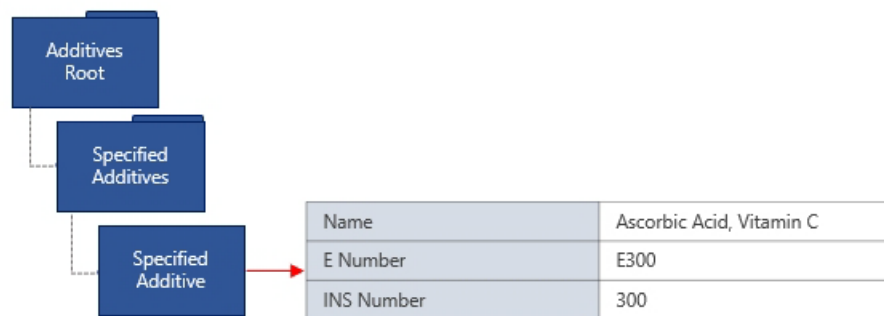
Additive

Additive represents an additive in the library. An additive can be a natural or synthetic substance that is added to commercially prepared foods for a specific purpose, such as a preservative, thickener, color retention agent, etc.



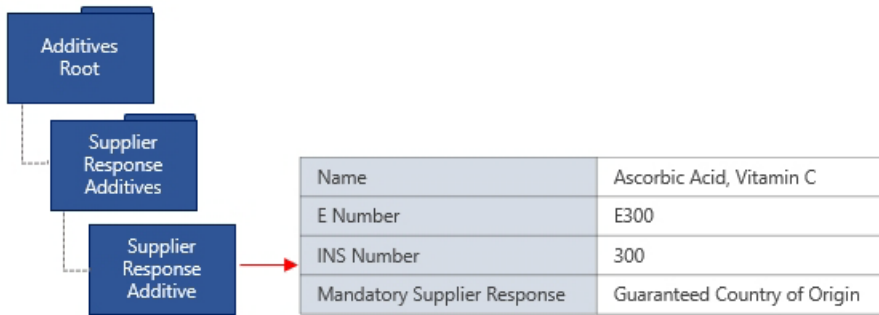
Specified Additive

A specified additive is used by the developed components for specifying additives. A user searches an additive library and chooses a class plus an additive. A copy of the additive is saved as a specified additive.



Supplier Response Additive

A supplier response additive represents an additive used in the supplier's recipe. A copy of an additive is made for each supplier who then selects and adds the needed additive(s) for their recipe.

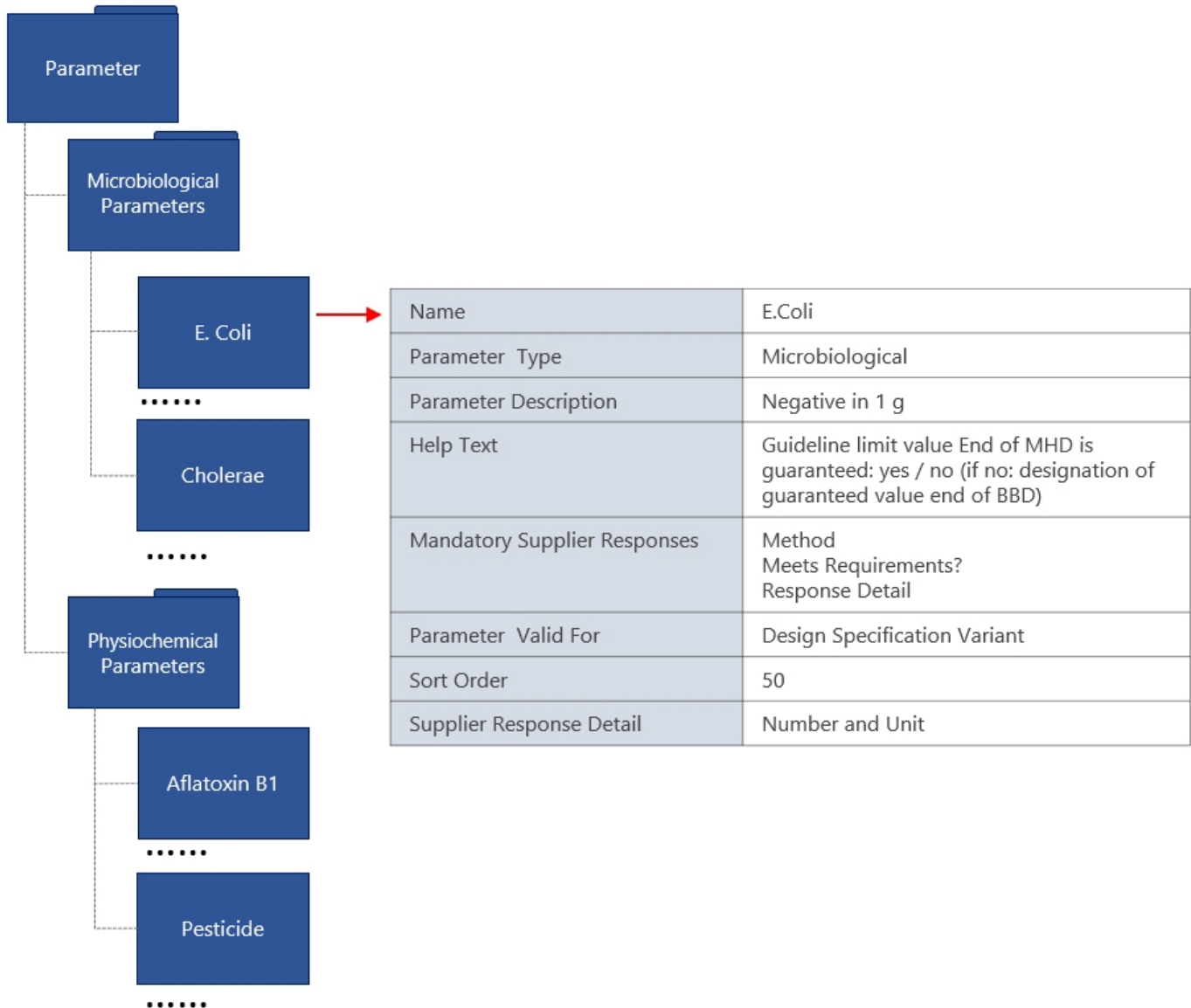


Note: The private label food solution includes an additives library, where food additives are classified by the functions they serve in food processing.

Parameters

Parameters set measurable laboratory testing thresholds for each property and hold information about food quality that must be met for the recipe. There are two different types of parameters, Microbiological, and Physiochemical.

The PLM private label food solution data model includes a parameters hierarchy where parameters are organized by parameter type. These are based on GS1's valid values for the attributes Microbiological / organismCode and PhysioChemical CharacteristicCode.



Note: Customers are responsible for populating the thresholds according to their standards. They are also responsible for providing help text to suppliers and indicating any mandatory responses.

Requirements

Requirements hold information about food standards to be met by the food chain process. It ensures that the food is safe and is of good quality. Requirements are also typically used to specify what the physical characteristics of a food are such as: aroma, flavor, texture, color, consistency.

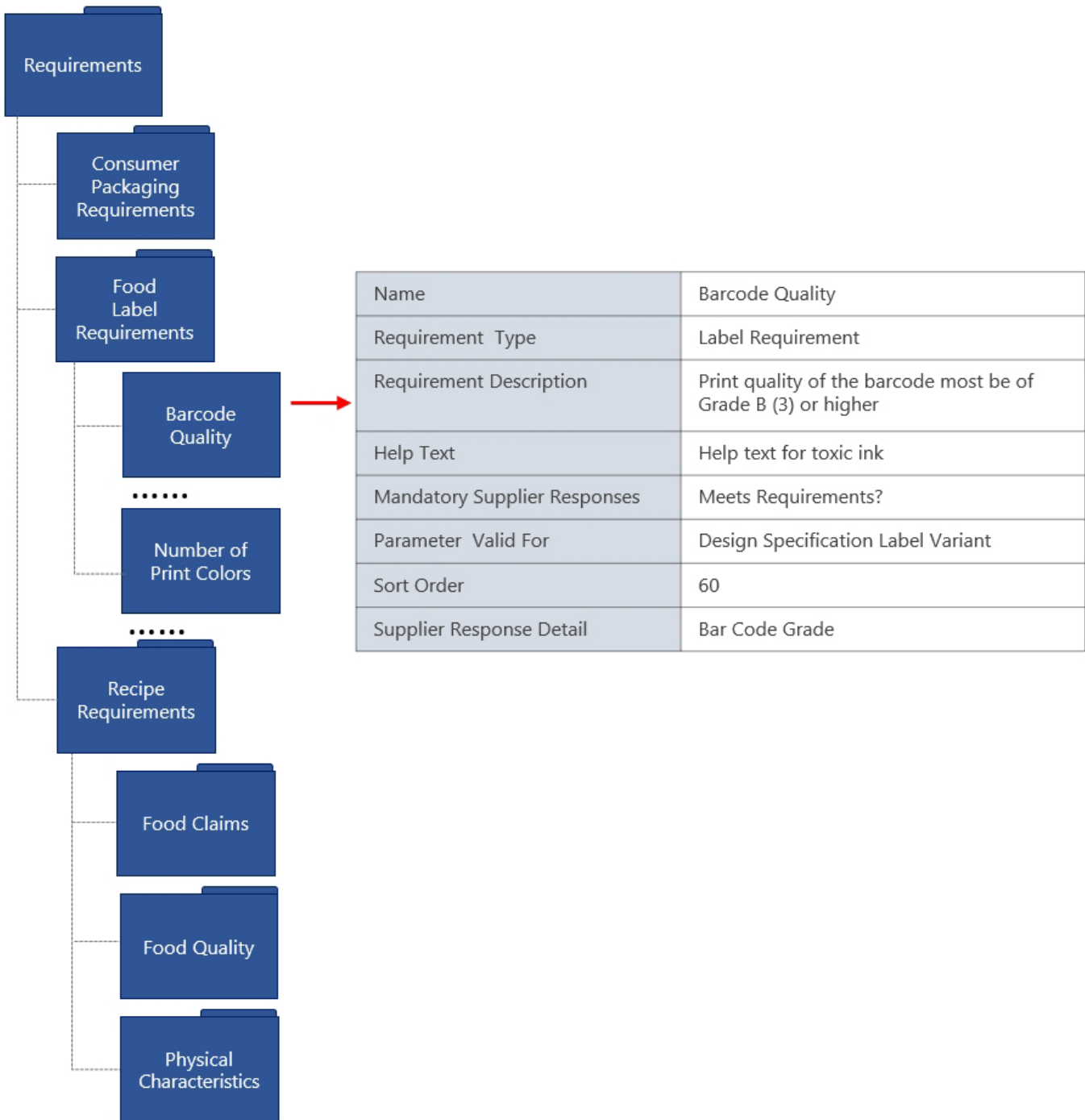
Some examples of different types of requirements are Food Claim Requirements, Label Requirements, and Quality Requirements

An example of a Quality Requirement would be:

Best-before date: for food for sale, this means the date up to which the food for sale will remain fully marketable and will retain any specific qualities that were expressed or implied.

It needs to remain in:

- An intact package during its storage
- Is stored in accordance with any storage conditions applicable under Standard 1.2.6

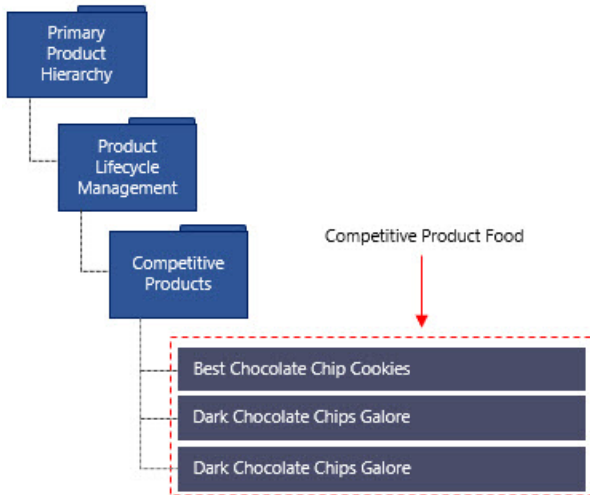


Note: These requirements are just examples. Project teams should expect to build these out and any detailing values.

Competitive Product Food

A competitive product food represents similar products to the product that a customer is evaluating for production. In the PLM private label food solution, a competitive product food is used to collect relevant information on similar products that already are on the market. Such information collected to compare could include brands, pricing, ingredients, product claims, and product images.

A competitive product can be added from a project. As a competitive product food is added to the comparison, a competitive product food object is created and linked to the project.



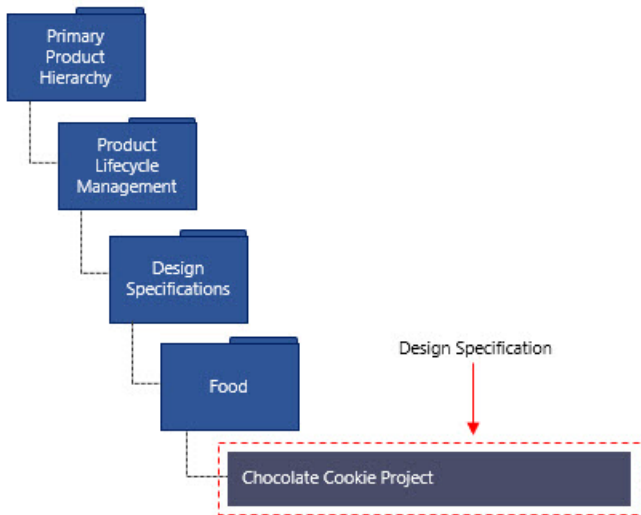
For a competitive product, an example of some attributes that might be included are the following:

Competitive Product General Information	Ingredients
Competitive Product Name	Ingredient1
Brand	Ingredient2
Price	Ingredient3
Net Content Options	Ingredient4
Competitive Product Claims	Ingredient5
Packaging Description	Ingredient6
URL	Ingredient7
Last Updated	Ingredient8
	Ingredient9

Design Specification

A design specification represents the entire project and is a high-level place to gather input for new products. A design specification could represent multiple products. For food, it could represent multiple packages sizes, flavors, and language(s) on the final product label. For detailed specifications, variants are created for each option and specified under the design specification.

Projects are organized in a one-level hierarchy.



For a project, some attributes that might be included are the following:

Project Information	Commercial
Project Name	Item Cost Estimate (Range)
Product Name	Planned Gross Margin (%)
Brand	Planned Quantity
Description	Planned Revenue
Project Type	
Product Category	
For Sale in Countries	
Label Country / Languages	
Planned Flavor Variations	

Project Information	Commercial
Planned Packaging Sizes	
New Branding Required?	
Need By Date	
Sourcing Strategy	
Design Specification Critical	
Design Specification Type	
Project Justification	
Project Start Date	
Key Product Claims / Benefits	
Marketing Messaging	
Target Market Segment	

Variant Object Types

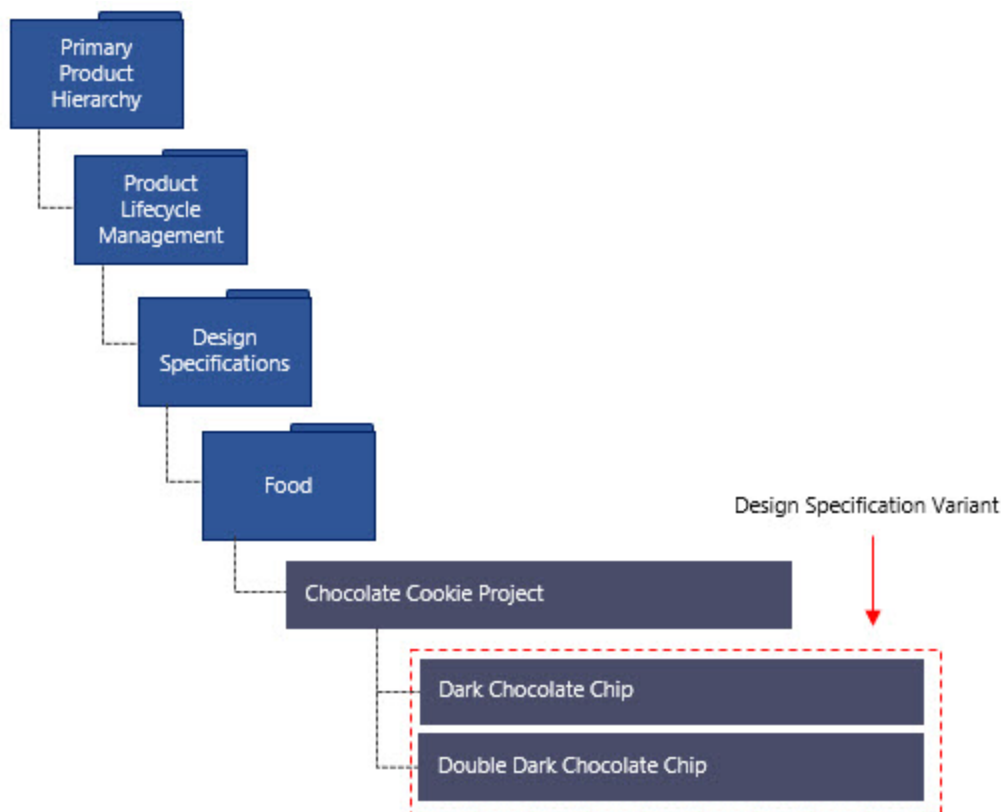
The following variant object types are required for the PLM private label food solution data model to work.

Design Specification Variant

A design specification variant (recipe specification) represents a flavor variation for one or more new products. Details about specifications, requirements, and parameters for each flavor variation are collected on this object.

For example, the Chocolate Cookie Project will have two flavors:

- Dark Chocolate Chip
- Double Dark Chocolate Chip



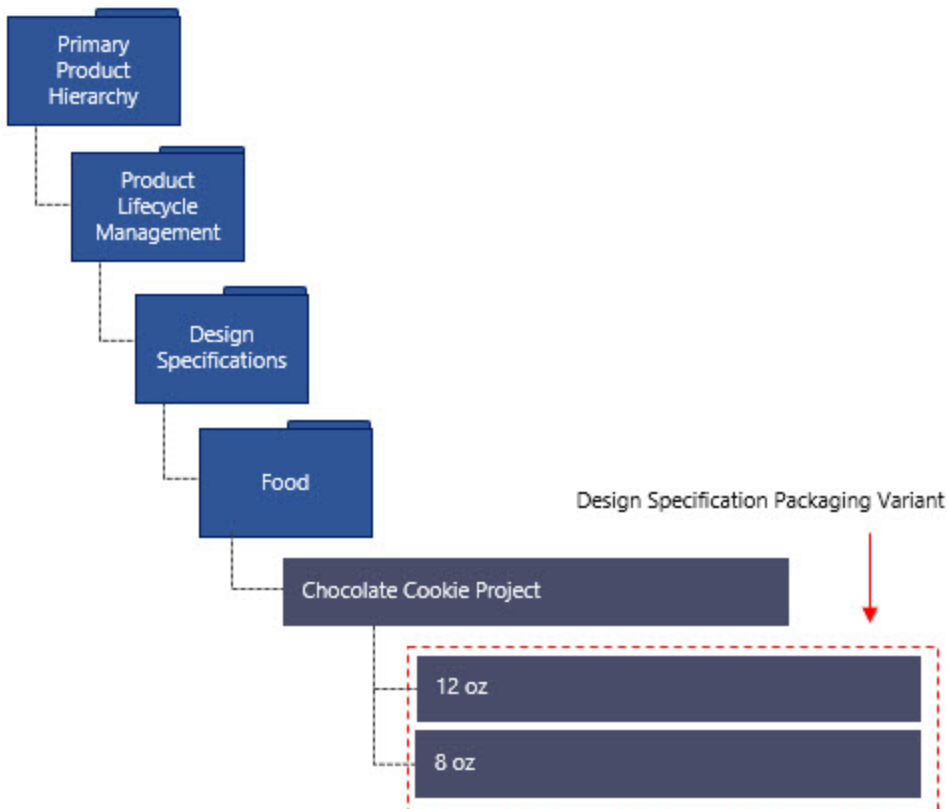
For a recipe specification, some attributes that might be included are the following:

Recipe Information	Recipe Requirements	Recipe Parameters	Specified Ingredients
Flavor Description	Requirement Description	Parameters Description	Ingredient

Recipe Information	Recipe Requirements	Recipe Parameters	Specified Ingredients
	Mandatory Supplier Response Help Text Sort Order	Mandatory Supplier Response	Ingredient Type Ingredient Allowance Ingredient Precision Ingredient Quantity Specification Details

Design Specification Packaging Variant

A design specification packaging variant (packaging variant) represents a package size variation for one or more new products. A packaging variant description and requirements are collected on this object. In the example below, the Chocolate Cookie Project will be produced in two packages sizes: 8 oz and 12 oz.



For a packaging variant, some of the following attributes may apply:

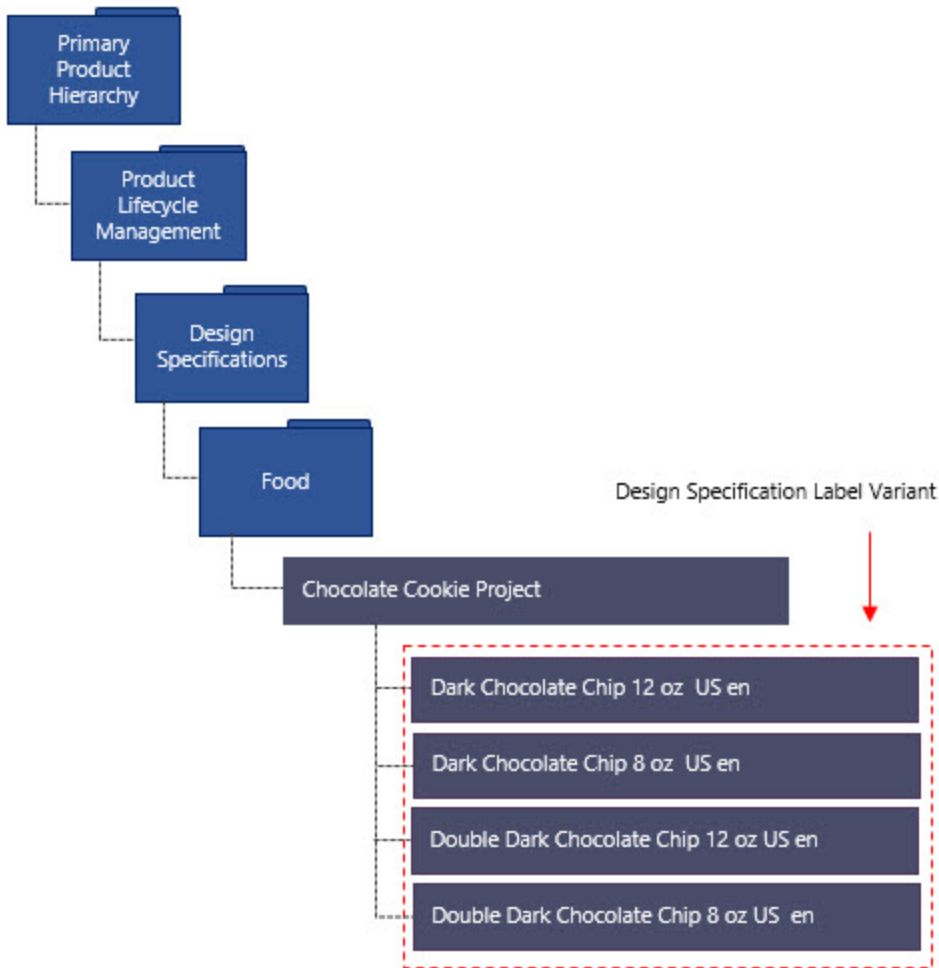
Packaging Information	Packaging Requirements
Packaging Size (from project)	Requirement Description
Packaging Variant Description	Mandatory Supplier Responses
	Help Text
	Sort Order

Note: For each packaging specification, three 'Packaging Elements' will be created underneath the Packaging Elements node.

- Consumer Packaging (Packaging Level 1)
- Packaging Element (Packaging Level 2)
- Packaging Tray (Packaging Level 3)

Design Specification Label Variant

This represents a label variation for one or more new products. A label variant represents a unique combination of one flavor variation, one packaging variant, and one set of languages on the product label. It represents the final item.



For a label variant, some attributes that might be used are the following:

Item Information	Commercial Item Information	Label Requirements
Unique Identifier (product SKU, GTIN)	Item Quantity Target Item Cost Target Item Suggested Retail Target Item Revenue Target Item Gross Margin (%) Target	Requirement Description Mandatory Supplier Responses Help Text Sort Order

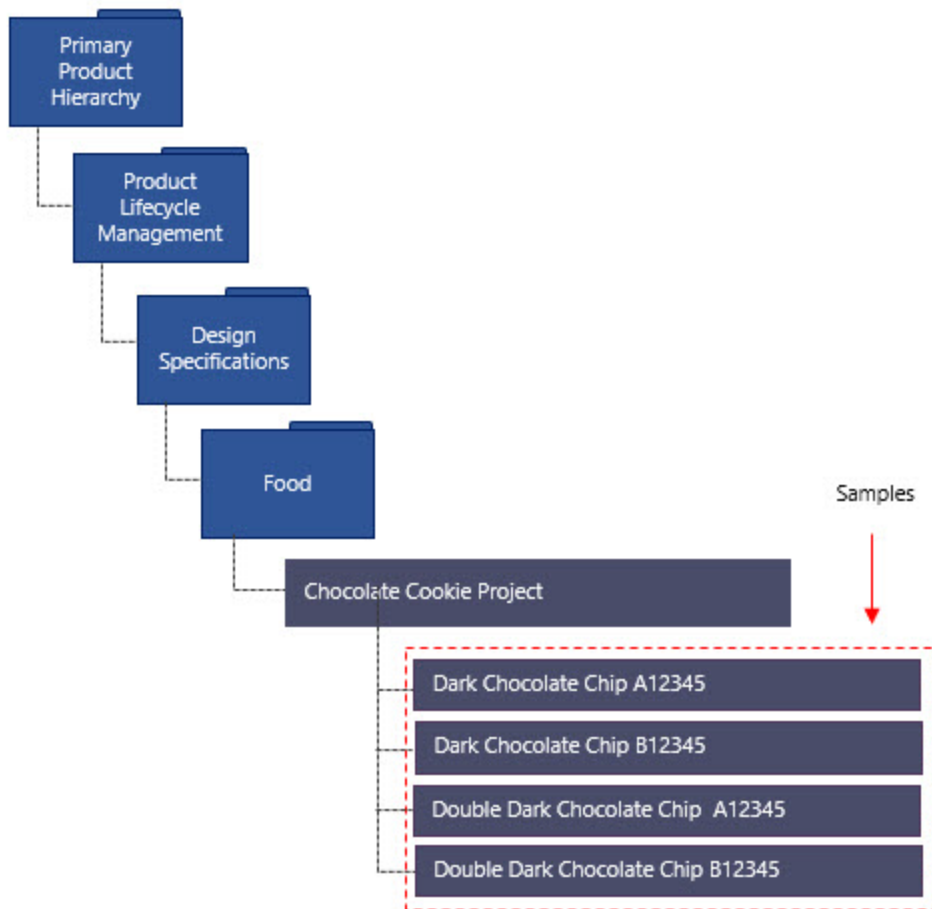
Sample Object Types

The following sample object types are required for the PLM private label food solution data model to work.

Sample

A Sample, also known as a Supplier Response, is an object that is created for each supplier who should respond to recipe specifications. This is where the supplier details the proposed recipe based on the specification received from the customer.

Each supplier has one equivalent object per variant where they respond to the specifications. All objects displayed underneath the Chocolate Cookie Project in the image below are used to handle Suppliers' recipes.



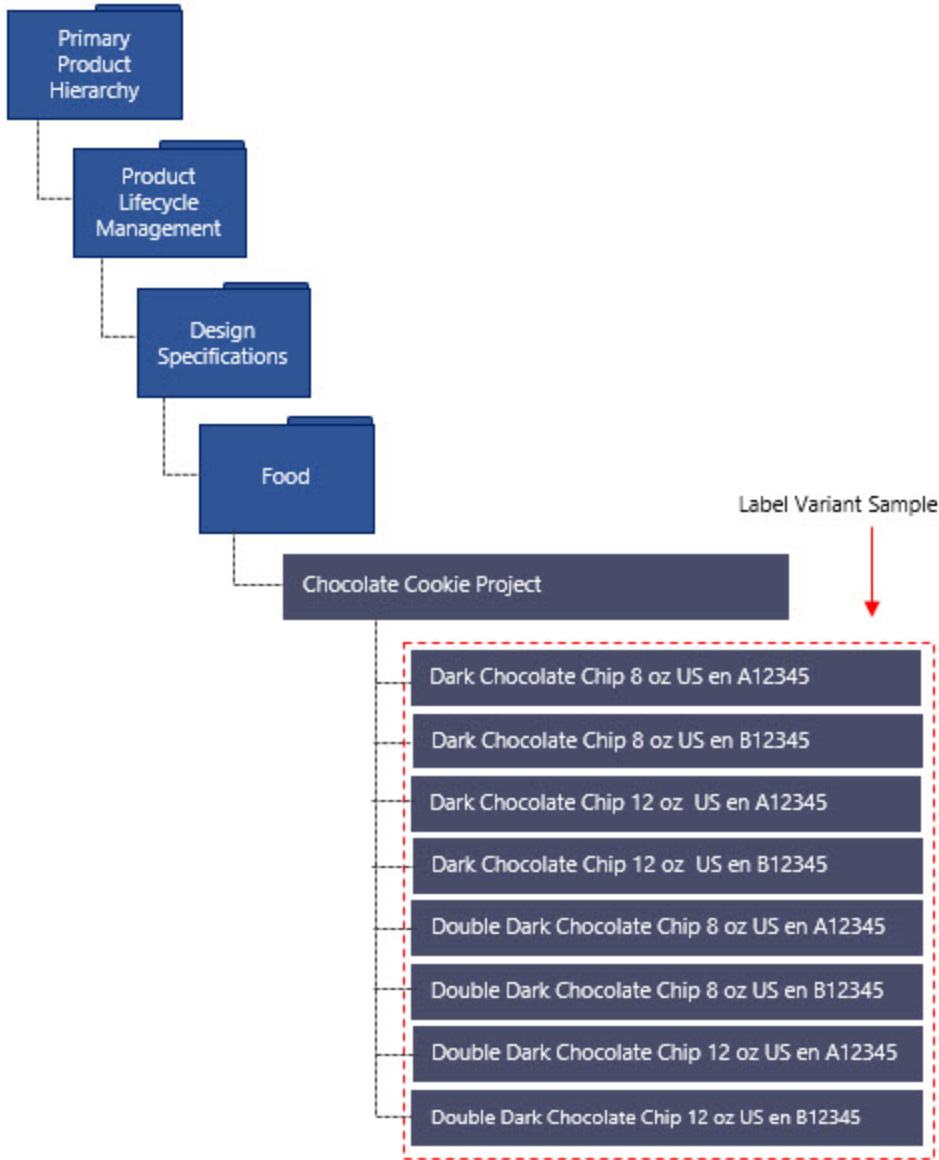
For a recipe response, some attributes that might be included are the following:

Recipe Requirements	Recipe Parameters	Recipe Ingredients
Meets Requirement?	Meets Requirement?	Ingredient
Response Detail	Response Detail	Ingredient Quantity %
Additional Comments	Method	Country of Origin
	Additional Comments	

Additionally, a supplier can provide Nutritional Information and Other Information related to the product.

Label Variant Sample

This is an object that is created for each supplier who should respond to package label specifications.

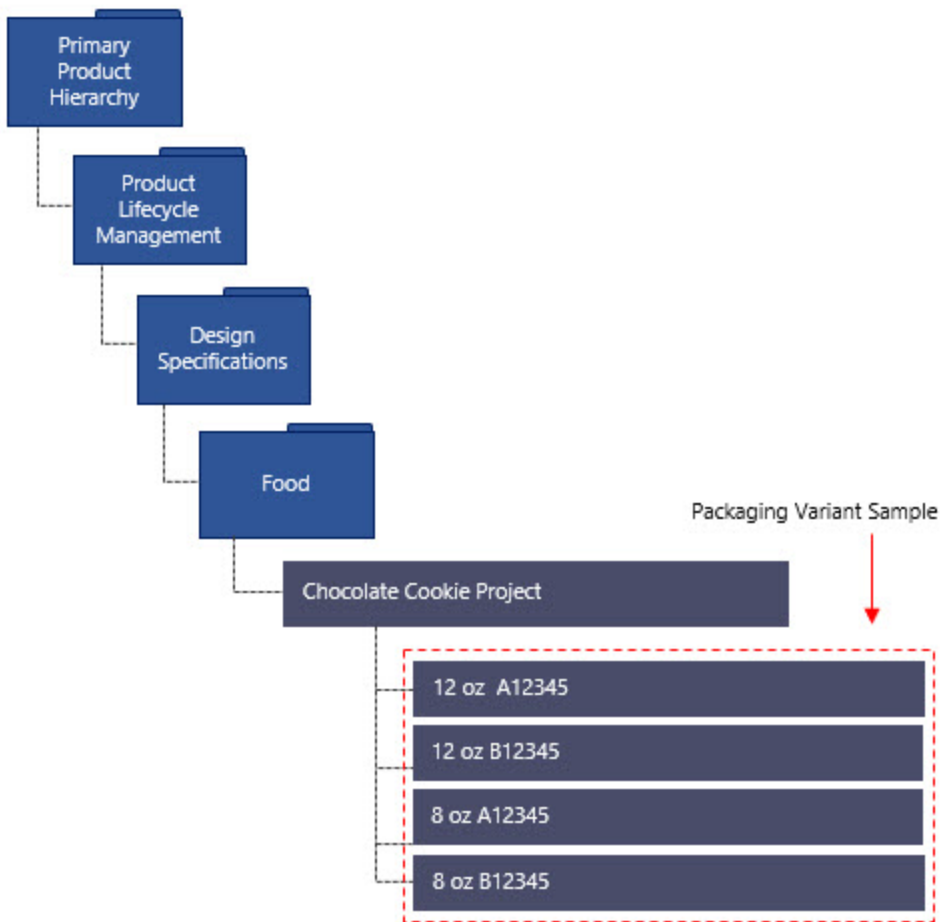


For a label response, some attributes that might be included are the following:

Label Requirements	Label Details
Meets Requirement?	Barcode Placement
Response Detail	Running Direction Of Barcode
Additional Supplier Comments	Applicable Recycling Codes

Packaging Variant Sample

An object that is created for each supplier who should respond to packaging specifications.



For a recipe response, some attributes that might be included are the following:

Packaging Requirements	Packaging Elements
Meets Requirement?	Packaging Level
Response Detail	Packaging Type
Additional Supplier Comments	Packaging Element Type
	Packaging Element Description
	Packaging Material Function
	Packaging Material Type

Packaging Requirements	Packaging Elements
	Packaging Material Type (other) Is Material Recyclable Packaging Material Color Packaging Height Packaging Depth Packaging Width Packaging Diameter Packaging Material Thickness

Note: For each Packaging specification, three Packaging Elements will be created underneath the Packaging Elements node: Consumer Packaging (Packaging Level 1), Packaging Element (Packaging Level 2), Packaging Tray (Packaging Level 3)

Primary Product Classification

Each object type in the Product Lifecycle Management 9.1 hierarchy is listed below, along with the purpose of the object type. PLM Private Label Food solution specifically does not use a product categorization to avoid coming into conflict with existing PMDM product categorization.

Primary Product Classification

Object Type Name	Object Type ID	Purpose
Product Lifecycle Management	ProductLifecycleManagementProductRoot	A root node of the hierarchy that contains all PLM products.
Competitive Products	PLMCompetitiveProductsRoot	A root level for organizing competitive product foods.
Competitive Product Food	PLMCompetitiveProductFood	Represent similar products to the product that a customer is evaluating to produce.
Design Specifications	PLMDesignSpecificationsRoot	Root level for organizing specifications.
Design Specification Level 1	PLMDesignSpecificationLevel1	A broad categorization for design specifications so that attribution can be controlled by the type of product being produced.
Design Specification	PLMDesignSpecification	Represents a high-level place to gather input for new products. Design Specification could represent multiple products. For food, it could represent multiple package size + flavor + label languages. For detailed specifications, variants are created for each option and specified there.

Object Type Name	Object Type ID	Purpose
Design Specification Label Variant	PLMDesignSpecificationLabelVariant	<p>They represent the item (GTIN, EAN, UPC) and represent exactly one unique combination of flavor variation and packaging variation. They define which languages appear on the label.</p> <p>While they do display some things from the variants, such as the recipe nutrition info, and the packaging variants net content, labels do not own that info.</p>
Design Specification Packaging Variant	PLMDesignSpecificationPackagingVariant	This specifies packaging options and requirements. Packaging may have many elements such as: consumer packaging, tray inside the consumer packaging, shelf tray, etc...
Design Specification Variant	PLMDesignSpecificationVariant	Represents a flavor variation for one or more new products. Details about the recipe are collected on this object.
Label Variant Sample	PLMLabelVariantSample	An object that is created for each supplier who should respond to package label specifications.
Packaging Variant Sample	PLMPackagingVariantSample	An object that is created for each supplier which responds to a package label specifications.
Sample	PLMSample	The sample object

Object Type Name	Object Type ID	Purpose
		represents the specified recipe in the private label food solution.
Materials Root	PLMMaterialsRoot	A root level for organizing materials.
Additives Root	PLMAdditivesRoot	A root level for organizing additives.
Additives	PLMAdditives	A root level for organizing the additive library.
Additive	PLMAdditive	Represents an additive in the library. An additive can be a natural or synthetic substance that is added to commercially prepared foods for a specific purpose, such as a preservative, thickener, color retention agent, etc...
Specified Additives	PLMSpecifiedAdditives	<p>Parent for storing specified additives. In Tree, a parent level of the same ID must exist.</p> <p>Additive specifications are stored on the reference between a flavor variant and the additive. Because the additive could be used multiple times in the same specification, a copy is created each time it is specified. A version for the suppliers' responses is needed, so a Supplier Response Additive is created.</p>

Object Type Name	Object Type ID	Purpose
Specified Additive	PLMSpecifiedAdditive	Used by the developed components for specifying additives. A user searches an additive library and chooses a class plus an additive. A copy of the additive is saved as a specified additive.
Supplier Response Additives	PLMSupplierResponseAdditives	A root level for organizing Suppliers Response additives.
Supplier Response Additive	PLMSupplierResponseAdditive	Represent an additive used in a supplier's recipe.
Ingredients Root	PLMIngredientsRoot	A root level for organizing ingredients.
Ingredients	PLMIngredients	A level for organizing ingredients in the ingredient library.
Compound Ingredient	PLMCompoundIngredient	This represents ingredients in the library that are made up of other ingredients, e.g. enriched flour may be made from wheat flour, iron, and niacin, which are sub-ingredients.
Ingredient	PLMIngredient	Represents an ingredient in the ingredient library.
Specified Ingredients	PLMSpecifiedIngredients	A level for organizing ingredients added by suppliers.
Specified Compound Ingredient	PLMSpecifiedCompoundIngredient	When a user specifies

Object Type Name	Object Type ID	Purpose
		<p>ingredients for a recipe, they search the ingredient library. When a compound ingredient is chosen, a copy of it is made as a specified compound ingredient so that parameters can be attached to it without permanently attaching that parameter to the library compound ingredient. Since parameters may be different based on how the compound ingredient is used, this keeps the library ingredients neutral.</p>
Specified Ingredient	PLMSpecifiedIngredient	<p>When a user specifies ingredients for a recipe, they search the ingredient library. When an ingredient is chosen, a copy of it is made as a specified ingredient so that parameters can be attached to it without permanently attaching that parameter to the library ingredient. Since parameters may be different based on how the ingredient is used, this keeps the library ingredients neutral.</p>
Supplier Response Ingredients	PLMSupplierResponseIngredientRoot	<p>A root level for organizing supplier response ingredients.</p>
Supplier Response Compound Ingredient	PLMSupplierResponseCompoundIngredient	<p>When a supplier adds ingredients to a recipe, they search the ingredient library. When a compound</p>

Object Type Name	Object Type ID	Purpose
		ingredient is chosen, a copy of it is made as a supplier response compound ingredient so that parameters can be attached to it without permanently attaching that parameter to the library compound ingredient. Since parameters may be different based on how the compound ingredient is used, this keeps the library ingredients neutral.
Supplier Response Ingredient	PLMSupplierResponseIngredient	When a supplier adds ingredients to a recipe, they search the ingredient library. When an ingredient is chosen, a copy of it is made as a supplier response ingredient so that parameters can be attached to it without permanently attaching that parameter to the library's ingredient. Since parameters may be different based on how the compound ingredient is used, this keeps the library ingredients neutral.
Packaging Elements Root	PLMPackagingElementsRoot	Root for packaging elements. Sub-roots for specified packaging elements and supplier response packaging elements.
Packaging Elements	PLMPackagingElements	Root level for specified packaging elements.

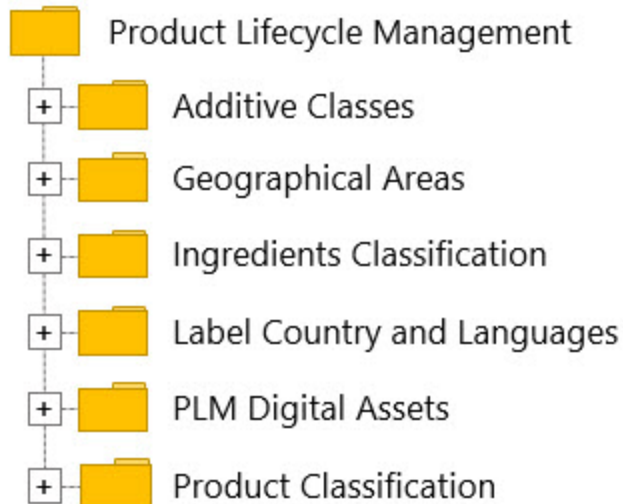
Object Type Name	Object Type ID	Purpose
Packaging Element	PLMPackagingElement	Used for capturing specifications of each packing element. E.g. A foil wrapper on a chocolate piece is a packaging element, a tray to hold and protect the chocolates is a separate element, and the box that the tray goes into is another element.
Supplier Response Packaging Elements	PLMSupplierResponsePackagingElements	Root level for all supplier response packaging elements.
Supplier Response Packaging Element	PLMSupplierResponsePackagingElement	Represents the supplier's version of a specified packaging element so that the supplier can provide information about what they propose for each element.
Parameters	PLMParametersRoot	A root level for organizing Parameters.
Parameters Level 1	PLMParametersLevel1	A broad categorization for parameters used for organizing different types of parameters.
Parameter	PLMParameter	Used to specify the quality testing tolerances of each microbiological or chemical property that may be present in food. e.g. Must be undetectable in 100 mg.

Object Type Name	Object Type ID	Purpose
Requirements Root	PLMRequirementsRoot	A root level for organizing requirements.
Requirements Level 1	PLMRequirementsLevel1	A broad categorization for requirements used for organizing different types of requirements.
Requirements Level 2	PLMRequirementsLevel2	A broad categorization for requirements used for organizing different subtypes of requirements.
Requirement	PLMRequirement	Holds information about requirements for a recipe or it's packaging or its labeling.

For more information on Snapshots and Snapshot Recorders, see the **Snapshot Configurations** and the **Snapshot Recorders** topics in the **Change Reports** segment of the **PLM for Admins** section of the **Product Lifecycle Management** documentation.

Alternate Classification Hierarchies

The private label food solution implementation uses six alternate classifications. Each is described in the subsequent sections.

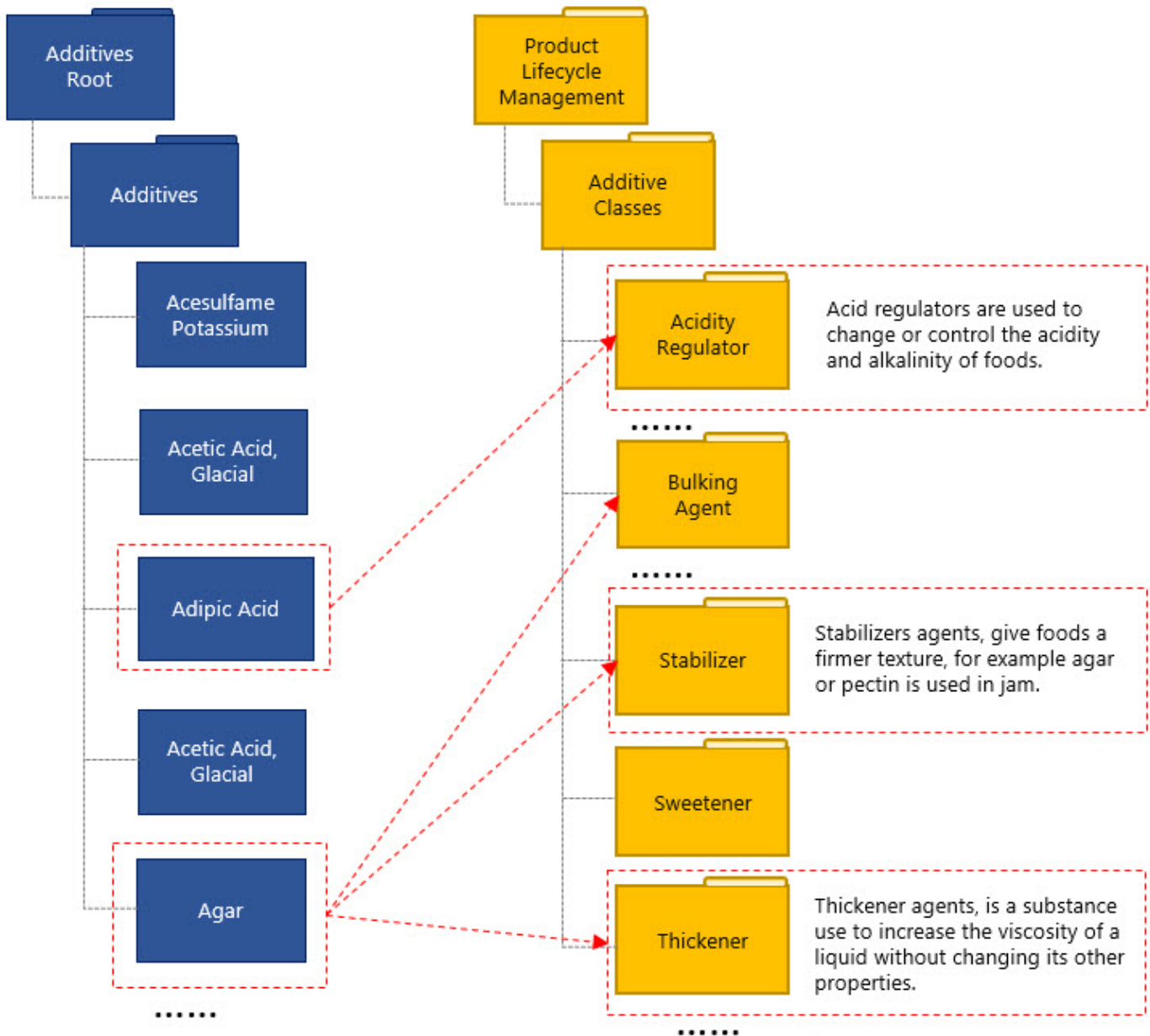


Object Type Name	Object Type ID	Purpose
Product Lifecycle Management	ProductLifecycleManagementClassifRoot	The root node of the Product Lifecycle Products.

Additive Classes

Organizes additives into one or more classes, based on classifications of GSFA (General Standard for Food Additives), an international standard administered by the Codex Alimentarius Commission.

For example, the same additive can be used as an acidifier or a color retention agent. On product labels, the purpose of the additive must be declared along with the additive.



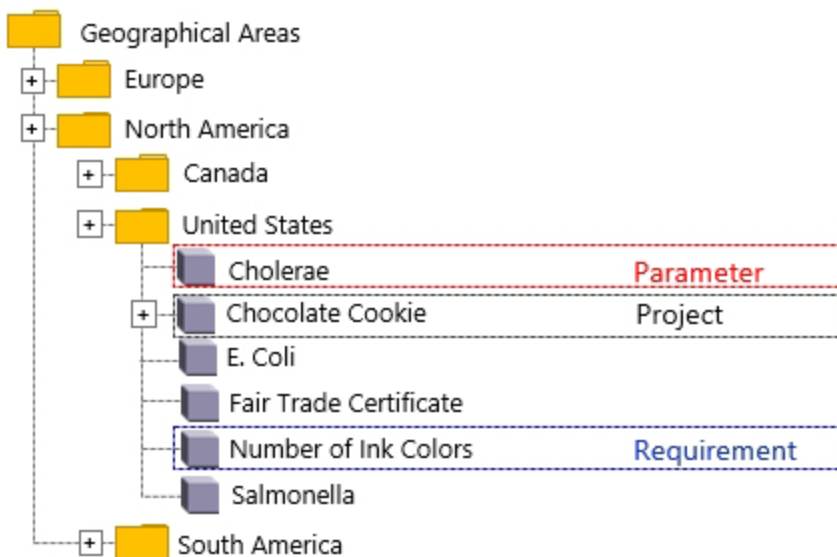
Object Type Name	Object Type ID	Purpose
Additive Class Root	PLMAdditiveClassRoot	A top-level organization level for additive classes.
Additive Class	PLMAdditiveClass	Organizes additives into one or more classes, based on classifications of GSFA (General

Object Type Name	Object Type ID	Purpose
		<p>Standard for Food Additives), an international standard administrated by the Codex Alimentarius Commission.</p> <p>An additive is classified according to the purpose function.</p> <p>For example, the same additive can be used as an acidifier or a color retention agent. On a product label, the purpose of the additive must be declared along with the additive.</p>

Geographical Areas

Organization for geographic areas of the world where the customer may sell their products. It includes regions and countries.

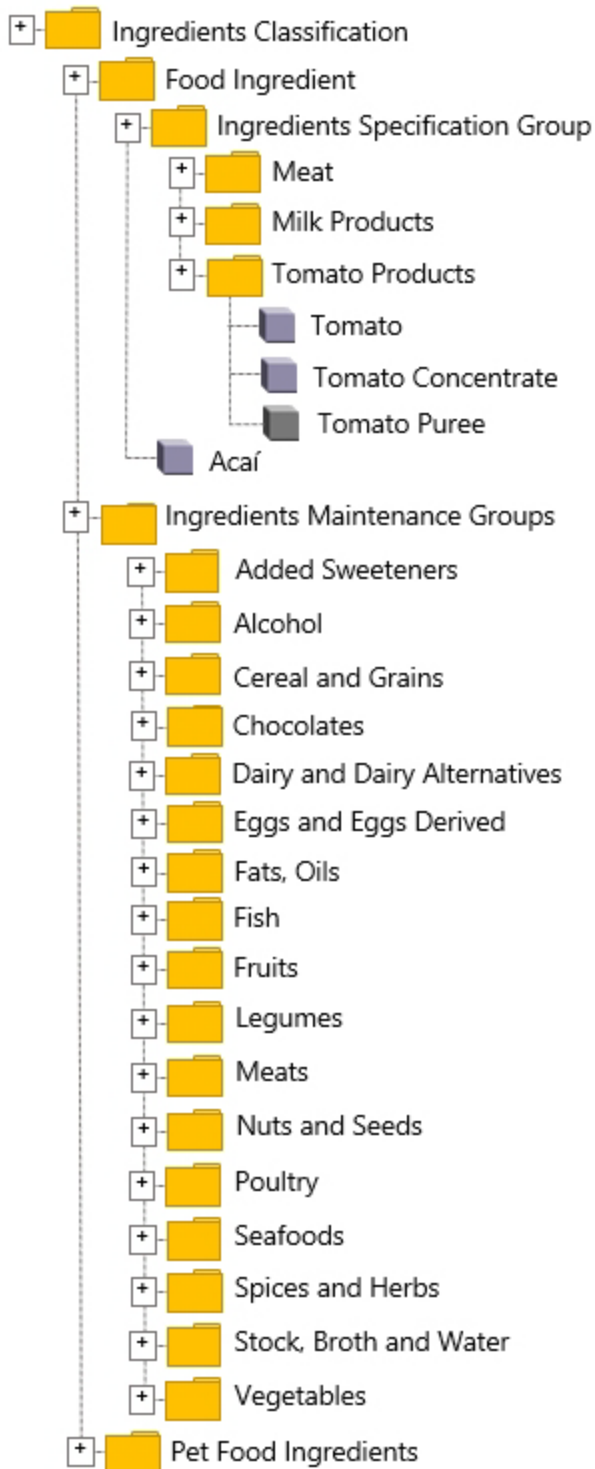
Countries classification is used to relate projects to countries where the product is intended to be sold. Also used to relate requirements and parameters so specific values of a basic requirement or parameter can be tailored for the country where it will be sold. The requirement or parameters can vary based on regulations or standards for that country.



Object Type Name	Object Type ID	Purpose
Geographical Areas Root	PLMGeographicalAreasRoot	A top-level organization level for geographic areas of the world where the customer may sell their products.
Country	PLMCountry	A classification for countries. This classification is used to relate Design Specifications to countries where the product is intended to be sold. Also used to relate requirements and parameters to countries so that the requirement or parameters can vary based on regulations or standards for that country.
Region	PLMRegion	An organization level for countries. (optional)

Ingredients Classification

Ingredients classifications organize ingredients in groups based on their allowable purpose, like whether food is intended for animals or humans. This allows ingredient searches used in the Web UI to specify ingredient component result in only relevant ingredients. It categorizes ingredients into relevant groupings for maintenance purposes and for specifying a group of ingredients that may be allowable.



Object Type Name	Object Type ID	Purpose
Ingredients Classification Root	PLMIngredientsClassificationRoot	Classification for ingredients; supports finding different ingredients under Food or Pet Food.
Ingredient Maintenance Groups	PLMIngredientMaintenanceGroups	Categorizes ingredients into relevant groupings for maintenance.
Ingredient Purpose	PLMIngredientPurpose	Organizes groups of ingredients by their allowable purpose, e.g. Food vs Pet Food so that ingredient searches result in only relevant ingredients.
Ingredient Group	PLMIngredientGroup	Categorizes ingredients into relevant groupings for maintenance purposes and also for specifying a group of ingredients that may be allowable.
Ingredient Specification Groups	PLMIngredientSpecificationsGroups	Organizes groups of Specification ingredients.
Ingredient Specification Group	PLMIngredientSpecificationGroup	Categorizes ingredients into relevant groupings for specifying a group of ingredients that may be allowable.

Label and Country Language

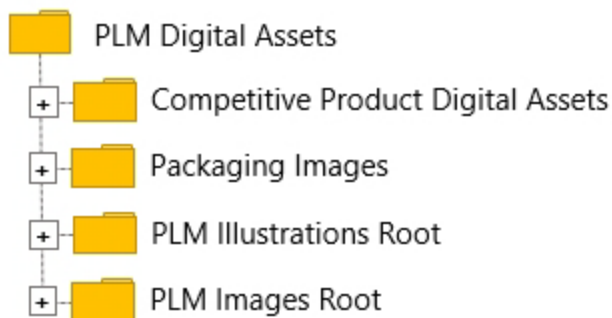
The label and country language hierarchy is an object that will hold attributes containing country code and language code for a label variation. It is recommended classification names to represent country name plus language code(s).



Object Type Name	Object Type ID	Purpose
Label Country and Languages Root	PLMLabelCountryAndLanguagesRoot	Root level for storing the language bundle library.
Label Country and Languages	PLMLabelCountryAndLanguages	An object that will hold attributes containing country code and language code for a label variation. Recommended classification names to represent country name plus language code(s).

PLM Digital Asset

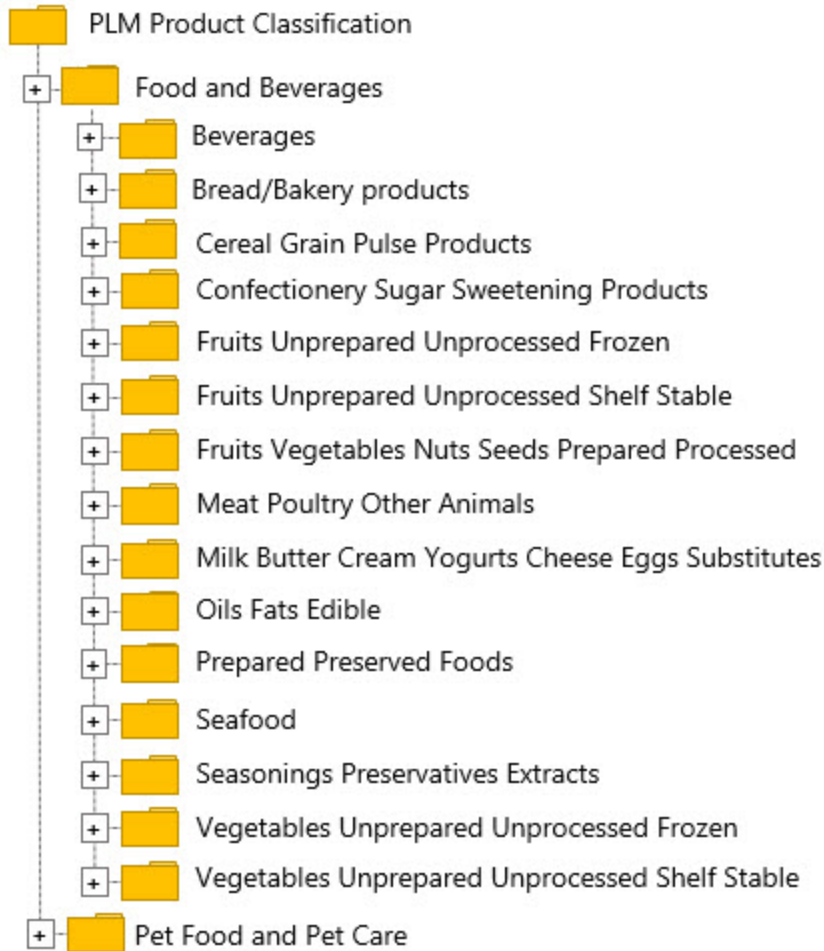
The PLM digital asset hierarchy organizes product lifecycle digital images uploaded or inserted by the customer. Food images will be located at:



Object Type Name	Object Type ID	Purpose
Digital Assets Root	PLMDigitalAssetsRoot	A top-level organization level for digital assets.
Competitive Product Digital Assets	PLMCompetitiveProductDigitalAssetsRoot	A top-level organization level for competitive digital assets.
Packaging Images	PLMPackagingImagesRoot	A top-level organization level for packaging digital assets.
PLM Illustrations Root	PLMIllustrationsRoot	A top-level organization level for PLM illustration digital assets.
PLM Images Root	PLMImagesRoot	A top-level organization level for PLM digital assets.

PLM Product Classification

The PLM product classification hierarchy organizes products based on GS1's Global Product Classification. The lowest level is used to organize projects, requirements, and parameters. This allows specific values of parameters and requirements to vary by the type of product being produced.



Object Type Name	Object Type ID	Purpose
PLM Product Classifications	PLMProductClassificationsRoot	An organization level for products based on GS1's Global Product Classification.
PLM Product Segment	PLMProductSegment	An organization level for products.
PLM Product Family	PLMProductFamily	An organization level for products.
PLM Product Class	PLMProductClass	An organization level for products.

Object Type Name	Object Type ID	Purpose
PLM Product Group	PLMProductGroup	An organization level for Design Specifications, Requirements, and Parameters. Allows specific values of Requirements and Parameters to vary by the type of product being produced.

Suppliers

Each object in the Suppliers hierarchy is listed below, along with the purpose of the object type.

Note: The following supplier configurations are necessary for the Private Label Food demo to work properly. If the target system already has suppliers configured with different IDs in the global system set up, existing supplier set ups can be used; however, business rules used for the demo should be modified for the alternate set up.

Object Type Name	Object Type ID	Purpose
Suppliers Group Root	SupplierGroupRoot	Root node of the hierarchy.
Suppliers Root	SuppliersRoot	The root node for each supplier; each supplier is assigned one root. Privileges for the associated supplier user group are tied to this node.
Suppliers Assets	SuppliersAssets	Organizational folder to hold all assets for the supplier; all assets uploaded via the Supplier Web UI are linked using the SupplierAsset reference.
Suppliers Batches	SuppliersBatches	Organizational folder to hold all batches for the supplier; default object created with each new supplier, but not utilized for the implementation.
Suppliers Products	SuppliersProducts	Organizational folder to hold all supplier items for the supplier; all supplier items uploaded via the Supplier Web UI are linked using the SupplierLink reference.
Suppliers Contacts	PLMSupplierContacts	Use to collect supplier contact information. Not used in PLM Private Label Solution.

Asset Object Types for PLM Private Label Food Solution

Each asset used in the implementation is described in the table below.

Object Type Name	Object Type ID	Purpose
Punch Template	PLMPunchTemplate	Punch template is a drawing that would be used for packaging producer, e.g. flattened perspective of a box, showing where flaps are, where resealable closure is, etc.

Reference Object Types for PLM Private Label Food Solution

Each reference used in the implementation is described in the table below.

Product References Types

Reference Name	Reference ID	Purpose
Additive	PLMAdditive	Used to relate additives, specified additive and supplier response additive to a recipe (design variants, sample).
Competitive Product	PLMCompetitiveProduct	Used to relate a Competitive Product Food to a Design Specification.
Ingredient	PLMIngredient	Relates a recipe (Design Specification Variant) to ingredients that are used to specify which ingredients can or cannot be used in a recipe. Also used to relate a supplier's sample (Sample) to ingredients in recipes that the supplier offers.
Label Requirement	PLMLabelRequirement	Used to relate a Design Specification Label Variant or Label Variant Sample to a Requirement. Allows for display and maintenance of specific types of requirements on Web UI screens.
Label Variant Sample	PLMLabelVariantSample	Relates a Design Specification Label Variant to a supplier response object (Label Variant Sample).
Packaging Element	PLMPackagingElement	Relates a Design Specification

Reference Name	Reference ID	Purpose
		Packaging Variant to elements that make up the packaging. Also relates a Packaging Variant Sample to supplier response objects for the packaging elements. Valid attributes are the same as for requirements.
Packaging Requirement	PLMPackagingRequirement	Used to relate Design Specification Packaging Variant, Packaging Element, Packaging Variant Sample or Supplier Response Packaging Element to a Requirement. Allows for display and maintenance of specific types of requirements on Web UI screens.
Packaging Variant Sample	PLMPackagingVariantSample	Relates the Design Specification Packaging Variant to supplier response objects for the packaging.
Parameter	PLMParameter	Relates to recipe specifications (Design Specification Variant), Ingredients, Compound Ingredient, Specified Ingredient, Specified Compound Ingredient, Supplier Response Ingredient, Supplier Response Compound Ingredients, to Parameters so that requirements for quality testing thresholds can be set.
Related Label Packaging	PLMRelatedLabelPackaging	Relates Design Specification Label Variant and Label Variant Sample objects to Design Specification Packaging Variant and Packaging Variant Sample objects.

Reference Name	Reference ID	Purpose
Related Packaging	PLMRelatedPackaging	Relates Design Specification Label Variant to one Design Specification Packaging Variant. It is also used to reference a Label Variant Sample to one Packaging Variant Sample.
Related Recipe	PLMRelatedRecipe	Relates a Design Specification Label Variant to one Design Specification Variant. It also relates the supplier objects from Label Variant Sample to one Sample.
Related Specification	PLMRelatedSpecification	Relates a Design Specification to Recipe Specification, Packaging and Label variant of the product.
Requirement	PLMRequirement	Relates recipe specifications (Design Specification Variants) and supplier response objects for recipes (Samples) to requirements for the recipe.
Sample	PLMSample	Relates a recipe specification (Design Specification Variant) to each supplier's response (sample) object for the product variation.
Specified Additive	PLMSpecifiedAdditive	Relates an additive in the library to a specified additive.
Specified Ingredient	PLMSpecifiedIngredient	Relates ingredients (Ingredient, Compound ingredient) in the ingredient library to the recipe's specified ingredients (Specified or Compound Ingredient).

Reference Name	Reference ID	Purpose
Sub-ingredient	PLMSubIngredient	Relates compound ingredient to sub-ingredients, which can be normal ingredients or compound ingredients. Indicates which ingredients are used in a Compound Ingredient in a recipe.
Sub-Ingredient Additive	PLMSubIngredientAdditive	Relates a compound ingredient (Specified Compound, Supplier Response Compound) in a recipe with a sub-ingredient that is an additive (Specified Additive or Supplier Response Additive).
Supplier's Equivalent	PLMSuppliersEquivalent	Relates ingredients, additives and packaging element in the library with copies of those ingredients, additives and packaging element that the supplier is using for their recipes. Allows traceability between the library ingredient and those ingredients that are used in the supplier recipes.
Supplier Response	PLMSupplierResponse	Relates a Design Specification to supplier response objects for the project. Used to store rankings on each of the samples so that there is a view from the Design Specification of all supplier responses.

Images and Documents Reference

Object Type Name	Object Type ID	Purpose
Primary Product Image	PrimaryProductImage	Links Product and Supplier

Object Type Name	Object Type ID	Purpose
		Items to Product Image objects. Upper levels of the Products hierarchy can also be linked as the reference is inherited. Multiples are not allowed as each product or Supplier Item may have only a single primary image assigned to it.
Product Image	ProductImage	Used for the additional product images for a product.
Punch Template	PLMPunchTemplate	Links Packaging Variant objects and Recipe to a Punch Template asset.

Classification References

Object Type Name	Object Type ID	Purpose
Additive Class	PLMAdditiveClass	Used by the PLM developed component for specifying recipes. This reference specifies an entire class of additives that may or may not be used in recipes.
Ingredient Group	PLMIngredientGroup	Relates a recipe to an ingredient group to specifying the allowance, precision, and quantity of nonspecific ingredients within that group. E.g. Must contain 40% meat. A supplier could then choose any meat for the recipe. The supplier's quantity of meat can be validated against the specification.

Object Type Name	Object Type ID	Purpose
Ingredient Options	PLMIngredientOptions	Used by the PLM developed component for specifying and building recipes. Creates a reference from a category of Design Specifications to the root of an ingredient classification so that the list of ingredient options can be controlled via classification. For example, pet food contains ingredients that should not be options for human-grade food.
Ingredient Specification Group	PLMIngredientSpecificationGroup	Used to connect a Design Specification Variant or Specified Compound Ingredient to one or more Ingredient Specification Group
Selected Supplier	PLMSelectedSupplier	Used to connect a Design Specification directly to one or more suppliers that are selected to bid on a new private label food product.

Product to Classification Link

Object Type Name	Object Type ID	Purpose
Additive Classification	PLMAdditiveClassification	Relates an additive to the Additive Class classification according to the additive function in the recipe.
Ingredient Classification	PLMIngredientClassification	A root level for ingredient classification that breaks down the purpose for ingredients (e.g. food or pet food) and allows ingredients to be classified in one or more ways.

Object Type Name	Object Type ID	Purpose
Label Country and Languages	PLMLabelCountryAndLanguages	Relates a label variant to the Label Country and Languages classification that the variant represents.
PLM Product Category	PLMProductCategory	<p>A product-centric classification used for classifying Design Specifications so that attribution can be controlled. Also used for product-centric Design Specification templates with Requirements and Parameters already linked to the templates to reduce effort by users when new Design Specifications are made.</p> <p>Relates a Design Specification to a product category for the product. Also relates requirements and parameters to product categories so that the default requirement or parameter's descriptions and help text can be tailored for the category.</p>
Required for Geography	PLMRequiredForGeography	Relates a Design Specification to one or more countries where the product(s) are intended to be sold. Also relates requirements and parameters to a country so that the default requirement or parameter's descriptions and help text can be tailored for regulations in each country.
Supplier Link	SupplierLink	Classifies suppliers' materials, samples, and other product objects into a folder which is used to control user privileges.

Private Label Food Solution Business Rules

Below is a table of some example business actions, what they do, and where they can be used for the private label food solution.

Business Action Name	Description	Where it is Used
PLM Food Award Bid	Updates the status of the Design Specification	Private Label Food New Project workflow
PLM Food Cancellation Details	Updates the status of related objects when a project or specification is canceled with date / time and user name.	Private Label Food New Project workflow and Private Label Food Product Specification workflow.
PLM Food Cancel Project Back To List	Move current project to next state and navigate back to task list	Private Label Food New Project workflow
PLM Food Cancel Samples	Updates canceled samples with date / time and user information	Private Label Food Supplier Responses
PLM Food Cancel Workflows	When projects are canceled, removes related variants and samples from their workflows.	By business rules: <ul style="list-style-type: none"> • PLM Food End Project • PLM Food End Specification
PLM Food Continue Project Back To List	Move current project to next state and navigate back to task list	Private Label Food New Project workflow
PLM Food Copy Requirements and Parameters	Copies default values from links between Requirements and Parameters to the link between variants and the Requirements or Parameters	Private Label Food Product Specification workflow, state Specify Details.
PLM Food Create Competitor Product	Creates a competitive product and a reference to it from the Design Specification	Private Label Food New Project workflow
PLM Food Create Product Specification	Creates variants and relates them, names them and copies default	Private Label Food New Project workflow

Business Action Name	Description	Where it is Used
	values from Requirements and Parameters to the references between the variants and the Requirements and Parameters.	
Private Label Food New Project workflow	Creates samples for the variants, names them, copies requirement and parameter values from the variant to the reference from sample to requirement or parameter.	Private Label Food New Project workflow
PLM Food End Project	Updates status for canceled or completed Design Specifications.	Private Label Food New Project workflow
PLM Food End Samples	Updates status for canceled or completed samples (supplier responses)	Private Label Food Supplier Response
PLM Food End Sample Workflow Update	Ends the sample workflow and routes related variants and Design Specifications in other workflows.	Used in PLM Food End Samples business rules
PLM Food End Specification	Updates status for canceled or completed specification variants.	Private Label Food Product Specification workflow
PLM Food End Specification Transition	When the last related variant leaves the workflow, submit Design Specification to Award state of Private Label Food New Project Workflow.	By business rules PLM Food End Specification
PLM Food Evaluation Complete	Sets the completed date / time when the specification leaves the Product Specification workflow.	Private Label Food Product Specification workflow
PLM Food Pending Related Specs	Update status of related design specification to show that the variant has been specified. When	Private Label Food Product Specification workflow: <ul style="list-style-type: none"> • PLM Food Update Status

Business Action Name	Description	Where it is Used
	all related specification variants have been specified the design specification will be transitioned out of its pending state.	<ul style="list-style-type: none"> PLM Food Pending Specifications Transitions
PLM Food Pending Specifications Transitions	Workflow transition logic.	Private Label Food Product Specification workflow
PLM Food Pending Supplier Response	<p>This business rule will reference two other rules that will be executed upon entry to Pending Supplier Responses state.</p> <ul style="list-style-type: none"> PLM Food Supplier Response Transition PLM Food Update Status 	Private Label Food New Project workflow
PLM Food Request Supplier Follow Up	On selected sample update attribute Supplier Response Attribute Routing also update attribute Status of This Response and Initiate the Sample into Supplier Response workflow.	<ul style="list-style-type: none"> Private Label Food Product Specification workflow Pending Evaluation state -Toolbar action
PLM Food Sample Version	Update attribute Version number in the current Sample.	PLM Food Samples business rules
PLM Food Specification Complete	Write the number '1' to variant attribute Version Number. Update attribute Status of This Specification to Specification completed [ISO Date].	Private Label Food Product Specification workflow
PLM Food Submit Supplier Bid	Update attribute Status of This Response.	Private Label Food Supplier Responses workflow
PLM Food Submit Supplier Follow Up	Update attribute Status of This Response.	Private Label Food Supplier Responses workflow

Business Action Name	Description	Where it is Used
PLM Food Supplier Response Transition	When Design Specification enters the Pending Suppliers Response state, find all related variants and transition them to the Pending Supplier Responses state of the Private Label Food Product Specification.	Private Label Food Product Specification workflow
PLM Food Update Status	Updates the progress on Design Specification, related variants and related samples as they move through their various workflows.	Private Label Food New Project workflow
PLM Awarded Bid Validation	Validate that each Label Variant Sample that is a target of reference Related Specification of the current object in the current state has 'Y' or 'N' in the attribute Awarded Bid or has a value in the attribute Status of Supplier Responses hat begin with 'Canceled'. If condition fails return a warning message.	Private Label Food New Project workflow
PLM Food Validate Specification	Validate that reference Requirement and reference Parameter, have target if the current object.	Private Label Food Product Specification workflow, web UI business action
PLM Food Validate Supplier Responses	Validate Mandatory Requirements Responses.	Private Label Food Supplier Responses
RemoveFromWorkflow	Remove current object from Workflow	All workflows

For more information, see the Stibo Systems PLM 9.1 Private Label Food Business Rules Detail topic at <https://stibo.sharepoint.com/sites/SYS-SC1/ProductStrategy/SitePages/Implementation>.

Workflows for PLM Private Label Food Solution

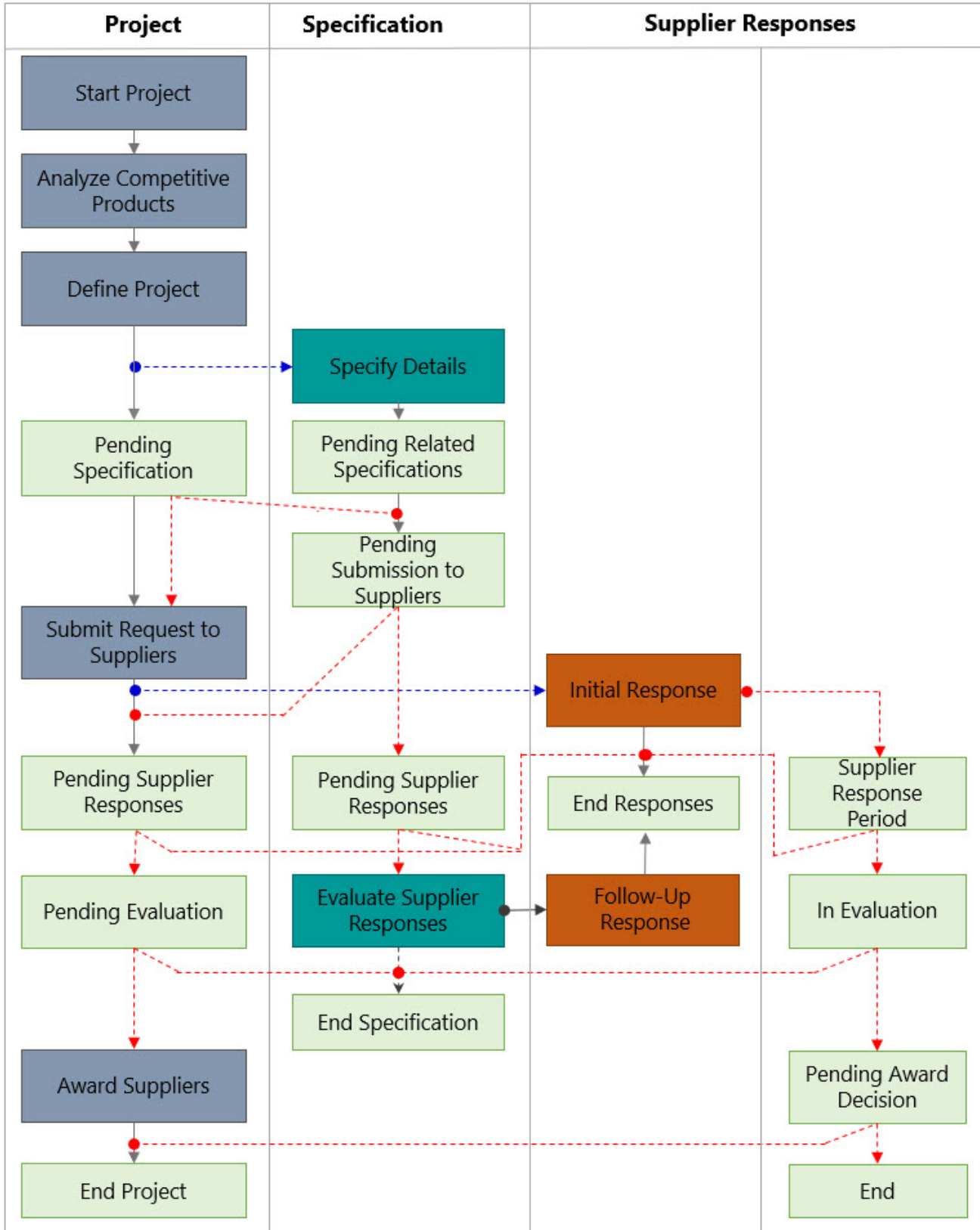
A series of four workflows are used to manage the process of designing and selecting suppliers for a new private label food introduction. This series of workflows manage a single project concept. The concept may be for a recipe having multiple flavor variations and multiple packaging configurations to be sold in more than one country – each having its own product label languages and requirements.

Although separate workflows are used, communication between them is critical to track the progress of the various pieces used to handle the specifications and the suppliers' responses. For this, a series of status attributes are used to provide a view of the progress of the related specifications and supplier responses.

Separate but integrated workflows are used to handle different objects in the process, and the specific processes for them are:

- The common aspects of the product on Design Specification, which represents the entire project.
- The specifications for variants of recipe, packaging, and labels.
- The suppliers' responses to the specifications for recipes, packaging, and labels.
- Track the status of the supplier's responses after they have been submitted to the customer

Status updates between the three workflows must take place throughout so that the progress of work on recipes and packaging is visible at the overall project level, the status of suppliers' responses is visible for each recipe and packaging specification, and the status of each supplier's work is visible at the response level.



Automated states

--> Create New Objects

-.-> Business Action Transitions

Private Label Food New Project Workflow

This workflow captures information that is relevant for the overall project on the Design Specification, which represents the overall concept of the new product or group of products but not the details of recipe, packaging, or labeling variations. The Design Specification defines the type of product, the markets where the product should be sold, commercial goals, and other fundamental aspects of the product. Suppliers are also selected for the project and awarded the project at the end. The overall progress of the Design Specification is tracked through these states as a view to the overall progress of the project.

Start a new Project – Initial State	Private Label Food New Project Workflow
<p>Role: Marketing or Quality team member</p>	
<p>Pre-Conditions:</p> <ul style="list-style-type: none"> ▪ Identify Countries where the product is intended to be sold ▪ Identify the appropriate product category ▪ Link default requirements and quality testing parameters to the appropriate product classification and countries where the product is intended to be sold so that they can be automatically applied where appropriate in later steps 	
<p>Details: Create a new Project (Design Specification object). A few basic pieces of information are entered on the project.</p>	
<p>Inputs:</p> <ul style="list-style-type: none"> ▪ Project Name ▪ Product Name ▪ Brand ▪ Description ▪ Project Type (select parent) ▪ Product Category: Project must be linked to the Product Classification. ▪ For Sale In Countries: Project must be linked to the countries where it is intended to be sold. 	
<p>Buttons</p> <p>Save: Create new Project</p>	

Analyze Competitive Product - State	Private Label Food New Project Workflow
<p>Role: Marketing or Quality team member</p>	
<p>Pre-Conditions:</p> <ul style="list-style-type: none"> ▪ Identify competitor products 	
<p>Details: The purpose of this state is to compare an idea of a new product with similar products that are already on the market to gather pricing, ingredients, product claims or other information for those products. The result is to determine whether the new product idea will be viable and how to position and price it.</p> <p>User can create competitive products, as they are added a business rule will link them to the current project.</p>	
<p>Inputs:</p> <ul style="list-style-type: none"> ▪ Competitive Product Name ▪ Brand ▪ Price ▪ Net Content Options ▪ Competitive Product Claims ▪ Packaging Description ▪ URL: where information was found ▪ Last Updated ▪ Ingredients 	
<p>Buttons</p> <p>Cancel Project: Execute a business rule that updates the status of the project with the date-time and user name when a project is cancelled.</p> <p>Add Competitive Product: Creates a competitive product and a reference to it from the Project so that the analysis is visible throughout the life of the project</p> <p>Continue Project: Project is submitted to Define Project state, and task list of projects in state Analyze Competitive Products will be displayed.</p>	
<p>On entry to this state status are updated to:</p>	
Status of Related Specifications	Specifications not defined
Status of Supplier Responses	Not submitted to suppliers
Status of This Specification	In progress

Define Project - State	Private Label Food New Project Workflow
<p>Role: Purchasing or Quality team member</p>	
<p>Pre-Conditions:</p> <ul style="list-style-type: none"> ▪ Have completed competitive product analysis ▪ Identify Countries where the product is intended to be sold (It was done in previous state) ▪ Define recipe flavor variations ▪ Define product packaging sizes ▪ Define Languages bundles for each country where the product will be sold that should appear in the packaging labels. ▪ Parameters and Requirements defined. 	
<p>Details: In this state user adds additional details of the new project. There a group of attributes that needs to be completed. Then a business action based in some of those values will generate objects that are used to specify about the new recipe, packaging and labels.</p>	
<p>Inputs:</p> <p>Project Information: Some of the following information was captured when project was created.</p> <ul style="list-style-type: none"> ▪ Brand ▪ New Brand Required? ▪ Need By Date ▪ Design Specification Critical ▪ Sourcing Strategy ▪ Project Start Date ▪ Key Product Claims / Benefits ▪ Marketing Messaging ▪ Target Market Segment ▪ For Sale in Countries: It was done in previous state, but user can modify actual values. ▪ Label Country Languages: User defines the languages bundles that should appear on the packaging labels based on geographic regions where the product will be sold. ▪ Planned Flavor Variations: User enter recipe flavor variations by entering description in this attribute. ▪ Planned Packaging Sizes: User enter the packaging sizes by entering description in this attribute. <p>Project Commercial Information:</p> <ul style="list-style-type: none"> ▪ Item Cost Estimated (Range) ▪ Planned Gross Margin (%) ▪ Planned Quantity ▪ Planned Revenue 	
<p>Buttons:</p> <p>Cancel Project</p> <p>Execute a business rules that updates the status of related objects when a project or specification is cancelled with the date-time and user name.</p>	
<p>Project Definition Complete</p> <p>On Transition to state Pending Specifications a business action creates product specifications for each flavor variation, each packaging variation and each variation of product labels and relates them to the project. Copies default values from Requirements and parameters to the reference between the variants and Requirements and Parameters.</p>	
<p>On entry to this state a local business update project status:</p>	
Status of Related Specifications	Specifications not defined
Status of Supplier Responses	Not submitted to suppliers
Status of This Specification	In progress

Pending Specification – State		Private Label Food New Project Workflow
Role: Any user with privileges can see what's pending		
Pre-Conditions:		
<ul style="list-style-type: none"> ▪ Have completed a Project Definition 		
Details: This a holding state for the project while related product specifications (flavor, packaging sizes and labels variants) are being defined in the PLM Private Label Food Product Specification workflow. The Project does not move to additional states until all related product specifications have been defined and are ready to send to suppliers for their bids.		
Inputs: None, non-editable state		
Buttons: None		
On entry to this state a local business update project status:		
Status of Related Specifications	(0) of (n) specified (0) cancelled	
Status of Supplier Responses	Not submitted to suppliers	
Status of This Specification	In progress	

Submit Request to Suppliers – State		Private Label Food New Project Workflow
Role: Purchasing team member		
Pre-Conditions:		
<ul style="list-style-type: none"> Have completed Product Specifications 		
<p>Details: When all related specification have been specified, a business action in the product specification workflow moves the project to this state so that one or more suppliers can be selected so that a request to participate in the bid can be sent to them.</p> <p>Submitting to suppliers from the Project best allows sending Supplier Responses to multiple suppliers with one interaction.</p>		
Inputs:		
<ul style="list-style-type: none"> Entered a deadline for the bid. Select suppliers from supplier classification 		
Buttons:		
<p>Cancel Project: Execute a business rules that updates the status of related objects when a project or specification is cancelled with the date-time and user name.</p> <p>Submit to Suppliers: On submit transition leaving Submit Request to Suppliers, creates Supplier Responses for the Specification variants, names them, copies requirements and parameter values from the Specifications variant to the reference from Supplier Responses to requirements or parameters.</p> <ul style="list-style-type: none"> Supplier Responses are linked to Supplier's Product Classification Create reference from the Project to the supplier response objects Create reference from the Specification to supplier response objects Write Supplier Information (Supplier ID, Supplier Name) to the Supplier Responses Supplier Responses are initiated Private Label Food Supplier Response workflow. E-mail notification is sent to each supplier selected to participate in the bid. Project will be moved to Pending Supplier Responses state in the Private Label Food New Project workflow. Specifications are moved to Pending Supplier Responses state in the Private Label Food Product Specification workflow. 		
On entry to this state a local business update project status:		
Status of Related Specifications	(n) of (n) specified (0) cancelled	
Status of Supplier Responses	(n) specifications, (0) suppliers, (0) responses requested (0) declined/no response (0) of (0) responses pending	
Status of This Specification	In progress	

Pending Supplier Responses – State	Private Label Food New Project Workflow
<p>Role: Any user with privileges can see what's pending</p>	
<p>Pre-Conditions:</p> <ul style="list-style-type: none"> ▪ Have completed a Supplier selection and sent request to selected suppliers. 	
<p>Details: This a holding state. The project waits in this state while the suppliers respond to the request for information.</p> <p>When all responses are finished in the Supplier Response workflow, the project transitions from this state to Pending Evaluation state.</p>	
<p>Inputs: None, non-editable state</p>	
<p>Buttons: None</p>	
<p>When Project enters the Pending Supplier Responses state, find all related variants and transition them to the pending Supplier Responses state of the Private Label Food Product Specification workflow.</p> <p>A status attributes will be updated via business rules.</p>	
<p>Status of Related Specifications</p>	<p>(n) of (n) specified (0) cancelled</p>
<p>Status of Supplier Responses</p>	<p>(n) specifications, (m) suppliers, (nxm) responses requested (0) declined/no response (nxm) of (nxm) responses pending</p>
<p>Status of This Specification</p>	<p>In progress</p>

Pending Evaluation – State		Private Label Food New Project Workflow
Role: Any user with privileges can see what's pending		
Pre-Conditions:		
<ul style="list-style-type: none"> Have completed a Supplier selection and sent request to selected suppliers. 		
Details: This a holding state. The project waits in this state while the suppliers respond to the request for information. The Project does not move to additional states until all supplier responses have been returned and have been evaluated in the Project Definition workflow.		
Inputs: None		
Buttons: None		
On entry to this state a local business update project status:		
Status of Related Specifications	(n) of (n) specified (0) cancelled (0) of (n) evaluated	
Status of Supplier Responses	(n) specifications, (m) suppliers, (nxm) responses requested (0) declined/no response (0) require follow-up (0) of (nxm) evaluated	
Status of This Specification	In progress	

Award Suppliers – State	Private Label Food New Project Workflow
Role: Purchasing(sourcing) team member	
Pre-Conditions: <ul style="list-style-type: none"> ▪ Supplier Responses have been evaluated and ranked. 	
Details: After supplier responses have been evaluated and ranked, someone must decide which supplier(s) award the contract. That is done in this state. Ranking is reviewed for related recipe specification, and packaging specifications. One or more suppliers are awarded the bid, based on their ranking and combination of recipes and packaging that the suppliers <u>are able to</u> produce for delivery in specific countries.	
Inputs: None	
Buttons Cancel Project: Execute a business rules that updates the status of the project with the date-time and user name when a project is cancelled. Validate: That each Label Response, that is reference by the current project is awarded. If condition fails a warning message will be displayed. Award Complete: Update the project status. On transition out of Award Suppliers state status attributes are updated to:	
Status of Related Specifications	(n) of (n) completed (0) cancelled (n) of (n) evaluated (0) awarded
Status of Supplier Responses	(n) specifications, (m) suppliers, (nxm) responses requested (0) declined/no response (nxm) of (nxm) evaluated (0) awarded
Status of This Specification	Completed [ISO Date]

Private Label Food Product Specification Workflow

The Private Label Food Product Specification Workflow allows for the independent design and evaluation of recipes, packaging, and label variants. The workflow will allow users to see task lists for pieces that need specifications and also enables for evaluation of supplier responses by comparing the responses. Suppliers proposals for each specification are ranked based on their evaluations.

Specify Details – State	Private Label Food Product Specification Workflow
<p>Role: Quality (recipe specification), Purchasing (packaging, labeling) team member</p>	
<p>Pre-Conditions:</p> <ul style="list-style-type: none"> ▪ Have completed a Project Definition 	
<p>Details: Each of the product specifications (recipe specification, packaging specification, label specification) must be specified in more details. In this workflow the recipe specification, packaging specification, label specification will be done in the same state.</p> <ul style="list-style-type: none"> ▪ Ingredients are specified for each recipe variation (flavor) ▪ Packaging is specified for each variation (packaging type and size) ▪ Packaging labels are specified for each variation (label country /languages) ▪ Default requirements and parameters are reviewed and modified if needed. <ul style="list-style-type: none"> • Regulations and quality standards vary by country and product category. Requirements and parameters have been attached to specifications automatically based on their classifications, but the Quality Manager or Purchaser may modify, add or remove these as needed. 	
<p>Inputs:</p> <p>Recipe Specification</p> <p>Not all ingredients are included in the recipe specification. It is used to list the ingredient that must be included or excluded in the supplier sample recipe.</p> <ul style="list-style-type: none"> ▪ Flavor Description ▪ Specify Ingredients: Allowance, Ingredient Precision, Ingredient Quantity, (Configurable attributes, e.g. Country of origin, is organic, etc.) ▪ Specify Quality Requirements: Requirement Description, Mandatory Supplier Responses ▪ Specify Quality Parameters: Parameter Description, Mandatory Supplier Responses 	
<p>Label Specification</p> <ul style="list-style-type: none"> ▪ Unique Identifier (UPC, GTIN) it is the SKU. ▪ Commercial Item Information: Item Quantity Target, Item Cost Target, Item Suggested Retail Target, Item Revenue Target, Item Gross margin (%) Target. ▪ Label Requirements: Requirement Description, Mandatory Supplier Responses 	
<p>Packaging Specification</p> <ul style="list-style-type: none"> ▪ Packaging Variant Description ▪ Complete Packaging specifications if needed (Consumer Packaging, Packaging Element, Packaging Tray). ▪ Specify Packaging Requirements: Requirement Description, Mandatory Supplier Responses 	

Specify Details – State	Private Label Food Product Specification Workflow
<p>Buttons:</p> <p>Cancel Specification</p> <p>Execute a business rules that updates the status of related objects when a project or specification is cancelled with the date-time and user name.</p>	
<p>Validate Requirements/Parameters or Validate</p> <p>If requirements have been added, the new requirements are validated to ensure that only appropriate requirements were added to each type of specification. For Requirements validate:</p> <ul style="list-style-type: none"> ▪ If the current object is Recipe Specification, validate that reference Requirement have targets with an LOV ID value PLMDesignSpecificationVariant in the attribute Requirement Valid For. ▪ If the current object is Packaging Specification, validate that reference Packaging Requirement have targets with an LOV ID value PLMDesignSpecificationPackagingVariant in the attribute Requirement Valid For. ▪ If the current object is Label Specification, validate that reference Label Requirement have targets with an LOV ID value PLMDesignSpecificationLabelVariant in the attribute Requirement Valid For. <p>If above conditions are not satisfied error message will be displayed.</p> <p>If parameters have been added, the new requirements are validated to ensure that only appropriate parameters were added to the recipe if they were only intended for ingredients. For Parameters validate:</p> <ul style="list-style-type: none"> ▪ If the current object is Recipe Specification, validate that selected Parameter is valid for the current object type by matching the current object type ID to the LOV ID value of the attribute PLMParameterValidFor on the Parameter. <p>If above conditions are not satisfied error message will be displayed.</p>	
<p>Copy Requirements/Parameters values or Copy Default Requirements</p> <p>Business action that copy the default attribute values for the selected Requirement(s), based on attributes that are linked to the attribute group "Copied Requirement Values, Variants".</p> <p>Business action that copy the default attribute values for the selected Parameter(s), based on attributes that are linked to the attribute group "Copied Parameter Values, Variants".</p> <p>Attributes that are language dependent will be copied in all contexts.</p> <p>If a value doesn't exist in a context, the value from the default context in copied instead. The default context is defined on the Product Lifecycle Management Product Root in the attribute Default Context.</p>	
<p>Specification Complete</p> <p>On transition from current state to Pending Related Specifications state, business rules action will update attribute version Number to "1" and update Status of this Specification to Specification completed [ISO Date]</p>	
<p>On entry to this state a local business update project status:</p>	
<p>Status of Related Specifications</p>	<p>(0) of (n) specified (0) cancelled</p>
<p>Status of Supplier Responses</p>	<p>Not submitted</p>
<p>Status of This Specification</p>	<p>Pending Specification</p>

Pending Related Specification – State	Private Label Food Product Specification Workflow
<p>Role: Any user with privileges can see what's pending</p>	
<p>Pre-Conditions:</p> <ul style="list-style-type: none"> ▪ Have completed a Product Specification 	
<p>Details: This is a waiting state where the product specifications (variants) wait until all related specifications for the Project have been specified. This will ensure that the complete set of information is sent to suppliers for responses at the same time.</p> <ul style="list-style-type: none"> ▪ Each product specification enters this state after action Specification Complete has been executed. At Specify Details state. ▪ Each time a product specification enters this state, the status of the related specifications will be updated to show that the product specification has been specified. ▪ When all related product specifications have been specified, the Project will be transitioned out of Pending Specification state in the Private Label Food New Projects then suppliers can be selected to bid on the product ▪ Transition all related specifications to the Pending Submission to Suppliers state of the current workflow. 	
<p>Inputs: None, non-editable state</p>	
<p>Buttons: None</p>	
<p>On entry to this state a global business rules update attribute Status of Related Specifications:</p>	
<p>Status of Related Specifications</p>	<p>(n) of (m) specified (0) cancelled</p>
<p>Status of Supplier Responses</p>	<p>Not submitted [not update needed]</p>
<p>Status of This Specification</p>	<p>Specification completed [ISO Date]</p>

Pending Submission to Suppliers – State		Private Label Food Product Specification Workflow
Role: Any user with privileges can see what's pending		
Pre-Conditions:		
<ul style="list-style-type: none"> ▪ Have completed all product specifications 		
Details: When all related specifications for the project have been completed, a business action moves all specifications to this state. All related specifications will wait here until the Buyer has selected suppliers for the bid and created samples for their responses.		
<ul style="list-style-type: none"> ▪ Supplier to participate in the bid are selected at Project level. 		
Inputs: None, non-editable state		
Buttons: None		
On entry to this state a local business update project status:		
Status of Related Specifications	(n) of (n) specified (0) cancelled	
Status of Supplier Responses	(m) suppliers, (0) responses requested (0) declined/no response (0) of (0) pending responses	
Status of This Specification	Specification completed [ISO Date]	

Pending Supplier Responses – State		Private Label Food Product Specification Workflow
Role: Any user with privileges can see what's pending		
Pre-Conditions: <ul style="list-style-type: none"> Have completed a Supplier selection and sent request to selected suppliers. 		
<p>Details: After suppliers were chosen for the project and the request for information was sent to them, a business action moves the specifications into this state. This a holding state until all chosen suppliers have replied to all related specifications, or until someone decides not to wait any longer and cancels the suppliers bid request due to lack of response.</p> <p>The status of each product specification will be updated by a business action in the Supplier Responses workflow as each supplier response is submitted from suppliers.</p> <p>When all supplier responses are finished in the Supplier Responses workflow, a business action in that workflow will move all related specifications to the Evaluate Responses state the Private Label Food Product Specification workflow and transition the Project from Pending Supplier Responses state to Pending Evaluation state in Private Label Food New Project workflow.</p>		
Inputs: None, non-editable state		
Buttons: None		
Status of Related Specifications	(n) of (n) specified (0) cancelled	
Status of Supplier Responses	(m) suppliers, (nxm) responses requested (0) declined/no response (nxm) of (nxm) responses pending	
Status of This Specification	Specification completed [ISO Date]	

Evaluate Suppliers Responses- State	Private Label Food Product Specification Workflow
<p>Role: Quality (recipe specification), Purchasing (packaging, labeling) team member</p>	
<p>Pre-Conditions:</p> <ul style="list-style-type: none"> ▪ Supplier Responses have been completed and submitted by suppliers ▪ Each product specification has all related specification completed 	
<p>Details: Once all supplier responses have been submitted by all suppliers or an authorized user decides not to wait any longer the responses from suppliers will be evaluated and ranked.</p> <ul style="list-style-type: none"> ▪ Comparison of supplier responses to recipe specification (ingredients), requirements and parameters. ▪ Comparison of packaging requirements and other packaging-related responses. ▪ Comparison of package label requirement and other label responses ▪ Optional, if customer needs clarification about a response or more information from the supplier, the supplier response may be returned to the supplier for follow up 	
<p>Inputs:</p> <p>Supplier Response Ranking, user enters a ranking of suppliers based on their responses. If the supplier response needs to be sent back to supplier for clarifications the follow-up responses date needs to be entered. All remaining supplier responses are ranked according to their evaluation.</p> <p>Recipe Response</p> <ul style="list-style-type: none"> ▪ Comparison of supplier responses(recipe) to recipe specification (ingredients) use compare ingredients component ▪ Comparison of supplier responses(recipe) to recipe specification (requirements) use compare requirements component ▪ Comparison of supplier responses(recipe) to recipe specification (parameters) use compare parameters component ▪ Compare supplier's responses(recipe) nutritional information. ▪ Compare other foods characteristics: Allergen statement, Storage and Serving Information, Diet Information, Claims Information ▪ Rank the supplier's response 	
<p>Packaging Response</p> <ul style="list-style-type: none"> ▪ Comparison of Packaging Response to Packaging Specification requirements. ▪ Rank the supplier's response 	
<p>Label Response</p> <ul style="list-style-type: none"> ▪ Comparison of Label Response to Label Specification requirements. ▪ Rank the supplier's response 	

Evaluate Suppliers Responses- State	Private Label Food Product Specification Workflow
<p>Buttons:</p> <p>Cancel Specification Execute a business rules that updates the status of related objects when a project or specification is cancelled with the date-time and user name.</p>	
<p>Supplier Follow Up – toolbar action Update Supplier Response Routing attribute value to "Follow-Up" Initiate the Supplier Response (Recipe Response, Packaging Response or Label Response) into Supplier Response workflow. Update the status of Status of this Supplier Response to: Follow-up requested by [username] [ISO Date]</p>	
<p>Evaluation Complete Set the status of the current product specification to: Evaluation completed [ISO Date] On entry to Evaluate Responses state, find all related Supplier Responses of the current product specification that are in the Private Label Food Supplier Bid Status workflow, and submit to the In Evaluation state of the Private Label Food Supplier Bid Status workflow.</p>	
<p>On entry to End Specification state, a local business update project status:</p>	
<p>Status of Related Specifications</p>	<p>(n) of (n) specified (0) cancelled</p>
<p>Status of Supplier Responses</p>	<p>(m) suppliers, (nxm) responses requested (0) declined/no response (0) required follow-up (nxm) of (nxm) evaluated</p>
<p>Status of This Specification</p>	<p>Evaluation completed [ISO Date]</p>
<p>On entry to End Specification state, a global business evaluates if there are no more related specifications on the Private Label Food Product Specification workflow and submit the project Award Suppliers state of the Private Label Food New Project.</p>	
<p>On entry to End Specification state, remove the current product specification from workflow.</p>	

Private Label Food Supplier Responses

This workflow is used to allow independent work on samples by various suppliers.

Initiate- State	Private Label Food Supplier Responses
<p>Role: Stibo System</p>	
<p>Pre-Conditions:</p> <ul style="list-style-type: none"> ▪ Have completed product specifications. ▪ Select Supplier to participate in the bid 	
<p>Details: A Supplier Response (Recipe Response, Packaging Response or Label Response) can be initiated into the Private Label Food Supplier Response to either an initial response task or a follow-up task.</p> <p>The Supplier Response (Recipe Response, Packaging Response or Label Response) is evaluated to determine whether it requires an initial response or a follow-up response.</p> <p>A Snapshot is created and saved to compare it with changes made by a supplier when a supplier user completes a supplier response and send it to the customer.</p> <p>A business rules routes the supplier response to the appropriate task based the value for attribute Supplier Response Routing.</p> <p>An email is sent to the supplier to let them know that they have been requested to respond to a bid.</p>	
<p>Inputs: None</p>	
<p>Actions:</p> <ul style="list-style-type: none"> ▪ Upon initiation into this workflow, route Supplier Response based in the value for the attribute Supplier Response Routing 	
<p>On entry to the Initiate state a Snapshot will be created. The initial Snapshot will contain Recipe, Packaging, and Label data according to configuration in Food Supplier Snapshot business rules.</p>	
<p>On transition from Initiated state to Initial Response state:</p> <ul style="list-style-type: none"> ▪ Find supplier's email address for each supplier response ▪ Send an email for each supplier response 	
<p>On transition from Initiated state to Follow-Up Response state:</p> <ul style="list-style-type: none"> ▪ Find supplier's email address for each supplier response ▪ Send an email for each supplier response 	

Initial Response- state	Private Label Food Supplier Responses
Role: Supplier team member	
Pre-Conditions: <ul style="list-style-type: none"> ▪ Have completed product specifications. ▪ Select Supplier to participate in the bid ▪ Supplier Responses were created and submitted to supplier's for bids. 	
Details: Supplier will see a task list of the Supplier Responses (Recipe Response, Packaging Response or Label Response) that they can respond to. <ul style="list-style-type: none"> ▪ Supplier can choose one to work or can select one or more and decline to the bid. Each supplier will be notified that there are Suppliers Responses to respond to. <ul style="list-style-type: none"> ▪ Respond to Supplier Responses (Recipe Response) adding their recipe ingredients and requirements and parameters. ▪ Respond to Supplier Responses (Packaging Response) packaging requirements and packaging elements. ▪ Respond to Supplier Responses (Label Response) label requirements and label details. 	
Inputs: Recipe Response <ul style="list-style-type: none"> ▪ Respond Recipe Requirements ▪ Respond Recipe Parameters ▪ Respond Recipe Ingredients ▪ Respond Nutrition Information ▪ Respond Other Information: Recipe Number, Preparation Instructions, Handling Statements, Suitable for Diet Type, Organic and GMO information. ▪ Optional Upload Files 	
Packaging Response <ul style="list-style-type: none"> ▪ Respond Packaging Requirements ▪ Respond Packaging Elements if needed. ▪ Optional upload illustration of the consumer packaging, including all print- and packaging-related provisions. Illustration should include a clear indication of the overall dimensions, position of the bar code, tear flaps and non-printable surfaces. Must be provided in .eps and .pdf or tif file format. 	
Label Response <ul style="list-style-type: none"> ▪ Respond Label Requirements ▪ Respond Label Details: Barcode Placement, Running Direction of Barcode, Applicable Recycling Codes ▪ Optional Upload Files 	
Buttons: Decline Bid Capture status on the Supplier Response, the status of related Supplier Responses and Product Specifications will be updated with a business rules upon entry to the End Response state.	
Validate Validate whether the supplier has provided answers to the mandatory attributes on each requirement and/or parameter. If there are attributes that require responses on the reference and the attribute have not value. There is an error. Error message should be ordered by the attribute Sort order which appears on the requirements reference.	
Send Response / Submit Bid This action Submit Supplier Response (Recipe Response, Label Response or Packaging Response), to End Responses state of the Private Label Supplier Response.	
On entry to Initial Response state, a local business update Supplier Response status:	
Status of This Response	Pending Initial response
On transitions out of the Initial Response state, update Status of This Response of the current Supplier Response with: Submitted by [user ID] [ISO Date]	
On entry to End Response state, a local business update project status: <ul style="list-style-type: none"> ▪ Update Version Number ▪ Update Status 	

Follow - Up – State	Private Label Food Supplier Responses
<p>Role: Supplier team member</p>	
<p>Pre-Conditions:</p> <ul style="list-style-type: none"> ▪ Evaluated product specification. 	
<p>Details: When supplier Responses are being evaluated in the Private Label Food Product Specification workflow, the customer may have questions about a response or may need some clarification about the response that was given. Customer may add comments or questions to the Supplier Response and return the Supplier Response to the Private Label Food Supplier Response workflow and routed to Follow-up Response task for the supplier to complete requested information.</p> <ul style="list-style-type: none"> ▪ Supplier is notified that follow-up is needed ▪ Supplier sees comments or questions that require clarification ▪ Supplier may choose to decline the bid ▪ Supplier may not respond. 	
<p>Inputs:</p> <ul style="list-style-type: none"> ▪ Supplier responds ▪ Supplier return responses to customer 	
<p>Buttons:</p> <p>Decline Bid</p> <p>Capture status on the Supplier Response, the status of related Supplier Responses and Product Specifications will be updated with a business rules upon entry to the End Response state.</p>	
<p>Validate</p> <p>Validate whether the supplier has provided answers to the mandatory attributes on each requirement and/or parameter.</p> <p>If there are attributes that require responses on the reference and the attribute have not value. There is an error. Error message should be ordered by the attribute Sort order which appears on the requirements reference.</p>	
<p>Send Response / Submit Bid</p> <p>This action Submit Supplier Response (Recipe Response, Label Response or Packaging Response), to End Responses state of the Private Label Supplier Response</p>	
<p>On transitions out of the Follow Up Response state, update Status of This Response of the current Supplier Response with: Follow-up submitted by [user ID] [ISO Date]</p>	
<p>On entry to End Response state, a local business update project status:</p> <ul style="list-style-type: none"> ▪ Update Version Number ▪ Update Status 	

Private Label Food Supplier Bid Status

This workflow is used to provide suppliers a view of the status of their open bids after the supplier has initially submitted the bid. Since the supplier's samples are removed from the Supplier Response Workflow after submitting a bid or responding to a request for a follow-up, this small workflow will provide the supplier a dashboard and quick link to a list of their responses that are still to be evaluated, or that are being considered for the bid.

This workflow is not intended to allow suppliers to modify their bids, only to view them.

Supplier Response Period- State	Private Label Food Supplier Bid Status
Role: Supplier	
Pre-Conditions: <ul style="list-style-type: none"> ▪ Have completed Supplier Response 	
Details: Supplier Response (Recipe Response, Packaging Response or Label Response) will be automatically initiated into the workflow via business rules as they enter to End Responses state of the Private Label Supplier Responses workflow. Show the supplier a list of their Supplier Responses that have been submitted to customer but not yet evaluated because other responses are still pending. <ul style="list-style-type: none"> ▪ Supplier can export the list of Supplier Responses on Supplier Response Period state to excel ▪ Supplier can review what they submitted (read-only version of the sample that they submitted) 	
Inputs: None	
Actions: None	
Business Actions: <ul style="list-style-type: none"> ▪ Supplier Responses will be moved out of this state by business rules in other workflows. 	

Pending Award Decision - State	Private Label Food Supplier Responses
Role: Supplier	
Pre-Conditions: <ul style="list-style-type: none"> ▪ Have completed Supplier Response 	
Details: Supplier Response (Recipe Response, Packaging Response or Label Response) will be automatically initiated into the workflow via business rules as they enter to End Responses state of the Private Label Supplier Responses workflow. Show the supplier a list of their Supplier Responses that have been submitted to customer but not yet evaluated because other responses are still pending. <ul style="list-style-type: none"> ▪ Supplier can export the list of Supplier Responses on Supplier Response Period state to excel ▪ Supplier can review what they submitted (read-only version of the sample that they submitted) 	
Inputs: None	
Actions: None	
Business Actions: <ul style="list-style-type: none"> ▪ Supplier Responses will be moved out of this state by business rules in other workflows. 	
On entry to End state, a global business removes current object from the workflow.	

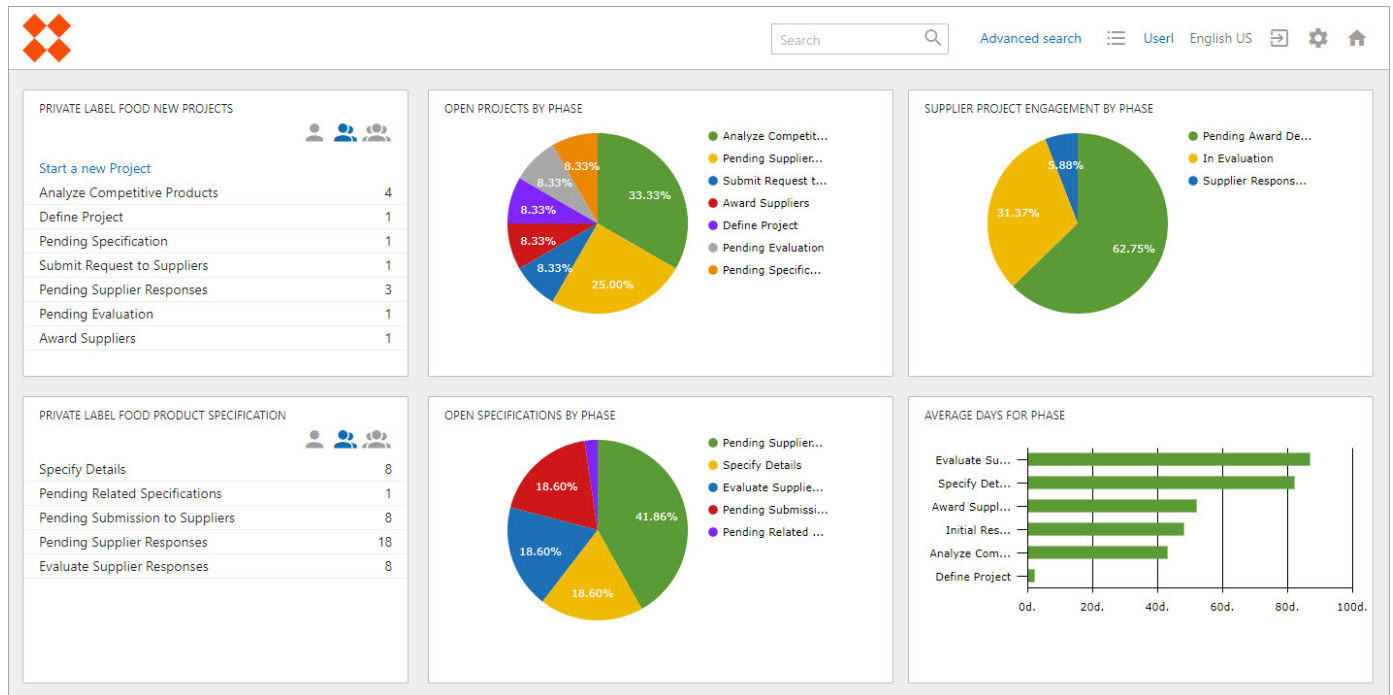
In Evaluation- State	Private Label Food Supplier Responses
Role: Supplier	
Pre-Conditions: <ul style="list-style-type: none"> ▪ Have completed Supplier Response 	
Details: Supplier Response (Recipe Response, Packaging Response or Label Response) will be automatically initiated into the workflow via business rules as they enter to End Responses state of the Private Label Supplier Responses workflow. Show the supplier a list of their Supplier Responses that have been submitted to customer but not yet evaluated because other responses are still pending. <ul style="list-style-type: none"> ▪ Supplier can export the list of Supplier Responses on Supplier Response Period state to excel ▪ Supplier can review what they submitted (read-only version of the sample that they submitted) 	
Inputs: None	
Actions: None	
Business Actions: <ul style="list-style-type: none"> ▪ Supplier Responses will be moved out of this state by business rules in other workflows. 	

Web UIs used for PLM Private Label Food Solution

PLM private label food solution provides three UI configurations.

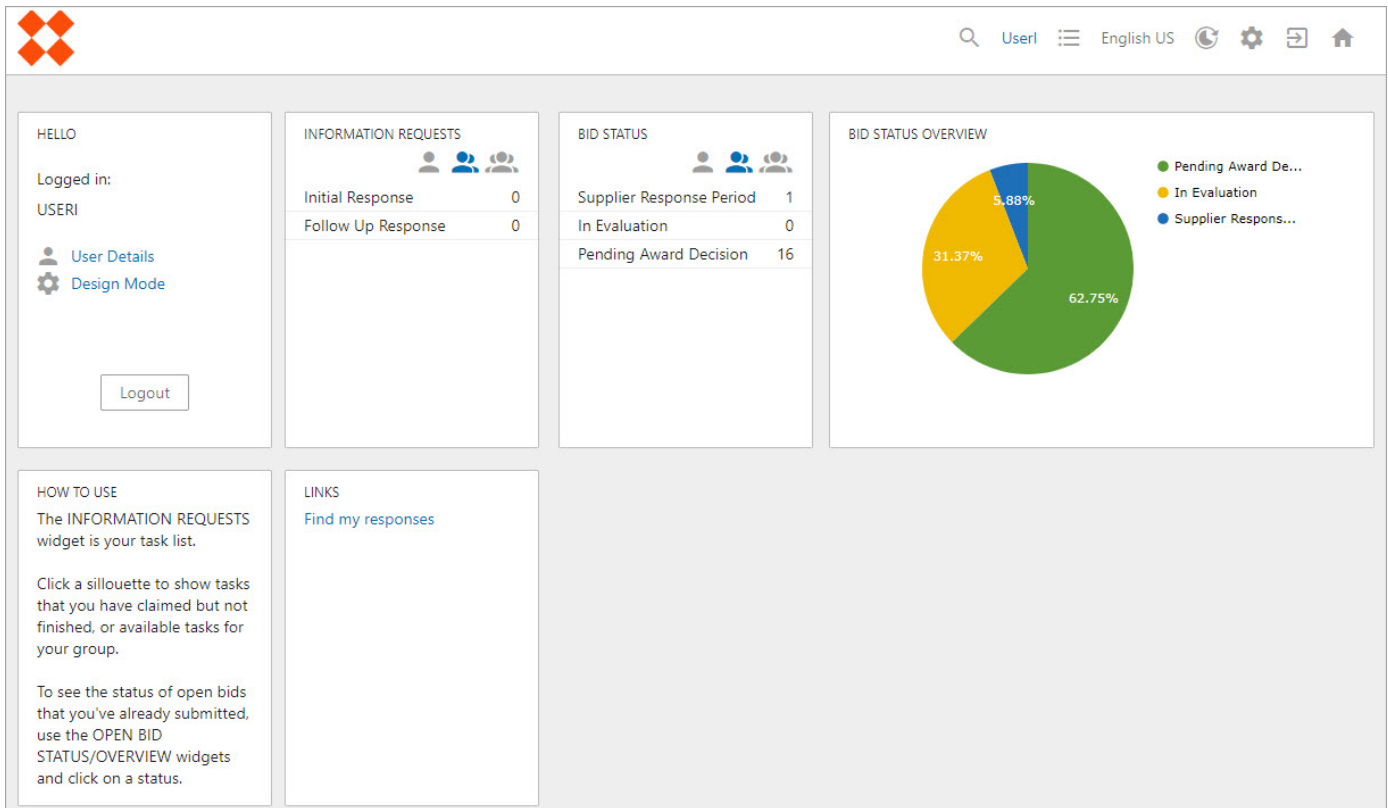
Private Label Food Web UI

The Primary Label Food Web UI configuration supports the Private Label Food New Project workflow and the Private Label Food Product Specification workflow.



Private Label Food Supplier Web UI

The Private Label Food Supplier Web UI configuration supports the Private Label Food Supplier Responses Workflow. This UI configuration will facilitate independent work on supplier responses by various suppliers.

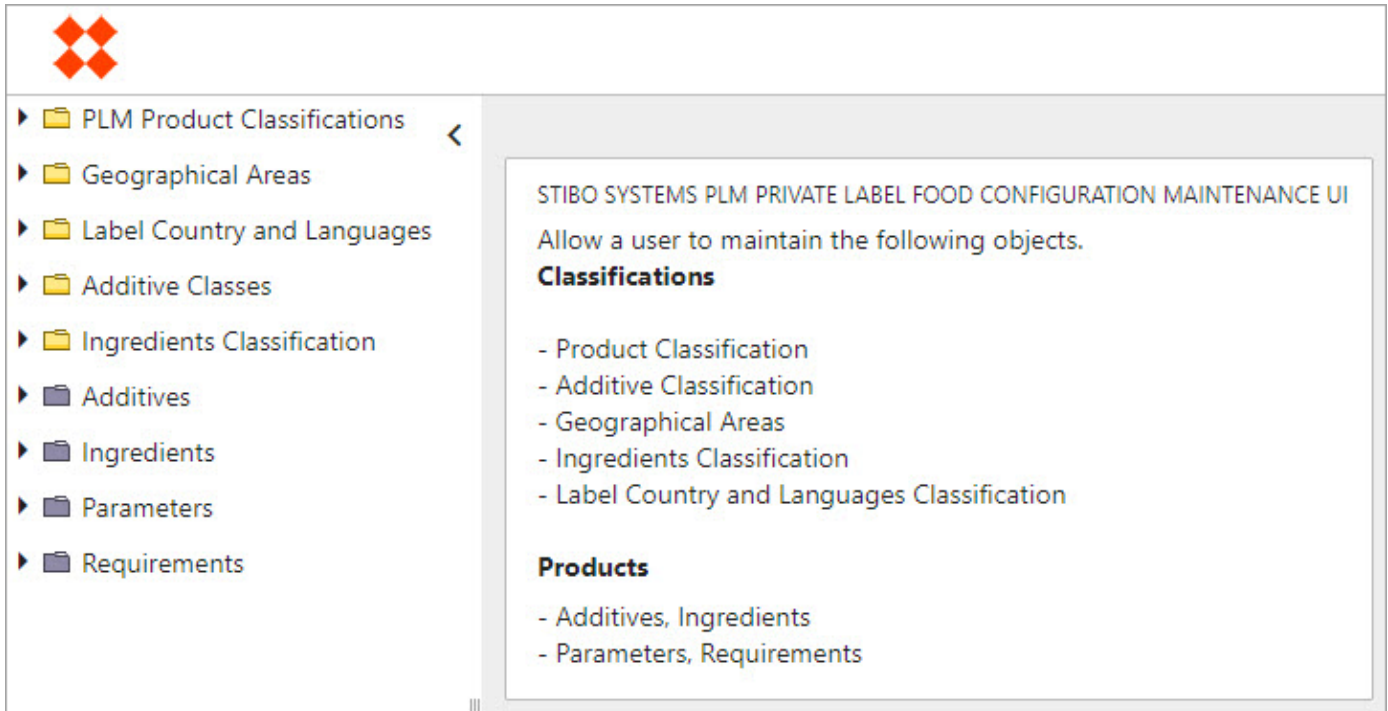


Private Label Food Configuration Maintenance Web UI

The Private Label Food Configuration Maintenance Web UI configuration will support the maintenance of the following objects:

- Product Classification
- Additive Classification
- Geographical Areas
- Ingredients Classification
- Label Country
- Languages Classification.

Additionally, it supports Additives, Ingredients, Parameters, and Requirements.



Note: This Web UI is not controlled by a workflow.

For more details, see the Private Label Food Configuration Maintenance User Guide.

Web UI New Components

Please review the online help documentation for the following:

- PLM for Admins
- PLM for Users

STEPXML Configuration Files

Please review Stibo Systems PLM 9.1 Private Label Food Installation Guide v0.1 at <https://stibo.sharepoint.com/sites/SYS-SC1/ProductStrategy/SitePages/Implementation>

PLM Change Reports Summary

On new product development, one of the more important functionalities is to improve collaboration between different user roles who are involved with bringing new products to market and with suppliers who are responding to the requests to bid for supplying the new products.

During the collaboration process, product data can experience multiples changes by different user roles. Each user group focuses on a specific set of data at a specific state or phase of the process. In private label food, there is a lot of collaboration back and forth between different internal user roles as well as with several suppliers during the process.

Clear visibility to changes in specifications and suppliers' responses to them throughout the process is needed by all parties to ensure that contractual agreements are well understood, and compliance standards are met.

PLM private label food uses Change Reports to improve the data review process.

Change Report Snapshot Overview

In STEP, historical versions of objects are stored as revisions, supplying a historical 'snapshot' of an object. For these revisions, the minimum timing threshold is 24 hours, and a revision is made when the time is exceeded. This represents a limitation since during the collaboration process product data can experience multiples changes by different user roles in a short period of time.

Snapshot Change Report is an alternative to STEP's revisions. In short:

- A Change Report can detail any changes that have been made during user-defined events.
- Static snapshots are taken and compared to the current data.
- Customers define which data point(s) to capture and when.
- They support complex data models like a recipe and packaging specification, including reference metadata and nested references.
- Data model changes will not remove data change history captured in the snapshots.
- A Change report snapshot will not be under revision control so it can be deleted at proper intervals, providing clean up to reduce object bloat.

See the Change Report Snapshot Setup topic to set up snapshots in this documentation.

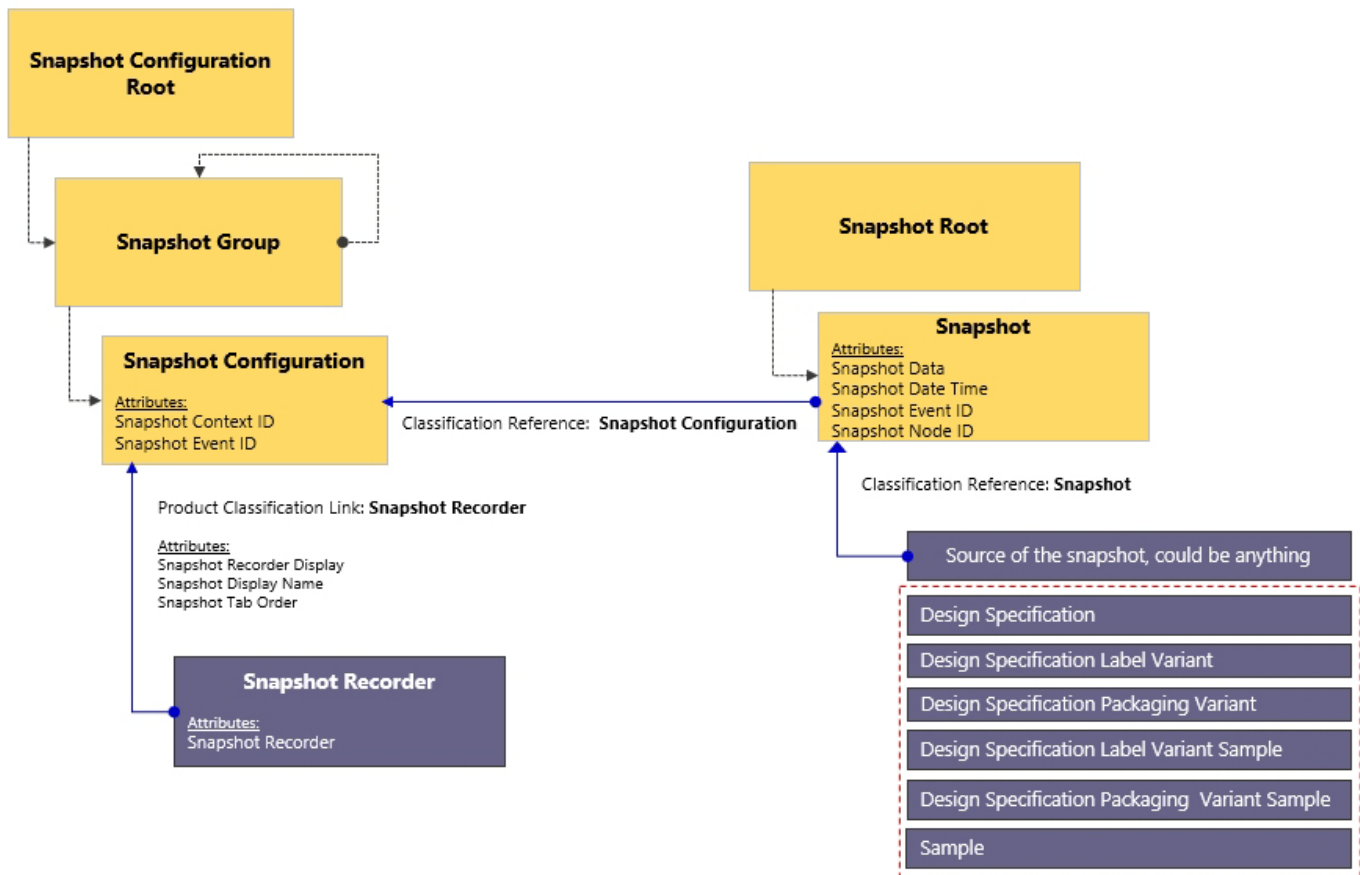
Change Report Snapshot Setup

A Change Report Snapshot needs a series of configurations to be enabled. See below the configurations included in Private Label Food Change Report Snapshot functionality.

- There is a required data model for storing snapshot definitions and snapshots.
- There is a required format for generating snapshots.
- There is a dependency on Product Summary Card. Change Report alerts will only appear on screens that are configured to use the Product Summary Card component.
- An add-on change-report component and license must be installed on your system.
- A snapshot business rule bind is used to support snapshot recorders.
- Business Rules are utilized.

Snapshot Data Model

The Change Report Snapshot is a fixed model. This model is for storing snapshot definitions and the snapshots created on data changes.



See the **Change Reports** documentation in the **Product Lifecycle Management** documentation for more information on the necessary objects, references, attributes, business rules, and snapshots needed for Change Reports Snapshots.

Snapshot Recorder Format

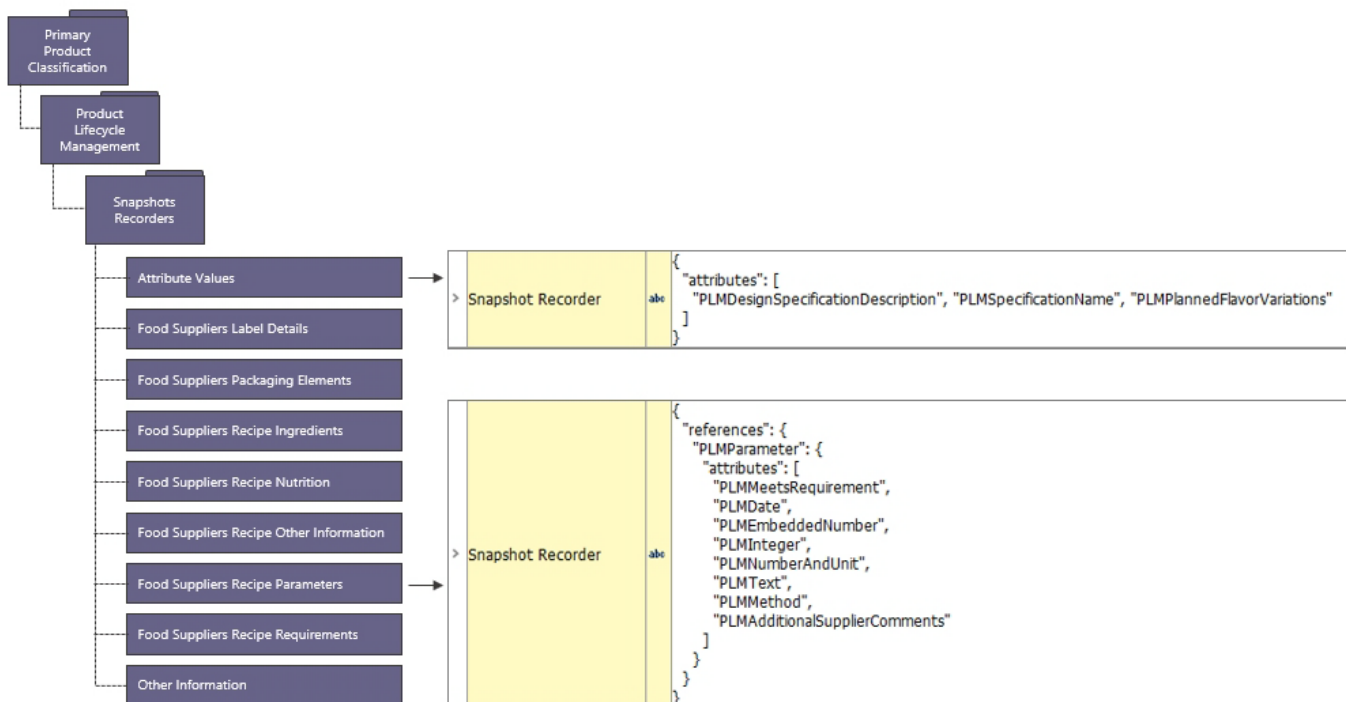
The Snapshot Recorder is a product object in STEP which stores a recorder text that defines which data must be captured in the snapshot. The format of the recorder text is a JSON string.

The JSON property attributes value is an array of JSON Objects.

For example, the JSON objects array is represented by: `[{}]`

```
{
  "attributes": [
    "PLMDesignSpecificationDescription", "PLMSpecificationName"
  ]
}
```

In Private Label Food solution, Snapshots are organized in a one-level hierarchy :



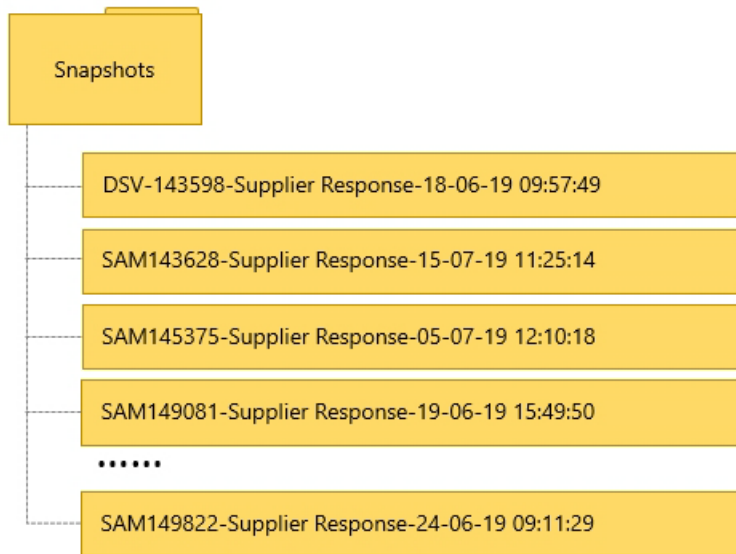
Snapshot Recorders are linked to one or many Snapshot Configuration(s) using the product classification link type Snapshot Recorder (ID SnapshotRecorder). This enables the re-use of Snapshot Recorders on many screens where the same data should be captured.

On the link between a Snapshot Recorder and a Snapshot Configuration are metadata attributes that are used to define tabs in the Change Report (web UI experience).

For a list of examples of elements that can be included in a snapshot, see the **Elements in a Snapshot** topic in the **Change Reports** segment of the **PLM for Admins** section of the **Product Lifecycle Management** documentation. For more on Snapshots, see the **Snapshots** topic in this documentation.

Snapshots

Snapshots are saved on classification objects in JSON strings. One snapshot is captured for each Snapshot Recorder that is linked to the Snapshot Configuration for the screen. A reference is created between the Snapshot and the Snapshot Configuration that created it.

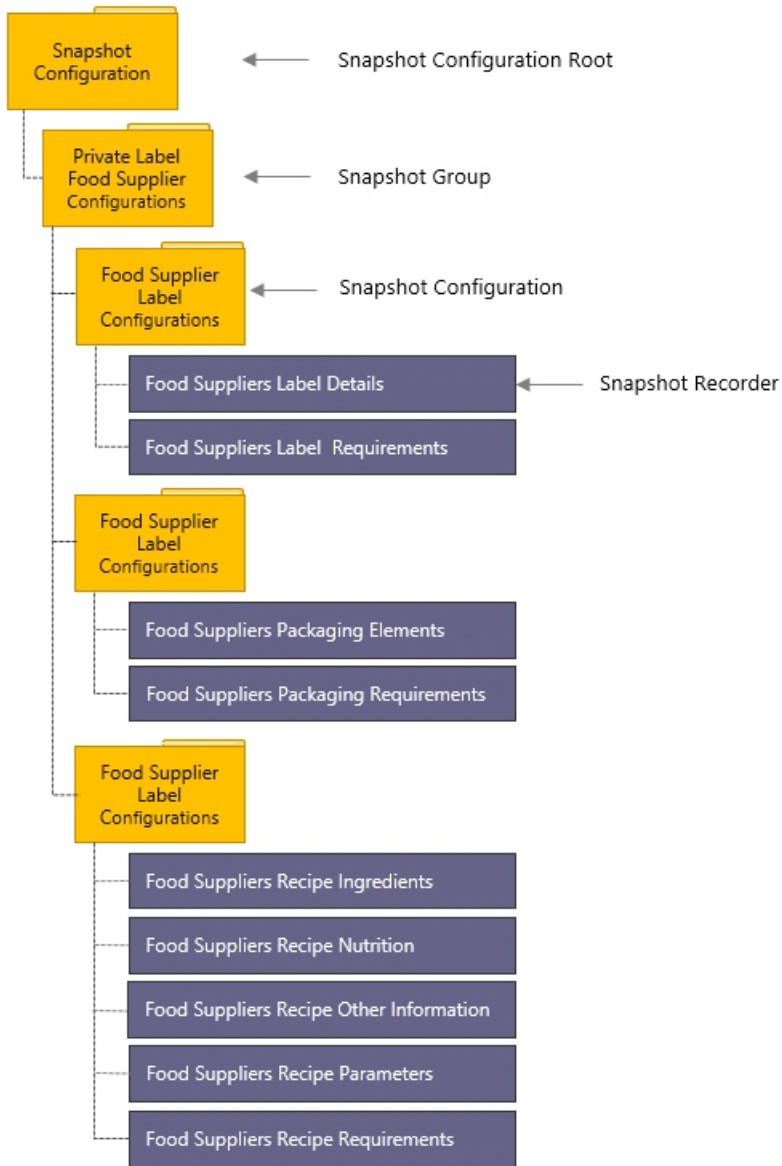


The Snapshot contains all of the data that was defined in the Snapshot Recorders configuration. The data of the Snapshot is organized by Recorder.

A Snapshot Configuration reference is created from the snapshot classification to the desired Snapshot Configuration.

Snapshot Configurations

Snapshot configurations are classifications kept in workbench, used for screens in Web UI, where they determine which contexts to capture data from, and any customer-defined change in events. This could be a change in a workflow state, a trigger by an inbound or outbound integration endpoint, or a change by derived events through an Event Processor. Once the defined change in an event has taken place, a snapshot recorder is used to help take note of the change and record any changes.



See the **Snapshot Configuration** topic in the **Change Reports** segment of the **PLM for Admins** section of the **Product Lifecycle Management** documentation.

Web UI Configurations

The Change Report Snapshot has been configured on an Evaluate Supplier Responses and Supplier Responses screens.

To enable the Change Report functionality in the Web UI, the Product Summary Card is required. It is an out-of-the-box component that can be configured to show either a preselected grouping of product information or a series of data points configured by the user.

Product Summary Card Component in Private Label Food screens

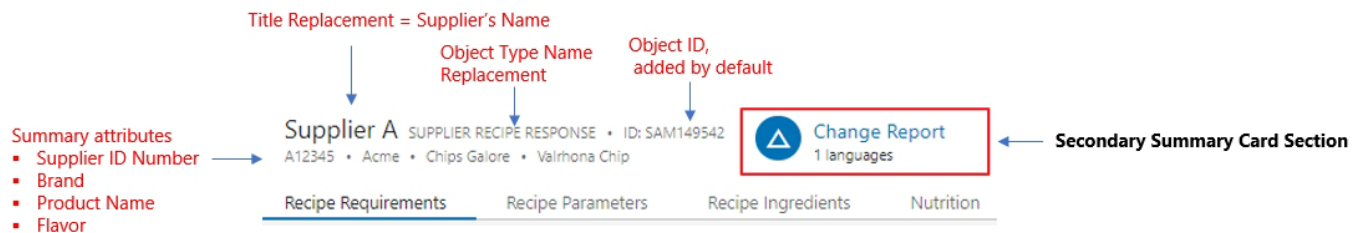
The Product Summary Card provides users a collection of product information display just below the screen title.

Private Label Food and Private Label Food Supplier Web UIs are both configured with the Product Summary Card component. It is a very helpful functionality to end-users since in the private label food solution different objects are used in a project, so different groups of information can be displayed based on the object in use, user role, and process state (task).

The following are examples of Primary Summary Card configurations in Private Label Food Solution.

Supplier Recipe Response

Primary Summary Card Section



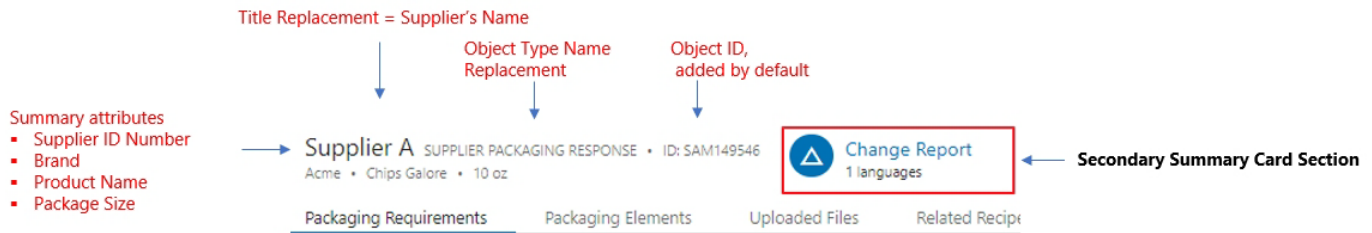
Supplier Label Response

Primary Summary Card Section



Supplier Packaging Response

Primary Summary Card Section



The Change Report component requires a license and is enabled in the Secondary Summary Card Section. Change Report component needs to be selected in the Secondary Summary Card and a Snapshot configuration specified.

Product Summary Card Properties [go to parent](#)

Component Description: The Product Summary Card displays information about a Product in a predefined template below the screen title.

Primary Summary Card Section	Attribute Card	Edit...
Secondary Summary Card Section	Change Report	Edit...

Change Report Properties

Component Description: Change Report

Show Change Report	<input checked="" type="checkbox"/>
Snapshot Configuration	<input type="text" value="step://classification?id=PLMFoodSupplierPackagingConf"/> Clear

The Secondary Summary Card section has been configured with parameters:

- Show Change Report: Checkbox enabled to display the Change Report button to the right of the Product Summary.
- Snapshot Configuration: (Snapshot configuration to be used). A parameter will be added to allow searching for a Snapshot Configuration. No other object types will be allowed.
- The Snapshot Configuration is used for the entire Web UI screen. It determines the contexts to capture data from and a customer-defined Event ID (e.g. supplier response or internal review) to identify the snapshot.
- Snapshot recorders can be created for each Web UI or for processing logic, workflow. They can be configured according to each customer requirements.
- On each snapshot recorder, on the Product to Classification Link Type 'SnapshotRecorder,' there are metadata attributes maintained. These determine factors about the Change Report so that each time the snapshot recorder is re-used, the information can be different.

For more information on attributes needed for snapshot recorders and Change Reports see the **Objects, References, and Attributes for Change Reports** topic in the **Change Reports** segment of the **PLM for Admins** section of the **Product Lifecycle Management** documentation.

Business Actions and Snapshots

In PLM Private Label Solution Food, business rules are created and configured to determinate when the snapshot should take place. These business rules for snapshots can be applied to workflow transitions or any other event that supports executing business rules.

In PLM Private Label Food solution, the PLM Food Supplier Snapshot business action is in use on the Initiate state of the Private Supplier Response workflow. When a Supplier Response (Recipe Response, Label Response, Packaging Response) is initiated in the workflow, a Snapshot will be created.

Note: Customers are responsible for creating business rules since each customer has different needs

For more information on Snapshot business rules, see the **Business Rules and Snapshots** topic in the **Change Reports** segment of the **PLM for Admins** section of the **Product Lifecycle Management** documentation.

How a Change Report Works

Private label food out-of-the-box configuration includes a set of example configurations for capturing data changes in the Supplier Responses phase and Evaluation of the Supplier Responses.

Change Reports detect any changes that have been made during user-defined events only if the change has been defined in the recorder.

When a Supplier Response (Recipe Response, Label Response or Packaging Response) is sent to a Supplier to request his / her responses for Ingredients, Parameters, Requirements, and Nutrition Information, the Supplier Responses are initiated in the Private Label Food Supplier Response workflow.

On entry to the Initiate state of the Private Label Food Supplier Response workflow, the PLM Food Supplier Snapshot business rule is executed, and the following actions will take place:

1. A Snapshot will be created. E.g. SAM183267-Supplier Response-12-07-19 13:51:49.
2. The supplier will then start working on supplier responses and respond with any required information. When finished, they select 'Send Response' and send it back to the customer (Buyer).
3. Once all Supplier Responses are received, all product specifications will be moved to the Evaluate Supplier Responses state of the Private Label Food Product Specification.
4. If the supplier completed all required information, it represents data changes so a new snapshot will be taken.
5. When a customer (buyer) starts reviewing the Supplier Responses, changes between the snapshot and the current data are detected, and the Change Report notification will be visible and active.

Use Cases for the Supplier User Response

Laura, from the Supplier A team, is responsible for answering the Recipe Response request received from the customer CIBUS. Laura accesses the Supplier Web UI, opens the Chocolate Cookie Project Dark Chocolate Chip A12345 Recipe Response and starts the process to complete requested information for recipe ingredients, requirements, and parameters.

First, she enters the recipe ingredients, and for each ingredient added, she fills out the ingredients quantity, country of origin, and whether the ingredient is organic or not.

Chocolate Cookie Project RECIPE RESPONSE • ID:SAM183267

Best Brand • Chocolate Chip Cookies • Double Dark Chocolate Chip

Project Information
Recipe Requirements
Recipe Parameters
My Recipe Ingredients
Nutrition
Other Information >

+ Add Ingredient

Recipe Ingredients

Ingredient	Ingredient Quantity (%)	Country of Origin	Organic
Brown Sugar	15.0	Guatemala	No
Butter	14.0	United States	No
Dark Chocolate	10.0	Brazil	-
Enriched Wheat Flour	25.0	United States	-

Specified Ingredients

You currently have 2 of 3 mandatory Ingredients added to the recipe

^ Must Contain

Brown Sugar (1%)	✓
Dark Chocolate(Minimum 15%)	!
Enriched Wheat Flour (Maximum 30%)	!

^ May Contain

Butter (Maximum (22 %))	✓
-------------------------	---

^ Must Not Contain

Additive Class: Sweetener	✓
---------------------------	---

Save
Decline Bid
Validate
Send Response

Laura completes all needed responses for requirements and responds if the product meets specified requirements. Responses details are added if needed, and she has the option to add additional comments.

Chocolate Cookie Project RECIPE RESPONSE • ID:SAM183267
Best Brand • Chocolate Chip Cookies • Dark Chocolate Chip A12345

Project Information Recipe Requirements **Recipe Parameters** My Recipe Ingredients Nutrition Other Information Related Packaging Related Labels Upload Files

Select all Clear filter Apply view Clear view Answer Requirement **Supplier A, Requirements Responses**

Requirement	Requirement Description	Responses Required For	Meets Requirements?	Response Details	Additional Comments	Help Text
<input type="checkbox"/> Fair Trade Certified	Must be Fair Trade Certified	Response Detail Meets Requirements?	Yes	2018-12-07		The fair trade model requires rigorous protection of local ecosystems and ensures farmers work in safe conditions and receive a harvest price.
<input type="checkbox"/> Calories from saturated Fat	Please Specify	Response Detail Meets Requirements?	Yes			Certified colors are synthetically produced (or human made) and used widely because they impart an intense, uniform color, are less expensive, and blend more easily to create a variety of hues. Do not add undesirable flavors.
<input type="checkbox"/> No Genetically Modified Ingredients	Use of non-GMO ingredients is required	Meets Requirements?	Yes		Now I can get non-GMO ingredients	Non-GMO means non-genetically modified organisms. GMOs (genetically modified organisms), are novel organisms created in a laboratory using genetic modification/engineering techniques. Scientists and consumer and environmental groups have cited many health and environmental risks with foods containing GMOs.
<input type="checkbox"/> Sugar by weight	Please Specify	Response Detail Meets Requirements?	Yes	25%	> 20 but < 25 for sure	Label will clearly list the number of grams of sugar, it won't directly inform you how many calories come from sugar. Because sugar doesn't really nourish your body and only provides calories, it does not have an established daily value. The American Heart Association recommends women and men respectively have no more than 100 and 150 additional calories from sugar each day. This amounts to 25 and 37.5 grams of sugar per day, respectively.

Number of items: 4

Save Decline Bid Validate Send Response

Laura also completes responses for Parameters and Response. If the product meets specified parameters she can add responses details, add a method if is required, and have the option to add additional comments.

Chocolate Cookie Project RECIPE RESPONSE • ID:SAM183267
Best Brand • Chocolate Chip Cookies • Dark Chocolate Chip A12345

Project Information Recipe Requirements Recipe Parameters **My Recipe Ingredients** Nutrition Other Information Related Packaging Related Labels Upload Files

Select all Clear filter Freeze panes Answer Parameter **Supplier A, Parameters Responses**

Parameter	Parameter Description	Responses Required For	Meets Requirements?	Response Details	Method	Additional Comments	Help Text
<input type="checkbox"/> Coliform Germs	Not detectable in 25g	Meets Requirements?	No	27 g	B		The presence of coliforms does not necessarily... conditions during food production or handling.
<input type="checkbox"/> E. Coli	Must be <3	Response Details Meets Requirements?	Yes	1.8 g	C		Acceptable 3 to <100 Unsatisfactory >=100 Potential hazardous N/A
<input type="checkbox"/> Cholerae	Not detectable in 25g	Meets Requirements?	Yes	25 g	C	Lorem Ipsum	To reduce the risk of food-borne transmission of cholera, ...
<input type="checkbox"/> Salmonella	Not detectable in 25g	Method Meets Requirements? Response Details	Yes	28 g	A		Guideline limit value End of MHD is guaranteed: yes / no (if no: designation of guaranteed value and of BBD)

Number of items: 4

Save Decline Bid Validate Send Response

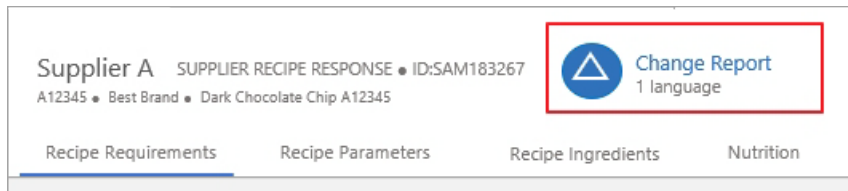
Laura completes the Recipe Response and clicks 'Send Response' to send it to the customer(Buyer).

Use Case for the Evaluate Supplier Response

When the Chocolate Cookie project reaches the Pending Evaluation state of the Private Label Food New Projects, all project specifications are in the Evaluate Supplier Responses state of the Private Label Food Product Specification. The quality manager user can start the process to evaluate supplier responses.

The quality manager user selects the Chocolate Cookie Project Dark Chocolate Chip 'Recipe Specification' from the Evaluate Supplier Responses task list and starts reviewing Supplier A's 'Recipe Response.'

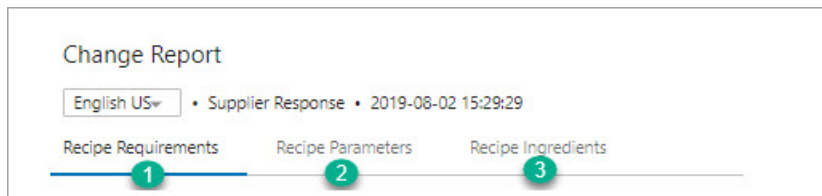
Since the Change Report component is active when the quality manager user opens the 'Recipe Responses' received from Supplier A, changes between the snapshot and the current data are detected and an active Change Report notification displays.



The notification will include an indication that changes were detected in one or more languages.

The quality manager user clicks on the Change Report notification, and a dialog displays showing a comparison of the changes that have taken place in the user login context. The dialog displays three tabs in this case since the Supplier performed changes to Recipe Ingredients, Requirements, and Parameters.

The name of the tabs is taken from the value of the attribute 'Snapshot Display Name' in the current context. If Snapshot Display Name is empty, the STEP ID will be shown.



The order of the tabs is determined by the attribute Snapshot Tab Order on the link between the Snapshot Configuration and Snapshot Recorder. If the Snapshot Tab Order attribute is empty, the display order will be alphabetic.

Each tab will display only the data that was defined by the Snapshot Recorder and only if there are changes between the current data and the last snapshot with the Event ID indicated on the Snapshot Configuration.

Each tab will group changes by the type of change. For example, a tab displaying changes for Requirements during an internal review can show new requirements that were added, values that were added to an existing requirement, deleted requirements, values that were deleted from an existing requirement, and any attribute value changes. The Additions, Deletions, and Value Changes sections can be collapsed by the user.

In this example of the Change Report Recipe Requirement tab, only value changes were made to the Recipe Requirements.

Change Report

English US ▾ • Supplier Response • 2019-06-02 15:29:29

Recipe Requirements

Recipe Parameters
Recipe Ingredients

^ Deletions
None

^ Additions
None

^ Value changes

Data in initial snapshot taken when Supplier Response is initiated in Supplier Responses workflow

Data added by Supplier. Changes detected on Evaluate Supplier Responses.

Target	Previous version	Current version
^ Requirement ^ Calories from Saturated Fat Meets Requirement?	(Empty)	Yes
^ Requirement ^ Fair Trade Certified Meets Requirement?	(Empty)	Yes
^ Requirement ^ Fair Trade Certified Date	(Empty)	2018-12-07
^ Requirement ^ No Genetically Modified Ingredients Additional Supplier Comments	(Empty)	Now I can get non-GMO ingredients
^ Requirement ^ No Genetically Modified Ingredients Meets Requirement?	(Empty)	Yes
^ Requirement ^ Sugar by weight Number and Unit	(Empty)	25 %
^ Requirement ^ Sugar by weight Additional Supplier Comments	(Empty)	> 20 but < 25 for sure.
^ Requirement ^ Sugar by weight Meets Requirement?	(Empty)	Yes

✓ OK

In this example of the Change Report Recipe Parameters tab, only value changes were made to the Recipe Parameters.

Change Report

English US • Supplier Response • 2019-08-02 15:29:29

Recipe Requirements **Recipe Parameters** Recipe Ingredients

^ Deletions

None

^ Additions

None

^ Value changes

Data in initial snapshot taken when Supplier Response is initiated in Supplier Responses workflow

Data added by Supplier Changes detected on Evaluate Supplier Responses.

Target	Previous version	Current version
^ Parameter ^ E. Coli Number and Unit	(Empty)	1.8 g
^ Parameter ^ E. Coli Method	(Empty)	C
^ Parameter ^ E. Coli Meets Requirement?	(Empty)	Yes
^ Parameter ^ Coliforme Germs Number and Unit	(Empty)	27 g
^ Parameter ^ Coliforme Germs Method	(Empty)	B
^ Parameter ^ Coliforme Germs Meets Requirement?	(Empty)	No
^ Parameter ^ Salmonella Number and Unit	(Empty)	28 g
^ Parameter ^ Salmonella Method	(Empty)	A
^ Parameter ^ Salmonella Meets Requirement?	(Empty)	Yes
^ Parameter ^ Cholerae Number and Unit	(Empty)	25 g
^ Parameter ^ Cholerae Method	(Empty)	C
^ Parameter ^ Cholerae Meets Requirement?	(Empty)	Yes

✓ OK

In this example of the Change Report Recipe Ingredients tab, only additions were made to the Recipe Ingredients.

Change Report

English US ▾ • Supplier Response • 2019-08-02 15:29:29

Recipe Requirements Recipe Parameters Recipe Ingredients

^ Deletions

None

^ Additions

Target	Value	
^ Ingredient	(No Value)	
^ Butter		
^ Ingredient		
^ Butter	United States	Ingredient 1
Country Of Origin		
^ Ingredient		
^ Butter	14.0	
Ingredient Quantity (%)		
^ Ingredient	(No Value)	
^ Enriched Wheat Flour		
^ Ingredient		
^ Enriched Wheat Flour	United States	Ingredient 2
Country Of Origin		
^ Ingredient		
^ Enriched Wheat Flour	25.0	
Ingredient Quantity (%)		
^ Ingredient	(No Value)	
^ Brown Sugar		
^ Ingredient		
^ Brown Sugar	Guatemala	Ingredient 3
Country Of Origin		
^ Ingredient		
^ Brown Sugar	15.0	
Ingredient Quantity (%)		
^ Ingredient	(No Value)	
^ Dark Chocolate		
^ Ingredient		
^ Dark Chocolate	Brazil	Ingredient 4
Country Of Origin		
^ Ingredient		
^ Dark Chocolate	10.0	
Ingredient Quantity (%)		

^ Value changes

None

✓ OK

If there are no changes in the Change Report in any language, the Change Report notification will appear disabled and it is not clickable.

The screenshot shows a software interface for a supplier recipe response. At the top left, it displays 'Supplier A' followed by 'SUPPLIER RECIPE RESPONSE • ID: SAM183267' and 'A12345 • Best Brand • Dark Chocolate Chip A12345'. To the right of this text is a button with a blue triangle icon, labeled 'Change Report' and '0 language'. This button is enclosed in a red rectangular box, indicating it is the focus of the document. Below the main text, there is a horizontal menu with four items: 'Recipe Requirements', 'Recipe Parameters', 'Recipe Ingredients', and 'Nutrition'. The 'Recipe Requirements' item is currently selected, indicated by a blue underline.

Capabilities, Considerations, and Limitations

Below are the current capabilities, performance considerations, and limitations to keep in mind when working with Change Reports.

Current Capabilities

Some of STEP's Web UI components allow viewing revisions of attribute values if the component has been configured to show historical revisions and if the user knows that they should click next to an attribute input field to see the revisions. Occasional users, like suppliers, may not remember that access to revision history requires hovering over a blank spot on the screen.

For PLM, most data used for specifications and responses are stored on reference metadata. The Web UI component that is most often used is a multi reference editor, where there is no capability for showing revisions at all.

Performance Considerations

To mitigate the risk of performance issues, it is recommended that snapshot recorders are defined to capture only the content that would change between events. For example, content that is maintained by internal users does not need to be part of a snapshot when suppliers submit their responses since user privileges should prevent suppliers from changing content that is maintained by internal roles.

Limitations

Change Report alerts will only appear on screens that are configured to use the Product Summary Card component.

Views of revisions will be limited to the current data and the last snapshot of the same type (eventId). Specific attributes and references on Web UI screens that have had changes will not show alerts as part of this development as there is a dependency on future development for deep linking.

Content within the Change Report dialog will not consider user privileges to see the data. All data that was captured in the snapshot will be shown if a user has privileges to view the change report. It will be up to each customer to ensure that the data that is defined in a Snapshot Recorder is appropriate for the users that will use the screens.

Solution Outline for Change Reports

Setup and Configurations	
Licensing	A separate license is required for Change Reports. Consult your implementation team for details.
Business Actions	<ul style="list-style-type: none"> • Customers are responsible for creating any business actions needed for creating Snapshots • Customers are responsible for creating Snapshot Configurations and Snapshot Recorders • Customers are responsible for the data model that supports the Change Reports.
Add-on Component	change-reports

For more information about Change Reports, see the **Change Reports** section of the **Product Lifecycle Management** documentation.

Multi Reference Editor Overview

In the PLM data model, the majority of the data is on references and not on objects. The users work on creating one reference at a time, adding metadata, then running validations on the added data. The 'PLM Edit Reference Action' allows users to configure metadata to append to the dialog menu, limiting what values on an object's references can be changed.

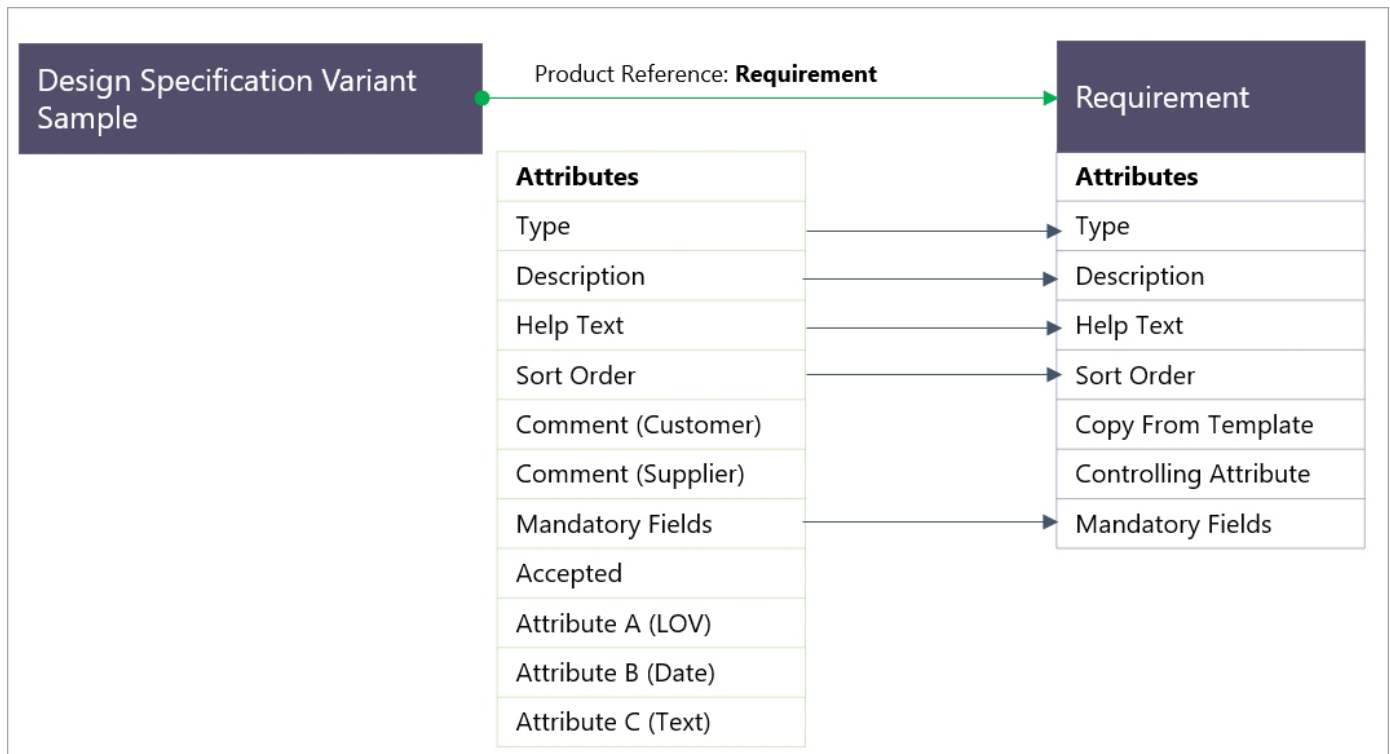
In the private label food solution, the Multi Reference Editor component in Web UI supplies two specific functionalities for the PLM food solution.

- PLM Create References Action
- PLM Edit Reference Action

Multi Reference Editor Data Model

The data model for Multi Reference Editor is based in Product-to-Product references.

In this model example, there are two source objects (Design Specification Variant and Sample) and one target object (Requirement). Both source and target objects are products. The reference connecting the objects is a Product Reference Type. An example of attributes valid on the reference and the target objects listed below the reference / object is pictured below.



PLM Create Reference Action

The PLM Create Reference is a configurable action for the PLM private label food solution. It allows users to configure a toolbar action that adds references to an object when used with the Multi Reference Editor. The PLM Create Reference Action can be configured to specify business rules for consistent creation, object nodes to restrict applicable references, and validation methods to ensure that the created reference is allowed. Once the PLM Create Reference Action component is added, it opens a configurable dialog box.

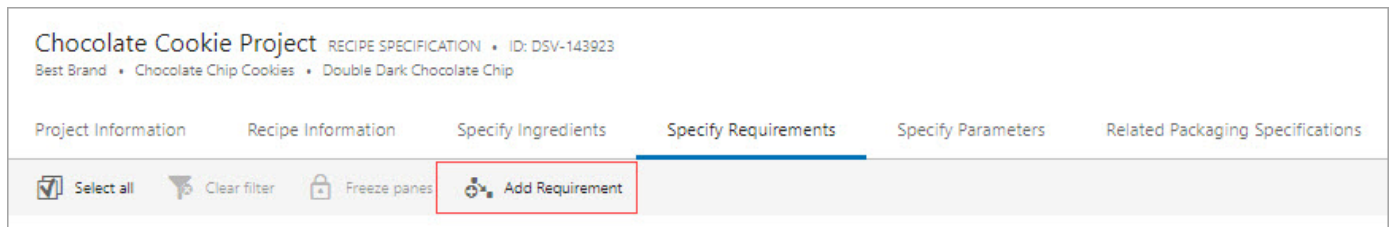
For more on how to configure the Create Reference Action in the Multi Reference Editor, see the **Multi Reference Editor in PLM** topic in the **PLM for Admins** section of the **Product Lifecycle Management** documentation.

Multi Reference Editor Use Case

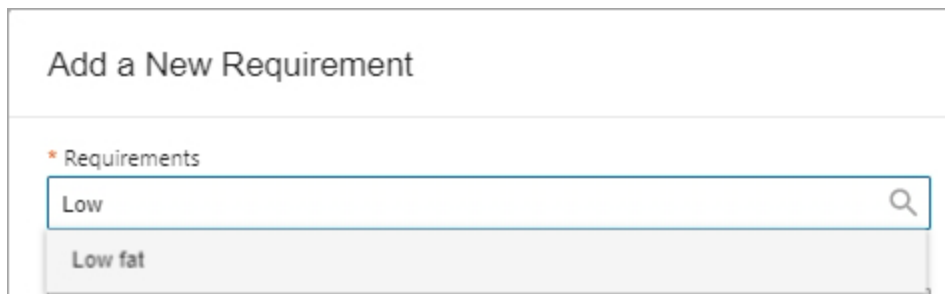
The quality manager user is responsible for reviewing the requirement and parameter references for each Recipe Specification, Label Specification, and Packaging Specification. They may need to add a requirement and/or a parameter references to the product in addition to what was added automatically by the system.

The quality manager user must access the Specify Details state of the Private Label Product Specification list in the Web UI, and select the Specification (Recipe Specification, Label Specification or Packaging Specification) to be maintained.

They can select the Specify Requirements tab to add requirements, or they can select the Specify Parameters tab to add parameters. The quality manager user then selects the **Add Requirement** or **Add Parameter** action in the toolbar.



Once the Add Requirement or Add Parameter action is executed, it opens a dialog box.



Here the quality manager user can do one or more of the following actions:

- They can search for a requirement or parameter (typeahead search capability embedded in the Add Reference component). The search is performed below the specified node. The quality manager user then selects the requirement or parameter to be added. If the requirement or parameter is already referenced, it will not be enabled for selection.

When the requirement or parameter is selected, the following actions take place:

1. Business function **PLM Food Get Requirement or Parameter Reference** Type is executed and returns the reference type ID to use.
2. The requirement or parameter reference is created.
3. Business action **PLM Food Copy Requirement or Parameter Template** is executed to copy default values from the requirement or parameter to populate attribute value(s) displayed in the dialog box.

The quality manager user can now change values for the configured attributes to be displayed in the dialog box.

Note: The created reference is deleted after the data is displayed in the dialog including copied values. The reference is then recreated and committed when the user clicks the Add button.

Add a New Requirement

*** Requirements**

Low fat
✕

Requirement Type

Food Claim

Requirement Description

Recipe must be 30% lower in fat than competitive products. Indicate minimum percent:

Help Text

A claim that a food is low in fat, and any claim likely to have the same meaning for the

Mandatory Supplier Responses

Meets Requirement? ✕
Supplier Response Detail ✕
✕

Sort Order

10

Add Another
 Add

Cancel

- If **Add Another** box is selected, the **Add a New Requirement** or **Add a New Parameter** dialog box will be refreshed after the reference is added, so that an additional requirement or parameter can be created and added to the Recipe Specification.
- When the **Add** button is clicked the reference will be created, values in the dialog box are saved to the reference and committed, and any validation of the data needed will be executed. A business action for copying default values in other contexts will be executed. If the validation fails, an error is shown in the dialog box and the dialog box stays open.
- Select **Cancel** to cancel the **Add Requirement** or **Add Parameter** action.

PLM Edit Reference Action

The **Edit Reference** action is used for editing an existing reference. It allows users to edit references with metadata attributes.

The purpose of the PLM Edit Reference action is to edit attributes on a reference in a dialog and also be able to run validation on the entered data.

A user can select more than one reference from the list view and select the PLM Edit Reference (Labeled as Answer Requirement or Answer Parameter) action in the toolbar.

In the private label food solution, the references for requirements and parameters have two phases, called scenarios in this guide, in the product specification process:

- The customer quality manager user reviews and customizes the requirements and parameters for each specification.
- The supplier user must complete the information needed for requirements and parameters in each specification. It is here where the PLM Edit Reference Action can be used for a Supplier to respond to multiple Requirements or Parameters.

Additionally, the **PLM Edit Reference** action has **Flex Valued Header** capabilities to show and edit flexible values from different metadata attributes on a reference in one column for the Multi Edit Display Mode. It also shows attribute values from different attributes in one column in the Table Display Mode.

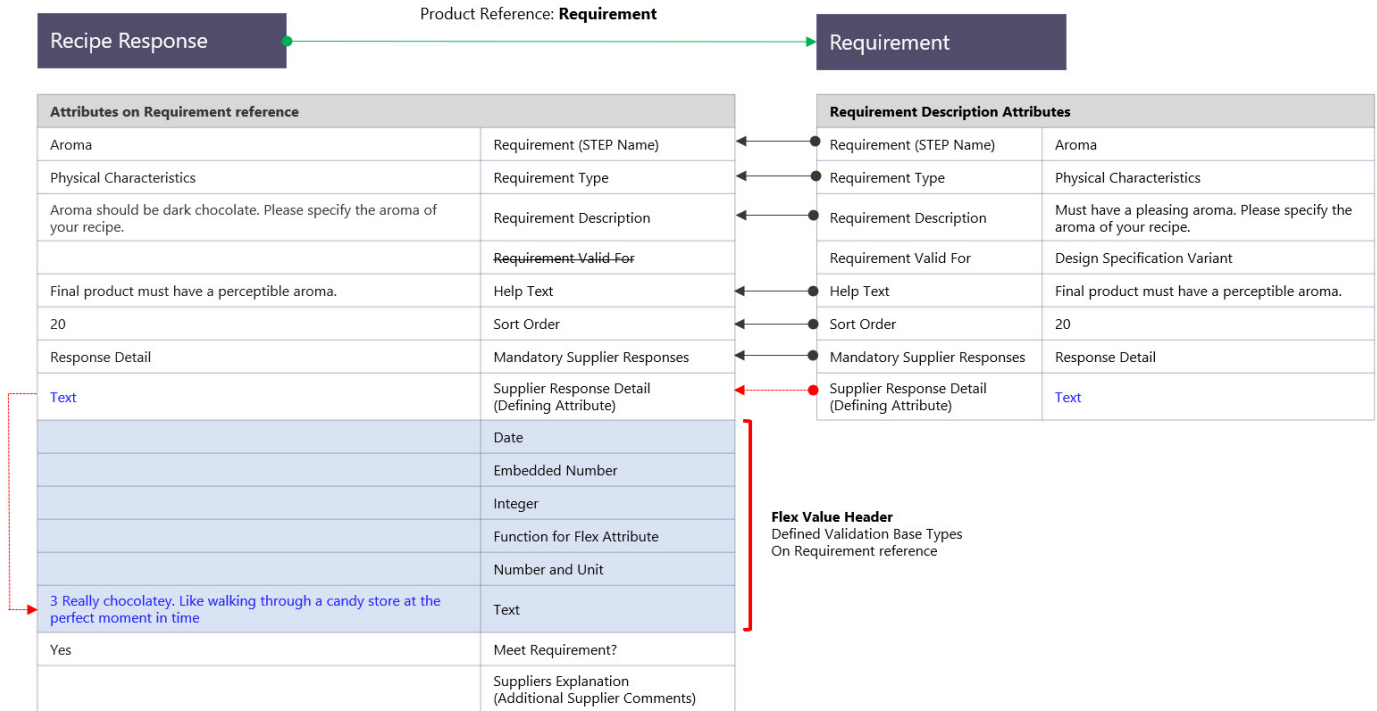
For more on how to configure the Edit Reference Action, see the **Multi Reference Editor in PLM** topic in the **PLM for Admins** section of the **Product Lifecycle Management** documentation.

Flex Valued Header

The **Flex Valued Header** is a highly configurable component that enables the ability to enter more than one validation base type for a metadata attribute. The validation base types supported are:

- Date
- Embedded Number
- Function for flex attributes
- Integer
- Number and Unit
- Text

The image below describes the metadata attributes on a Requirement reference using the Reference Metadata Flex Value Header.



For more information on configuring the Flex Valued Header, see the **Reference Metadata Flex Value Header Component** topic in the **PLM for Admins** section of the **Product Lifecycle Management** documentation.

Note: The PLMDefiningAttribute must be a single value LOV. This is the attribute that defines the ID specific of the Validation Base Type to be allowed. Additionally, defining the Attribute LOV is a LOV with ID. The ID will be the attribute ID / business function ID used as the flex attribute.

Defining Attribute LOVE

ID	Name	Description
PLMDate	Date	One of the required specific attributes. The attribute is a date.
PLMEmbeddedNumber	Embedded Number	One of the required specific attributes. The attribute is an Embedded Number
PLMFunctionForFlexAttribute	Function for Flex Attribute	A business function that will return the attribute ID to be used.

ID	Name	Description
PLMInteger	Integer	One of the required specific attributes. The attribute is an Integer.
PLMNumberAndUnit	Number and Unit	One of the required specific attributes. The attribute is a Number and has units.
PLMText	Text	One of the required specific attributes. The attribute is a text.
PLMISODate	ISO Date	One of the required specific attributes. The attribute is an ISO date.
PLMProductLOV	Product Dating	One of the required specific attributes. The attribute has an LOV.

Note: The **defining attribute** is used to identify the attribute defined to control the allowed attribute validations

Supplier Responding to Requirements and Parameters Use Case

The supplier user is responsible for answering the requirements and parameters specified by the customer for each Recipe Response, Label Response, and Packaging Response.

1. The supplier user accesses the Initial Response state of the Private Label Food Supplier Response list in the Web UI, selects the response (Recipe Response, Label Response, or Packaging Response) that needs to be answered, and navigates to the Recipe Requirements and/or Parameters tab.
2. The supplier user then selects requirements or parameter to answer from the list view. If more than one requirement or parameter has been selected, the requirements / parameter will be displayed in the Answer Requirement / Answer Parameter dialog box in the sequential order that they were selected.
3. To edit each of the selected requirements / parameters, the supplier user must select the Answer Requirement / Answer Parameters action from the toolbar and the Answer Requirement / Answer Parameters dialog box will be displayed.

Chocolate Cookie Project RECIPE RESPONSE • ID:SAM183267
Best Brand • Chocolate Chip Cookies • Dark Chocolate Chip A12345

Project Information Recipe Requirements **Recipe Parameters** My Recipe Ingredients

Select all Clear filter Freeze panes Answer Parameter

	Parameter	Parameter Description	Responses Required For	Meets Requirement
<input checked="" type="checkbox"/>	Coliforme Germs	Not detectable in 25g	Meets Requirements?	No
<input checked="" type="checkbox"/>	E. Coli	Must be <3	Response Details Meets Requirements?	Yes
<input checked="" type="checkbox"/>	Cholerae	Not detectable in 25g	Meets Requirements?	Yes
<input checked="" type="checkbox"/>	Salmonella	Not detectable in 25g	Method Meets Requirements? Response Details	Yes

Number of items: 4

Answer Parameter 1 of 4

Requirement
Coliforme Germs

Response Detail Units

Parameter Description
Not detectable in 25g

Help Text
The presence of coliforms does not necessarily mean that pathogens are present. While the detection of pathogens in ready-to-eat food indicates a risk of foodborne illness, the level of coliforms only reflects the general hygienic conditions during food production or handling.

Mandatory Supplier Responses
Meets Requirement?
Meets Requirement?

Method

Additional Comments

4. A supplier can do one or more of the following actions in the Answer Requirement / Parameters dialog box:
- Views requirement / parameters information, such as attribute values on the reference.
 - Views help texts for the requirement / parameters and for the attributes shown in the dialog.
 - Views and answers the requirement / parameter specific attribute defined by the customer quality manager user.
 - View alerts from validations performed by a business function.

Note: The solution associated with this documentation does not include function validations. A customer may add their own validation business functions as needed.

- Save the answer on the reference.
5. The Answer Requirement / Answer Parameter dialog box will have buttons to move back and forward to view the previous or next requirement of all selected requirements / parameters.
6. Clicking the **Save** button will save any supplier user changes.
7. Clicking the **Cancel** button will cancel any user changes. An **Unsaved Changes** warning message will display. The user can click **OK** to confirm that changes will not be saved, or they can click **Cancel** to go back to the dialog box and **Save** the changes.
8. Additionally, the Answer Requirements action has the Flex Valued Header capability to show and edit values from different attributes in one column for the Multi Edit Display Mode or to show attributes values from different attributes in one column for the Table Display Mode.

Multi Reference Editor Business Rules

For the Multi Reference Editor (MRE), several business rules can be configured. Each of the business rules will be described in detail in this section.

Get Reference Type – Business Function

This business function is used by the **PLM Create Reference Action** component to get the reference type ID that will be used to create the new reference.

It has two input parameters:

- Source object of the type Node which is the owner of the reference that will be created
- Target object of the type Node which is the target object of the reference that will be created

The return type of the business function is in the format of a string, containing the STEP reference type ID.

Below is an example of a business function that is used in the private label food solution to get the reference type ID when adding a requirement or a parameter to a variant.

JavaScript Function

Bind:

Variable name	Bind to
manager	STEP Manager

Messages:

Variable name	Message	Translations

Input Parameters:

Parameter name	Type	Description
source	Node	
target	Node	

Return Type:

Return Type
String

JavaScript:

```

1
2 var otID = target.getObjectType().getID();
3
4 if (otID.equals("PLMParameter")){
5     if (!isValidFor(target, source, "PLMParameterValidFor", logger)){
6         throw "Parameter [" + target.getName() + "] is not valid for [" + source.getName() + "];";
7     }
8
9     return new java.lang.String("PLMParameter");
10 } else if (otID.equals("PLMRequirement")){
11     if (!isValidFor(target, source, "PLMRequirementValidFor", logger)){
12         throw "Requirement [" + target.getName() + "] is not valid for [" + source.getName() + "];";
13     }
14
15     var nodeOTID = source.getObjectType().getID();
16     if (nodeOTID.equals("PLMDesignSpecificationVariant")){
17         return new java.lang.String("PLMRequirement");
18     } else if (nodeOTID.equals("PLMDesignSpecificationPackagingVariant")){
19         return new java.lang.String("PLMPackagingRequirement");
20     } else if (nodeOTID.equals("PLMDesignSpecificationLabelVariant")){
21         return new java.lang.String("PLMLabelRequirement");
22     }
23 } else {
24     throw "Not a Parameter or Requirement";
25 }
26
27
28
29 function isValidFor(req, source, attrID, logger){
30
31     var objectTypeID = source.getObjectType().getID();
32
33     var validFor = req.getValue(attrID).getValues();
34     for (var i = 0; i < validFor.size(); i++){
35         var validForID = validFor.get(i).getID();
36         if (validForID.equals(objectTypeID)){
37             return true;
38         }
39     }
40 }

```

Edit externally

Copy From Template- Business Action

This business action is used by the **PLM Create Reference Action** component for getting default values to display in the Multi Reference Editor (MRE).

The low-level processing flow to display default values in the MRE dialog is:

1. Start a transaction.
2. Create a reference between the source and target object using the reference type ID returned by the 'get reference type – business function'.
3. Execute the defined 'copy from template – business action'. This will populate values on the created reference in step 2.
4. The MRE dialog reads the defined attribute values from the reference that was created in step 2 and has default values populated in step 3.
5. MRE dialog is shown.
6. The transaction is rolled back.

Important: Any values that are copied to the created reference that are not displayed in the MRE dialog will be deleted when the reference is deleted (rolled back). The values in the MRE dialog will be saved to a new reference when the user clicks the save button in the MRE dialog.

This business action has a bind that is an instance of the reference object that was created in step 2 above.

Below is an example for a business action that is used in the private label food solution to copy default values based on attributes in an attribute group when adding a requirement or parameter.

The screenshot shows a JavaScript editor with the following content:

```

Execute JavaScript
Binds:
Variable name | Binds to
node | Current Object
refObj | Reference
manager | STEP Manager

Messages:
Variable name | Message | Translations

JavaScript:
1
2 var plmRoot = manager.getProductHome().getProductByID("ProductLifecycleManagementProductRoot");
3 var defaultContext = plmRoot.getValue("PLMDefaultContext").getSimpleValue();
4
5 var tar = refObj.getTarget();
6 var tarOTID = tar.getObjectType().getID();
7
8 var attrGrpID = "";
9 if (tarOTID.equals("PLMParameter")){
10     attrGrpID = "PLMCopiedParameterValuesVariants";
11 } else if (tarOTID.equals("PLMRequirement")){
12     attrGrpID = "PLMCopiedRequirementValuesVariants";
13 }
14
15 copyAttrValues(tar, refObj, attrGrpID, defaultContext, manager, logger);
16
17
18 function copyAttrValues(target, ref, attrGrpID, defaultContext, manager, logger){
19
20     var group = manager.getAttributeGroupHome().getAttributeGroupByID(attrGrpID);
21     var attrs = group.getAttributes();
22     var attrItr = attrs.iterator();
23
24     while (attrItr.hasNext()){
25         var attr = attrItr.next();
26
27         if (attr.isLanguageDependent()){
28             //Logger.info("Lang attr: " + attr.getID() + " ref: " + ref + " target: " + target + " defaultContext: " + defaultContext);
29             setValueByContext(manager, ref, attr, target, defaultContext, logger);
30         } else {
31             //Logger.info("Not Lang attr: " + attr.getID());
32             var refValue = ref.getValue(attr.getID()).getSimpleValue();
33             if (refValue == null){
34                 var attrValue = target.getValue(attr.getID()).getSimpleValue();
35                 ref.setSimpleValue(attr, attrValue);
36             }
37         }
38     }
39 }
40
41
42
43
44
45
46
47
Edit externally

```

Validation – Business Function

This business function is used by the **PLM Create Reference Action** and the **PLM Edit Reference Action** components to validate the entered data in the Multi Reference Editor (MRE) dialog.

It has two input parameters:

- Source object of the type Node which is the owner of the reference that was created
- Target object of the type Node which is the target object of the reference that was created

The return type of the business function is in the format of a list<String>, which is a list of strings containing pairs of values where the first value is the attribute name and the second value is the validation error message. The validation error message can contain html tags including links (a href)

Below is an example of a validation – business function. This example is not used in the private label food solution.

JavaScript Function

Bind:

Variable name	Bind to
manager	STEP Manager

Messages:

Variable name	Message	Translations
---------------	---------	--------------

Input Parameters:

Parameter name	Type	Description
source	Node	
target	Node	

Return Type:

Return Type
List<String>

JavaScript:

```

1  var refObj = getReference(manager, source, target, "PLMParameter");
2
3  logger.info("source: " + source);
4  logger.info("target: " + target);
5
6  var retVal = new java.util.ArrayList();
7
8
9  if (refObj != null && refObj.getValue("PLMMeetsRequirement").getSimpleValue() != null &&
10     refObj.getValue("PLMMeetsRequirement").getSimpleValue().equals("No")){
11     retVal.add("PLMProductName");
12     retVal.add("<b>Dav med <a href='www.google.com'>dig</a></b>");
13     retVal.add("PLMBrand");
14     retVal.add("<i>Another one</i>");
15 }
16
17 logger.info("retVal: " + retVal);
18
19 return retVal;
20
21
22 function getReference(manager, source, target, refTypeID){
23
24     var refType = manager.getReferenceTypeHome().getReferenceTypeByID(refTypeID);
25
26     var refs = source.getReferences(refType);
27     var refsItr = refs.iterator();
28     while (refsItr.hasNext()){
29         ref = refsItr.next();
30
31         if (ref.getTarget().getID().equals(target.getID())){
32             return ref;
33         }
34     }
35
36     return null;
37 }

```

Edit externally

The validation errors are shown to the user in a dialog as shown below:

The screenshot shows a software interface with a validation error dialog box at the top. The dialog box has a red vertical bar on the left and a close button (X) on the right. It contains the following text:

- Validation Error
- 1. Product Name: **Cannot be empty, see for more information**
- 2. Brand: *Please enter a brand value*

Below the dialog box, the main interface shows a form titled "Edit Parameter" with a "1 of 1" indicator. The form contains the following fields:

- Parameter: Aflatoxin G1
- Parameter Description: Lorem ipsum dolor sit amet, liber iudicabit vix ne, eu justo denique definitionem mel.
- Parameter Description: Must be undetectable. Please specify the testing method. HELLO
- * Meets Requirement?: A dropdown menu with "No" selected.
- Method: An empty text input field.

At the bottom of the form, there are four buttons: "Back", "Save" (highlighted in teal), "Cancel", and "Close".

Copy From Template (Context) – Business Action

This business action is used by the **PLM Create Reference Action** component for copying additional values to the created reference, including values in other contexts than the current context. An example of copying values in other contexts could be that when working in the US English context, and adding a new parameter to a variant, we need to populate the default help text in Spanish and potential other contexts as well.

This business action has a bind which an instance of the reference object.

Below is an example for a business action that is used in the private label food solution to copy default values based on attributes in an attribute group when adding a requirement or parameter. This is the same business action used in the 'copy from template – business action'. The business action is copying attribute values for all of the system-defined contexts.

Execute JavaScript

Binds:

Variable name	Binds to
node	Current Object
refObj	Reference
manager	STEP Manager

Messages:

Variable name	Message	Translations
---------------	---------	--------------

JavaScript:

```

42
43 function getValueByContext(manager, ref, attr, contextID){
44     var contextValues = manager.executeInContext(contextID, function(aManager) {
45         return aManager.getObjectFromOtherManager(ref).getValue(attr.getID()).getSimpleValue();
46     });
47
48     return contextValues;
49 }
50
51
52 function setValueByContext(manager, ref, attr, target, defaultContext, logger){
53     //Logger.info("target: " + target.getID());
54     var contexts = manager.getContextHome().getContexts();
55     var contextsItr = contexts.iterator();
56     while (contextsItr.hasNext()){
57         var context = contextsItr.next();
58         var contextID = context.getID();
59
60         var curValue = getValueByContext(manager, ref, attr, contextID);
61         //Logger.info("curValue: " + curValue);
62         if (curValue == null){
63             var ctxValue = getValueByContext(manager, ref, attr, contextID);
64             //Logger.info("curValue 1: " + ctxValue);
65             if (ctxValue == null){
66                 ctxValue = getValueByContext(manager, target, attr, contextID);
67             }
68             //Logger.info("curValue 2: " + ctxValue);
69             if (ctxValue == null){
70                 ctxValue = getValueByContext(manager, ref, attr, defaultContext);
71             }
72             //Logger.info("curValue 3: " + ctxValue);
73             if (ctxValue == null){
74                 ctxValue = getValueByContext(manager, target, attr, defaultContext);
75             }
76             //Logger.info("curValue 4: " + ctxValue);
77             //Logger.info("ctxValue: " + ctxValue + " attrID: " + attr.getID() + " target: " + target.getID());
78
79             manager.executeInContext(contextID, function(aManager) {
80                 aManager.getObjectFromOtherManager(ref).setSimpleValue(attr, ctxValue);
81             });
82         }
83     }
84 }

```

Edit externally

References, Limitations, and Performance

This topic details how to remove references as well as any limitations or performance considerations when working with the Multi References Editor.

Remove Reference

This functionality will remove the selected reference to Requirements or Parameters.

In the private label food solution, some requirements are used in 90% of projects. Once the user has started the revision process, some references to requirements or parameters must be deleted.

Limitations

The only attribute validation base type(s) that are supported in the current React components are:

- Number
- Text
- ISO Date
- LOV (single and multi-valued)

Note: Only the edit mode is supported.

Performance Considerations

A lot of business actions / functions are executed in the new 'Create Reference' and 'Edit Reference' dialogs. The performance will depend on how the business actions / functions are configured.

Solution Outline for Multi Reference Editor

Below is a table that outlines the setup and configurations needed for Multi Reference Editor to work.

Setup and Configurations	
Licensing	A Multi Reference Editor will require a PLM license and an additional Flex Table Header license. Consult your implementation team for details.
Business Actions	No special privileges are required.
Add-on Component	Spire-plm

For more information about Multi Reference Editor for the PLM food solution, see the **Multi Reference Editor in PLM** topic of the **Product Lifecycle Management** documentation.