Meridium APM Risk

3.6.1.0.0

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3.6.1.0.0

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About This Document

This file is provided so that you can easily print this section of the Meridium APM Help system.

You should, however, use the Help system instead of a printed document. This is because the Help system provides hyperlinks that will assist you in easily locating the related instructions that you need. Such links are not available in a print document format.

The Meridium APM Help system can be accessed within Meridium APM itself or via the Meridium APM Documentation Website (https://www.meridium.com/documentation/WebHelp/WebHelpMaster.htm).

Note: If you do not have access to the Meridium APM Documentation Website, contact Meridium Global Support Services.

Table of Contents

Meridium APM Risk 1
Copyright and Legal 2
About This Document 3
Table of Contents 4
About the Risk Assessment Feature 7
Risk Assessment System Requirements 8
What is Risk? 9
What is a Risk Assessment? 10
About the Baseline Risk Matrices 11
Risk Assessment Data Model 12
Risk Matrix 14
Risk Category 15
Consequence 16
Probability 17
Risk Threshold 20
Protection Level 21
About the Row, Column, and Tooltip Labels in the Risk Matrix 23
Illustration of How Risk Threshold Records are Used 27
About Accessing the Risk Assessment Interface 29
First-Time Deployment Workflow 30
Upgrade or Update Risk Assessment to 3.6.1.0.0 31
Associating a Risk Matrix with a Site 32
About Customizing a Risk Matrix 33
Copying Risk Matrices 34
Overview of the Risk Matrix Definition Datasheet 35
Risk Matrix Definition Tab 36
Risk Matrix Preview Tab 37
Aspects of the Risk Category Tab 40

System Codes and Risk Category Records 43
Aspects of the Consequence Tab 45
System Codes and Consequence Records 48
Aspects of the Probability Tab 50
System Codes and Probability Records 55
Aspects of the Protection Level Tab 57
System Codes and Protection Level Records 60
Aspects of the Risk Threshold Tab 62
System Codes and Risk Threshold Records 65
Adding System Codes Via the Risk Matrix Definition Datasheet 67
Modifying System Codes Via the Risk Matrix Definition Datasheet 70
Deleting System Codes Via the Risk Matrix Definition Datasheet 72
Adding New Consequences and Probabilities 73
Example of Adding Risk Categories 77
Example of Adding Consequences 80
Example of Adding Probabilities 83
Adding a Slider With the Default Name and Description 87
Adding a Slider with a Custom Name and Description 90
Example of Adding Risk Thresholds 95
Modifying the Risk Assessment Interface Title 97
About Modifying Text Box Labels in the Risk Assessment Interface 99
Modifying Text Box labels 100
Modifying Consequences and Probabilities 102
Changing the Axis on which Values Appear 103
Changing the Order in Which Consequence or Probability Values Appear 104
Unlocking the Mitigated Consequence 105
Disabling the Not Applicable Check Box 107
About Displaying Custom Labels in the Risk Matrix 109
An Example of Customizing Row, Column, and Tooltip Labels 110
Defining How Risk Values Will be Displayed in Each Cell 117

Hiding the Probability and Consequence Names 119
Hiding the Numeric Risk Rank 121
Hiding the Text Boxes Below the Protection Level Slider 123
Hiding the Financial Tab 125
Aspects of the Risk Assessment Interface 127
Aspects of the Risk Matrix 131
About the Not Applicable Check Box 133
About Using the Risk Matrix 136
Determining an Overall Risk Rank 138
Specifying That a Risk Category Does Not Apply to the Current Risk 140
Risk Assessment Associated Pages 143
Consequence 144
Probability 146
Protection Level 148
Risk Category 150
Risk Matrix 152
Risk Threshold 160
Risk 162

About the Risk Assessment Feature

The *Risk Assessment feature* is a combination of:

- The Risk Assessment interface, which is an interface that displays a Risk Matrix and other risk information.

  -and-

- The Risk Matrix data model, which includes entity families, relationship families, and records that determine:
  - The values that you will see in the Risk Assessment interface.
  - The calculations that will be performed based on the values that you select.

The baseline Meridium APM database contains a set of baseline records that determine the values that you will see on the interface and the calculations that are performed using those values. You can access this interface through modules such as:

- Asset Strategy Management (ASM)
- Reliability Centered Maintenance (RCM)
- Failure Modes and Effects Analysis (FMEA)

If you do not want to use the baseline values and calculations, you can customize them or configure your own.

Risk Assessment System Requirements

The *Meridium APM Framework Tool* license must be activated before you can take advantage of Risk Assessment functionality. In addition, your system must contain .basic Meridium APM system architecture.

After you have installed and configured the basic system architecture, risk assessment will be ready to use. If, however, you want to use a custom risk matrix, you will need to perform some configuration tasks.

What is Risk?

In any company, equipment and locations can fail. In some cases, these failures do not cause any immediate problems. For instance, consider a clothes dryer with a switch that shuts off the dryer automatically if the temperature inside the drum reaches 180 degrees Fahrenheit (F). If the switch stops working but the temperature never reaches 180 degrees F, meaning that the switch is never activated, the switch failure would not present any problems.

In other cases, however, a failure can cause not only problematic but *catastrophic* consequences. Consider the same clothes dryer and safety switch. If the safety switch stops working and the temperature inside the drum *does* reach 180 degrees F, the switch will not perform its intended function: shutting off the dryer. Instead, the dryer would continue to run, allowing the temperature to potentially rise even further, which could ultimately cause the dryer to catch on fire.

From this example, you can see that the safety switch failure is problematic because it could cause a fire, which would have safety, financial, and operational impacts.

In Meridium APM, a *risk* is the combination of an event or condition that causes something bad to happen and the negative outcome. In the example described above:

- The *switch failure* is the event that causes something bad to happen.
- A *fire* is the negative outcome.

So, the risk is the combination of the switch failure and the negative outcome. In other words, the risk is that the switch stops working and the dryer overheats, eventually causing a fire.

In your company, your equipment and locations can also fail. As in the preceding example, these failures and their negative outcomes are *risks*.

What is a Risk Assessment?

Remember that a risk is the combination of an event or condition that causes something bad to happen and the negative outcome. As part of defining risks in Meridium APM, in some modules, you can also perform a *risk assessment*, which assesses:

- The probability that the negative outcome will have an impact on safety, the environment, operations, or finances.
- The severity of the safety, environmental, operational, or financial impact.

For example, consider the risk that the switch in a dryer stops working and the dryer overheats, eventually causing a fire. As part of assessing this risk, you could also define:

- The probability that the fire will have a safety, environmental, operational, or financial impact. For example, you might determine that an operational impact is inevitable, while an environmental impact is possible but not likely.
- The severity of the safety, environmental, operational, or financial impact. For example, you might determine that the severity of a safety impact is very high (homeowners could be killed), but the severity of an environmental impact is low (damage only to immediate, surrounding landscaping).

In some modules, you will assess risk using the Risk Matrix. In other modules, you will assess risk using datasheets or other forms. Keep in mind that the *type* of impact that each module allows you to assess might differ. For example, Asset Strategy Optimization (ASO) allows you to asses safety, environmental, and operational impact. Asset Strategy Management (ASM), on the other hand, allows you to assess safety, environmental, operational, and financial impact.

About the Baseline Risk Matrices

The baseline Meridium APM database contains two Risk Matrices:

- Standard Practice
- Default

Note: If you are upgrading from a previous version of Meridium APM, you will *not* receive the Standard Practice Risk Matrix. You will receive only the Default Risk Matrix (and any Risk Matrices that you created manually). The Default Risk Matrix will be phased out over the next several releases. If you are an existing customer, you should continue using the Risk Matrix that you were using before you upgraded. New customers, however, will receive *both* Risk Matrices but should use the Standard Practice Risk Matrix or create their own Risk Matrix. In other words, the Standard Practice Risk Matrix is recommended for customers who are *not* already using a different Risk Matrix. For this reason, the Meridium APM documentation explains the functionality of the Standard Practice Risk Matrix, *not* the Default Risk Matrix. Throughout this documentation, when we use the phrase *baseline Risk Matrix*, we are referring to the *Standard Practice* Risk Matrix. The Standard Practice Risk Matrix is *not* set automatically as the default Risk Matrix. If you are planning to use it as the default Risk Matrix, you will need to select the **Default** check box on the datasheet (after *clearing* the **Default** check box for the Default Risk Matrix).

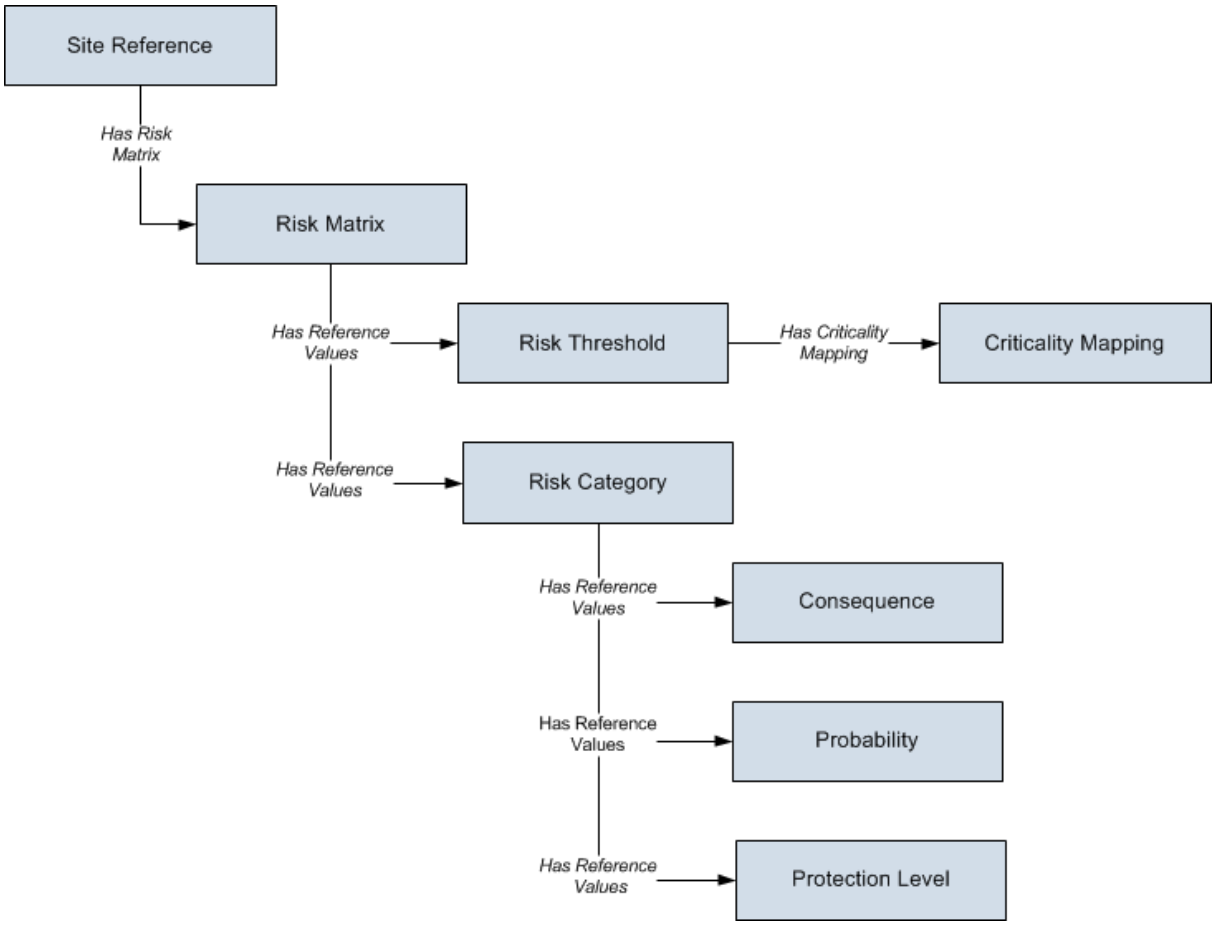
Risk Assessment Data Model

The values that appear on the baseline Risk Matrix come from values that are stored in records in the following families:

- Risk Matrix
- Risk Category
- Consequence
- Probability
- Risk Threshold
- Protection Level

The following diagram illustrates the families that are used to create a Risk Matrix and how they are related to one another in the baseline Meridium APM database. Meridium APM leverages its fundamental entity and relationship family infrastructure to store data about the Risk Matrix.

The shaded boxes represent entity families, and the arrows represent relationship families. You can determine the direction of each relationship definition from the direction of the arrow head: the box from which the arrow originates is the *predecessor* in that relationship definition, and the box to which the arrow head points is the *successor* in that relationship definition. For example, you can see that Risk Category records are linked to Risk Matrix records through the *Has Reference Values* relationship, where the Risk Matrix family is the predecessor.



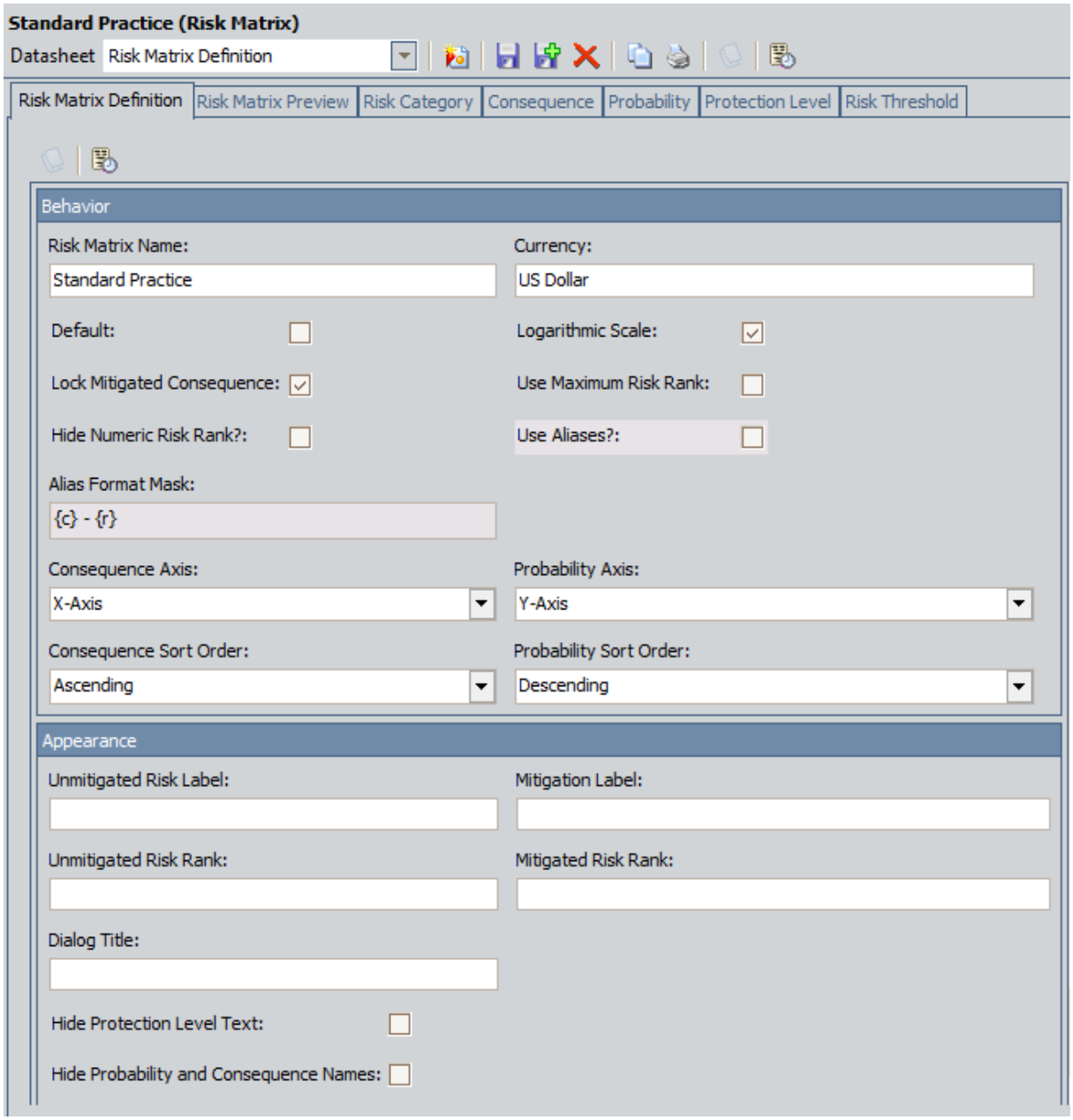
Note: The Criticality Mapping entity family and the Has Criticality Mapping relationship family are used only by the Asset Criticality Analysis (ACA) module.

Risk Matrix

Risk Matrix records store the majority of the values that determine how the Risk Matrix looks. Some of the values in a Risk Matrix record are also used to filter the values that you can select in other records in the Risk Matrix data model.

The baseline datasheet for the Risk Matrix family is the *Risk Matrix Definition* datasheet. It contains multiple tabs that each controls a certain aspect of the Risk Matrix's appearance.

The following image illustrates the**Risk Matrix Definition** tab of the Risk Matrix Definition datasheet.



Risk Category

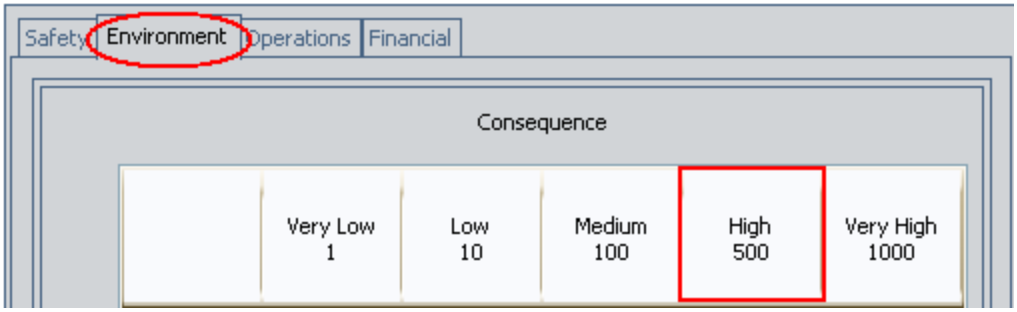
Risk Category records are linked to Risk Matrix records through the Has Reference Values relationship. For each Risk Category record that is linked to the Risk Matrix record, a tab appears on the Risk Matrix. Each tab contains its own matrix.

For example, since the Risk Category record *Environment* is linked to the baseline Risk Matrix record *Default*, the baseline Risk Matrix includes the **Environment** tab, which displays a matrix as shown in the following image.

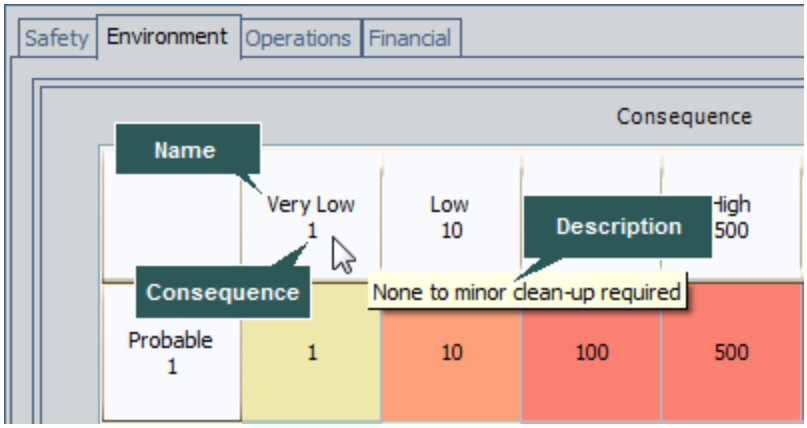
The baseline Risk Matrix is linked to four Risk Category records: Safety, Environment, Operations, and Financial.

Consequence

Each Risk Matrix uses multiple *Consequence* records, where each Consequence record corresponds to one *column* on one tab of the Risk Matrix. Each Consequence record is linked to a Risk Category record through the Has Reference Values relationship, where the Risk Category record determines the tab on which the column will appear. For example, since the Consequence record *High* is linked to the Risk Category record *Environment*, the **High** column appears on the **Environment** tab on the Risk Assessment feature.



The following image highlights the *Name*, *Description*, and *Consequence* value for the *Very Low* Consequence as it is configured in the baseline Meridium APM database.



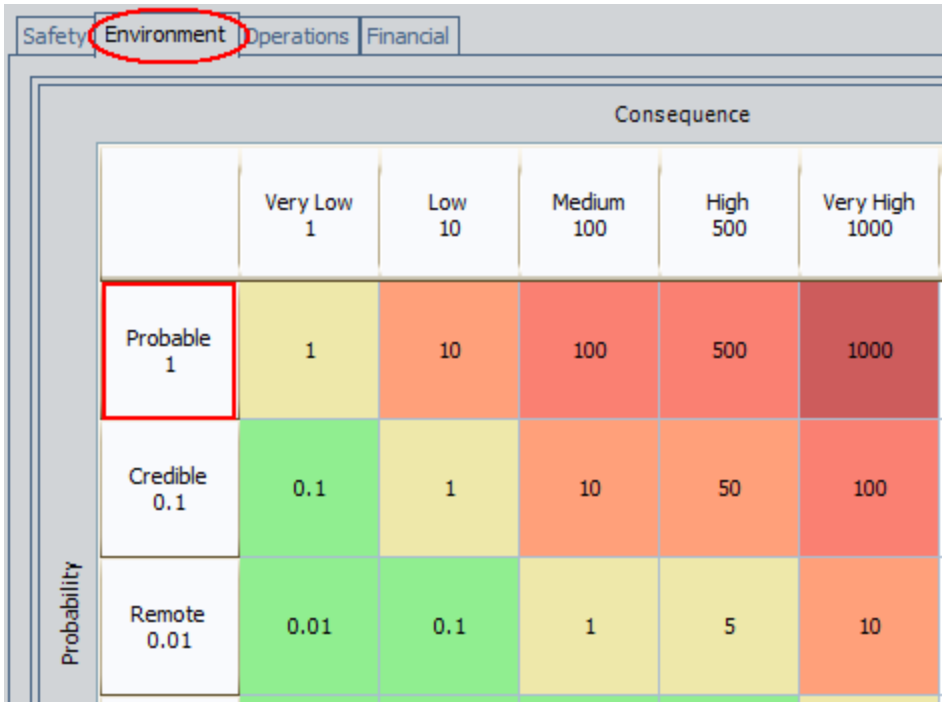
The baseline Risk Matrix uses five Consequence records: Very Low, Low, Medium, High, and Very High.

In the baseline Meridium APM database, each Consequence record is linked to the following Risk Category records: Environment, Operations, Safety.

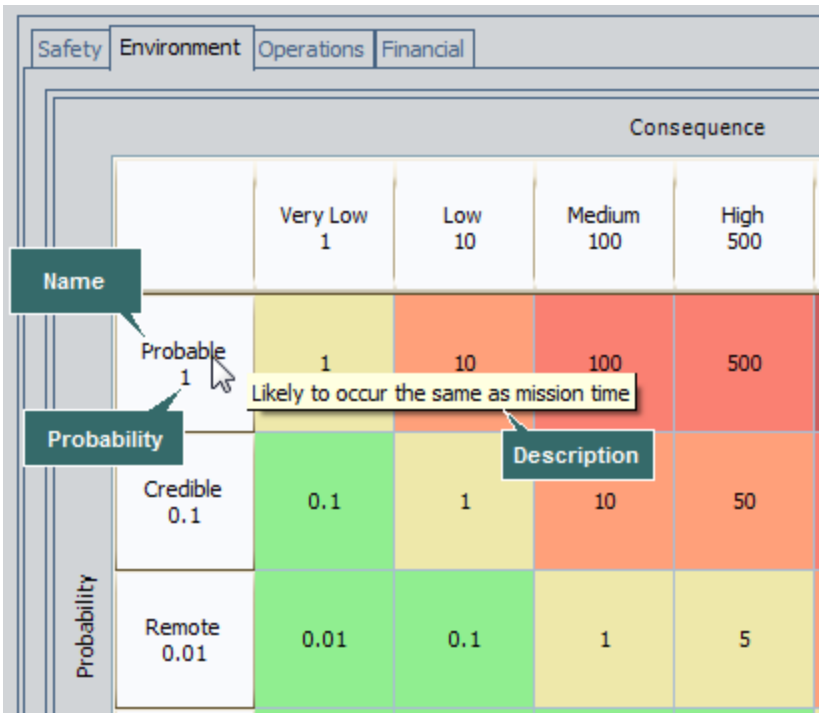
Note: The Risk Category record *Financial* is not linked to a Consequence record.

Probability

Each Risk Matrix uses multiple *Probability* records, where each Probability record corresponds to one *row* on one tab of the Risk Matrix. Each Probability record is linked to a Risk Category record through the Has Reference Values relationship, which determines the tab on which the associated row will appear. For example, since the Probability record *Probable* is linked to the Risk Category record *Environment* , the **Probable** row appears on the **Environment** tab on the risk matrix.



The following image highlights the Name, Description, and Probability value for the Probability record *Probable* as it is configured in the baseline Meridium APM database.



The baseline Risk Matrix uses five Probability records:

- Frequent
- Probable
- Likely
- Credible
- Remote
- Possible
- Improbable
- Unlikely

In the baseline Meridium APM database, some Risk Category records to some of these Probability records, and other Risk Category records are linked to other Probability records, as shown in the following table.

Safety	Environment	Operations	Financial
Probable	Probable	Frequent	Frequent
Credible	Credible	Probable	Probable
Remote	Remote	Likely	Likely
Improbable	Improbable	Credible	Credible
Unlikely	Unlikely	Possible	Possible

Risk Threshold

Each risk matrix uses multiple *Risk Threshold* records, where each Risk Threshold record corresponds to one *color* on each tab of the risk matrix. Each Risk Threshold record is linked to a Risk Matrix record through the Has Reference Values relationship, which determines the risk matrix on which the associated colors will appear and the risk threshold value that appears when you pause on a cell in the matrix.

The baseline Risk Matrix record is linked to four Risk Threshold records: Low, Medium, High, and Very High.

Protection Level

Each Risk Matrix can use multiple *Protection Level* records, where each Protection Level record corresponds to one *level* on a Protection Level Definition slider. The baseline Risk Matrix does not include a Protection Level record. Protection Level records can be linked to Risk Category records through the Has Reference Values relationship, which determines the tab on which the Protection Level Definition slider will appear.

In this image, you can see that the Protection Level Definition name is *Normal*, and the description is *Procedural controls; inherent design controls*. You can also see in the **Unmitigated** cell (below the slider) that the factor for this Protection Level Definition is *1*. In this case, any number that is selected on the **Environment** tab will be multiplied by 1 to determine the total risk value for the Environment risk category.

Note that when the Protection Level slider is displayed on a tab, the values in the cells on that tab change depending on the level at which the slider is positioned. The factor associated with the current position of the slider is multiplied by the baseline values in the matrix cells to determine the new numbers that are displayed in each cell.

For example, in the baseline Risk Matrix, the value in the cell at the intersection of the *Remote* probability and *Low* consequence is *1*. If the Protection Level Definition slider were displayed and the slider were positioned where the factor was 5, the value in the cell at the intersection of the *Remote* probability and *Low* consequence would be *5* (1 x 5).

Safety: 0
Environment: 5
Operations: 0
Financial: 0
Consequence
Very Low 1
Low 10
Medium 100
High 500
Very High 1000
Probable 1
5
50
500
2500
5000
Credible 0.1
0.5
5
50
250
500
Remote 0.01
0.05
0.5
5
25
50
Improbable 0.001
0.005
0.05
0.5
2.5
5
Unlikely 0.0001
0.0005
0.005
0.05
0.25
0.5
Probability
Protection Level
Unmitigated
5

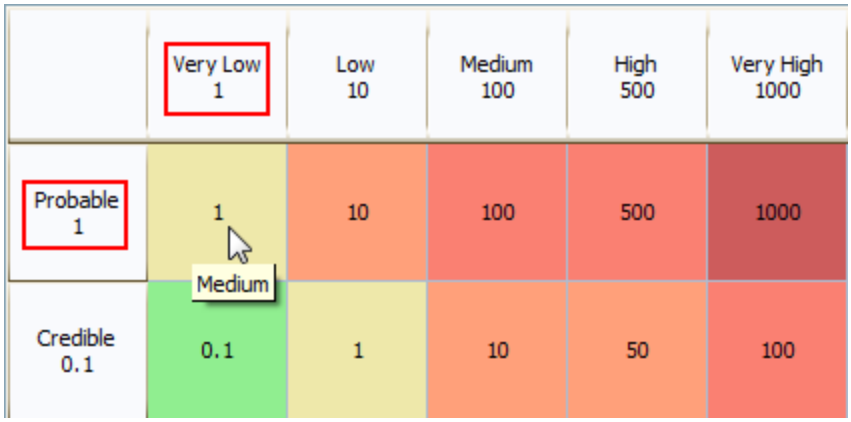
About the Row, Column, and Tooltip Labels in the Risk Matrix

The Risk Matrix is configured to display values in certain places to guide you in selecting the appropriate risk values. For example:

- Each row and column contains a label that identifies the probability or consequence level associated with that row or column.
- Each cell contains a tooltip that explains the threshold within which the risk value falls.

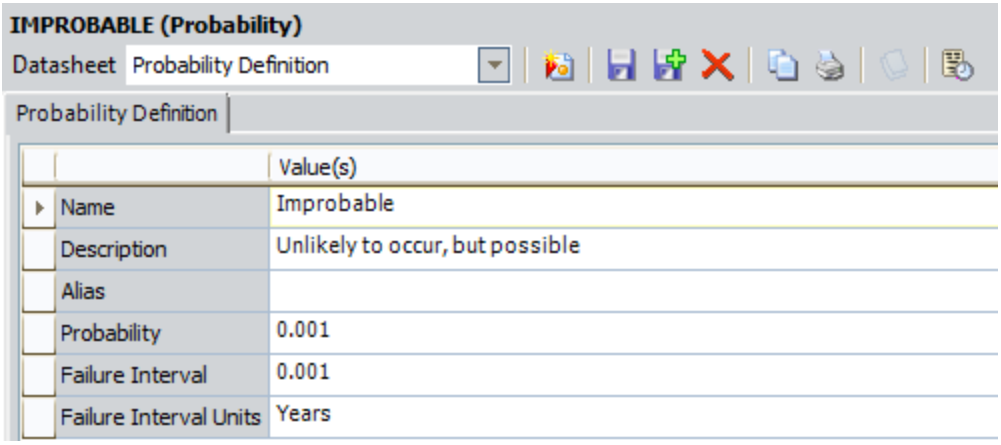
For example, in the following image, which displays the baseline Risk Matrix, you can see:

- The label of the first (top) row is *Probable 1*.
- The label of the first (left) column is *Very Low 1*.
- The label of the tooltip is *Medium*.

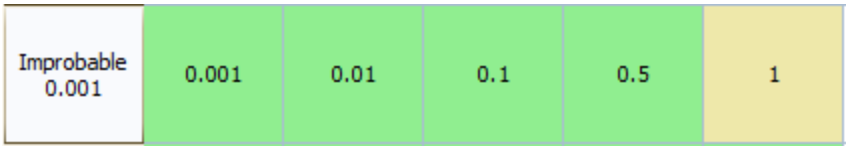


By default, the label for each row, column, and tooltip is configured as follows:

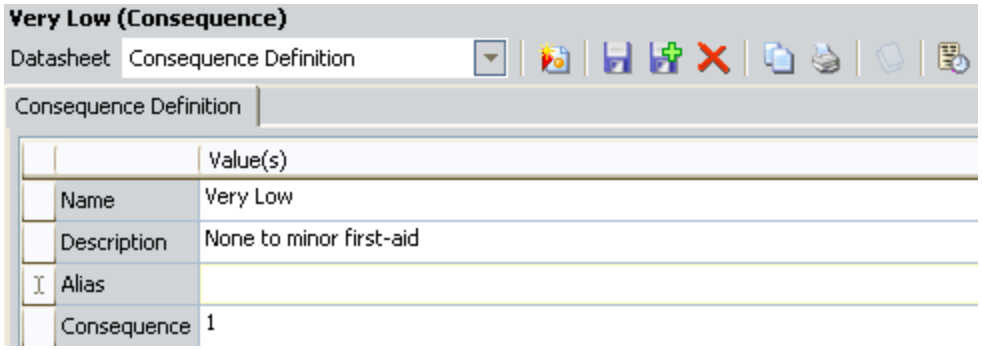
- The label for each *row* is the combination of the value in the Name field and the Probability field in a Probability record. For example, consider the following Probability record, whose Name field contains the value *Improbable* and whose Probability field contains the value *0.0001*.



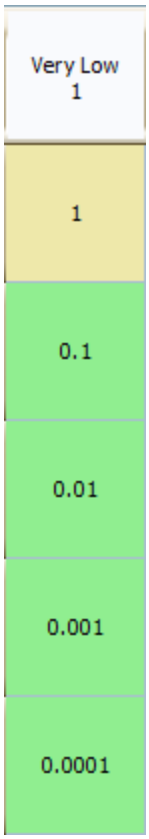
If you were to view the Risk Matrix, you would see a row with the label *Improbable 0.0001*, as shown in the following image.



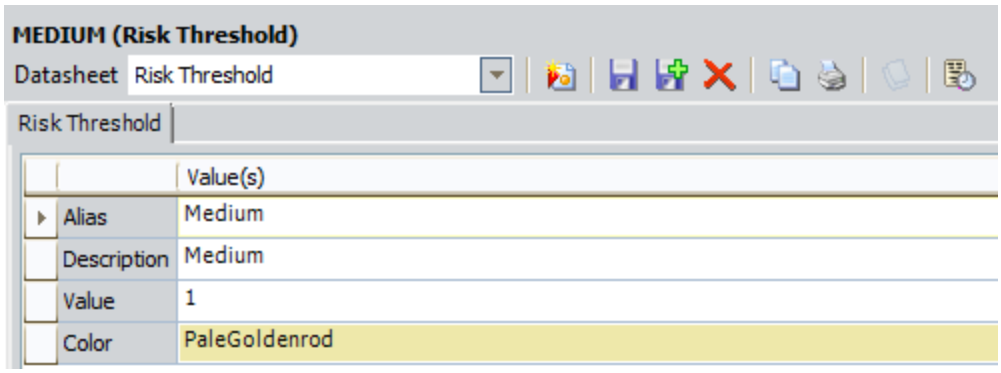
- The label for each *column* is the combination of the value in the Name field and the Consequence field in a Consequence record. For example, consider the following Consequence record, whose Name field contains the value *Very Low* and whose Consequence field contains the value *1*.



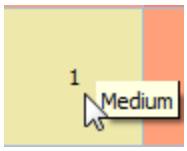
If you were to view the Risk Matrix, you would see a column with the label *Very Low 1*, as shown in the following image.



- The label for each *tooltip* is the value in the Description field in the Risk Threshold record that is associated with that risk value. For example, consider the following Risk Threshold record, whose Description field contains the value *Medium* and whose Value field contains the value *1*.



If you were to pause on the cell containing the value *10*, the tooltip would show the text *Medium*, as shown in the following image.

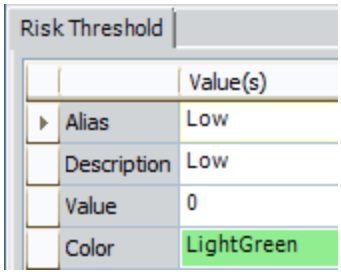


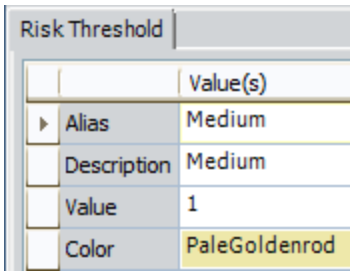
If desired, you can create your own custom label for each row, column, and tooltip.

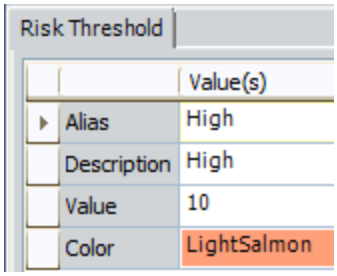
Illustration of How Risk Threshold Records are Used

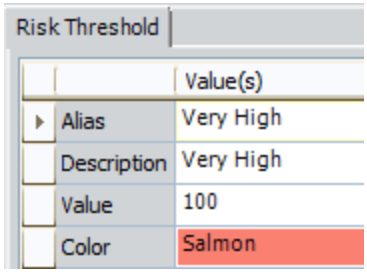
Risk Threshold records are best understood through a detailed illustration. The following explanation illustrates how the baseline Risk Threshold records are used.

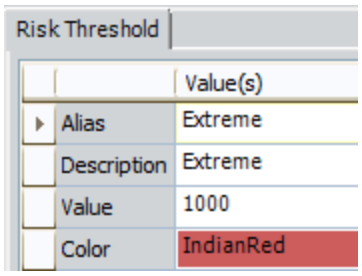
The following Risk Threshold records are provided in the baseline Meridium APM database to support the baseline Risk Matrix.







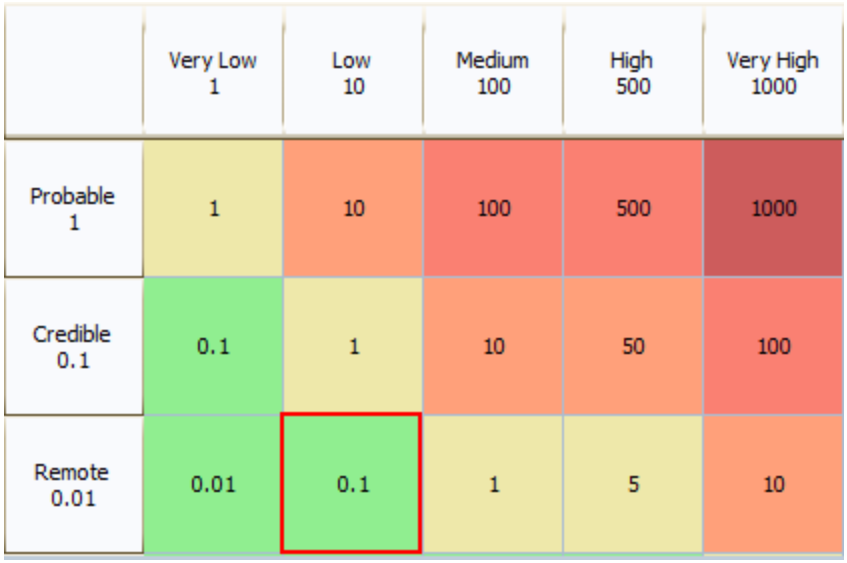




From the values in these records, we can determine that the following criteria will be applied to numbers that appear on the baseline Risk Matrix:

- Any number greater than or equal to 0 and less than 1 will be considered low risk. Cells in the matrix that contain numbers greater than or equal to 0 and less than 1 will be shaded *LightGreen*.
- Any number greater than or equal to 1 and less than 10 will be considered medium risk. Cells in the matrix that contain numbers within this range will be shaded *PaleGoldenrod*.
- Any number greater than or equal to 10 and less than 100 will be considered high risk. Cells in the matrix that contain numbers within this range will be shaded *LightSalmon*.
- Any number greater than or equal to 100 and less than 1000 will be considered very high risk. Cells in the matrix that contains numbers within this range will be shaded *Salmon*.
- Any number greater than or equal to 1000 will be considered very high risk. Cells in the matrix that contains numbers greater than or equal to 1000 will be shaded *IndianRed*.

When you view a tab on the Risk Matrix, the cells in the matrix are shaded according to the value in that cell and where it falls within the ranges as they are defined in the Risk Threshold records. For example, in the following image, you can see that the highlighted cell contains the number *0.1* and is colored *LightGreen*.



About Accessing the Risk Assessment Interface

You can access the Risk Assessment interface in various modules throughout the Meridium APM Framework application, such as Asset Strategy Management. For details on accessing the Risk Assessment interface using a particular module, see the documentation for that module.

First-Time Deployment Workflow

Deploying and configuring the Risk Assessment feature for the first time includes installing and configuring the basic Meridium APM system architecture.

Note: If you want to use a *custom* Risk Matrix, however, you will need to complete several additional configuration steps.

Upgrade or Update Risk Assessment to 3.6.1.0.0

The following tables list the steps that are required to update or upgrade Risk Assessment to 3.6.1.0.0. These steps assume that you have completed the steps for upgrading the basic Meridium APM system architecture.

Upgrade from any version V3.6.0.0.0 through V3.6.0.12.3

The Risk Assessment feature will be upgraded to 3.6.1.0.0 automatically when you upgrade the components in the basic Meridium APM system architecture. No additional steps are required.

Upgrade from any version V3.5.1.0.0 through V3.5.1.12.0

The Risk Assessment feature will be upgraded to 3.6.1.0.0 automatically when you upgrade the components in the basic Meridium APM system architecture. No additional steps are required.

Upgrade from any version V3.5.0 SP1 LP through V3.5.0.1.9.0

The Risk Assessment feature will be upgraded to 3.6.1.0.0 automatically when you upgrade the components in the basic Meridium APM system architecture. No additional steps are required.

Upgrade from any version V3.5.0 through V3.5.0.0.7.1

The Risk Assessment feature will be upgraded to 3.6.1.0.0 automatically when you upgrade the components in the basic Meridium APM system architecture. No additional steps are required.

Upgrade from any version V3.4.5 through V3.4.5.0.1.4

The Risk Assessment feature will be upgraded to 3.6.1.0.0 automatically when you upgrade the components in the basic Meridium APM system architecture. No additional steps are required.

Associating a Risk Matrix with a Site

Each site can be associated with only one risk matrix. A single risk matrix, however, can be associated with multiple sites.

To associate a risk matrix with a site:

1. In the Meridium APM Framework, perform a search for the Site Reference record representing the site with which you want to associate a risk matrix.
2. Open the desired Site Reference record.

   The Site Reference record appears in the Record Manager.
3. Using the shortcut menu in the **Record Explorer** pane, link the Site Reference record to the desired Risk Matrix record.

   The Risk Matrix record is linked to the Site Reference record.

About Customizing a Risk Matrix

You can customize the Risk Matrix that appears in the Risk Assessment interface throughout Meridium APM. You can do so by modifying values in the corresponding Risk Matrix record and the records to which it is linked.

You can modify the *baseline* Risk Matrix record without creating a completely new one, or you can make a copy of the baseline Risk Matrix and customize the copy. Note that only one Risk Matrix record can be specified as the default.

Note: After you modify a Risk Matrix, you should close and reopen the Meridium APM Framework to see the changes within any module (e.g., ASM).

You can customize a Risk Matrix in the following ways:

- Create new Consequence and Probability records.
- Modify Consequence and Probability records.
- Create new system codes.
- Modify the Risk Assessment interface title.
- Modify text box labels in the Risk Assessment interface.
- Change the axis on which the consequence and probability values appear.
- Change the order in which the consequence and probability values are displayed on the axis.
- Lock the mitigated consequence.
- Hide the probability and consequence names.
- Hide numeric risk rank values.
- Hide the text boxes below the Protection Level slider.
- Display custom labels in the Risk Matrix.
- Disable the **Not Applicable** check box.

If a Risk Matrix has been used by a module in Meridium APM, the values in the following fields in the Risk Matrix record cannot be modified:

- Currency
- Use Maximum Risk Rank
- Use Aliases?
- Alias Format Mask

In addition, you will not be able to add or remove probabilities or consequences from the Risk Matrix.

Copying Risk Matrices

Rather than modifying an existing Risk Matrix, you can create a copy of it, which will create a new Risk Matrix record with the name *Copy of <Name>*, where *<Name>* is the name of the Risk Matrix record that you copied. After you create a copy of a Risk Matrix, you can modify it as desired.

To copy a Risk Matrix:

1. In the Meridium APM Framework, open the Risk Matrix record that you want to copy.
2. On the **Associated Pages** menu, click the **Copy Risk Matrix** link.

   The Record Manager is refreshed and displays the new Risk Matrix record with the name **Copy of <Name>**. At this point, you can modify the new record.

Overview of the Risk Matrix Definition Datasheet

The Risk Matrix Definition datasheet is the default datasheet for the Risk Matrix family.

Using the Risk Matrix Definition datasheet, you can:

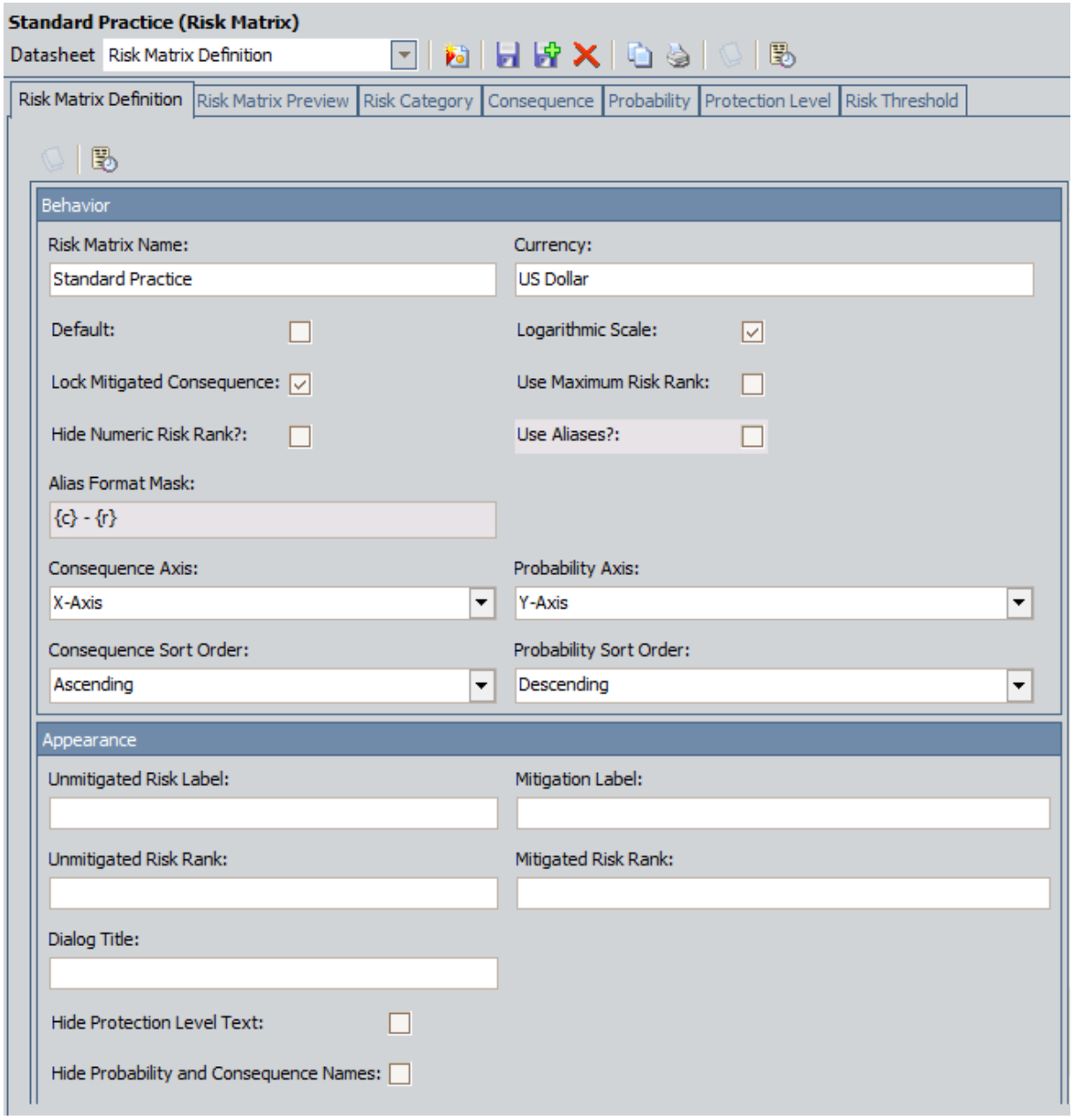
- Customize the Risk Matrix.
- Manage system code table values for the families that are linked to the Risk Matrix record.

The Risk Matrix Definition datasheet contains the following tabs, which you can use to manage the values that appear on the Risk Matrix:

- **Risk Matrix Definition** tab
- **Risk matrix Preview** tab
- **Risk Category** tab
- **Consequence** tab
- **Probability** tab
- **Protection Level** tab
- **Risk Threshold** tab

Risk Matrix Definition Tab

You can use the options on the**Risk Matrix Definition**tab to customize the Risk Matrix that will appear in the Risk Assessment interface.



Risk Matrix Preview Tab

The **Risk Matrix Preview** tab on the Risk Matrix Definition datasheet displays a preview of how the Risk Matrix will appear in the Risk Assessment interface. As you make changes to the values on the Risk Matrix Definition datasheet, those changes will be displayed on the **Risk Matrix Preview** tab.

	Very Low 1	Low 10	Medium 100	High 500	Very High 1000	Add New
Probable 1	1	10	100	500	1000	0
Credible 0.1	0.1	1	10	50	100	0
Remote 0.01	0.01	0.1	1	5	10	0
Improbable 0.001	0.001	0.01	0.1	0.5	1	0
Unlikely 0.0001	0.0001	0.001	0.01	0.05	0.1	0
Add New	0	0	0	0	0	0

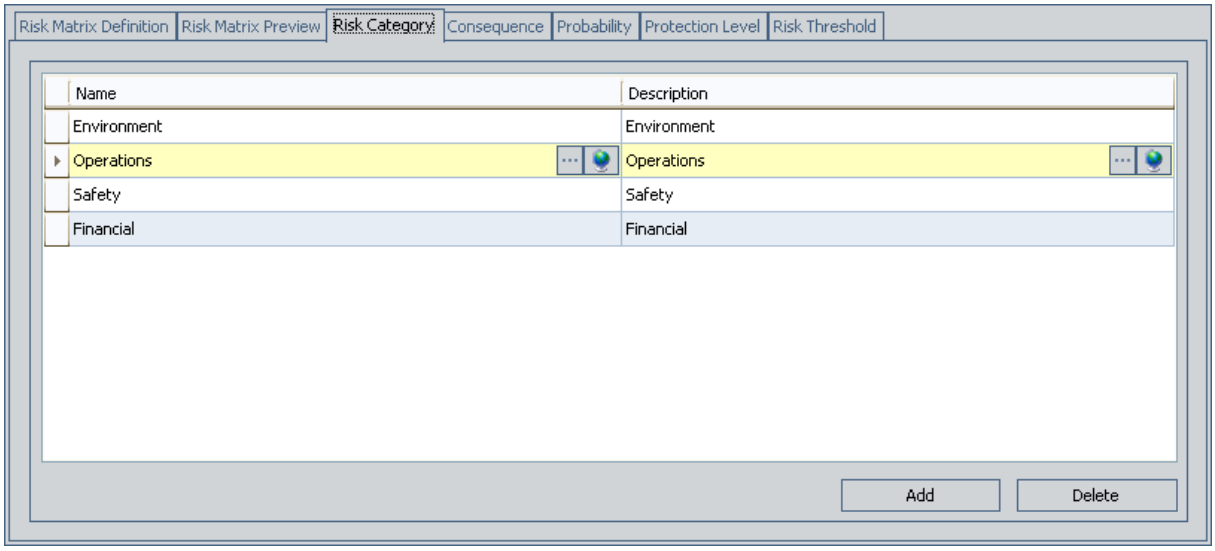
Using the **Risk Matrix Preview** tab, you can:

- View the Risk Matrix as it will appear in the Risk Assessment interface.
- View and modify the Consequence and Probability records.
- Create new Consequence and Probability records.

Aspects of the Risk Category Tab

The **Risk Category** tab on the Risk Matrix Definition datasheet contains a grid, where each row in the grid represents a separate *risk category*, which appears as its own tab on the Risk Matrix.

For example, in the baseline database, the grid on the **Risk Category** tab contains the following rows.



Each row corresponds to a separate tab on the baseline Risk Matrix, as shown in the following image.

The grid contains the following columns: **Name** and **Description**. These columns offer a custom view of the *Description* of the System Codes in the following System Code Tables:

- MI_RISK_CATEGORY
- MI_RISK_CATEGORY_DESC

Note that each System Code in the MI_RISK_CATEGORY System Code Table has a corresponding System Code in the MI_RISK_CATEGORY_DESC System Code Table. For example, using the System Code Table view from the Configuration Manager, you can see that both System Code Tables contain the *Environment* System Code:

The corresponding System Codes are required to have the same ID, but their *Descriptions* can be different.

For each set of corresponding System Codes, the Descriptions are displayed in a single row on the **Risk Category** tab, where:

- The value in the **Name** column is the Description of the System Code in the MI_RISK_CATEGORY System Code Table.
- The value in the **Description** column is the Description of the corresponding System Code in the MI_RISK_CATEGORY_DESC System Code Table.

The values in these columns are used to define risk categories.

Each cell in the grid contains the buttons that are listed in the following table.

Button	Description
	Displays the **View/Update System Code** dialog box, where you can view and modify the *Description* of the System Code. You cannot modify the *ID* of an existing System Code.
	Displays the **LocalizeDescription for <System Code>** dialog box, where **<System Code>** is the value that appears in the cell from which you accessed the **Localize<String>** dialog box. Using the **Localize <String>** dialog box, you can create or modify translations for the *Description* of the System Code. You cannot translate the *ID* of an existing System Code.

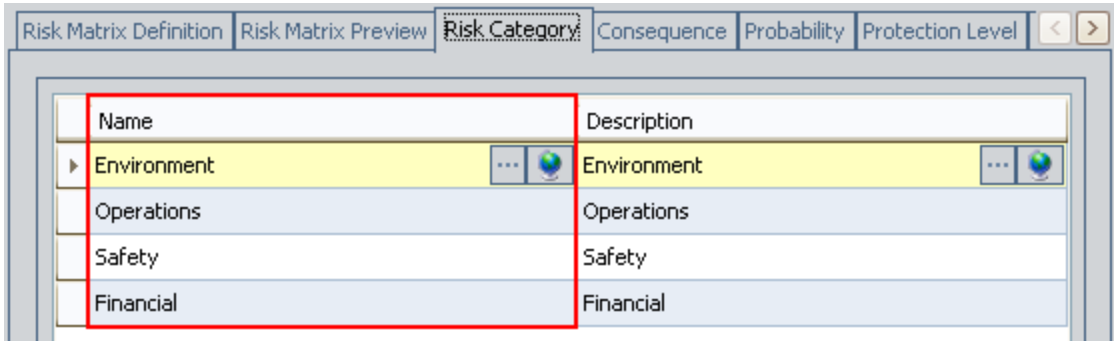
Below the grid, the following buttons appear:

- **Add:** Displays the **Add System Code** dialog box, where you can define the System Codes that will be added to*both*System Code Tables: MI_RISK_CATEGORY and MI_RISK_CATEGORY_DESC.
- **Delete:** After asking for confirmation, deletes the System Codes in the selected row.

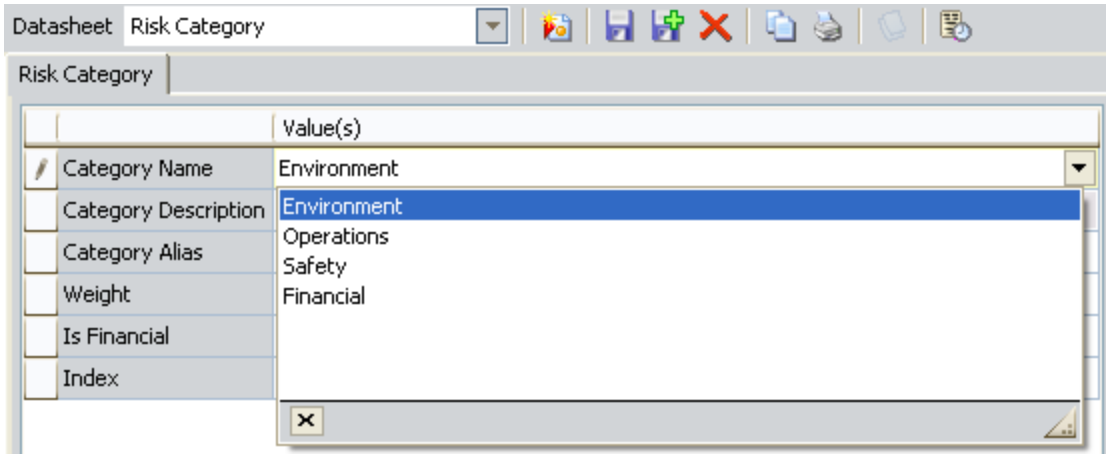
System Codes and Risk Category Records

The values in the **Name** column in the grid on the **Risk Category** tab appear in the **Category Name** list in the Risk Category records. For example, in the baseline database, the **Risk Category** tab contains the following values in the **Name** column:

- Environment
- Operations
- Safety
- Financial



If you were to view the **Category Name** list in a Risk Category record, you would see the same values:

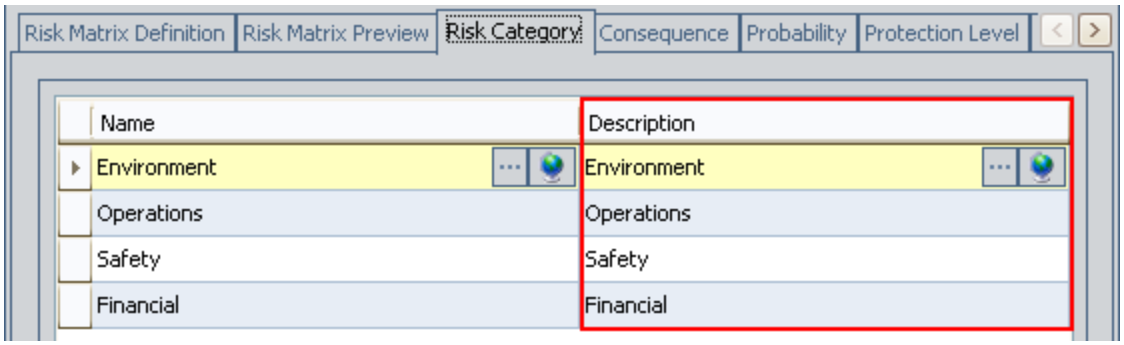


When the Category Name field in a Risk Category record is populated, the value in the Category Description field in that Risk Category record is set by default to the value that appears on the **Risk Category** tab in the **Description** column in the same row as that name.

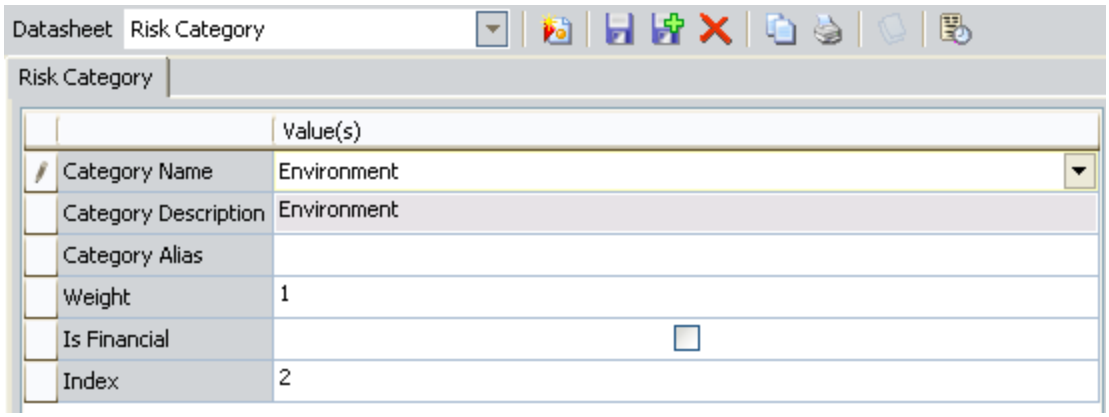
For example, in the baseline database, the **Risk Category** tab contains the following values in the **Description** column:

- Environment
- Operations

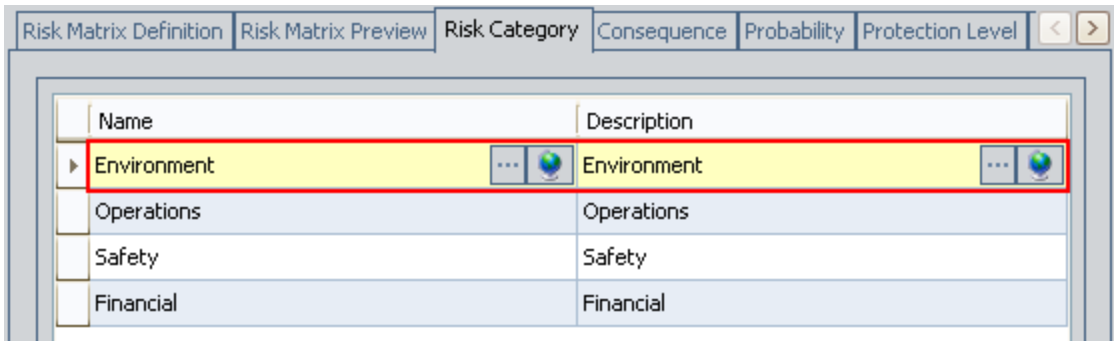
- Safety
- Financial



In a Risk Category record, if you were to select *Environment* in the Category Name field, the Category Description would be populated automatically with the value *Environment*, as shown in the following image.



On the baseline Risk Matrix Definition datasheet, for each row on the **Risk Category** tab, the values in the **Name** and **Description** columns are the same. For example, in the first row, the value in the **Name** column and the **Description** column is *Environment*.



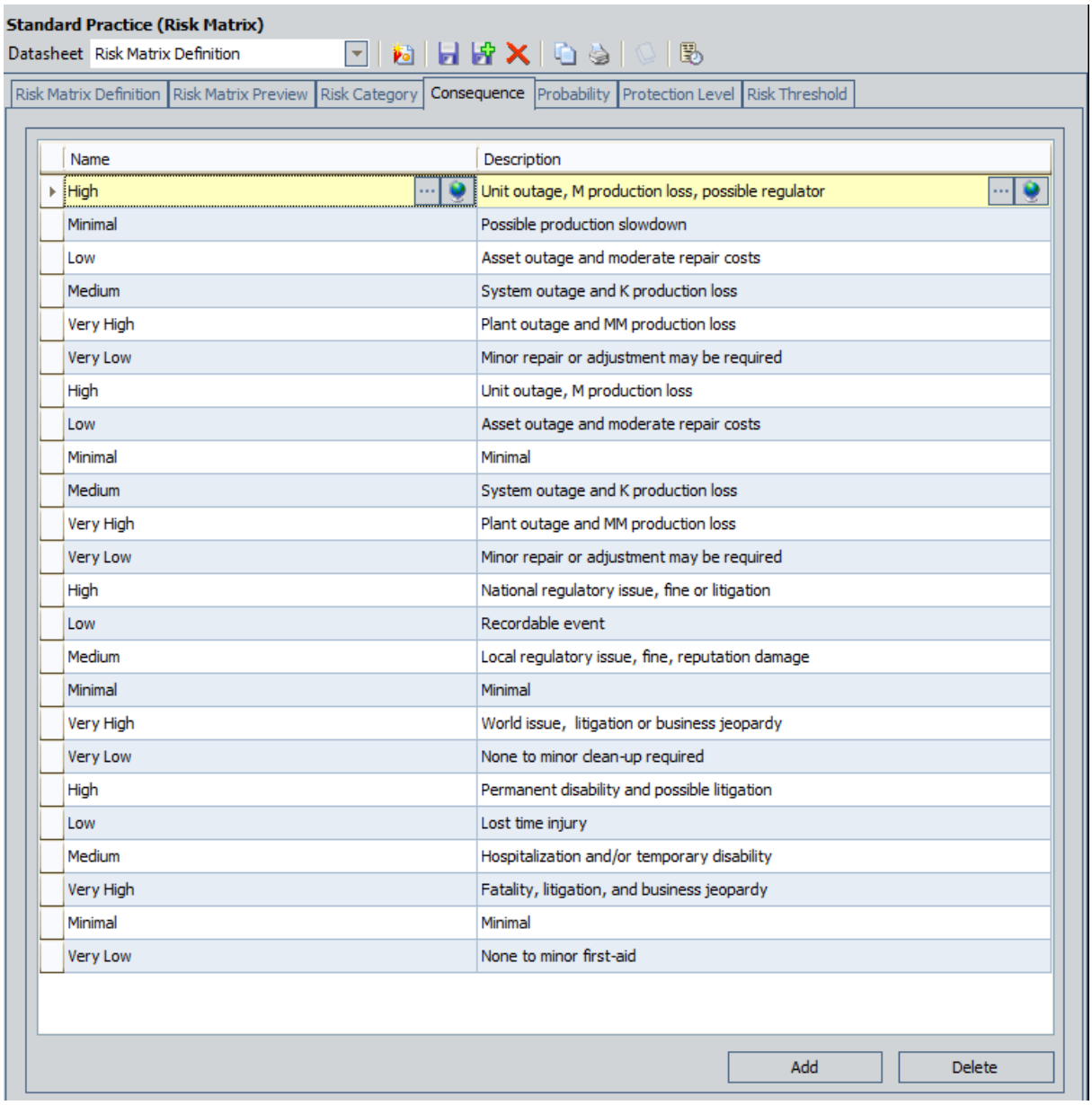
Therefore, to fully understand how the values work together to create risk categories on the Risk Matrix, it is best to consider an example of how to create your own risk category.

Aspects of the Consequence Tab

The **Consequence** tab on the Risk Matrix Definition datasheet contains a grid, where each row in the grid represents a separate *consequence*, which appears on its own column or row on a tab on the Risk Matrix.

Note: The consequence will be its own *column* if the value in the Consequence Axis field on the **Risk Matrix Definition** tab is set to *X-Axis*. Likewise, the consequence will be its own *row* if the value in the Consequence Axis field is set to *Y-Axis*.

For example, in the baseline database, the grid on the **Consequence** tab contains the following rows.

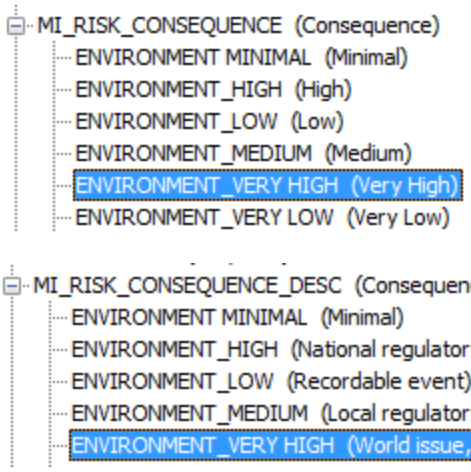


Each row corresponds to a separate column in the x-axis header in the matrix, as shown in the following image.

On the **Consequence** tab, the grid contains the following columns: **Name** and **Description**. These columns offer a custom view of the *Description* of the System Codes in the following System Code Tables:

- MI_RISK_CONSEQUENCE
- MI_RISK_CONSEQUENCE_DESC

Note that each System Code in the MI_RISK_CONSEQUENCE System Code Table has a corresponding System Code in the MI_RISK_CONSEQUENCE_DESC System Code table. For example, using the System Code Table view from the Configuration Manager, you can see that both System Code Tables contain the System Code *ENVIRONMENT_VERY_HIGH*:



The corresponding System Codes are required to have the same ID, but their *Descriptions* can be different.

For each set of corresponding System Codes, the Descriptions are displayed in a single row on the **Consequence** tab, where:

- The value in the **Name** column is the Description of the System Code in the MI_RISK_CONSEQUENCE System Code Table.
- The value in the **Description** column is the Description of the corresponding System Code in the MI_RISK_CONSEQUENCE_DESC System Code Table.

The values in these columns are used to define consequences.

Each cell in the grid contains the buttons that are listed in the following table.

Button	Description
	Displays the **View/Update System Code** dialog box, where you can view and modify the *Description* of the System Code. You cannot modify the *ID* of an existing System Code.
	Displays the **LocalizeDescription for <System Code>** dialog box, where **<System Code>** is the value that appears in the cell from which you accessed the **Localize<String>** dialog box. Using the **Localize <String>** dialog box, you can create or modify translations for the *Description* of the System Code. You cannot translate the *ID* of an existing System Code.

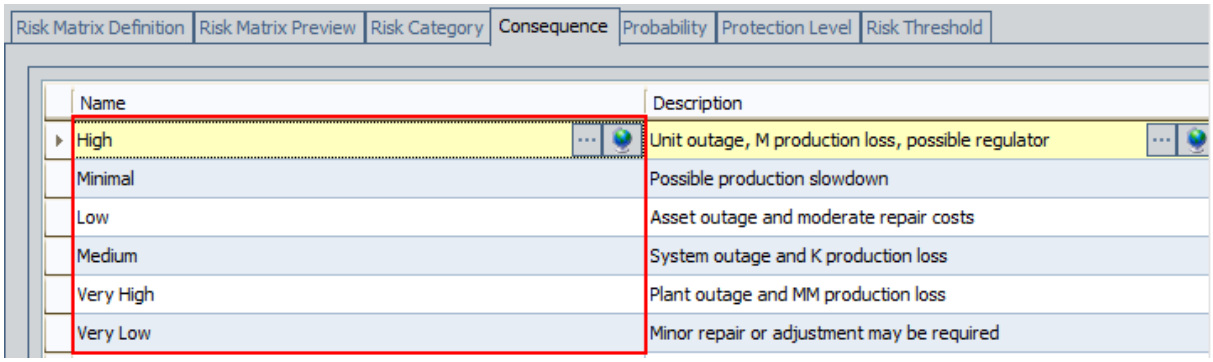
Below the grid, the following buttons appear:

- **Add:** Displays the **Add System Code** dialog box, where you can define the System Codes that will be added to*both*System Code Tables: MI_RISK_CONSEQUENCE and MI_RISK_CONSEQUENCE_DESC.
- **Delete:** After asking for confirmation, deletes the System Codes in the selected row.

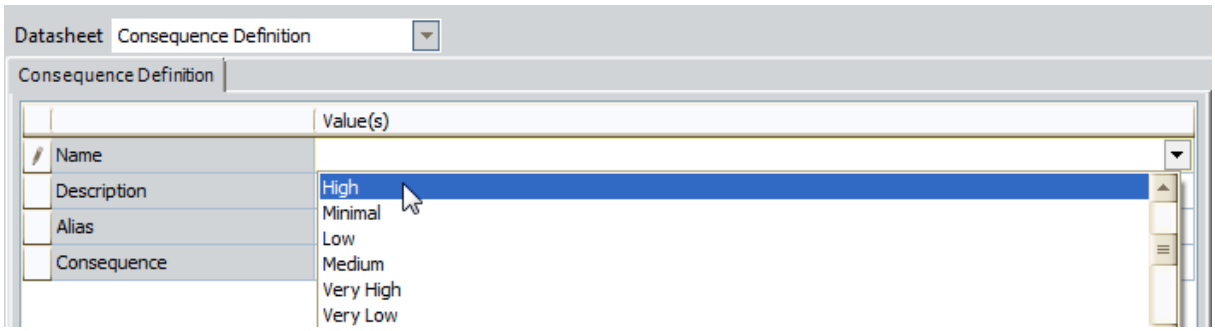
System Codes and Consequence Records

The values in the **Name** column in the grid on the **Consequence** tab appear in the **Name** list in the Consequence records. For example, in the baseline database, the **Consequence** tab contains the following values in the **Name** column (this is just a subset of the values in the **Name** column):

- High
- Minimal
- Low
- Medium
- Very High
- Very Low



If you were to view the **Name** list in a Consequence record, you would see the same values:

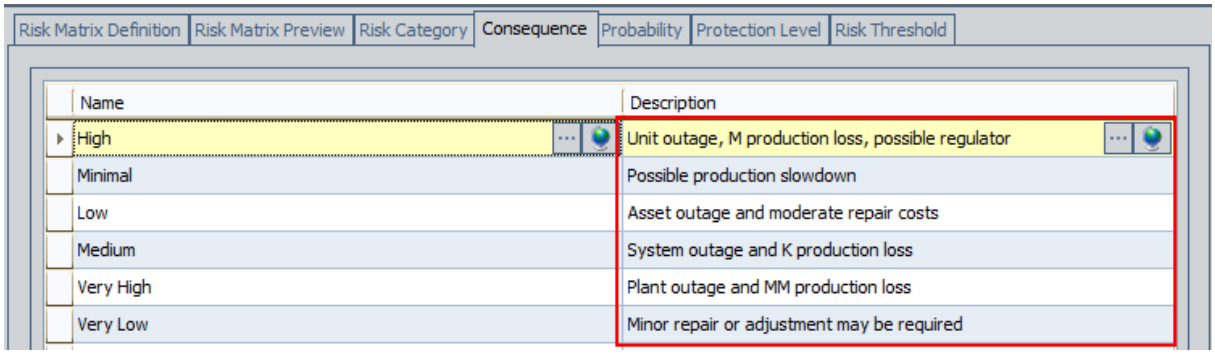


When the Name field in a Consequence record is populated, the value in the Description field in that Consequence record is set by default to the value that appears on the **Consequence** tab in the **Description** column in the same row as that name.

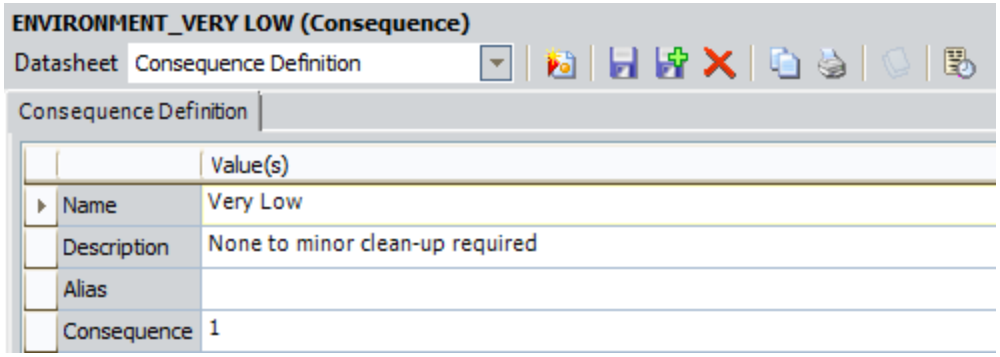
For example, in the baseline database, the **Consequence** tab contains the following values in the **Description** column (this is just a subset of the values in the **Description** column):

- Unit outage, M production loss, possible regulator
- Possible production slowdown

- Asset outage and moderate repair costs
- System outage and K production loss
- Plant outage and MM production loss
- Minor repair or adjustment may be required



In a Consequence record, if you were to select *Very Low* in the Name field, the Description field would be populated automatically with the value *Minor repair or adjustment may be required*, as shown in the following image.



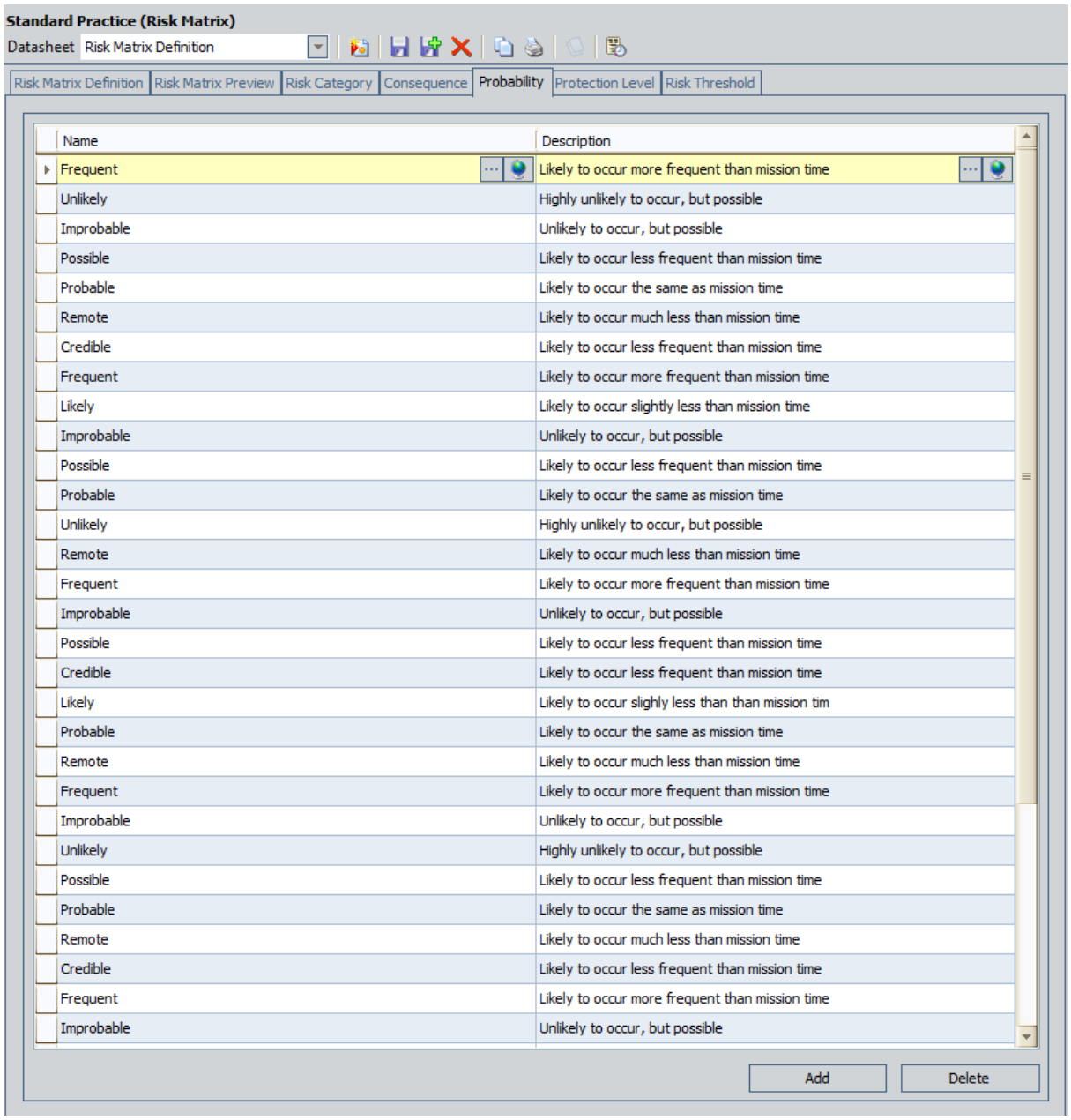
To fully understand how the values work together to create consequences in the Risk Matrix, it is best to consider an example of how to create your own consequence.

Aspects of the Probability Tab

The **Probability** tab on the Risk Matrix Definition datasheet contains a grid, where each row in the grid represents a separate *probability*, which appears on its own column or row on a tab on the Risk Matrix.

Note: The probability will be its own *column* if the value in the Probability Axis field on the **Risk Matrix Definition** tab is set to *X-Axis*. Likewise, the probability will be its own *row* if the value in the Probability Axis field is set to *Y-Axis*.

For example, in the baseline database, the grid on the **Probability** tab contains the following rows.



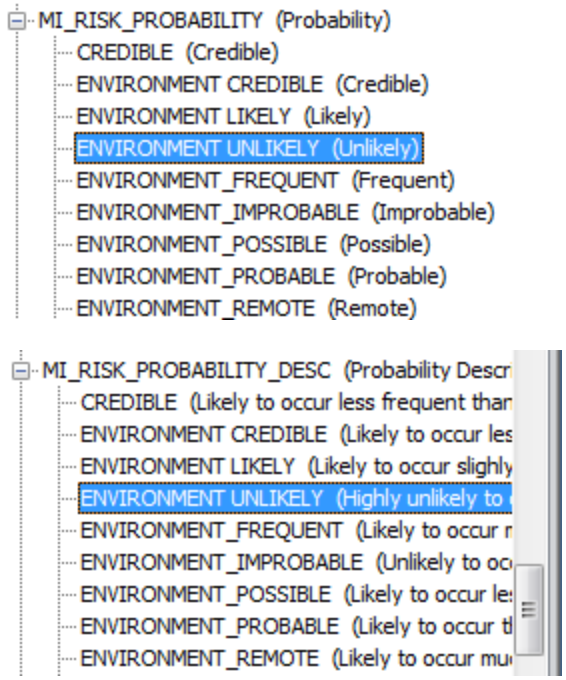
Each row corresponds to a separate row on a specific matrix. For example, in the following image, you can see the rows that are available in the Safety matrix.

	Very Low 1	Low 10	Medium 100	High 500	Very High 1000
Probable 1	1	10	100	500	1000
Credible 0.1	0.1	1	10	50	100
Remote 0.01	0.01	0.1	1	5	10
Improbable 0.001	0.001	0.01	0.1	0.5	1
Unlikely 0.0001	0.0001	0.001	0.01	0.05	0.1

On the **Probability** tab, the grid contains the following columns: **Name** and **Description**. These columns offer a custom view of the *Description* of the System Codes in the following System Code Tables:

- MI_RISK_PROBABILITY
- MI_RISK_PROBABILITY_DESC

Note that each System Code in the MI_RISK_PROBABILITY System Code Table has a corresponding System Code in the MI_RISK_PROBABILITY_DESC System Code table. For example, using the System Code Table view from the Configuration Manager, you can see that both System Code Tables contain the System Code *ENVIRONMENT_UNLIKELY*:



The corresponding System Codes are required to have the same ID, but their *Descriptions* can be different.

For each set of corresponding System Codes, the Descriptions are displayed in a single row on the **Probability** tab, where...

- The value in the **Name** column is the Description of the System Code in the MI_RISK_PROBABILITY System Code Table.
- The value in the **Description** column is the Description of the corresponding System Code in the MI_RISK_PROBABILITY_DESC System Code Table.

The values in these columns are used to define probabilities.

Each cell in the grid contains the buttons that are listed in the following table.

Button	Description
	Displays the **View/Update System Code** dialog box, where you can view and modify the *Description* of the System Code. You cannot modify the *ID* of an existing System Code.
	Displays the **LocalizeDescription for <System Code>** dialog box, where **<System Code>** is the value that appears in the cell from which you accessed the **Localize<String>** dialog box. Using the **Localize <String>** dialog box, you can create or modify translations for the *Description* of the System Code. You cannot translate the *ID* of an existing System Code.

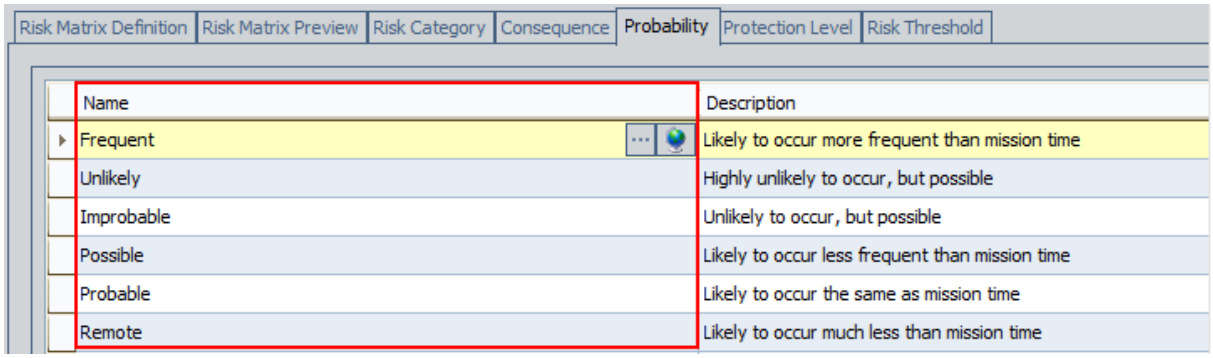
Below the grid, the following buttons appear:

- **Add:** Displays the **Add System Code** dialog box, where you can define the System Codes that will be added to*both*System Code Tables: MI_RISK_PROBABILITY and MI_RISK_PROBABILITY_DESC.
- **Delete:** After asking for confirmation, deletes the System Codes in the selected row.

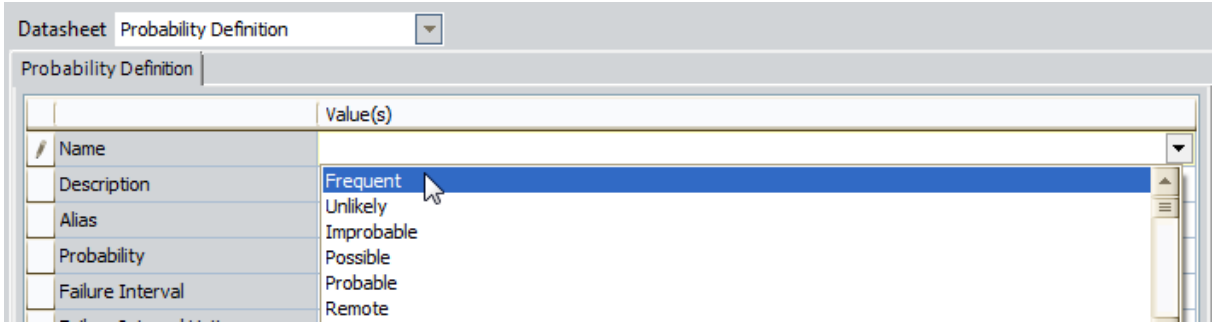
System Codes and Probability Records

The values in the **Name** column in the grid on the **Probability** tab appear in the **Name** list in Probability records. For example, in the baseline database, the **Probability** tab contains the following values in the **Name** column (this is just a subset of values in the **Name** column):

- Frequent
- Unlikely
- Improbable
- Possible
- Probable
- Remote



If you were to view the **Name** list in a Probability record, you would see the same values:

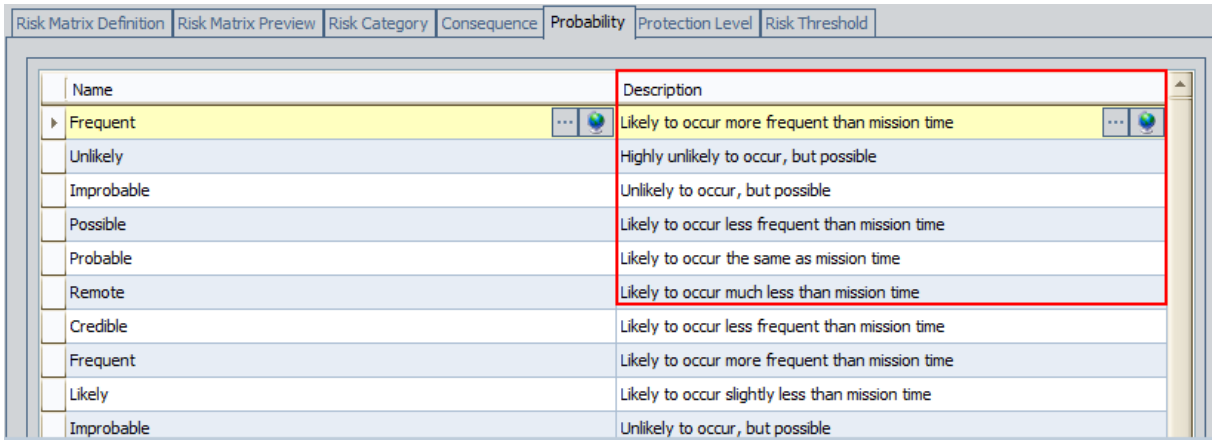


When the Name field in a Probability record is populated, the value in the Description field in that Probability record is set by default to the value that appears on the **Probability** tab in the **Description** column in the same row as that name.

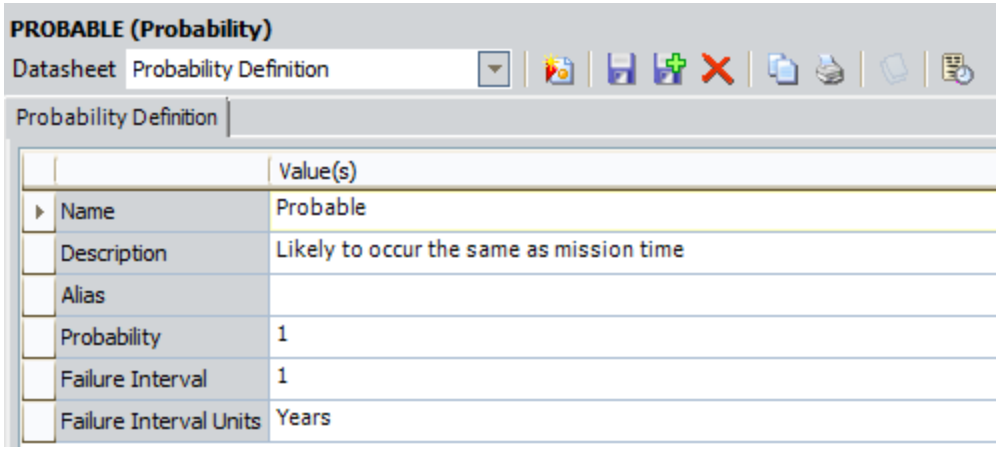
For example, in the baseline database, the **Probability** tab contains the following values in the **Description** column:

- Likely to occur more frequent than mission time
- Highly unlikely to occur, but possible
- Unlikely to occur, but possible

- Likely to occur less frequent than mission time
- Likely to occur the same as mission time
- Likely to occur much less frequent than mission time



In a Probability record, if you were to select *Probable* in the Name field, the Description field would be populated automatically with the value *Likely to occur the same as mission time*, as shown in the following image.



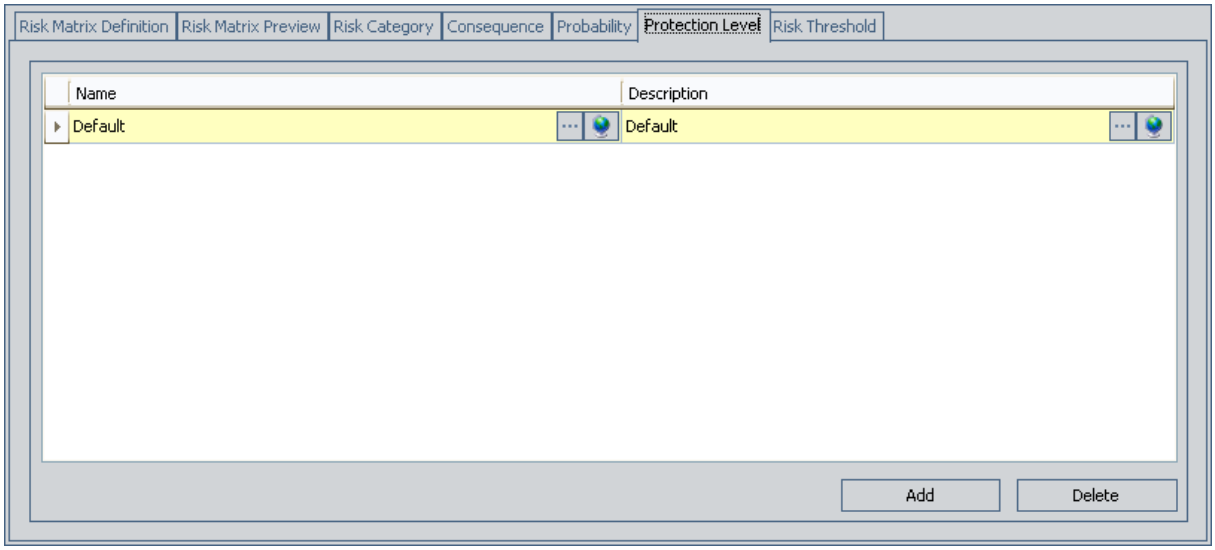
To fully understand how the values work together to create probabilities in the Risk Matrix, it is best to consider an example of how to create your own probability.

Aspects of the Protection Level Tab

The **Protection Level** tab on the Risk Matrix Definition datasheet contains a grid, where each row in the grid represents a Protection Level slider that can appear on the Risk Matrix. Protection Level records can be linked to Risk Category records through the Has Reference Values relationship, which determines the tab on which the protection level slider will appear.

The baseline Risk Matrix is not linked to a Protection Level records by default. However, a baseline System Code is provided and appears on the **Protection Level** tab on the Risk Matrix Definition datasheet.

For example, the grid on the **Protection Level** tab contains the following row.

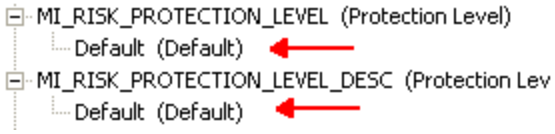


Each row in the grid represents one Protection Level slider, as shown in the following image.

The grid contains the following columns: **Name** and **Description**. These columns offer a custom view of the *Description* of the System Codes in the following System Code Tables:

- MI_RISK_PROTECTION_LEVEL
- MI_RISK_PROTECTION_LEVEL_DESC

Note that each System Code in the MI_RISK_PROTECTION_LEVEL System Code Table has a corresponding System Code in the MI_RISK_PROTECTION_LEVEL_DESC System Code table. For example, using the System Code Table view from the Configuration Manager, you can see that both System Code Tables contain the *Default* System Code:



The corresponding System Codes are required to have the same ID, but their *Descriptions* can be different.

For each set of corresponding System Codes, the Descriptions are displayed in a single row on the **Protection Level** tab, where:

- The value in the **Name** column is the Description of the System Code in the MI_RISK_PROTECTION_LEVEL System Code Table.
- The value in the **Description** column is the Description of the corresponding System Code in the MI_RISK_PROTECTION_LEVEL_DESC System Code Table.

The values in these columns are used to define protection level sliders.

Each cell in the grid contains the buttons that are listed in the following table.

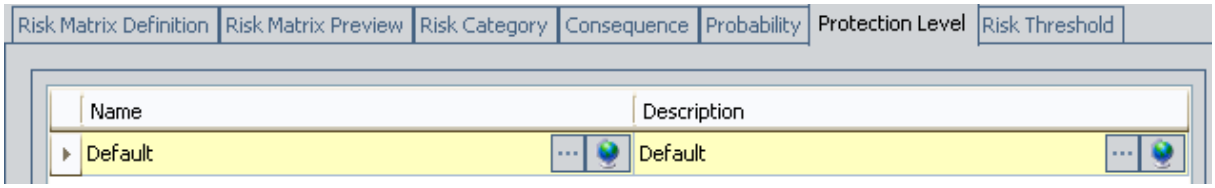
Button	Description
	Displays the **View/Update System Code** dialog box, where you can view and modify the *Description* of the System Code. You cannot modify the *ID* of an existing System Code.
	Displays the **LocalizeDescription for <System Code>** dialog box, where **<System Code>** is the value that appears in the cell from which you accessed the **Localize<String>** dialog box. Using the **Localize <String>** dialog box, you can create or modify translations for the *Description* of the System Code. You cannot translate the *ID* of an existing System Code.

Below the grid, the following buttons appear:

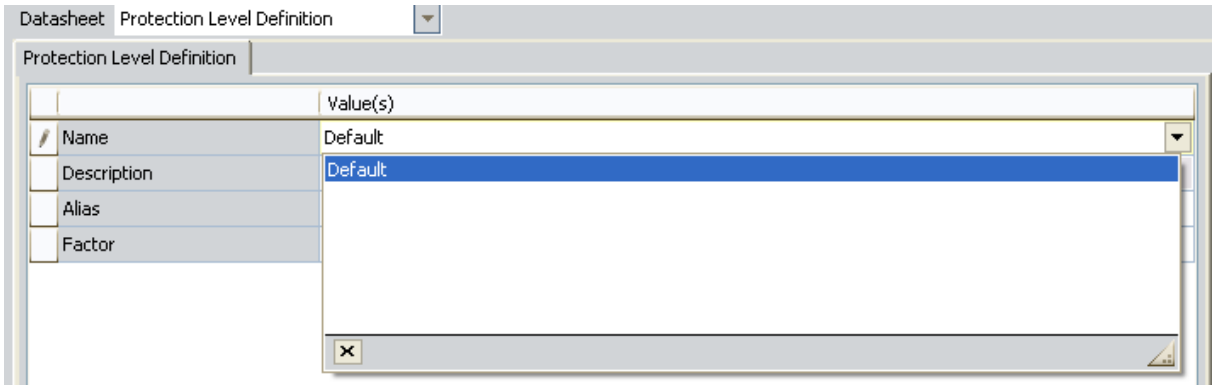
- **Add:** Displays the **Add System Code** dialog box, where you can define the System Codes that will be added to*both*System Code Tables: MI_RISK_PROTECTION_LEVEL and MI_RISK_PROTECTION_LEVEL_DESC.
- **Delete:** After asking for confirmation, deletes the System Codes in the selected row.

System Codes and Protection Level Records

The values in the **Name** column in the grid on the **Protection Level** tab appear in the **Name** list in Protection Level records. For example, in the baseline database, the **Protection Level** tab contains the following value in the **Name** column: *Default*.

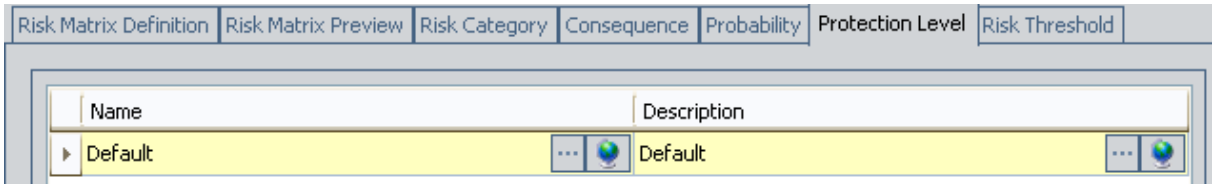


If you were to view the **Name** list in a Protection Level record, you would see the same value:

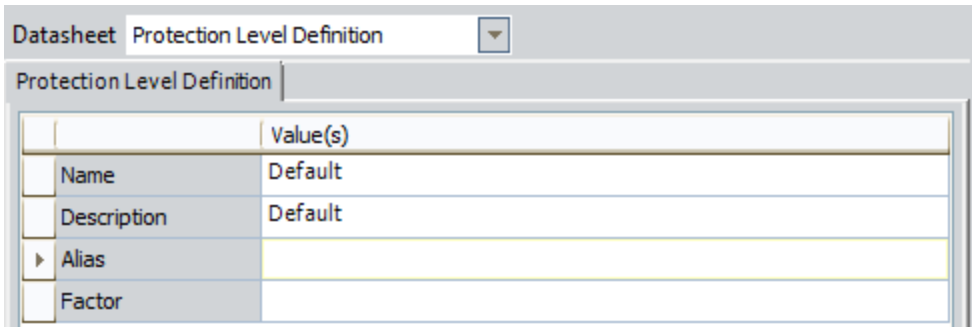


When the Name field in a Protection Level record is populated, the value in the Description field in that Protection Level record is populated automatically with the value that appears in the **Description** column on the **Protection Level** tab in the same row as that name.

For example, in the baseline database, the **Protection Level** tab contains the following value in the **Description** column: *Default*.



In a Protection Level record, if you were to select *Default* in the Name field, in the Description field is populated automatically with the value *Default*, as shown in the following image.

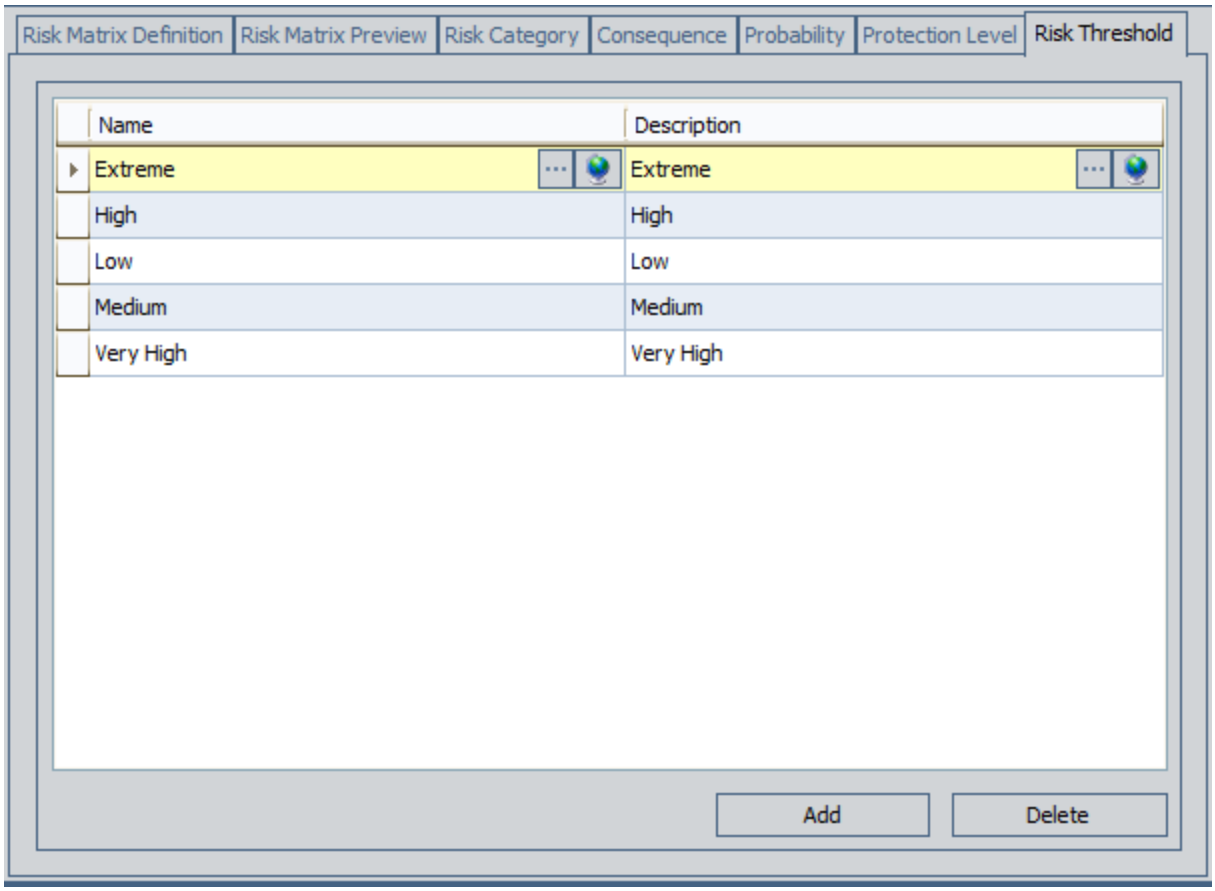


To fully understand how the values work together to create a protection level slider on the Risk Matrix, it is best to consider an example of how to create your own protection level slider.

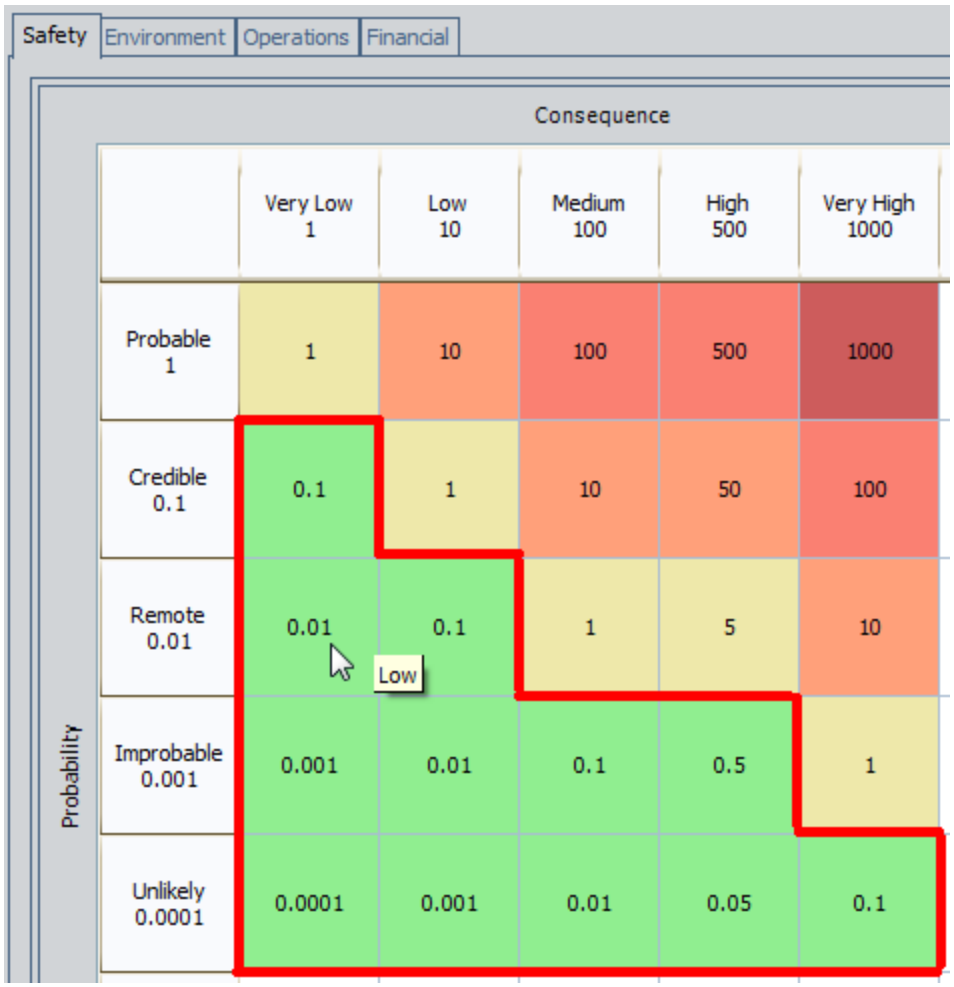
Aspects of the Risk Threshold Tab

The **Risk Threshold** tab on the Risk Matrix Definition datasheet contains a grid, where each row in the grid represents a separate *risk threshold*, which represents a range of values that should be colored the same color in the matrix.

For example, in the baseline database, the grid on the **Risk Threshold** tab contains the following rows.



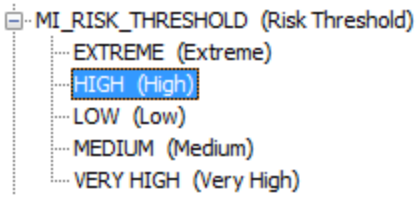
You can see in this image that one risk threshold is *Low*. If you were to view the matrix, by pausing on the green cells (outlined in red in the following image), you would see in the tooltips that all the green cells fall within the *Low* risk range.

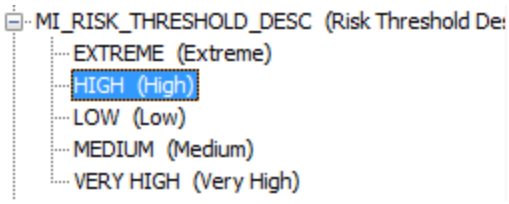


The grid contains the following columns: **Name** and **Description**. These columns offer a custom view of the *Description* of the System Codes in the following System Code Tables:

- MI_RISK_THRESHOLD
- MI_RISK_THRESHOLD_DESC

Note that each System Code in the MI_RISK_THRESHOLD System Code Table has a corresponding System Code in the MI_RISK_THRESHOLD_DESC System Code table. For example, using the System Code Table view from the Configuration Manager, you can see that both System Code Tables contain the *High* System Code:





The corresponding System Codes are required to have the same ID, but their *Descriptions* can be different.

For each set of corresponding System Codes, the Descriptions are displayed in a single row on the **Protection Level** tab, where:

- The value in the **Name** column is the Description of the System Code in the MI_RISK_THRESHOLD System Code Table.
- The value in the **Description** column is the Description of the corresponding System Code in the MI_RISK_THRESHOLD_DESC System Code Table.

The values in these columns are used to define risk thresholds.

Each cell in the grid contains the buttons that are listed in the following table.

Button	Description
	Displays the **View/Update System Code** dialog box, where you can view and modify the *Description* of the System Code. You cannot modify the *ID* of an existing System Code.
	Displays the **LocalizeDescription for <System Code>** dialog box, where **<System Code>** is the value that appears in the cell from which you accessed the **Localize<String>** dialog box. Using the **Localize <String>** dialog box, you can create or modify translations for the *Description* of the System Code. You cannot translate the *ID* of an existing System Code.

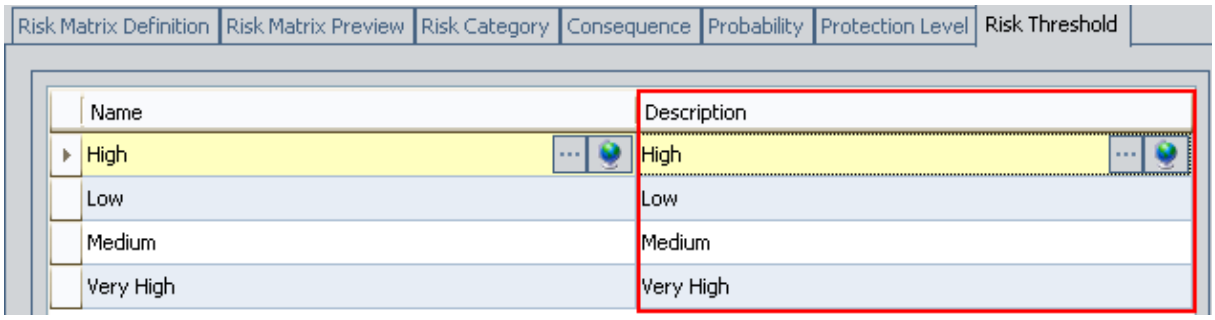
Below the grid, the following buttons appear:

- **Add:** Displays the **Add System Code** dialog box, where you can define the System Codes that will be added to*both*System Code Tables: MI_RISK_THRESHOLD and MI_RISK_THRESHOLD_DESC.
- **Delete:** After asking for confirmation, deletes the System Codes in the selected row.

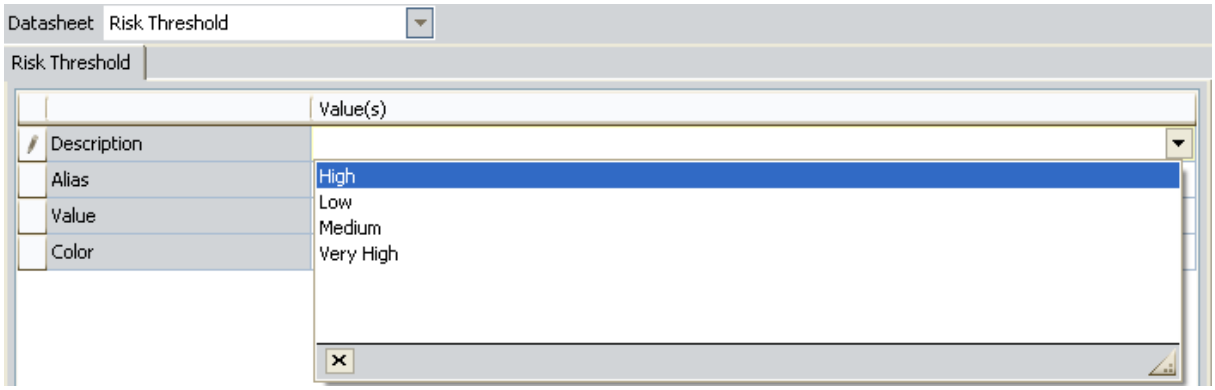
System Codes and Risk Threshold Records

The values in the **Description** column in the grid on the **Risk Threshold** tab appear in the **Description** list in Risk Threshold records. For example, in the baseline database, the **Risk Threshold** tab contains the following values in the **Description** column:

- High
- Low
- Medium
- Very High

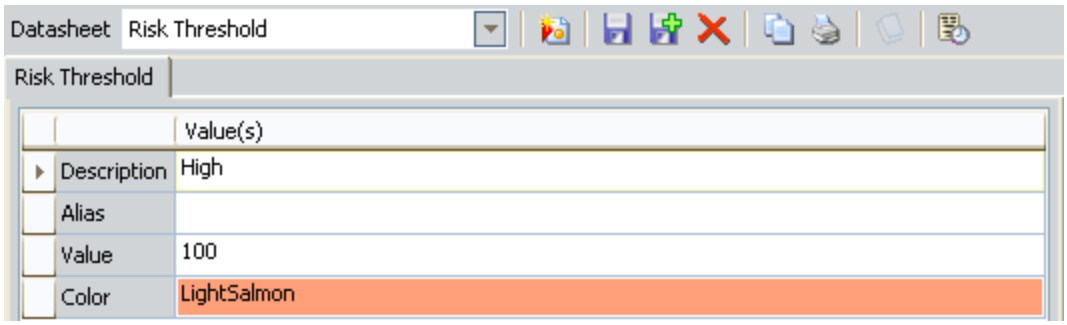


If you were to view the **Description** list in a Risk Threshold record, you would see the same values:



The value that you select in the **Description** list of a Risk Threshold record appears when you hover over the group of cells in the matrix.

For example, the baseline database contains the following Risk Threshold record, where the description value is *High* and the color value is *Light Salmon* as shown in the following image.



In the Risk Matrix, when you hover over the cells that are colored light salmon, the description value from the corresponding Risk Threshold record appears: *High*.

To fully understand how the values work together to create risk thresholds in the Risk Matrix, it is best to consider an example of how to create your own risk threshold.

Adding System Codes Via the Risk Matrix Definition Datasheet

The Risk Matrix Definition datasheet contains tabs that are specific to the following families, which are used by the Risk Matrix:

- Risk Category
- Consequence
- Probability
- Protection Level
- Risk Threshold

These tabs contain an **Add** button, which you can use to add new System Codes to System Code Tables associated with that family. After you create System Codes for a family, you can use the System Codes to create records in that family. When you create System Codes via the **Add** button on a family-specific tab in the Risk Matrix record, you are defining *two* System Codes at once:

- The first System Code appears in the **Name** column on the tab from which you accessed the **Add** option, and when you create a record in the family associated with this tab, this System Code will appear in the **Name** list.
- The second System Code appears in the **Description** column on the tab from which you accessed the **Add** option. When you create a record in the family associated with this tab and select a value in the **Name** list, the Description field is populated automatically with this System Code.

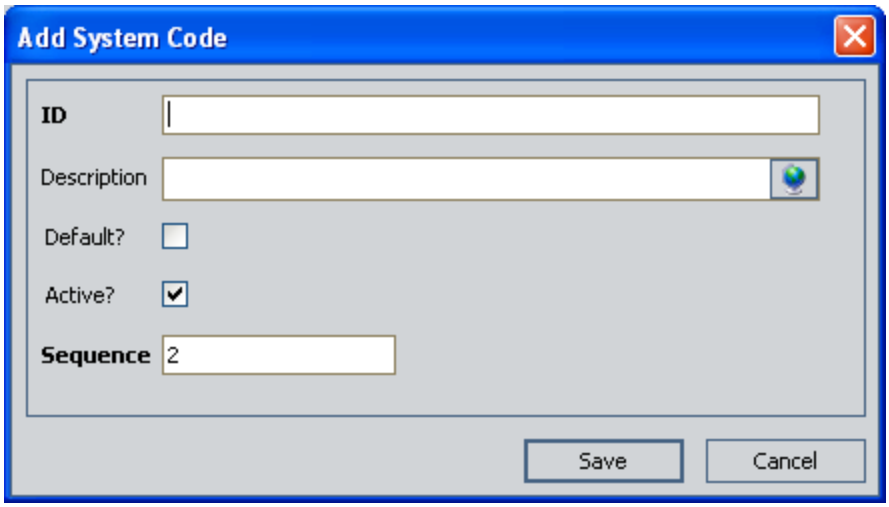
These System Codes will share an *ID* so that after you select the first System Code in a record in one of the families listed above, that record is populated automatically with the corresponding System Code. For example, in a Risk Category record, in the **Name** list, if you select the System Code *Environment*, the Description field is populated automatically with the value *Environment*, which appears in the **Description** column on the **Risk Category** tab in the Risk Matrix record.

The following instructions provide general information for adding System Codes that are used by records in these families.

To add System Codes via the Risk Matrix Definition datasheet:

1. On any of the following tabs on the Risk Matrix Definition datasheet, click the **Add** button.
   - **Risk Category** tab
   - **Consequence** tab
   - **Probability** tab
   - **Protection Level** tab
   - **Risk Threshold** tab

   The **Add SystemCode** dialog box appears.



The **Add System Code**dialog box contains the following items:

- **ID:** Stores the *ID* for BOTH System Codes.
- **Description:** Stores the value that appears in the **Name** and **Description** columns on that tab.
- **Default:** Lets you specify whether or not the first System Codes should appear in the **Name** list in a record by default.
- **Active?:** Lets you specify whether or not the System Codes are active or inactive. When the System Codes are active, they will be available in the **Name** list in a new record in that family.
- **Sequence:** A numeric value that specifies in what order the System Code should appear in the list on that family-specific tab.

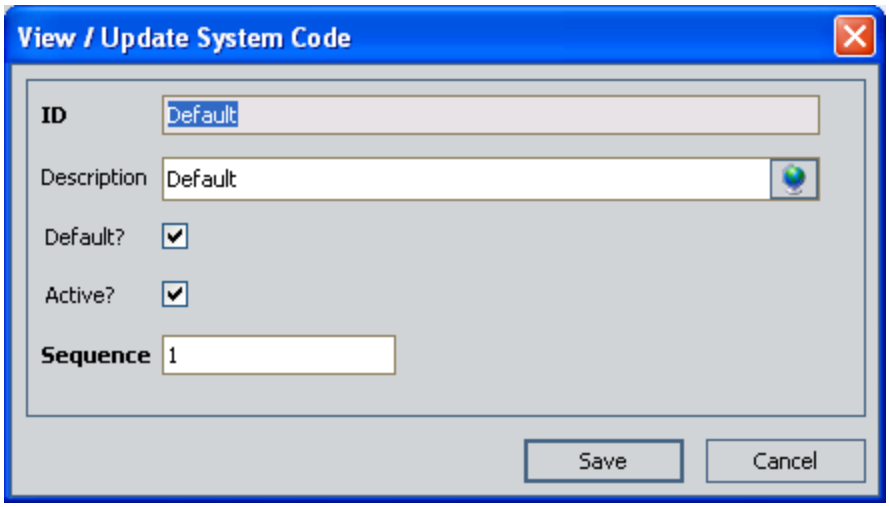
2. Complete the fields as desired, and then click the **Save** button.

   The new System Codes are saved to the System Code Tables for that family, and the value that you typed in the **Description** on the **Add System Code** dialog box appears in the **Name** and **Description** columns on the family-specific tab from which you accessed the dialog box.

3. If desired, you can modify the *Description* for the System Code that appears in either the **Name** or **Description** column. These instructions assume that you want to do so.

4. In the cell that contains the System Code whose *Description* you want to modify, click the ... button.

   The **View/Update System Code** dialog box appears.



5. In the **Description** text box, modify the value as desired, and then click the **Save** button.

   Your changes are saved, and the value that you specified in the **Description** text box is displayed in the cell from which you accessed the **View/Update System Code** dialog box.

   Note: If you modified the Description for a System Code that is already used in a record, the record will not be updated automatically. To view the modified value on the Risk Matrix, you will need to create a new record and select the new System Code value.

6. On the **Common Tasks** menu, click the **Save** link.

   Your changes are saved.

Modifying System Codes Via the Risk Matrix Definition Datasheet

The Risk Matrix Definition datasheet contains tabs that are specific to the following families, which are used by the Risk Matrix:

- Risk Category
- Consequence
- Probability
- Protection Level
- Risk Threshold

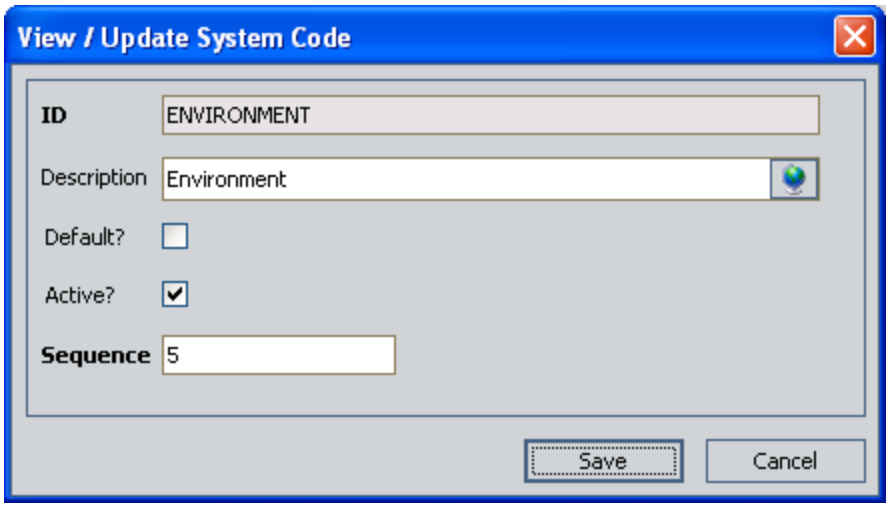
Each family-specific tab contains rows, where each row displays information about System Codes that are associated with that family. Each cell in a row contains a ... button which you can use to modify the Description of the System Code that is represented by that row.

To modify a System Code Description Via the Risk Matrix Definition datasheet:

1. On any of the following tabs on the Risk Matrix Definition datasheet, in the cell that represents the System Code whose Description you want to modify, click the ... button.

   - **Risk Category** tab
   - **Consequence** tab
   - **Probability** tab
   - **Protection Level** tab
   - **Risk Threshold** tab

   The **View/Update System Code** dialog box appears.



2. In the **Description** field, modify the Description for the System Code. This value will appear in the cell from which you accessed the **View/Update System Code** dialog box.
3. Modify the values in the remaining fields as desired. The **ID**field is disabled. You cannot modify the ID for an existing System Code.
4. Click the **Save** button.

   Your changes are saved, and the modified value appears in the cell from which you accessed the**View/Update System Code**dialog box.

Deleting System Codes Via the Risk Matrix Definition Datasheet

The Risk Matrix Definition datasheet contains tabs that are specific to the following families, which are used by the Risk Matrix:

- Risk Category
- Consequence
- Probability
- Protection Level
- Risk Threshold

The family-specific tabs for these families contain a **Delete** button, which you can use to delete System Codes that are associated with that family. When you delete System Codes using the **Delete** button, you are deleting *two* System Codes at once:

- The System Code that appears in the **Name** column on the family- specific tab.

  -and-

- The System Code that appears in the **Description** column on the family-specific tab.

If an existing record is using a System Code and you delete the System Code via the Risk Matrix Definition datasheet, the record will not be deleted, but the value defined in that record will no longer appear on the Risk Matrix. For example, if you create a Risk Category record that uses the System Code *Environment* and then you delete the System Code *Environment*, the *Environment* Risk Category record will still exist, but the **Environment** tab on the Risk Matrix will be removed.

To delete System Codes via the Risk Matrix Definition datasheet:

1. On any of the following tabs on the Risk Matrix Definition datasheet, select the row that contains the System Codes that you want to delete.
   - **Risk Category** tab
   - **Consequence** tab
   - **Probability** tab
   - **Protection Level** tab
   - **Risk Threshold** tab
2. Click the **Delete** button.

   A confirmation message appears, asking if you really want to delete the System Code.
3. Click the **Yes** button.

   The selected System Code is deleted.

Adding New Consequences and Probabilities

Rather than using the record hierarchy to create new Consequence and Probability records, you can use the **Risk Matrix Preview** tab on the Risk Matrix Definition datasheet to create these records.

To create new Consequence and Probability records, you must be a Super User.

Note: You should not create more than ten Consequence or Probability records within a given Risk Matrix configuration. Creating more than ten Consequence or Probability records will cause the Risk Matrix to become visually unusable (i.e., it will contain vertical and horizontal scroll bars, and the cells and text will be too small to read easily).

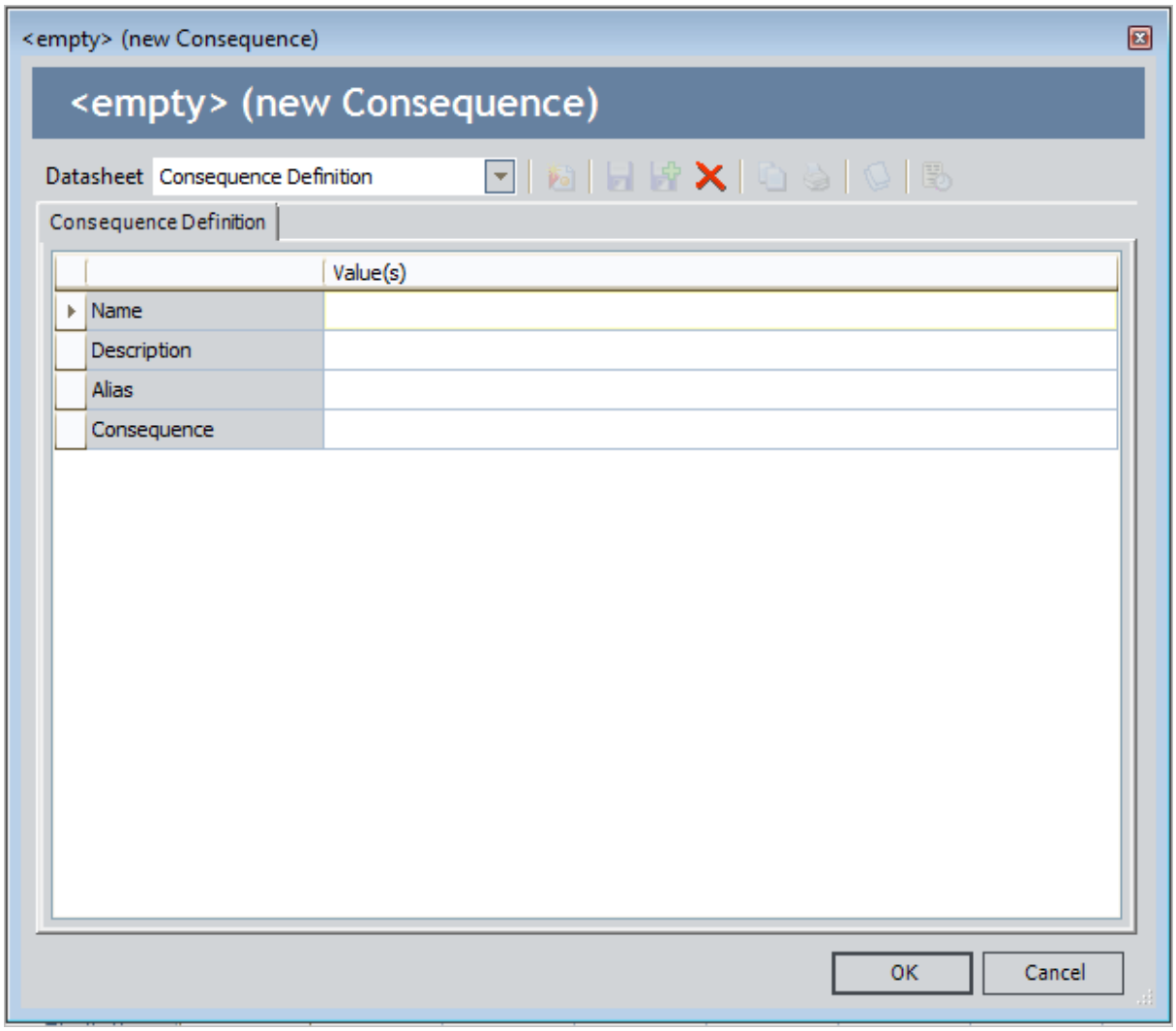
To create a new Consequence or Probability record via the Risk Matrix Preview tab:

1. Open the Risk Matrix record to which you want to link a new Consequence or Probability record.
2. On the Risk Matrix Definition datasheet, on the **Risk Matrix Preview** tab, locate the axis that represents the records in desired family (i.e., Consequence or Probability).

   Note: On the baseline Risk Matrix, records in the Consequence family appear on the x-axis by default, and records in the Probability family appear on the y-axis by default.

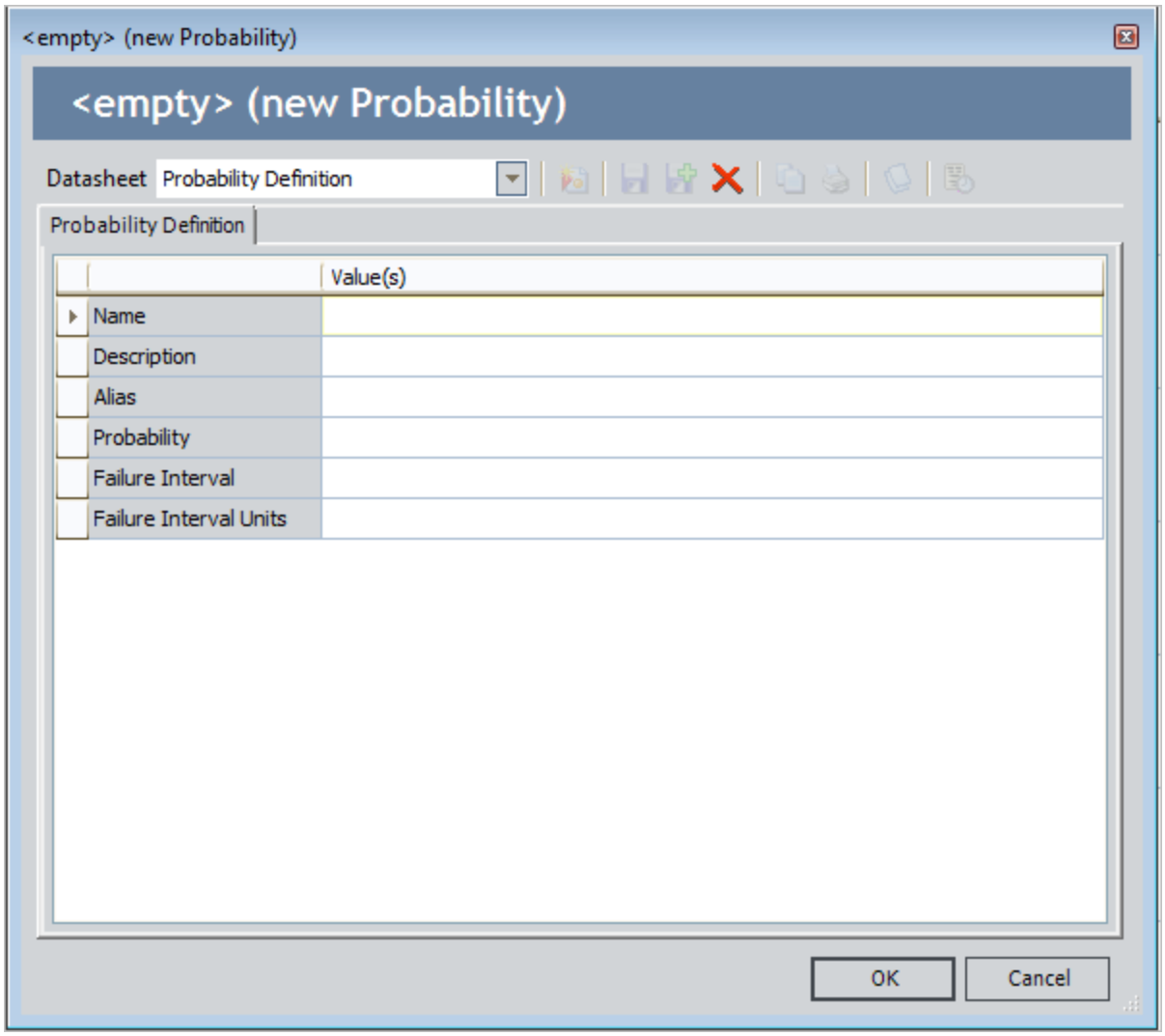
3. Double-click the **Add New** header.

If you double-clicked the **Add New** header on the Consequence axis, a new Consequence record appears in a separate window.



-or-

If you double-clicked the **Add New** header on the Probability axis, a new Probability record appears in a separate window.



4. In the Name field, select a name from the list.

   The Description field is populated automatically with the description that corresponds to the name value that you selected.

5. Type values in the remaining fields as desired, and then click **OK**.

   The new record closes, and your changes are saved and displayed in the matrix on the**Risk Matrix Preview** tab.

Example of Adding Risk Categories

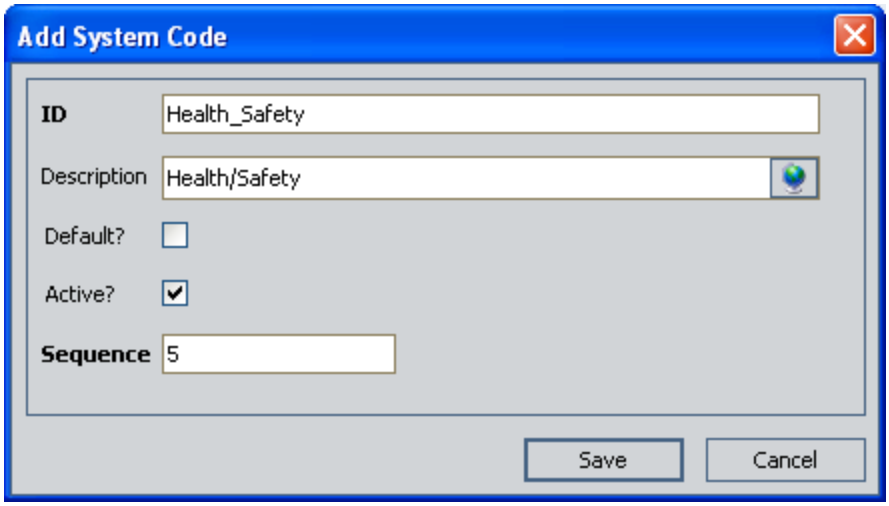
Assume that you want to add the *Health/Safety* risk category to the Risk Matrix, but you want the description of the tab to be *Health and Safety*.

To do so, you will need to create:

- Two System Codes:
  - The first System Code will be stored in the System Code Table MI_RISK_CATEGORY.
  - The second System Code will be stored in the System Code Table MI_RISK_CATEGORY_DESC.
- A Risk Category record.

Creating the System Codes

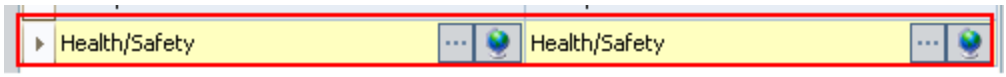
To create the two System Codes needed to define the *Health and Safety* risk category, on the **Risk Category** tab in a Risk Matrix record, you would need to click the **Add** button. Then, on the **Add System Code** dialog box, you would complete the fields as shown in the following image:



...where:

- *Health_Safety* is the ID of both System Codes.
- *Health/Safety*is the Description of both System Codes. This value will appear in both the **Name** and **Description** columns in a single row on the**Risk Category** tab.

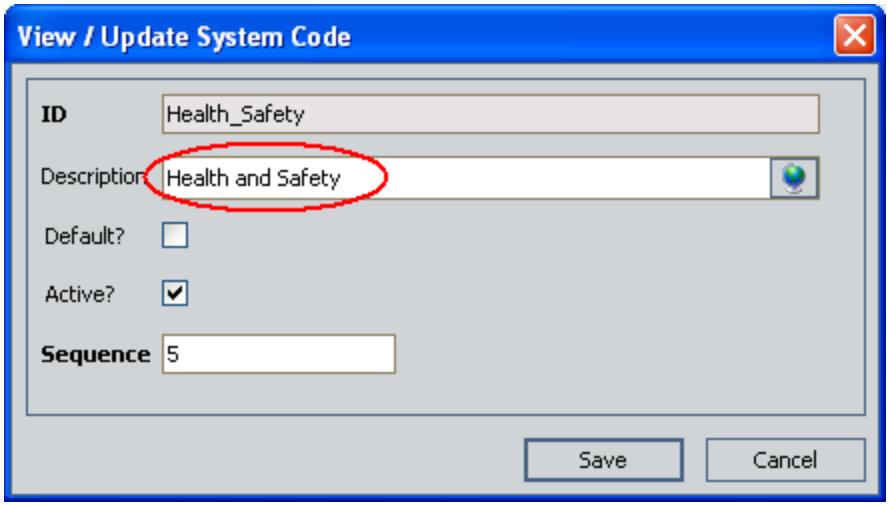
In this case, the values would appear on the **Risk Category** tab as shown in the following image:



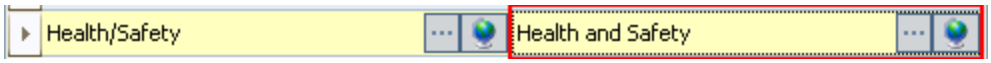
So far, you have created the System Codes, providing an ID and Description for each, and the Description that you provided, *Health/Safety*, appears on the **Risk Category** tab of the Risk Matrix record.

Note: At this point, you could create a Risk Category record and select the value *Health/Safety* in the **Category Name** list. Doing so would cause a new tab, *Health/Safety* to appear in the Risk Matrix. For the purpose of further clarifying how the values on the **Risk Category** tab of the Risk Matrix record work, the following explanation continues the example to explain what you would need to do to change the tab description from *Health/Safety* to *Health and Safety*.

To specify that you want the Risk Matrix tab description to be *Health and Safety* instead of *Health/Safety*, on the **Risk Category** tab, in the **Description** column, you would need to click the ... button. Then, on the **View/Update System Code** dialog box, you would modify the value in the **Description** text box as shown in the following image.

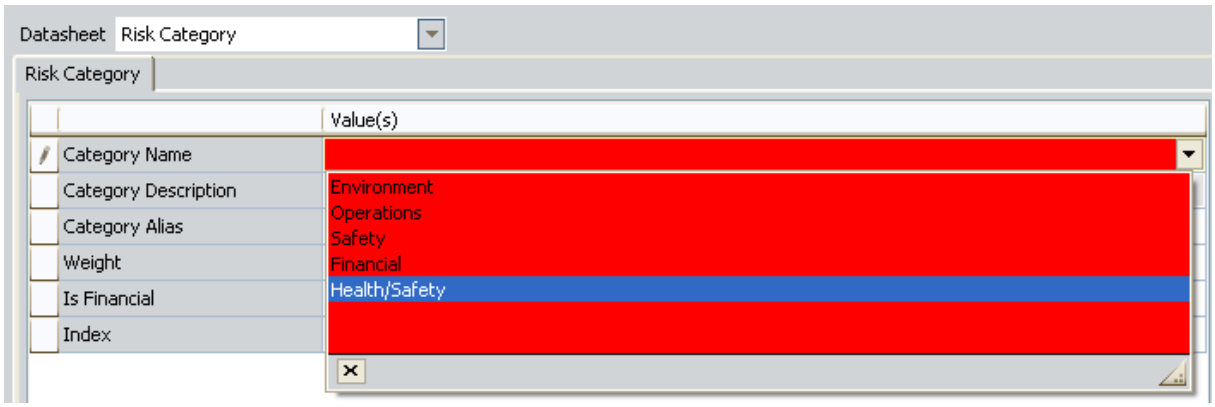


The value *Health and Safety* would then appear in the **Description** column on the **Risk Category** tab, as shown in the following image.

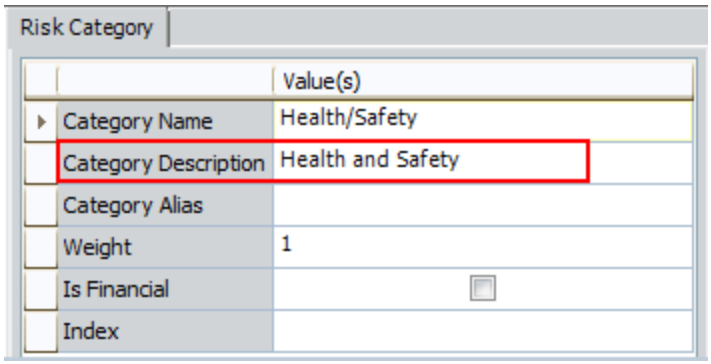


Creating a Risk Category record

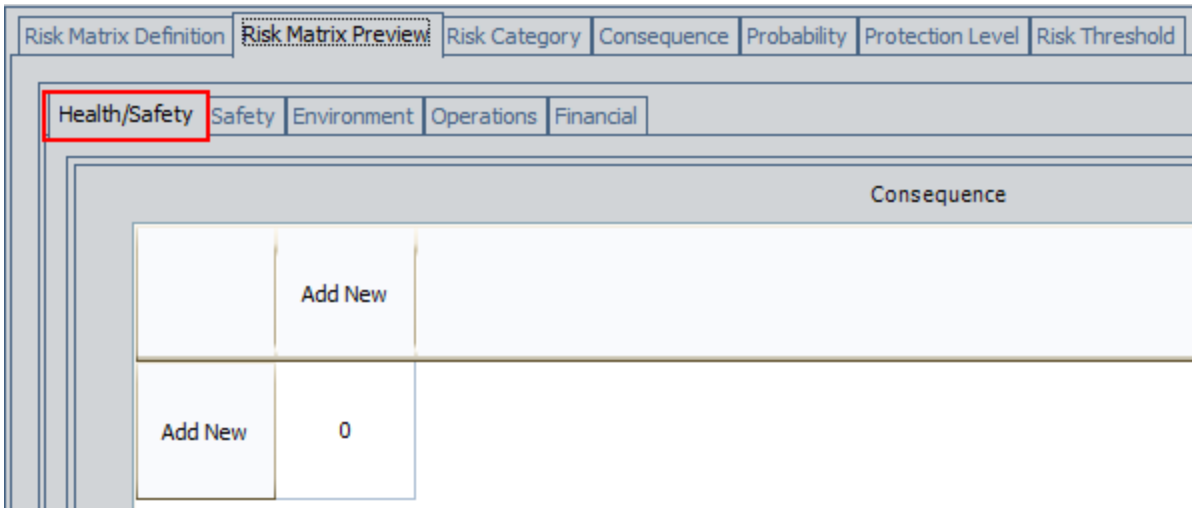
On the Risk Category datasheet, the **Category Name** list contains all the values that appear in the **Name** column on the **Risk Category** tab. Continuing with the previous example, to add the *Health/Safety* tab to the Risk Matrix, in a new Risk Category record, in the **Category Name** list, you would need to select *Health/Safety* .



After doing so, the Category Description field is populated automatically with the value that appears in the **Description** column in the same row on the **Risk Category** tab.



After you save the Risk Category record, the new tab would appear on the Risk Matrix as shown in the following image.



At this point, you would also want to define Consequence records and Probability records so that a usable matrix appears on the tab.

Example of Adding Consequences

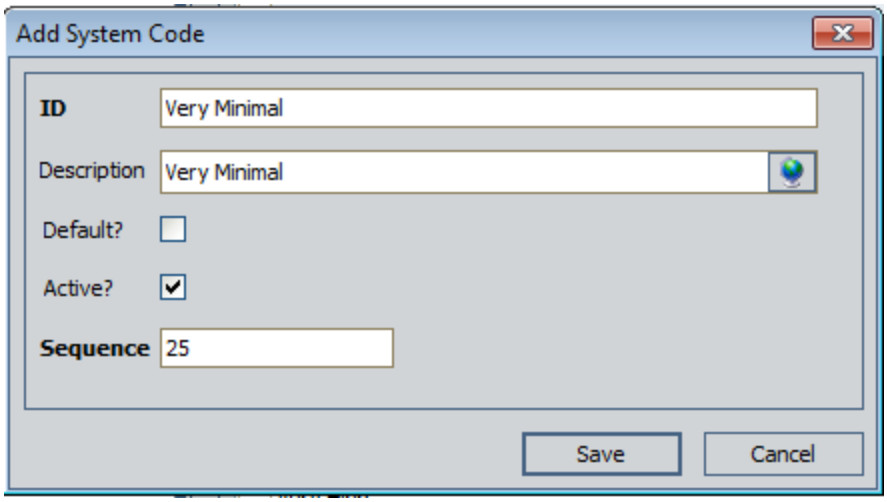
Assume that you want to add the *Very Minimal* consequence to the Risk Matrix, but you want the description of the consequence to be *Regular maintenance may be required*.

To do so, you will need to create:

- Two System Codes:
  - The first System Code will be stored in the System Code Table MI_RISK_CONSEQUENCE.
  - The second System Code will be stored in the System Code Table MI_RISK_CONSEQUENCE_DESC.
- A Consequence record.

Creating the System Codes

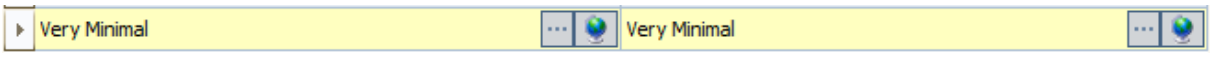
To create the two System Codes needed to define the *Very Minimal* consequence, on the **Consequence** tab in a Risk Matrix record, you would need to click the **Add** button. Then, on the **Add System Code** dialog box, you would complete the fields as shown in the following image:



...where:

- *Very Minimal* is the ID of both System Codes.
- *Very Minimal* is the Description of both System Codes. This value will appear in both the **Name** and **Description** columns in a single row on the**Consequence** tab.

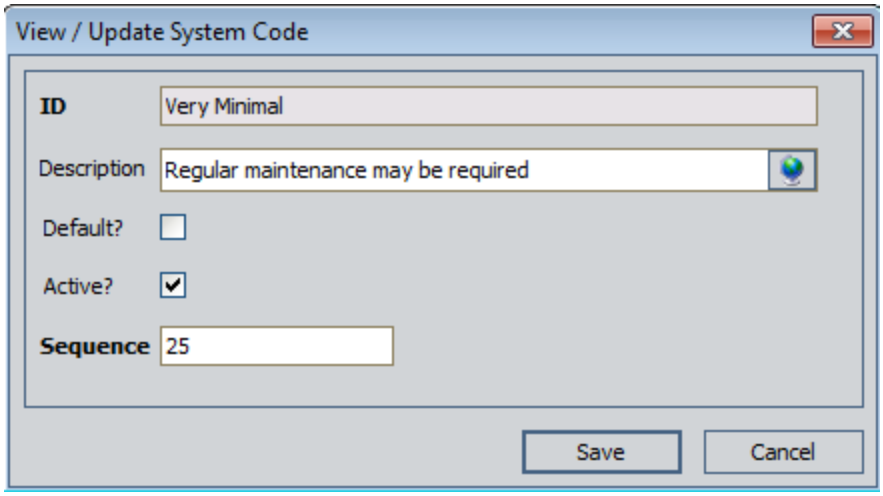
In this case, the values would appear on the **Consequence** tab as shown in the following image:



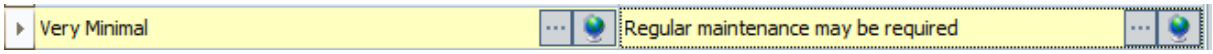
So far, you have created the System Codes, providing an ID and Description for each, and the Description that you provided, *Very Minimal*, appears on the **Consequence** tab of the Risk Matrix record.

Note: At this point, you could create a Consequence record and select the value *Very Minimal* in the **Name** list. Doing so would cause a new consequence *Very Minimal* to appear in the matrix. For the purpose of further clarifying how the values on the **Consequence** tab of the Risk Matrix record work, the following explanation continues the example to explain what you would need to do to change the consequence description from *Very Minimal* to *Regular monitoring may be required*.

To specify that you want the description of the consequence on the matrix to be *Regular maintenance may be required* instead of *Very Minimal*, on the **Consequence** tab, in the **Description** column, you would click the ... button, and on the **View/Update System Code** dialog box, you would modify the value in the **Description** text box as shown in the following image.



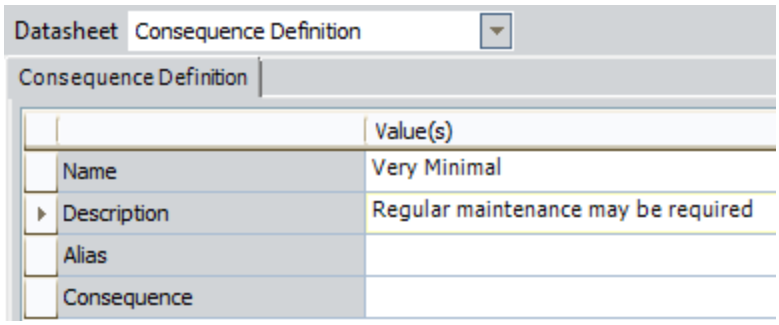
In this case, the System Code appears on the **Consequence** tab as shown in the following image.



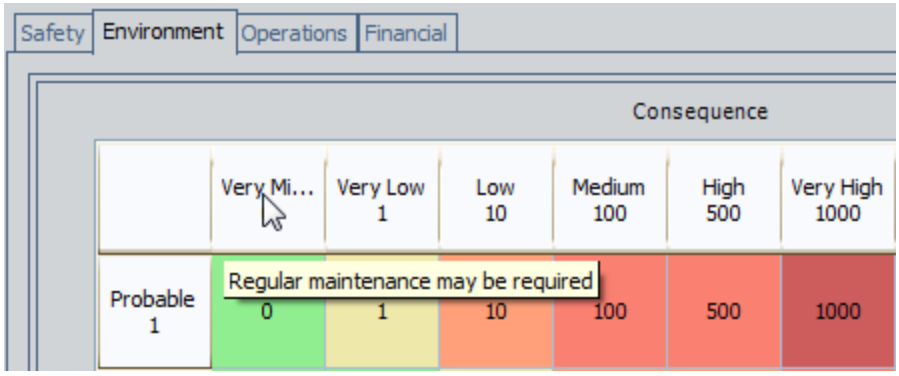
Creating a Consequence record

On the Consequence Definition datasheet, the **Name** list contains all the values that appear in the **Name** column on the **Consequence** tab. Continuing with the example, to add the *Very Minimal* consequence to the Risk Matrix, in a new Consequence record, in the **Name** list, you would need to select *Very Minimal*.

After doing so, the Description field is populated automatically with the value that appears in the **Description** column in the same row on the **Consequence** tab.



After you save the Consequence record, the new consequence appears in the matrix as shown in the following image.



Example of Adding Probabilities

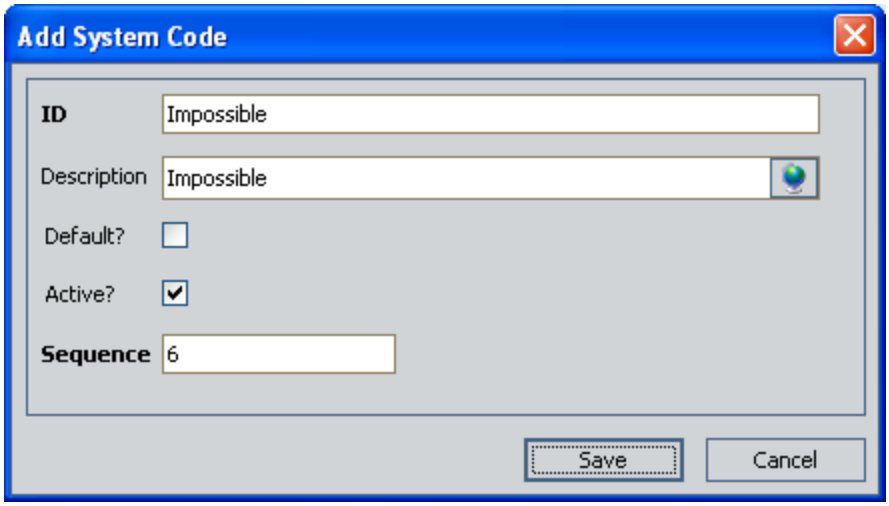
Assume that you want to add the *Impossible* probability to the Risk Matrix, but you want the description of the probability to be *Cannot occur*.

To do so, you will need to create:

- Two System Codes:
  - The first System Code will be stored in the System Code Table MI_RISK_PROBABILITY.
  - The second System Code will be stored in the System Code Table MI_RISK_PROBABILITY_DESC.
- A Probability record.

Creating the System Codes

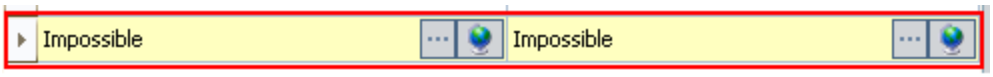
To create the two System Codes needed to define the *Impossible* probability, on the **Probability** tab in a Risk Matrix record, you would need to click the **Add** button. Then, on the**Add System Code** dialog box, you would complete the fields as shown in the following image:



...where:

- *Impossible* is the ID of both System Codes.
- *Impossible* is the Description of both System Codes. This value will appear in both the **Name** and **Description** columns in a single row on the**Probability** tab.

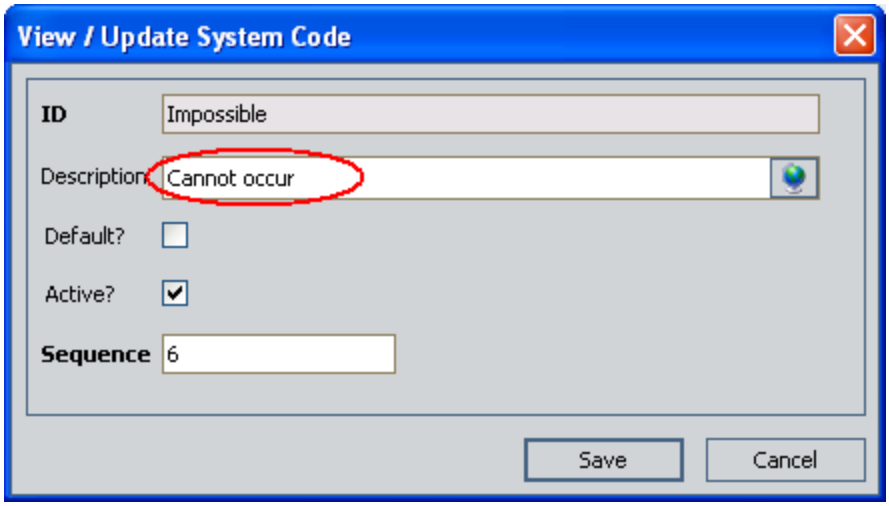
In this case, the System Codes appears on the **Probability** tab as shown in the following image.



So far, you have created the System Codes, providing an ID and Description for each, and the Description that you provided, *Impossible*, appears on the **Probability** tab of the Risk Matrix record.

Note: At this point, you could create a Probability record and select the value *Impossible* in the **Name** list. Doing so would cause a new probability *Impossible* to appear in the matrix. For the purpose of further clarifying how the values on the **Probability** tab of the Risk Matrix record work, the following explanation continues the example to explain what you would need to do to change the probability description from *Impossible* to *Cannot occur*.

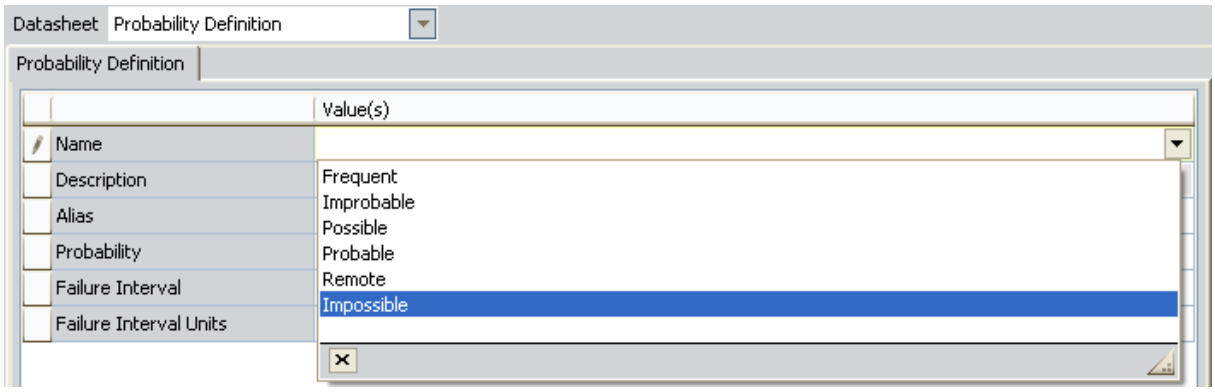
To specify that you want the description of the probability on the matrix to be *Cannot occur* instead of *Impossible*, on the **Probability** tab, in the **Description** column, you would click the ... button, and on the **View/Update System Code** dialog box, you would modify the value in the **Description** text box as shown in the following image.



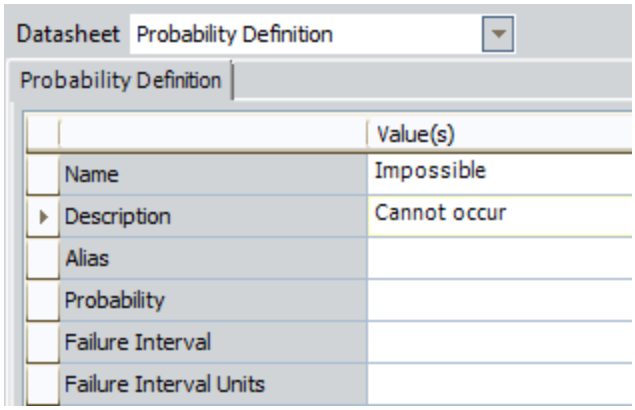
In this case, the System Code appears on the **Probability** tab as shown in the following image.

Creating a Probability record

On the Probability Definition datasheet, the **Name** list contains all the values that appear in the **Name** column on the **Probability** tab. Continuing with the example, to add the *Impossible* probability to the Risk Matrix, in a new Probability record, in the **Name** list, you would select *Impossible*.



After doing so, the Description field is populated automatically with the value that appears in the **Description** column in the same row on the **Probability** tab.



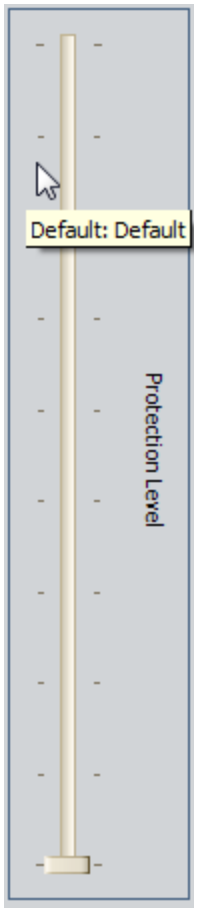
After you save the Probability record, the new probability appears in the Risk Matrix as shown in the following image.

Example of Adding Probabilities

	Very Low 1	Low 10	Medium 100	High 500	Very High 1000
Probable 1	1	10	100	500	1000
Credible 0.1	0.1	1	10	50	100
Remote 0.01	0.01	0.1	1	5	10
Improbable 0.001	0.001	0.01	0.1	0.5	1
Unlikely 0.0001	0.0001	0.001	0.01	0.05	0.1
Impossible 0	0	0	0	0	0

Adding a Slider With the Default Name and Description

The baseline Risk Matrix does not display a protection level slider by default, but the appropriate System Codes exist to allow you to add a protection level slider to the baseline Risk Matrix. Using these baseline System Codes, the default name *and* description of the protection level slider is *Default*. The name and description are concatenated in the tooltip when you pause on the protection level slider, as shown in the following image.

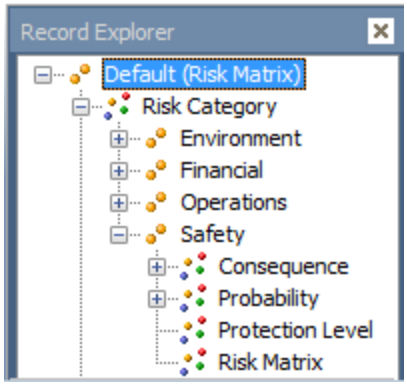


If you want to add a protection level slider with the default name and description, *Default*, you can do so using the following workflow, which assumes that:

- You want to add the protection level slider to the **Safety** tab of the Risk Matrix.
- You want the protection level slider to contain levels 1 through 10.

To create the protection level slider based upon these assumptions:

1. Open the Risk Matrix record for the Risk Matrix to which you want to add the protection level slider.
2. In the **Record Explorer** pane, expand the **Risk Category** node, and then expand the **Safety** node.

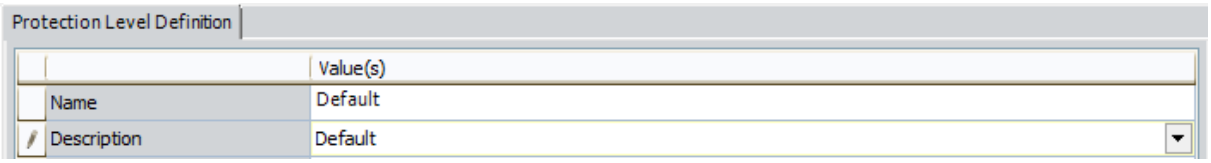


3. Below the *Safety* node, right-click the *Protection Level* node, and click **Create a new Protection Level to link to Safety**.

   Hint: If you do not see the Protection Level node, at the bottom of the **Record Explorer** pane, click the ▼ button to the left of the **Related Families Displayed** text, and then click **Show all possible families**.

4. In the new Protection Level record, in the **Name** list, select *Default*.

   Note: The **Description** cell is populated automatically with the value *Default*.



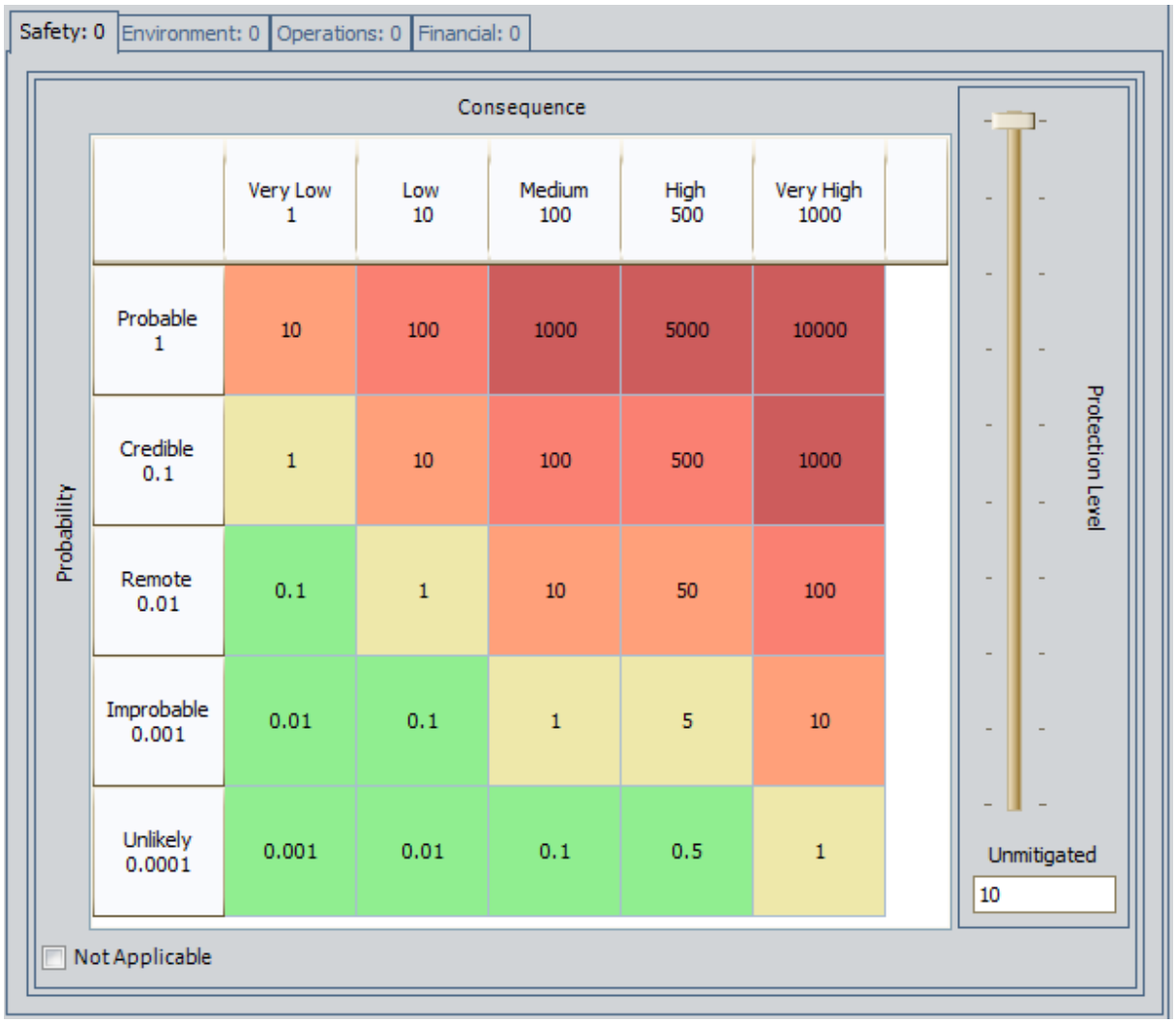
5. In the **Alias** text box, type any value. If the Alias Format Mask field in the associated Risk Matrix record contains the value *{pl}*, the value in the Alias field in the Protection Level record will be displayed in the cell in the Risk Matrix (according to the complete template that is defined in the Alias Format Mask field).

6. In the **Factor** text box, type a number by which you want to multiply each consequence and probability value that is selected in the Risk Matrix. Using our example, for this first Protection Level record, you would type *1*.

7. Save the record.

8. Repeat steps 3 through 7 until you have created ten Protection Level records with the factors 1 through 10.

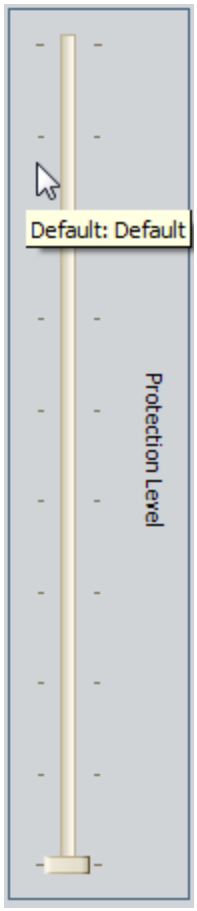
   When you are finished completing these steps, when you access the **Safety** tab from an item that uses this Risk Matrix (e.g., an Action in ASM), the protection level slider will look like this:



In this image, you can see that the highest level of the slider is selected (with the factor of 10), causing the value in the selected cell to be *50* (the result of the calculation 1 x 5 x 10, where *1* is the selected consequence and *5* is the selected probability). You can also see that the tooltip displays the default name and description as a concatenated value, *Default: Default*.

Adding a Slider with a Custom Name and Description

The baseline Risk Matrix does not display a protection level slider by default, but the appropriate System Codes exist to allow you to add a protection level slider to the baseline Risk Matrix. Using these baseline System Codes, the default name *and* description of the protection level slider is *Default*. The name and description are concatenated in the tooltip when you pause on the protection level slider, as shown in the following image.



If you want to add a protection level slider with a different name and description, you can do so using the following workflow, which assumes that:

- You want to add the protection level slider to the **Safety** tab of the Risk Matrix.
- You want the protection level slider to contain levels 1 through 10.
- You want the name to be *Protection Level*.
- You want the description to be *Design controls*.

To create the protection level slider based upon these assumptions, you would need to complete the following main steps:

1. Create two System Codes:

- The first System Code will be stored in the System Code Table MI_RISK_PROTECTION_LEVEL.
- The second System Code will be stored in the System Code Table MI_RISK_PROTECTION_LEVEL_DESC.

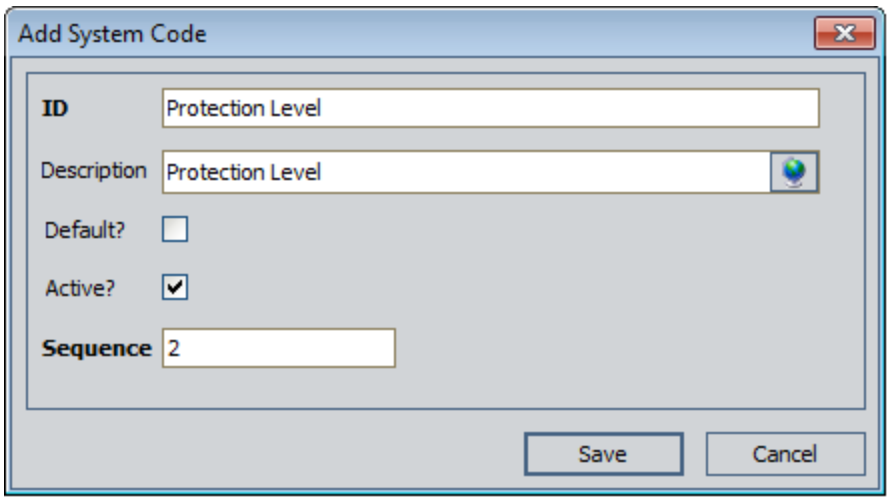
2. Create ten Protection Level records.

More information about performing each of these steps is provided below.

Step 1: Creating the System Codes

To create the two System Codes:

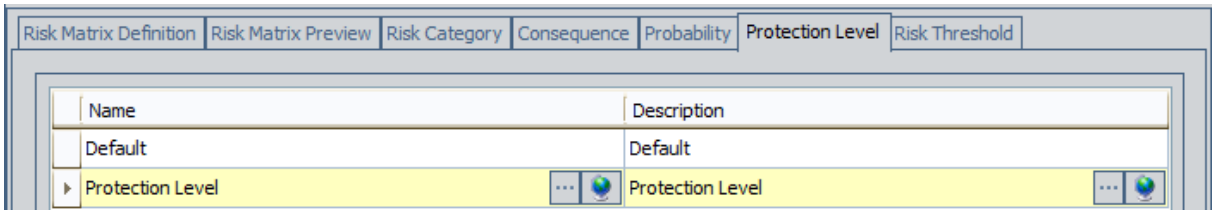
1. Open the Risk Matrix record for the Risk Matrix to which you want to add the protection level slider.
2. On the **Protection Level** tab, click the **Add** button.
3. On the **Add System Code** dialog box, complete the fields as shown in the following image:



...where:

- *Protection Level* is the ID of both System Codes.
- *Protection Level* is the Description of both System Codes.

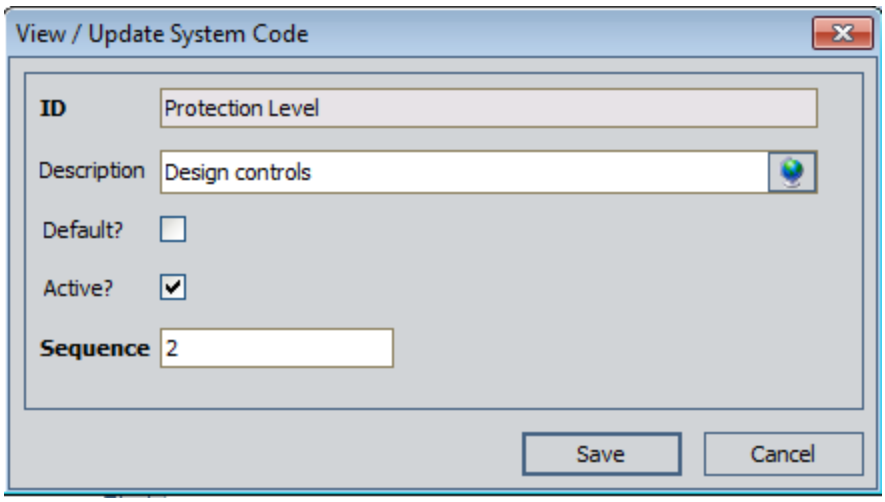
In this case, the System Codes appears on the **Protection Level** tab as shown in the following image.



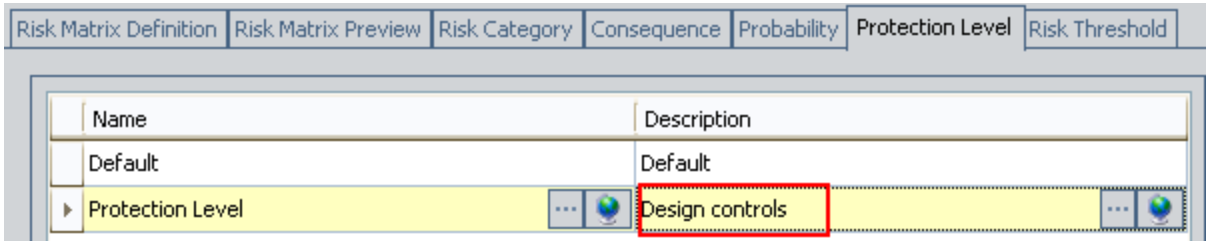
At this point, if you were to create the Protection Level records and view the protection level slider, when you paused on the slider, the tooltip text would appear as *Protection Level: Protection Level*.

4. To change the description from *Protection Level* to *Design controls*, on the **Protection Level** tab, in the **Description** column, click the ... button.

5. On the **View/Update System Code** dialog box, in the **Description** text box, type *Design controls*.



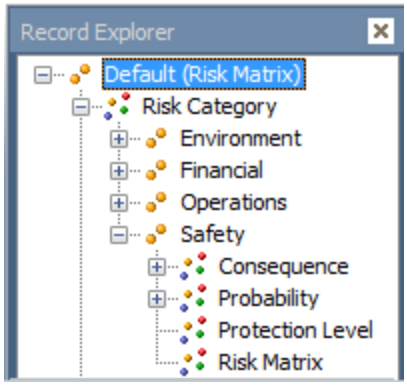
The System Code appears on the **Protection Level** tab as shown in the following image.



Step 2: Creating the Protection Level Records

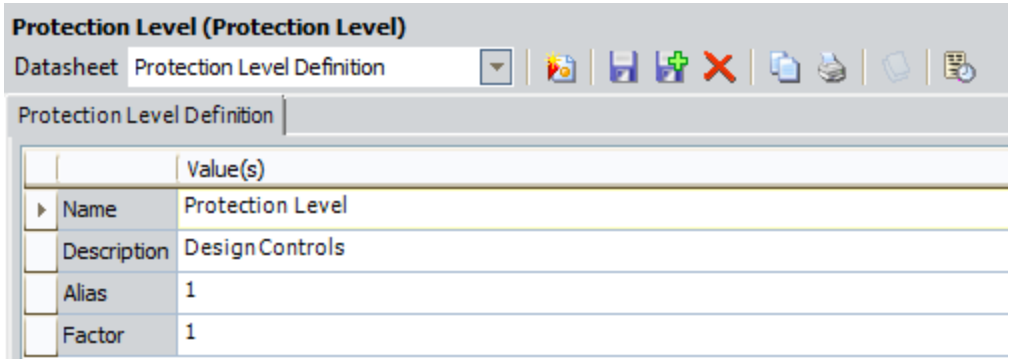
To create the Protection Level records:

1. With the same Risk Matrix record open, in the **Record Explorer** pane, expand the **Risk Category** node, and then expand the **Safety** node.



2. Below the *Safety* node, right-click the *Protection Level* node, and click **Create a new Protection Level to link to Safety**.
3. In the new Protection Level record, in the **Name** list, select *Protection Level*.

   Note: The **Description** cell is populated automatically with the value *Design Controls*.



4. In the **Alias** text box, type any value. If the Alias Format Mask field in the associated Risk Matrix record contains the value *{pl}*, the value in the Alias field in the Protection Level record will be displayed in the cell in the Risk Matrix (according to the complete template that is defined in the Alias Format Mask field).
5. In the **Factor** text box, type a number by which you want to multiply each consequence and probability value that is selected in the Risk Matrix. Using our example, for this first Protection Level record, you would type *1*.
6. Save the record.
7. Repeat steps 2 through 6 until you have created ten Protection Level records with the factors 1 through 10.

   When you are finished completing these steps, when you access the **Safety** tab from an item that uses this Risk Matrix (e.g., an Action in ASM), the protection level slider will look like this:

Safety: 0
Environment: 0
Operations: 0
Financial: 0
Consequence
Very Low 1
Low 10
Medium 100
High 500
Very High 1000
Probable 1
10
100
1000
5000
10000
Credible 0.1
1
10
100
500
1000
Remote 0.01
0.1
1
10
50
100
Improbable 0.001
0.01
0.1
1
5
10
Unlikely 0.0001
0.001
0.01
0.1
0.5
1
Probability
Protection Level: Design Controls
Protection Level
Unmitigated
10

Example of Adding Risk Thresholds

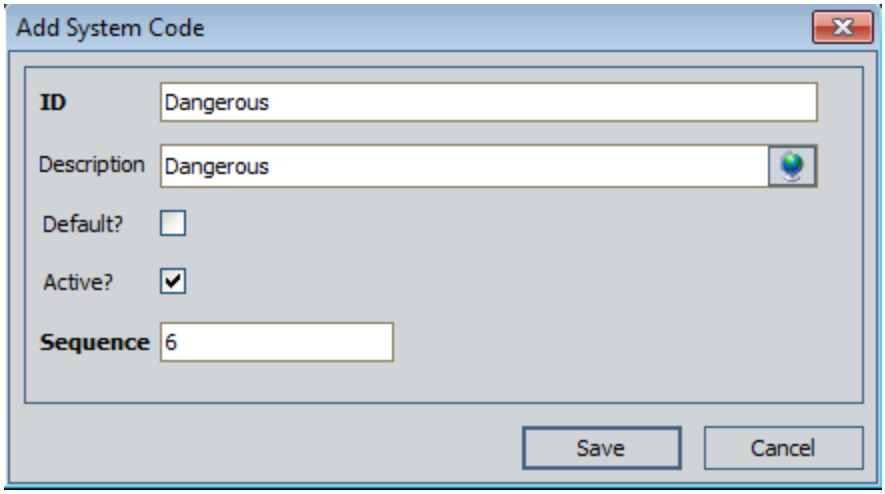
Assume you want to add a *Dangerous* risk threshold to the Risk Matrix.

To do so, you will need to create:

- Two System Codes:
  - The first System Code will be stored in the System Code Table MI_RISK_THRESHOLD.
  - The second System Code will be stored in the System Code Table MI_RISK_THRESHOLD_DESC.
- A Risk Threshold record.

Creating System Codes

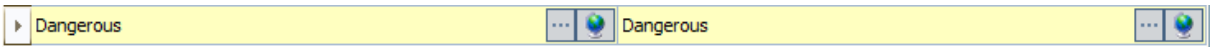
To create the two System Codes needed to define the *Dangerous* risk threshold, on the **Risk Threshold** tab in a Risk Matrix record, you would need to click the **Add** button. Then, on the **Add System Code** dialog box, you would complete the fields as shown in the following image:



...where:

- *Dangerous* is the ID of both System Codes.
- *Dangerous* is the Description of both System Codes.

In this case, the System Codes appears on the **Risk Threshold** tab as shown in the following image.

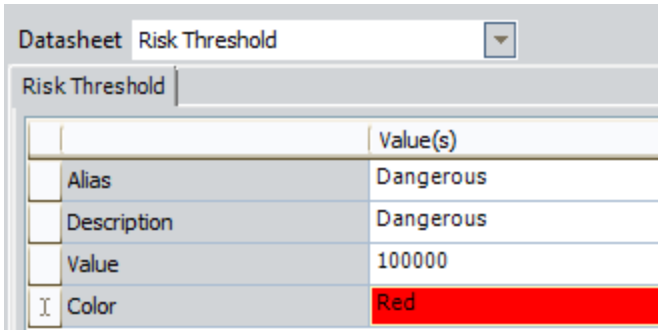


Creating a Risk Threshold record

This example assumes that you have created the necessary Probability and Consequence records.

On the Risk Threshold datasheet, the **Description** list contains all the System Codes that appear in the **Description** column on the **Risk Threshold** tab. To continue with our example, to add the *Dangerous* risk threshold to the matrix, in a new Risk Threshold record, in the **Description** list, you would select *Dangerous*.

Also, in the Value field, you would specify the number that is used to define the range of values are considered to be within the *Dangerous* risk threshold. In this case, you would type `100000`. Additionally, in the **Color** list, you would select the color *Red*.

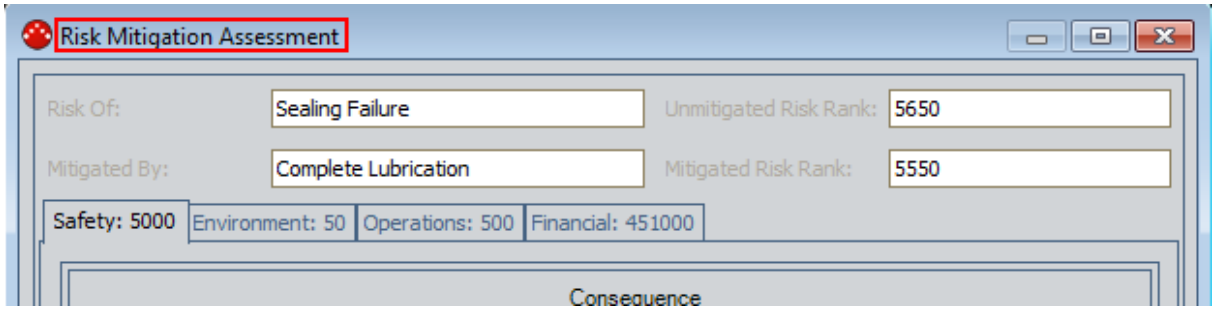


After you save the Risk Threshold record, the matrix might look similar to the following image.

	Very Low 1	Low 10	Medium 100	High 500	Very High 1000	Extreme 20000
Always 30	30	300	3000	15000	30000	600000
Probable 1	1	10	100	500	1000	20000
Credible 0.1	0.1	1	10	50	100	2000
Remote 0.01	0.01	0.1	1	5	10	200
Improbable 0.001	0.001	0.01	0.1	0.5	1	20
Unlikely 0.0001	0.0001	0.001	0.01	0.05	0.1	2

Modifying the Risk Assessment Interface Title

The following instructions provide details on modifying the title of the Risk Assessment interface. The following image illustrates the default title that appears when you access the interface from an Action in ASM, where a red border has been added to the image to highlight the title.



You can modify the default title using the Risk Matrix record. When you modify the title, the new title will be used everywhere that the Risk Matrix record is used to display the Risk Assessment interface. For example, if an Asset Strategy and an RCM Analysis use the same Risk Matrix, if you modify the title in that Risk Matrix record, the new title will be displayed when you access the Risk Assessment interface from any of the following items:

- An Action or Risk in that Asset Strategy.
- A Failure Effect or Recommendation in that RCM Analysis.

To modify the Risk Assessment interface title:

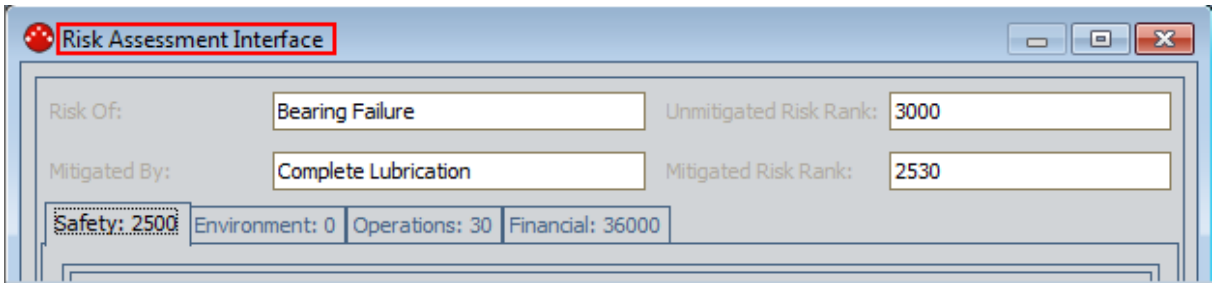
1. Open the Risk Matrix record for the Risk Matrix that you want to modify.
2. On the Risk Matrix Definition datasheet, on the **Risk Matrix Definition** tab, in the **Dialog Title** text box, type the new title.

   Note: The default title is not displayed on the datasheet. If the **Dialog Title** text box is empty, it indicates that the default title is being used.

   For example, in the following image, you can see that the new title is *Risk Assessment Interface*.

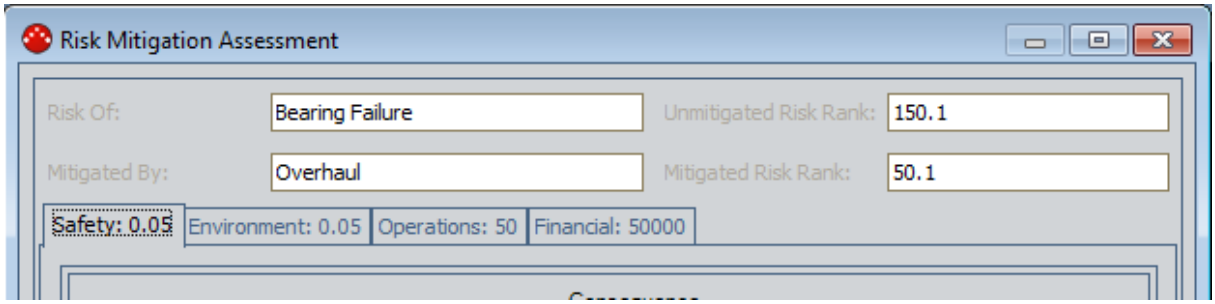
3. On the **Common Tasks** menu, click the **Save** link.

   Your changes are saved. The next time you view the Risk Assessment interface from any item that uses this Risk Matrix (e.g., an Asset Strategy or RCM Analysis), the new title will appear. For example, in the following image, you can see that the title has been changed to *Risk Assessment Interface*.


Risk Assessment Interface
Risk Of:
Bearing Failure
Unmitigated Risk Rank:
3000
Mitigated By:
Complete Lubrication
Mitigated Risk Rank:
2530
Safety: 2500
Environment: 0
Operations: 30
Financial: 36000

About Modifying Text Box Labels in the Risk Assessment Interface

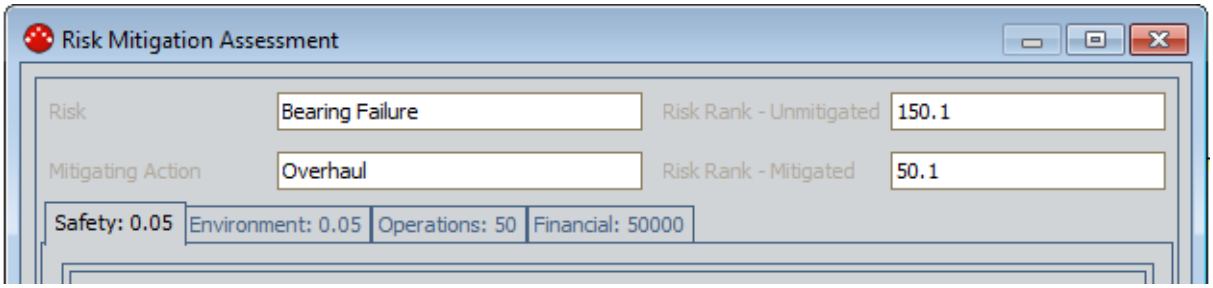
The following image illustrates the top portion of the default Risk Assessment interface when it is accessed from an Action in ASM.



Notice the following cells:

- **Risk Of:** Displays the name of the associated Risk.
- **Unmitigated Risk Rank:** Displays a value that is calculated based on the sum of the unmitigated risk values, which are represented by a ⚠ icon on the matrix.
- **Mitigated By:** Displays the name of the Action.
- **Mitigated Risk Rank:** Displays a value that is calculated based on the sum of the mitigated risk values, which are represented by a ✔ icon in the matrix.

If the default labels are not suitable for your organization and terminology, you can modify the labels using the Risk Matrix record. For example, you might want the labels to appear like this instead:



When you modify the labels, the new labels will be used everywhere that the Risk Matrix record is used to display the Risk Assessment interface. For example, if an Asset Strategy and an RCM Analysis use the same Risk Matrix, if you modify the labels in that Risk Matrix record, the new labels will be displayed when you access the Risk Assessment interface from any of the following items:

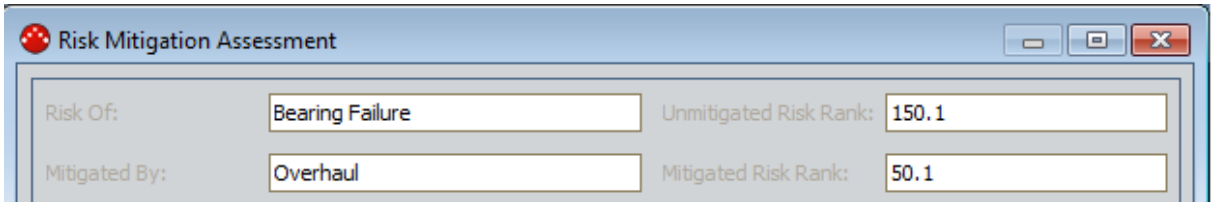
- An Action or Risk in that Asset Strategy.
- A Failure Effect or Recommendation in that RCM Analysis.

Modifying Text Box labels

To modify the text box labels in the Risk Assessment interface:

1. Open the Risk Matrix record for the Risk Matrix that you want to modify.
2. On the Risk Matrix Definition datasheet, on the **Risk Matrix Definition** tab, in the following text boxes, type the new titles:
   - **Unmitigated Object Label:** The label that you want to use in place of *Risk Of*.
   - **Mitigated Object Label:** The label that you want to use in place of *Mitigated By*.
   - **Unmitigated Risk Label:** The label that you want to use in place of *Unmitigated Risk Rank*.
   - **Mitigated Risk Label:** The label that you want to use in place of *Mitigated Risk Rank*.

   Remember that these default titles appear in the Risk Assessment interface like this:

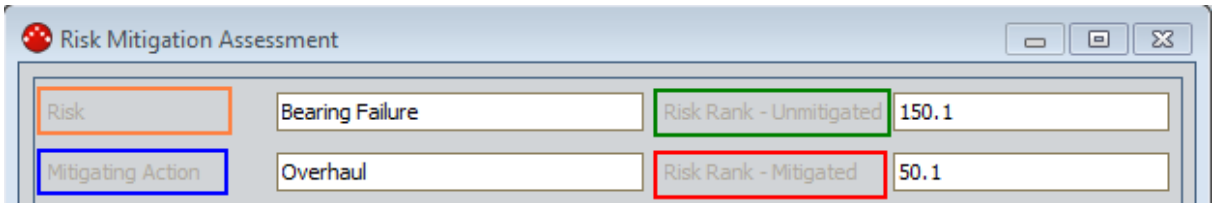


Note: The default titles are not displayed on the datasheet. If the text boxes are empty, it indicates that the default titles are being used.

For example, in the following image, you can see the following new titles:

- **Unmitigated Object Label:***Risk*
- **Mitigated Object Label:***Mitigating Action*
- **Unmitigated Risk Label:***Risk Rank - Unmitigated*
- **Mitigated Risk Label:***Risk Rank - Mitigated*

...which translate onto the Risk Assessment interface like this, where the text boxes are colored the same color as the corresponding text boxes in the preceding datasheet image:



3. On the **Common Tasks** menu, click the **Save** link.

   Your changes are saved. The next time you view the Risk Assessment interface from any item that uses this Risk Matrix (e.g., an Asset Strategy or RCM Analysis), the new titles will appear.

Modifying Consequences and Probabilities

Via **Risk Matrix Preview** tab on the Risk Matrix Definition datasheet, you can add new and modify existing Consequence or Probability records.

If a Risk Matrix has been used by a module in Meridium APM, you cannot modify the Consequences or Probabilities it contains.

To modify a Consequence record or a Probability record via the Risk Matrix Preview tab:

1. Open the Risk Matrix record for the Risk Matrix that you want to modify.
2. On the Risk Matrix Definition datasheet, on the **Risk Matrix Preview** tab, locate the column or row header that represents the Consequence or Probability record that you want to modify.

   Note: On the baseline Risk Matrix, Consequence records appear on the x-axis by default, and Probability records appear on the y-axis by default.

3. Double-click the column or row header that represents the Consequence record or Probability record that you want to modify.

   - If you double-clicked a header representing a Consequence record, the selected Consequence record appears in a separate window.

   -or-

   - If you double-clicked a header representing a Probability record, the selected Probability record appears in a separate window.

4. Modify the values in the fields as desired, and then click **OK**.

   The record closes, and your changes are saved. If you modified values that appear on the Risk Matrix, your changes are displayed on the **Risk Matrix Preview** tab.

Changing the Axis on which Values Appear

On the baseline Risk Matrix, values in Consequence records appear on the x-axis, and values in Probability records appear on the y-axis. If desired, you can flip the axes for these families so that values in Probability records appear on the x-axis and values in Consequence records appear on the y-axis.

When you modify the axis setting for one family, the axis setting for the other family is updated automatically to the opposite axis setting. In other words, if you specify that values in Consequence records should appear on the y-axis instead of the x-axis, the axis setting for values in Probability records will automatically appear on the x-axis instead of the y-axis.

To change the axis on which values in Consequence and Probability records appear:

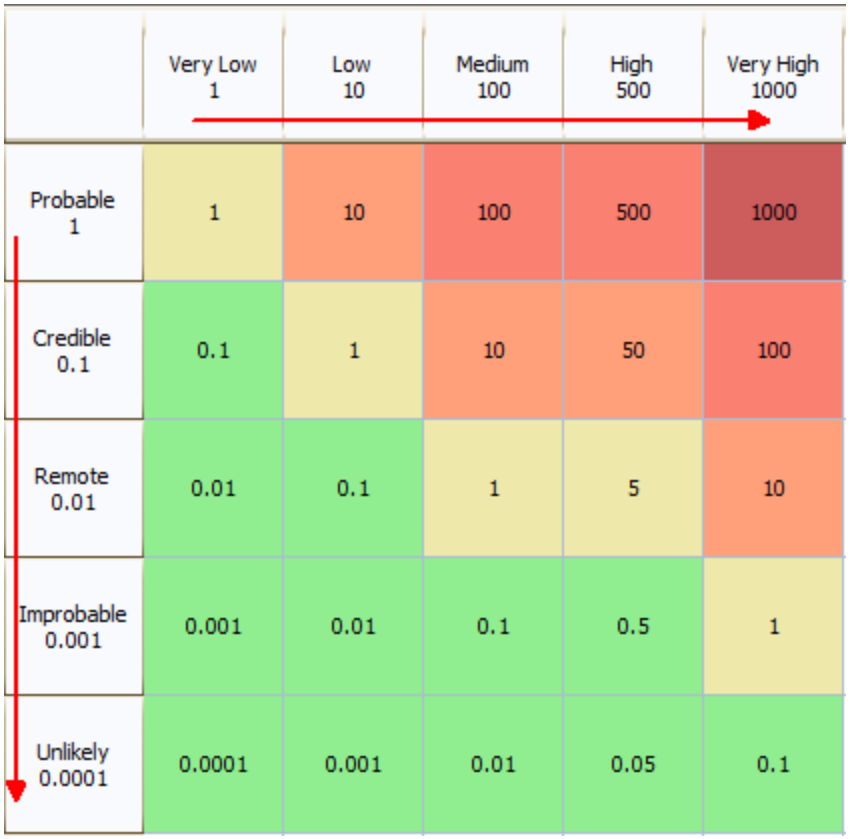
1. Open the Risk Matrix record for the Risk Matrix that you want to modify.
2. On the **Risk Matrix Definition** tab on the Risk Matrix Definition datasheet, in the **Consequence Axis** or **Probability Axis** lists, select the axis on which you want to view the family.

   The axis setting for the family whose option you did not change is updated automatically to display the opposite axis.
3. On the **Common Tasks** menu, click the **Save** link.

   Your changes are saved, and you can view them via the **Risk Matrix Preview** tab.

Changing the Order in Which Consequence or Probability Values Appear

On the baseline Risk Matrix, consequence values appear in ascending order from left to right, and probability values appear in descending order from top to bottom, as illustrated in the following image.



You can change the sort order for one or both of these families.

To change the change the order in which consequence or probability values appear:

1. Open the Risk Matrix record for the Risk Matrix that you want to modify.
2. On the **Risk Matrix Definition** tab on the Risk Matrix Definition datasheet, in the **Consequence Sort Order** or **Probability Sort Order** field, select the sort order that you want to apply: Ascending or Descending.
3. On the **Common Tasks** menu, click the **Save** link.

   Your changes are saved, and you can view them via the **Risk Matrix Preview** tab.

Unlocking the Mitigated Consequence

By default, the baseline Risk Matrix is configured to lock the mitigated consequence. This means that for mitigated risk assessments, you will be able to modify only the *probability* value. You will not be able to modify the *consequence* value. For example, in the following image, the mitigated consequence is locked, so you can see that you can lower the probability but *not* the consequence.

You can use the following instructions to unlock the mitigated consequence.

To unlock the mitigated consequence:

1. Open the Risk Matrix record for the Risk Matrix that you want to modify.
2. On the Risk Matrix Definition datasheet, on the **Risk Matrix Definition** tab, clear the **Lock Mitigated Consequence** check box.
3. On the **Common Tasks** menu, click the **Save** link.

Your changes are saved, and when you view the Risk Matrix via the Risk Assessment interface, you will be able to change the probability value or the consequence value in mitigated risk assessments.

Disabling the Not Applicable Check Box

In some cases, you might want to disable the **Not Applicable** check box (which appears on each tab of the Risk Matrix) so that Risk Matrix users cannot select it. For example, your company might have a policy that requires risk to *always* be evaluated rather than allowing people to bypass the risk assessment process.

The following image illustrates what the **Not Applicable** check box looks like after it has been disabled.

Note: The process of disabling the **Not Applicable** check box requires you to create a disabled rule on the Not Applicable field in the Risk Rank family. Because this field is used to display the **Not Applicable** check box on *all* tabs of *all* Risk Matrices, it will be disabled *everywhere* that *any* Risk Matrix is displayed.

To disable the Not Applicable check box:

1. Using the Configuration Manager, in the **Risk Rank** family, create a disabled rule on the **Not Applicable** field. You can create the rule such that the check box is always disabled, or you can create a more complex rule that causes the check box to become disabled only under certain conditions (e.g., after the risk rank is set to anything higher than 100).
2. Save the family.
3. Compile the family.

   The **Not Applicable** check box will now be disabled on *all* tabs of *all* Risk Matrices.

About Displaying Custom Labels in the Risk Matrix

To create a custom label for a row or column, you will need to create an alias in the corresponding Probability and Consequence record. Then, if you also hide the numeric values that appear in the row and column labels (by clearing the **Hide Numeric Risk Rank?** check box in the Risk Matrix record) and use the maximum risk rank (by selecting the **Use Maximum Risk Rank** check box in the Risk Matrix record), the aliases that you create will appear *in place of* the numeric values in the row and column labels.

To create a custom label for a tooltip, you will need to create an alias in the corresponding Risk Threshold record.

To support custom labels, each Risk Matrix record contains the **Use Aliases?** check box. When you select the check box, the aliases that you define in the Consequence, Probability, and Risk Threshold records to which it is linked will appear in the Risk Matrix.

An Example of Customizing Row, Column, and Tooltip Labels

Suppose the internal matrix that your company uses to evaluate safety risk looks like this:

	Very Low 1	Low 2	Medium 3	High 4	Very High 5
Frequent E	E1	E2	E3	E4	E5
Probable D	D1	D2	D3	D4	D5
Possible C	C1	C2	C3	C4	C5
Remote B	B1	B2	B3	B4	B5
Improbable A	A1	A2	A3	A4	A5

You want to begin using Meridium APM Asset Strategy Management to create Asset Strategies and evaluate risk, and the baseline Meridium APM Risk Matrix that will be used in ASM looks like this:

You can see that the baseline Risk Matrix differs from your company's risk matrix. Instead of displaying probability values *A* through *E*, the baseline Meridium APM Risk Matrix displays *0.0001* through *1* (circled in red in the following image). In addition, instead of displaying consequence values *1* through *5*, the baseline Meridium APM Risk Matrix displays *1* through *1000* (circled in blue in the following image).

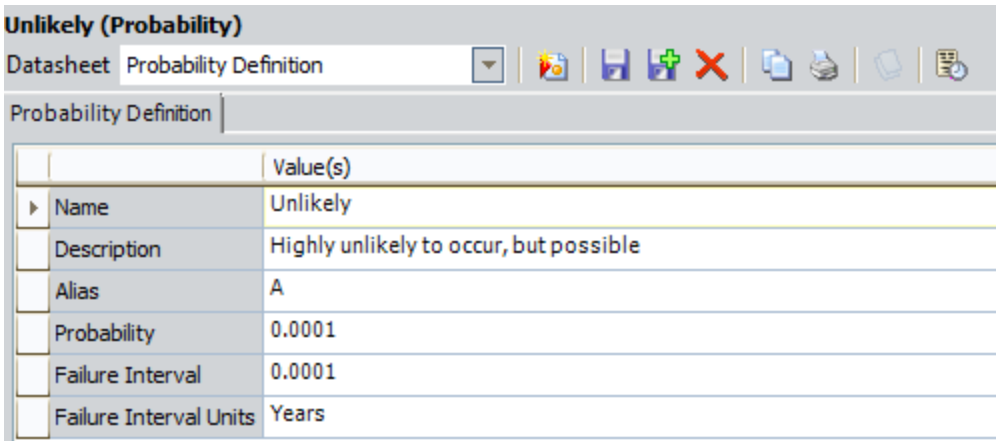
You could modify the baseline Risk Matrix so that the probability and consequence labels more closely resemble the risk matrix that you are familiar with.

To do so, in the Risk Matrix record, you would need to:

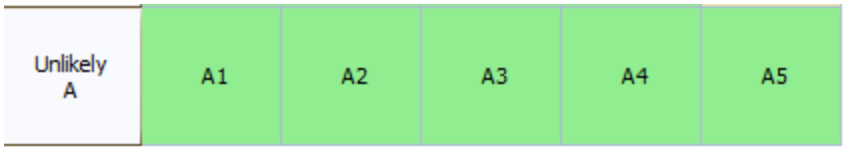
- Select the **Hide Numeric Risk Rank** check box, which hides the probability values 0.0001 through 1 and consequence values 1 through 1000 from the Risk Matrix.
- Select the **Use Maximum Risk Rank** check box, which causes the total risk rank value to be the maximum risk rank across all categories (tabs) versus the sum of all risk rank values.
- Select the **Use Aliases** check box, which allows you to define your own custom labels.
- Type the text `{r}{c}` in the **Alias Format Mask** text box.

Then, in the Probability and Consequence records that are linked to the *Safety* Risk Category record, you would need to create aliases to specify the labels that you want to see in the Risk Matrix. Specifically, you would need to:

- Specify the probability values *A* through *E* in the Alias field in the Probability records. For example, in the *Unllikely* Probability record with the Probability value *0.0001*, you would type *A* in the **Alias** text box.

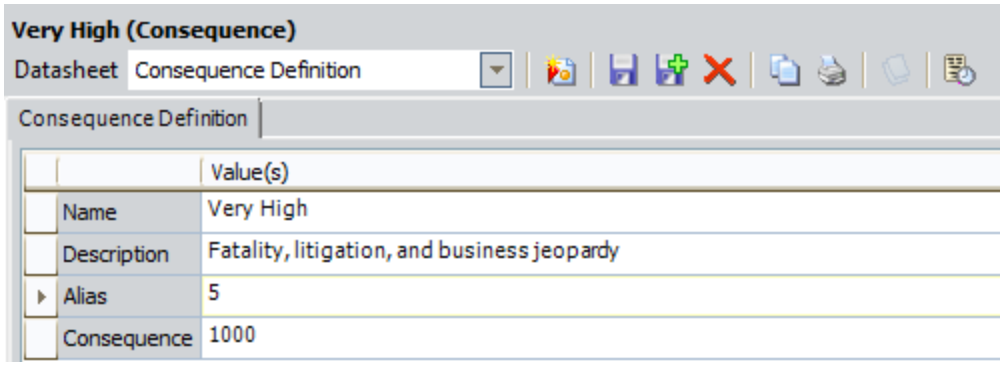


If you were to view the Risk Matrix, you would see a row with the label *Unlikely A*, as shown in the following image.

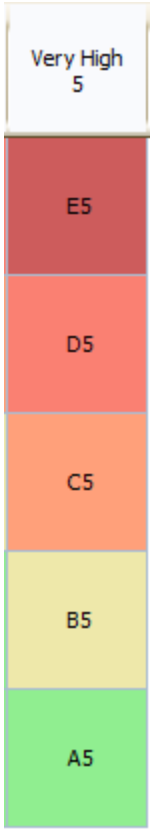


In each remaining Probability record, you would specify the aliases B, C, D, and E.

- Specify the consequence values *1* through *5* in the Alias field in the Consequence records. For example, in the *Very High* Consequence record with the Consequence value *1000*, you would type *5* in the **Alias** text box.



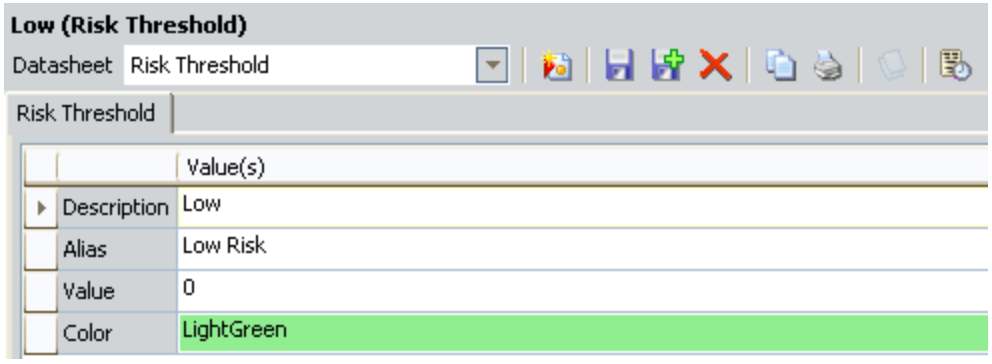
If you were to view the Risk Matrix, you would see a column with the label *Very High 5*, as shown in the following image.



In each remaining Consequence record, you would specify the aliases 2, 3, 4, and 5.

When you finished defining the aliases, the completed **Safety** tab in the Risk Matrix would look like this:

If you also wanted the tooltip that appears when you pause on a green-shaded cell to display the text *Low Risk* instead of the default text *Low*, you could change the value in the Alias field in the *Low* Risk Threshold record, as shown in the following image.



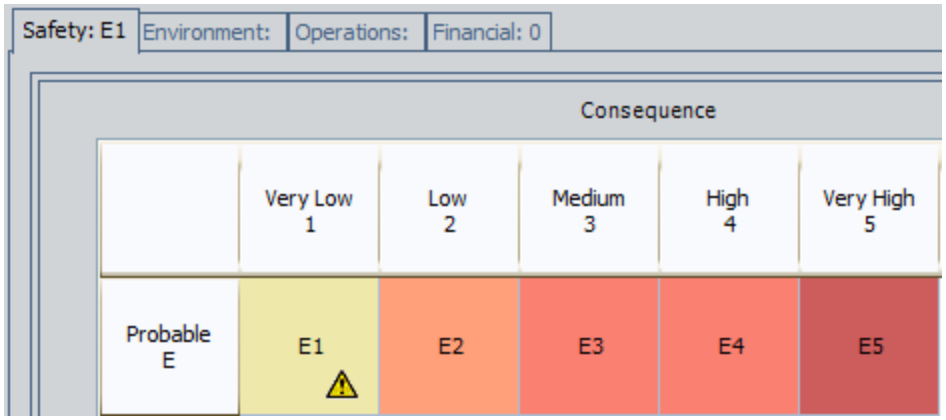
If you were to view the Risk Matrix and pause on a green-shaded cell, you would see the following tooltip.

A1
Low Risk

Defining How Risk Values Will be Displayed in Each Cell

The Risk Matrix contains multiple tabs, which each display their own matrix where you can select risk values. After you select a risk value in a cell, the tab label is updated to reflect the selected value. If you have decided to display custom values in the Risk Matrix, you can also create a template that will determine how those values will be displayed in individual cells and on the tab labels.

For example, suppose your custom aliases appear in the Risk Matrix like this:



You can see that the risk value in each cell is a combination of the row alias and column alias, without a delimiter. You can also see that the selected risk value is reflected on the tab label. For instance, at the intersection of the *Probable E* row and the *Very Low 1* column, you see the value *E1*, which is also displayed on the tab label.

You could change this so that the risk values use a delimiter, such as a dash, so you would see E-*1* instead of E*1*.

To define how you want to display risk values:

1. Open the Risk Matrix record for the Risk Matrix for which you want to specify how risk values will be displayed.
2. On the Risk Matrix Definition datasheet, select the **Risk Matrix Definition** tab.
3. On the **Risk Matrix Definition** tab, in the **Alias Format Mask** text box, type a formula that represents the format in which you want risk values to be displayed, using any combination of the following parameters, with or without delimiters:
    - **{c}:** The alias for the column (specified in the Alias field in the corresponding Consequence record).
    - **{r}:** The alias for the row (specified in the Alias field in the corresponding Probability record).
    - **{pl}:** The alias for the protection level (specified in the Alias field in the corresponding

Protection Level record).

- **{t}:** The alias for the risk threshold (specified in the Alias field in the corresponding Risk Threshold record).

For example, suppose you want risk values to be displayed using the format *<row alias> - <column alias>*. In other words, if the row alias is *E* and the column alias is *1*, you want the risk value will be displayed as *E-1*. In this case, you would type the following formula in the **Alias Format Mask** text box:

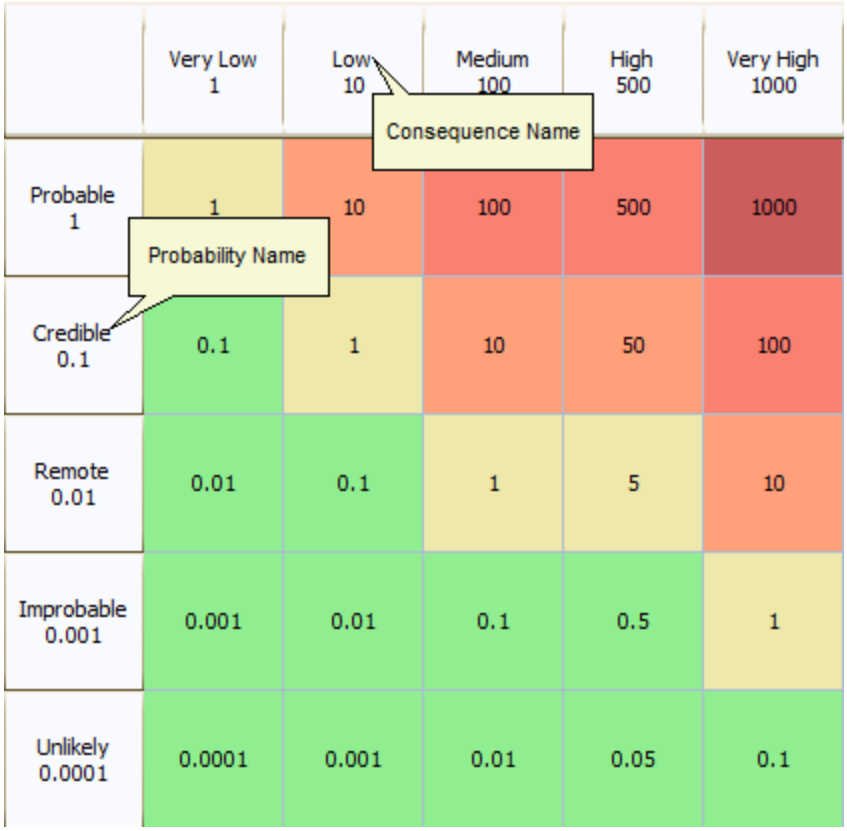
{r}-{c}

4. On the **Common Tasks** menu, click the **Save** link.

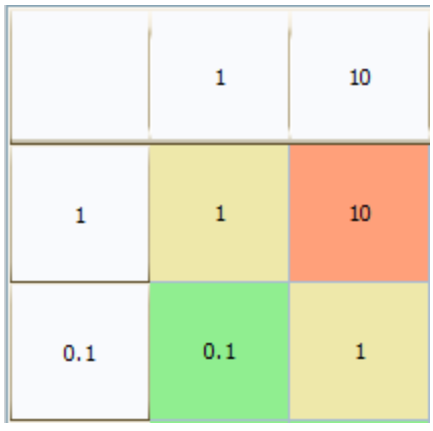
   The Risk Matrix record is saved.

Hiding the Probability and Consequence Names

On the baseline Risk Matrix, Probability and Consequence names appear as row and column headers in the Risk Matrix, as illustrated in the following image.



Using the following instructions, you can hide the Consequence and Probability names so that the row and column headers on the Risk Matrix look like this instead:



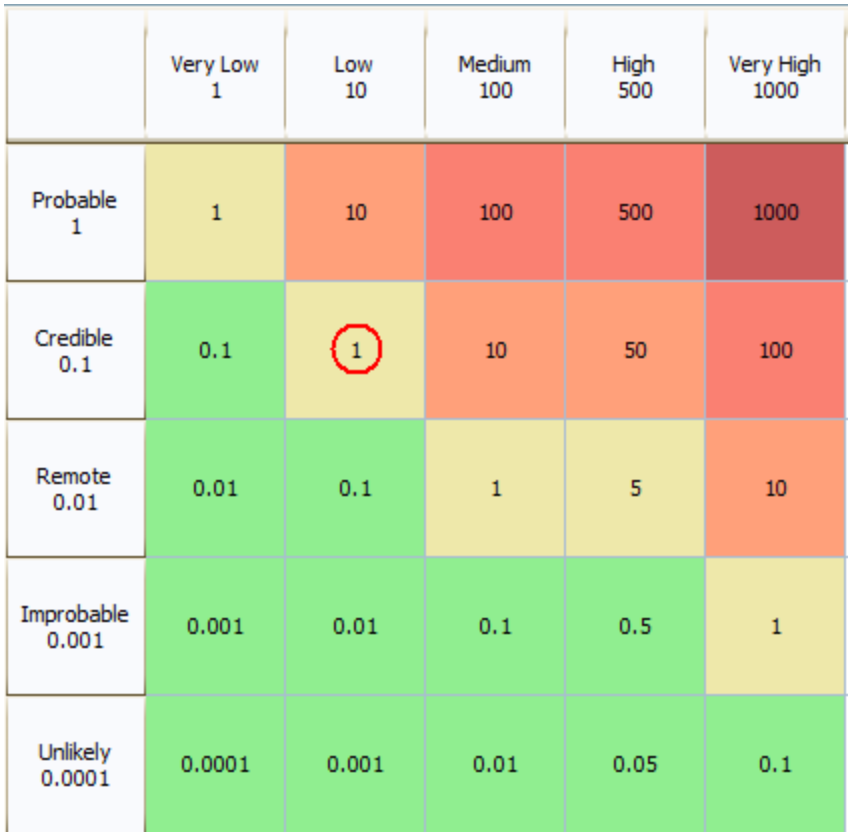
To hide Consequence or Probability names from the Risk Matrix:

1. Open the Risk Matrix record for the Risk Matrix from which you want to hide Consequence and Probability names.
2. On the Risk Matrix Definition datasheet, on the **Risk Matrix Definition** tab, select the **Hide Probability and Consequence Names** check box.
3. On the **Common Tasks** menu, click the **Save** link.

   Your changes are saved. The next time the Risk Matrix is displayed, the Consequence and Probability names will be hidden from the column and row headings.

Hiding the Numeric Risk Rank

On the baseline Risk Matrix, numeric values appear in the matrices as shown in the following image.



	Very Low 1	Low 10	Medium 100	High 500	Very High 1000
Probable 1	1	10	100	500	1000
Credible 0.1	0.1	1	10	50	100
Remote 0.01	0.01	0.1	1	5	10
Improbable 0.001	0.001	0.01	0.1	0.5	1
Unlikely 0.0001	0.0001	0.001	0.01	0.05	0.1

You can hide these numeric values and then use the **Use Aliases?** option to display aliases in place of the numeric values. For example, instead of the value *1* shown in this image, you could display the alias value *Credible - Low*.

The following instructions assume you are familiar with using alias values and provide details only for *hiding the numeric values*.

To hide the numeric risk rank:

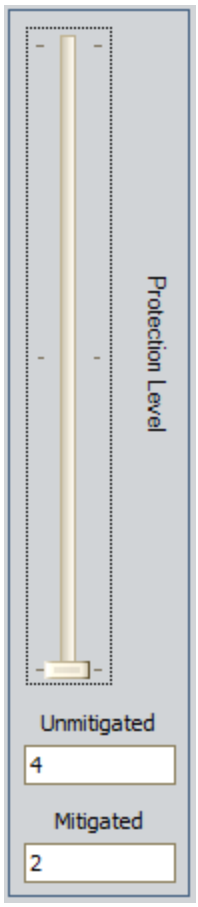
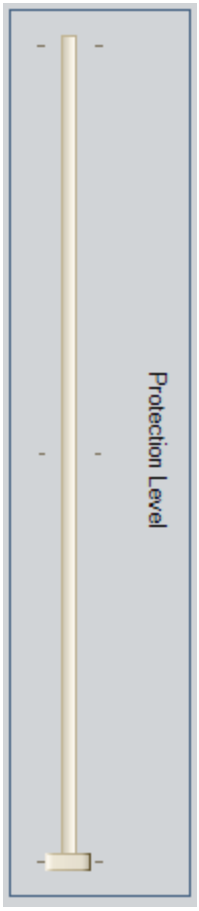
1. Open the Risk Matrix record for the Risk Matrix that you want to modify.
2. On the Risk Matrix Definition datasheet, on the **Risk Matrix Definition** tab, select the **Hide Numeric Risk Rank?** check box.
3. On the **Common Tasks** menu, click the **Save** link.

   Your changes are saved, and you can view them via the **Risk Matrix Preview** tab. For example, the following image shows the matrix as it appears on the **Risk Matrix Preview** tab after the numeric risk rank values have been hidden.

The cells in this matrix are empty. If you use the **Hide Numeric Risk Rank?** option in conjunction with the **Use Aliases?** option, the specified alias values will appear in these cells.

Hiding the Text Boxes Below the Protection Level Slider

On the baseline Risk Matrix, text boxes appear below the protection level slider. Using the following instructions, you can hide the text boxes. The following image illustrates what the slider looks like with and without the text boxes.

With Text Boxes (baseline behavior)	Without Text Boxes
	

To hide the text boxes below the Protection Level slider:

1. Open the Risk Matrix record for the Risk Matrix from which you want to hide the protection level slider text boxes.
2. On the Risk Matrix Definition datasheet, on the **Risk Matrix Definition** tab, select the **Hide**

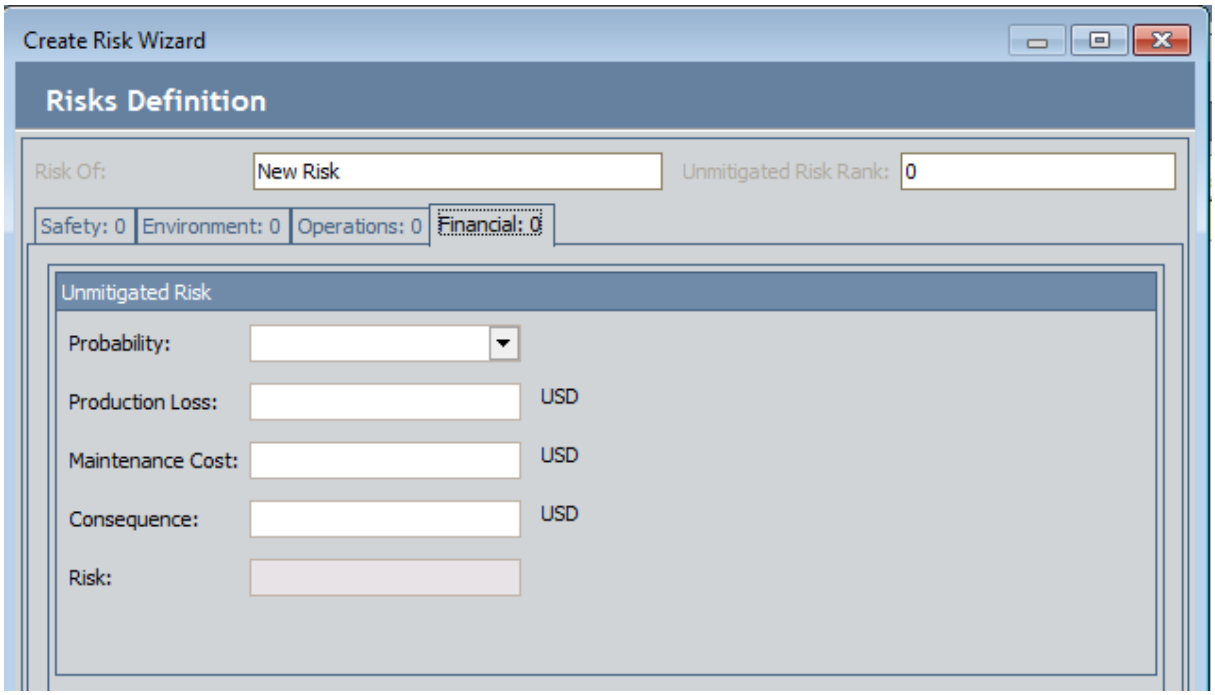
Protection Level Text check box.

3. On the **Common Tasks** menu, click the **Save** link.

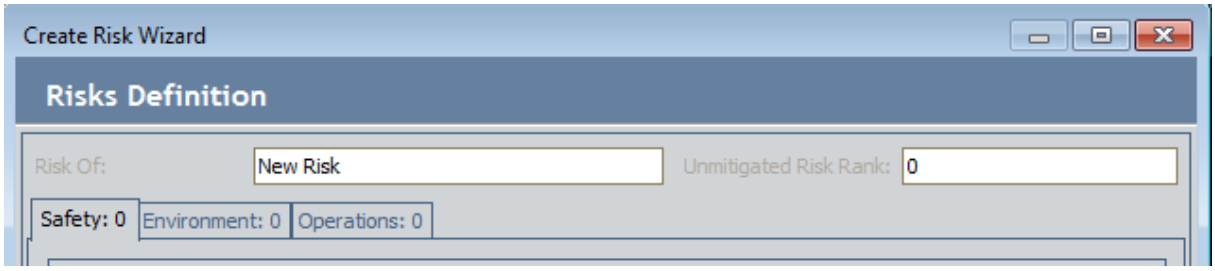
   Your changes are saved. The next time the Risk Matrix is displayed, the text boxes will be hidden below the protection level slider.

Hiding the Financial Tab

On the baseline Risk Matrix, the **Financial** tab appears as shown in the following image.



If desired, you can hide the **Financial** tab, as shown in the following image.



Note: You can hide the **Financial** tab only if the Risk Matrix has not been used by a module to evaluate risk.

To hide the Financial tab:

1. Open the Risk Matrix record for the Risk Matrix from which you want to hide the **Financial** tab.
2. Using the **Record Explorer** pane, open the *financial* Risk Category record that is linked to the Risk Matrix record.

> **Hint:** The financial Risk Category record is the one with the selected **Is Financial** check box.

3. Delete the financial Risk Category record.

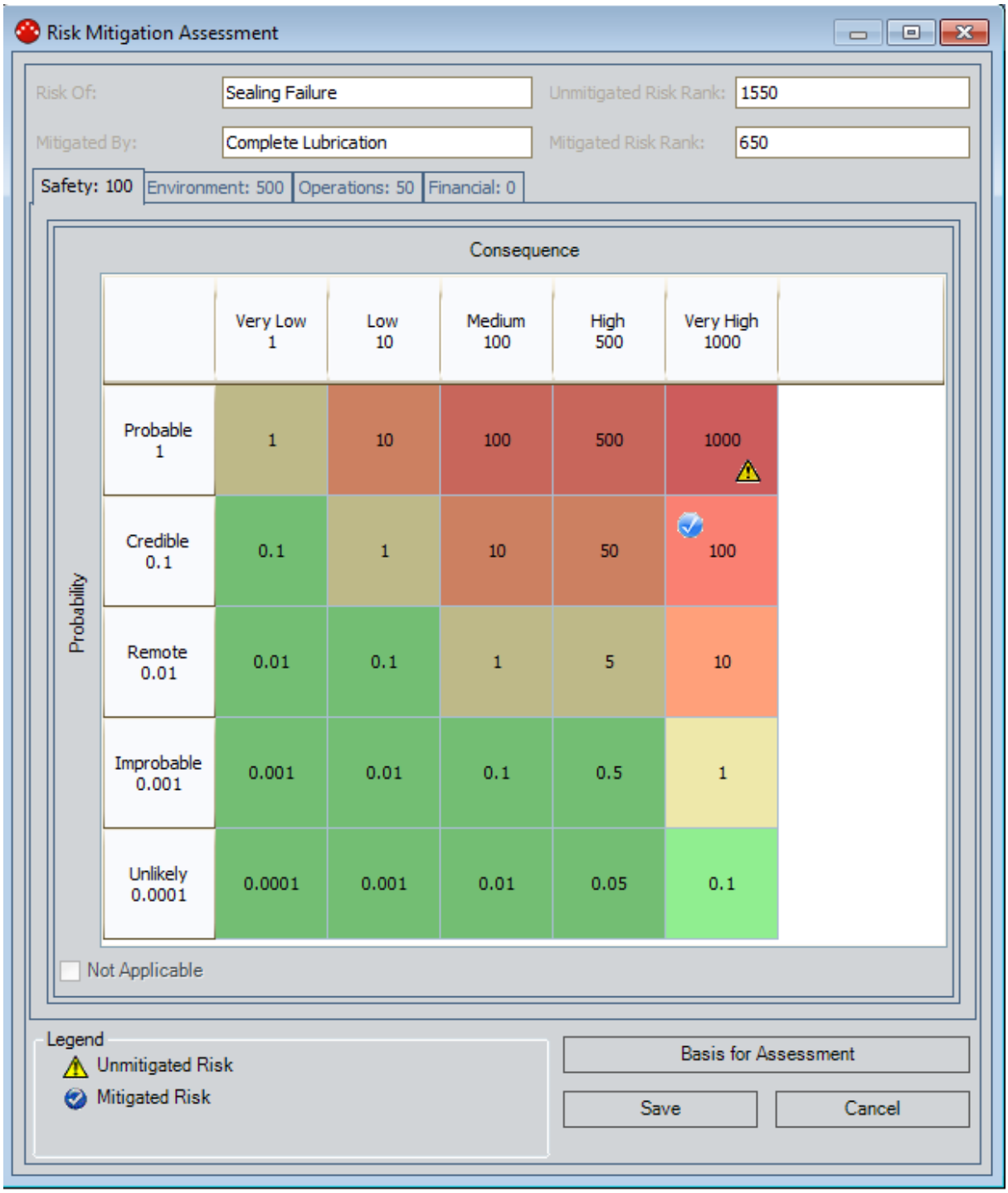
   Now that the financial Risk Category record is deleted, when you access this Risk Matrix within a module, the **Financial** tab will not appear.

Aspects of the Risk Assessment Interface

The *Risk Assessment interface* displays a Risk Matrix and other risk information. You can access the Risk Assessment interface in various places throughout the Meridium APM Framework application. The way in which you access it will determine the window title that appears on the interface. For example, when you access the interface from an RCM FMEA Failure Effect node in the **RCM Explorer** pane, the window is titled **Unmitigated Risk Assessment**. When you access it by creating a new Risk in ASM, however, you will see the **Create Risk Wizard**, in which the second step displays the Risk Assessment interface.

Throughout this documentation, we use the term *Risk Assessment interface* to refer generically to the window that displays the Risk Matrix and other risk information.

The following image illustrates what the Risk Assessment interface looks like when accessed from an Action in ASM.



The Risk Assessment interface will contain different items depending upon how you access it. The following table describes the possible items that you might see on the Risk Assessment interface.

Item	Description	Notes
Title bar	Displays the title of the Risk Assessment interface.	You can modify the title using the Risk Matrix Definition datasheet.
Risk Of cell	Displays the name of the risk.	You can modify the label of this cell using the Risk Matrix Definition datasheet.
Unmitigated Risk Rank cell	Displays a value that is calculated based on the sum of the unmitigated risk values, which are represented by a ⚠ icon on the matrix.	The value in the **Unmitigated Risk Rank** cell is a sum of all of the values on the tabs on the Risk Matrix, multiplied by the appropriate weight and protection level factor (the weight and the protection level factor are configured in Risk Category records and Protection Level records). If the Risk Matrix is configured to use the maximum risk rank, this value is the greatest of all the risk values, not the sum. You can modify the label of this cell using the Risk Matrix Definition datasheet.
Mitigated By cell	Displays the name of the action or the recommendation that mitigates the risk.	You can modify the label of this cell using the Risk Matrix Definition datasheet.
Mitigated Risk Rank cell	Displays a value that is calculated based on the sum of the mitigated risk values, which are represented by a ✔ icon in the matrix. For a given risk, the mitigated risk rank will be *lower* than the unmitigated risk rank.	The value in the **Mitigated Risk Rank** cell is a sum of all of the values on the tabs on the Risk Matrix, multiplied by the appropriate weight and protection level factor (the weight and the protection level factor are configured in Risk Category records and Protection Level records). If the Risk Matrix is configured to use the maximum risk rank, this value is the greatest of all the risk values, not the sum. You can modify the label of this cell using the Risk Matrix Definition datasheet.
Risk Matrix	Contains a series of tabs that contain a matrix, where you can make selections that the Meridium APM system will use to calculate the overall risk rank.	For details about the Risk Matrix, see the topic **Aspects of the Risk Matrix** in this documentation.

Item	Description	Notes
Legend	Displays the icons that are used to represent mitigated risk values and unmitigated risk values in the matrix.	None
Basis for Assessment button	Displays the **Basis for Assessment** dialog box, where you can type an explanation of the current risk assessment.	None
Save button	Saves any changes you have made using the Risk Assessment interface.	None
Cancel button	Closes the Risk Assessment interface, discarding any changes you have made.	None

Aspects of the Risk Matrix

The *Risk Matrix* that appears in the Risk Assessment interface allows you to make selections that are used in calculations to determine an overall risk rank value.

The baseline Meridium APM database contains a Risk Matrix that you can use when evaluating risk. This Risk Matrix displays values that exist in records that are provided in the baseline Meridium APM database. In addition, the values that you select on the Risk Matrix are used in calculations, which are also determined based on the values in these records.

The following image displays the Risk Matrix that is provided in the baseline database.

The baseline Risk Matrix contains the following tabs, which represent areas that might be affected if risk were to be presented:

- Safety
- Environment
- Operations
- Financial

Except for the **Financial** tab, each tab contains its own matrix, which combines in a grid format probability factors with consequence factors. The values that you see on each tab in the Risk Matrix are configurable. If you do not want to use the default values, an administrative user can customize the default Risk Matrix or create a new Risk Matrix to use as the default.

Each tab also contains the **Not Applicable** check box. If this check box is selected, it indicates that the risk category that is represented by that tab does not apply to the risk.

In some cases, certain cells will be disabled in each matrix. For example, if the **Lock Mitigated Consequence** check box is selected in the Risk Matrix record, when you are defining a mitigated risk assessment, you will be able to modify only the probability value. You will *not* be able to modify the consequence value at all. Also, even if this check box is cleared, when you are defining a mitigated risk assessment, you will not be able to select a consequence or probability value that exceeds the unmitigated consequence or probability value. You will know that a cell is disabled because its color will be slightly darker than the enabled cells of the same color. For example, in the following image, you can see that some cells are slightly darker, indicating that you must select a probability value less than or equal to *0.1* and a consequence value less than or equal to *100*.

About the Not Applicable Check Box

Each tab in the Risk Matrix contains the **Not Applicable** check box. If this check box is selected, it indicates that the risk category that is represented by that tab does not apply to the risk. You might, for example, determine that a leak does not have a safety impact. In this case, when you are assessing the risk of the *Leak* Risk record, you would select the **Not Applicable** check box on the **Safety** tab. The following image shows the selected **Not Applicable** check box on the **Safety** tab for the *Leak* Risk record.

The behavior of the other items on the tab differs depending upon whether you select the **Not Applicable** check box on a non-financial tab or a financial tab:

- If you select the check box on a *non-financial* tab, the matrix on that tab will be disabled, and no unmitigated risk rank icon will appear. In addition, the tab label will contain the text *N/A*.

- If you select the check box on a *financial* tab, all fields will be removed from the tab, and the tab label will contain the text *N/A*.

Remember that after you perform a risk assessment, multiple Risk Rank records are created, where the value in the Category field in each Risk Rank record represents a specific risk category (e.g., Safety) that you assessed. If, for example, you create a Risk record with the name *Leak*, when you assess the risk using the Risk Matrix, multiple Risk Rank records will be created and linked to that Risk record. Each Risk Rank record will contain a value in the Category field to indicate the risk rank per category (e.g., Safety). In addition, each Risk Rank record will contain the value *True* or *False* in the Not Applicable field to indicate whether or not you selected the **Not Applicable** check box on the tab representing that category. Specifically:

- *True* indicates that the **Not Applicable** check box was *selected* on the tab.
- *False* indicates that the **Not Applicable** check box was *cleared* on the tab.

So, using the *Leak* Risk record example, if you selected the **Not Applicable** check box on the **Safety** tab, the *Leak* Risk record would be linked to a Risk Rank record with the following values:

- **Category:** Safety
- **Not Applicable:** True

Note that the Not Applicable field is not displayed on the baseline Risk datasheet that is defined for the Risk Rank family, but you can see the value if you create a query that includes the Risk Rank family. Consider the following image, which was created using a query that includes the Risk, Risk Rank, and Has Risk Category families. In the image, each row represents a Risk Rank record that is linked to the *Leak* Risk record.

Risk Name	Risk Category	Not Applicable
Leak	ENVIRONMENT	False
Leak	FINANCIAL	True
Leak	OPERATIONS	False
Leak	SAFETY	True

You can see in the query results that the *Leak* Risk record is linked to four Risk Rank records, where each Risk Rank record contains one of the following values in the Risk Category field:

- ENVIRONMENT
- FINANCIAL
- OPERATIONS
- SAFETY

In addition, you can see that the following Risk Rank records contain the value *False* in the Not Applicable field:

- ENVIRONMENT
- OPERATIONS

Likewise, the following Risk Rank records contain the value *True* in the Not Applicable field:

- SAFETY
- FINANCIAL

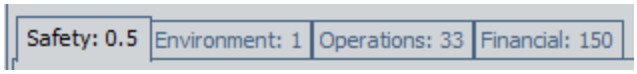
You can infer, therefore, that when the risk of a leak was assessed, the assessor determined that the leak does not have a safety or financial impact, so he selected the **Not Applicable** check box on the **Safety** and **Financial** tabs on the Risk Matrix.

About Using the Risk Matrix

When you access the Risk Assessment interface, you will need to select values on each tab of the Risk Matrix. To select a value on a tab other than the **Financial** tab, you can click any cell in the matrix. To select a value on the **Financial** tab, you will need to select values from the drop-down lists.

If any tab represents a risk category that does not apply to the risk that you are assessing, you can select the **Not Applicable** check box on that tab. When you do so, the tab will be disabled, and the tab label will be updated to contain the text *N/A*.

If you select a value on a tab, the selected value appears beside the tab name, as shown in the following image.



When you select a value on any tab *except* for the **Financial** tab, the value that you select is represented by an icon.

- If you have accessed the Risk Assessment interface from a record that represents an action that might mitigate risk (e.g., an Action record in ASM or a Recommendation node in an RCM Analysis), the value that you select is represented by a icon.
- If you have accessed the Risk Assessment interface from a record that represents risk *before* any actions have mitigated it (e.g., a Failure Risk record in ASM or a Failure Effect node in an RCM Analysis), the value that you select is represented by a icon.

For instance, in the following image, you can see that the value on the **Safety** tab is *0.05*, and the icon appears in the cell that contains the value 0.05. In this case, the Risk Assessment feature was accessed from an Action record in ASM, so the important value is the value represented by the mitigating action, or the icon.

After you have selected a value on each tab, the selected values are used in a calculation to determine the overall risk rank.

- If you are working with a Risk Matrix where the values represented by the icon are displayed on the tabs, the risk rank is displayed in the **Mitigated Risk Rank** cell.
- If you are working with a Risk Matrix where the values represented by the icon are displayed on the tabs, the risk rank is displayed in the **Unmitigated Risk Rank** cell.

Note: When selecting a value using the icon, you cannot select a value with a higher probability or consequence than the value that is already represented by the icon. For example, suppose the icon appears in the cell at the intersection of the Probable probability (1) and Low consequence (10). In this case, using the icon, you could not select a value with a probability greater than 1 or a consequence greater than 10.

Determining an Overall Risk Rank

The Risk Assessment interface displays values in text boxes that are populated based on the way in which you accessed the interface. While you can modify these values if desired, the main purpose of the Risk Assessment interface is to allow you to select values that will be used to determine an overall risk rank.

The following instructions assume that you want to specify a risk rank value on each tab of the Risk Matrix. If, however, any tab represents a risk category that does not apply to the risk that you are assessing, you can select the **Not Applicable** check box on that tab.

Note: These instructions assume that a financial risk category exists for the Risk Matrix.

To use the Risk Assessment interface to determine an overall risk rank:

1. In the Meridium APM Framework, after you have accessed the Risk Assessment interface, on the first tab that appears, in the matrix, click the desired cell.

   An icon appears in the selected cell. The way in which you accessed the Risk Assessment interface determines the icon that appears in the cell.

   - If you are defining unmitigated risk (e.g., for a Risk in Asset Strategy Management), the ⚠ icon will appear.
   - If you are defining mitigated risk (e.g., for an Action in Asset Strategy Management), the ✔ icon will appear. Also, if you are defining mitigated risk, the mitigated values must be *lower* than the unmitigated values.

2. If a protection level slider appears on the tab, on the slider, slide the indicator up or down to select the appropriate level of protection.

   The number that corresponds to the selected level is multiplied by the selected consequence and probability, and the result appears in the selected cell in the matrix and on the tab next to the tab name.

3. Click the tab to the right of the current tab.

4. In the matrix, click the desired cell.

   An icon appears in the selected cell. Again, the way in which you accessed the Risk Assessment interface determines the icon that appears in the cell.

5. If a protection level slider appears on the tab, on the slider, slide the indicator up or down to select the appropriate level of protection.

   The number that corresponds to the selected level is multiplied by the selected consequence and probability, and the result appears in the selected cell in the matrix and on the tab next to the tab name.

6. For each tab on the interface that is not labeled **Financial**, in the matrix, click the desired cell, and select the appropriate protection level if a **Protection Levels Definition** slider

appears.

7. Click the **Financial** tab.
8. In each list or text box, select or type the desired value. Note that the values that you type in the **Production Loss** and **Maintenance Cost** cells will be added together to determine the overall consequence, which is displayed in the **Consequence** cell.

   If you are defining mitigated risk, the mitigated financial values must be *lower* than the unmitigated financial values.

   When you are finished making selections on each tab, the values that appear next to each tab name (except for a financial tab) are used in a calculation to determine the overall risk rank.

- In the corresponding Risk Matrix record, if the **Use Maximum Risk Rank** check box is selected, the risk rank will equal the largest value on the tabs.

  -or-

- In the corresponding Risk Matrix record, if the **Use Maximum Risk Rank** check box is not selected, the risk rank will equal the sum of values on each tab.

  The calculated risk rank is displayed in either the **Unmitigated Risk Rank** cell or the **Mitigated Risk Rank** cell.

- If the values displayed on the tabs appear in the matrix cells with the ⚠ icon, the calculated risk rank appears in the **Unmitigated Risk Rank** cell.
- If the values displayed on the tabs appear in the matrix cells with the ✔ icon, the overall risk rank appears in the **Mitigated Risk Rank** cell.

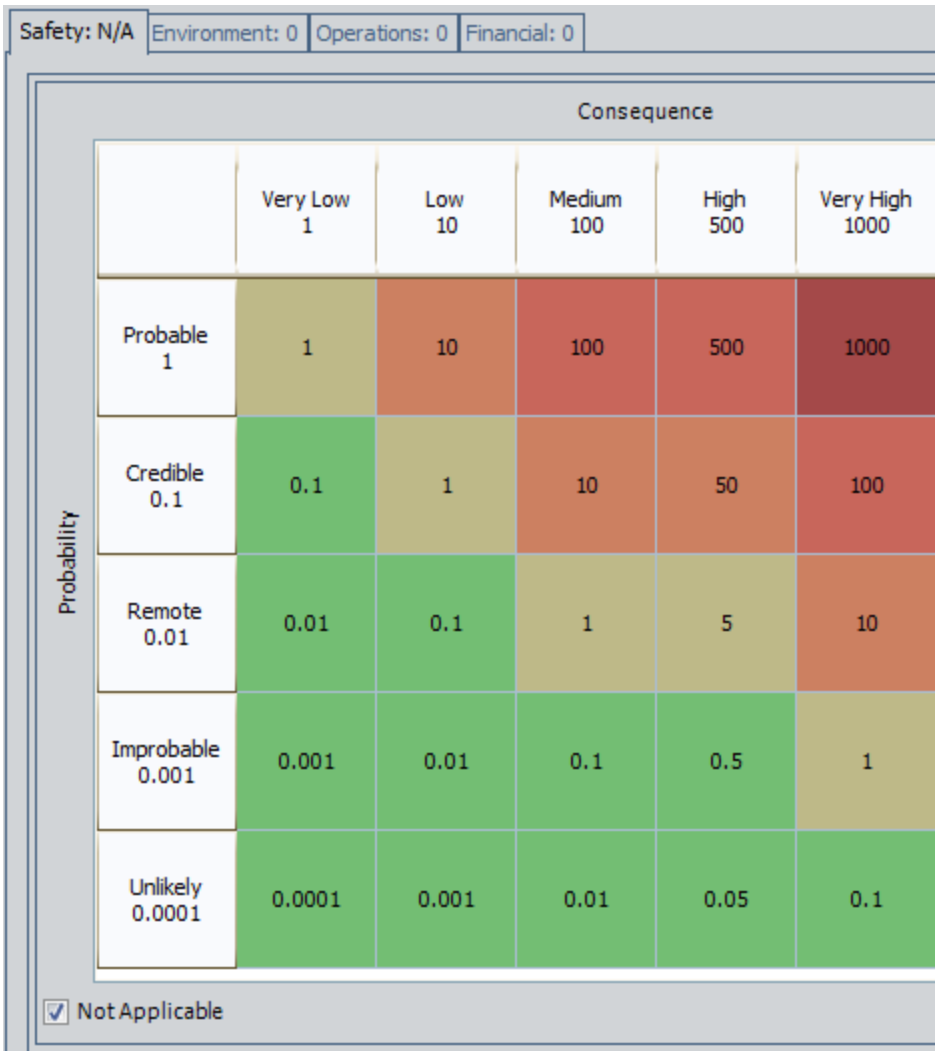
Specifying That a Risk Category Does Not Apply to the Current Risk

To specify that a risk category does not apply to the risk that you are assessing:

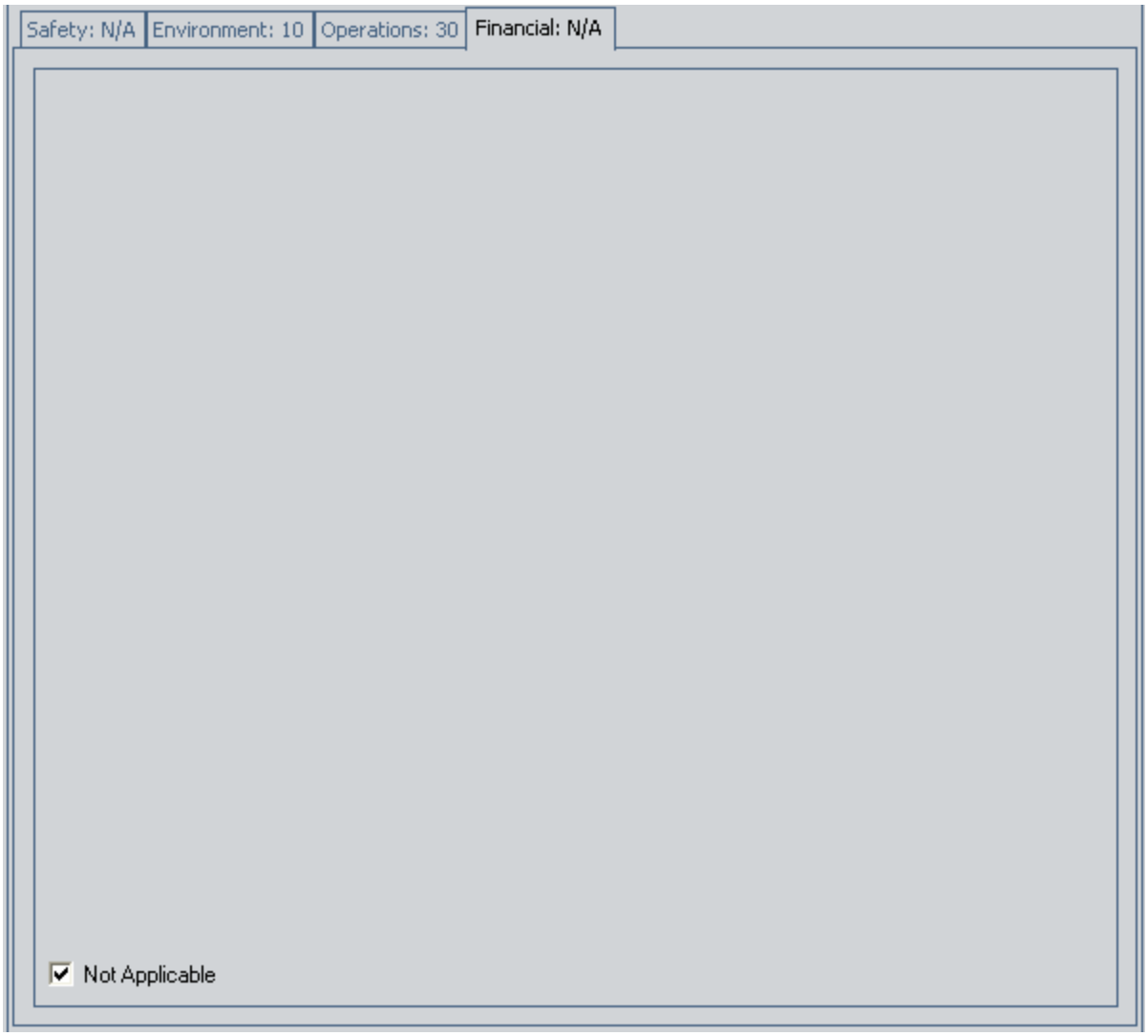
1. In the Meridium APM Framework, after you have accessed the Risk Assessment interface, on any tab that represents a risk category that does not apply to the risk that you are assessing, below the matrix, select the **Not Applicable** check box. The following image shows the **Not Applicable** check box on the **Safety** tab.

The behavior of the other items on the tab differs depending upon whether you select the **Not Applicable** check box on a non-financial tab or a financial tab:

- If you select the check box on a *non-financial* tab, the matrix on that tab will be disabled, and no unmitigated risk rank icon will appear. In addition, the tab label will contain the text *N/A*. The following image illustrates this scenario.



- If you select the check box on a *financial* tab, all fields will be removed from the tab, and the tab label will contain the text *N/A*. The following image illustrates this scenario.



2. Click the **Save** button.

   Your changes are saved. In the Risk Rank record that is associated with the tab on which you selected the check box, the value in the Not Applicable field is set to *True*.

Risk Assessment Associated Pages

The following Associated Page is configured by default for the Risk Matrix family:

- **meridium://COMMON/RISKMATRIX/CLONE?MatrixKey=[ENTY_KEY]**

  Creates records that are copies of the selected Risk Matrix record and all the records that are linked to that record.

Consequence

The following table provides an alphabetical list and description of the fields that exist in the Consequence family and that are displayed on the baseline Consequence Definition datasheet (unless otherwise noted). The information in the table reflects the baseline state and behavior of these fields.

Field	Data Type	Description	Behavior and Usage
Alias	Character	An alias for the consequence.	When the **Use Aliases?** check box is selected in the associated Risk Matrix record, the value in the Alias field in the Consequence record appears in the column header along with the consequence name. In addition, if the Alias Format Mask field in the associated Risk Matrix record contains the value *{c}*, the value in the Alias field in the Consequence record will be displayed in the cell in the Risk Matrix (according to the complete template that is defined in the Alias Format Mask field).
Color Code	Character	N/A. This field is not currently used, and it does not appear on the datasheet.	N/A. This field is not currently used, and it does not appear on the datasheet.
Consequence	Number	A numeric value representing the severity of the consequence.	This value appears on the column header in the risk matrix. After the Risk Matrix has been used by a module in Meridium APM, this field is disabled, and you will not able to modify it.

Field	Data Type	Description	Behavior and Usage
Description	Character	A description of the severity of consequence.	This field is populated automatically based upon the value in the Name field. It is populated with a System Code in the MI_RISK_CONSEQUENCE_DESC System Code Table, which contains the same ID as the System Code that is stored in the Name field. A Super User can configure the System Codes that are available via the **Consequence** tab in the Risk Matrix record to which this Consequence record is linked. In the risk matrix, this value appears when you pause on the column header.
Name	Character	The name of the consequence.	This field contains a list that is populated based upon the MI_RISK_CONSEQUENCE System Code Table. A Super User can configure the System Codes that are available in this list via the **Consequence** tab in the Risk Matrix record to which this Consequence record is linked. This value appears on the column header in the risk matrix.

Probability

The following table provides an alphabetical list and description of the fields that exist in the Probability family and that are displayed on the baseline Probability Definition datasheet (unless otherwise noted). The information in the table reflects the baseline state and behavior of these fields.

Field	Data Type	Description	Behavior and Usage
Alias	Character	An alias for the probability.	When the **Use Aliases?** check box is selected in the Risk Matrix record, the value in this field appears in the row header along with the probability name. In addition, if the Alias Format Mask field in the associated Risk Matrix record contains the value *{r}*, the value in the Alias field in the Probability record will be displayed in the cell in the Risk Matrix (according to the complete template that is defined in the Alias Format Mask field).
Color Code	Character	N/A. This field is not currently used, and it does not appear on the datasheet.	N/A. This field is not currently used, and it does not appear on the datasheet.
Description	Character	A description of the probability.	This field is populated automatically based upon the value in the Name field. It is populated with the System Code in the MI_RISK_PROBABILITY System Code table, which contains the same ID as the System Code that is stored in the Name field. A Super User can modify the System Codes that are available via the **Probability** tab in the Risk Matrix record to which this Probability record is linked. In the risk matrix, this value appears when you pause on the row header.

Field	Data Type	Description	Behavior and Usage
Failure Interval	Number	A numeric value that is used to define the failure rate associated with the probability value for a specific workflow within the Asset Strategy Optimization module.	None
Failure Interval Units	Character	The unit of measure that specifies the amount of time on which the failure interval and probability values are based.	On the datasheet, you can select a unit of measure from the **Failure Interval Units** list. The baseline Probability records contain the value **Years** by default.
Name	Character	The name of the probability level.	This field contains a list that is populated based upon the MI_RISK_PROBABILITY System Code Table. A Super User can modify the System Codes that are available in this list via the **Probability** tab in the Risk Matrix record to which this Probability record is linked. The value that you select appears on the row header in the risk matrix.
Probability	Number	A numeric value that represents the probability that the risk will occur.	After the Risk Matrix has been used by a module in Meridium APM, this field is disabled, and you will not able to modify it.
Risk Category	Character	The name of the risk category to which this probability applies (stored in the Category Name field of the Risk Category record to which this Probability record is linked).	This field does not appear on the datasheet.

Protection Level

The following table provides an alphabetical list and description of the fields that exist in the Protection Level family and that are displayed on the baseline Protection Level Definition datasheet (unless otherwise noted). The information in the table reflects the baseline state and behavior of these fields.

Field	Data Type	Description	Behavior and Usage
Alias	Character	An alias for the protection level.	If the Alias Format Mask field in the associated Risk Matrix record contains the value *{pl}*, the value in the Alias field in the Protection Level record will be displayed in the cell in the Risk Matrix (according to the complete template that is defined in the Alias Format Mask field).
Description	Character	A description of the protection level.	This field is populated automatically based upon the value in the Name field. It is populated with the System Code in the MI_RISK_PROTECTION_LEVEL_DESC System Code Table, which contains the same ID as the System Code that is stored in the Name field. A Super User can modify the System Codes that are available via the **Protection Level** tab in the Risk Matrix record to which this Protection Level record is linked. When you pause on a level in the Protection Level Definition slider, this value appears to the right of the protection level name (separated by a colon). For example, if the name is *1* and the description is *One*, when you pause on that level in the slider, you will see the value *1:One*.

Field	Data Type	Description	Behavior and Usage
Factor	Number	A number by which you want to multiply the currently selected risk value. For example, if the Factor is *10* and the value selected on the Environment tab is *30*, the total risk value for the Environment category would be 300 (10 x 30).	This number appears below the Protection Level slider in the **Unmitigated** cell or the **Mitigated** cell, depending upon whether you are defining the unmitigated risk (e.g., from a Risk in ASM) or mitigated risk (e.g., from an Action in ASM). After the Risk Matrix has been used by a module in Meridium APM, this field is disabled, and you will not able to modify it.
Name	Character	The name of the protection level.	This field contains a list that is populated based upon the MI_RISK_PROTECTION_LEVEL System Code Table. A Super User can modify the System Codes that are available in this list via the **Protection Level** tab in the Risk Matrix record to which this Protection Level record is linked. This value appears when you pause on a level in the Protection Level slider.

Risk Category

The following table describes the fields that exist on the Risk Category datasheet and the values that are provided in these fields in the baseline Risk Category records.

Field	Data Type	Description	Behavior and Usage
Category Alias	Character	An alias for the category.	This value does not appear on the Risk Matrix.
Category Name	Character	The name of the category.	This field contains a list that is populated based on the MI_RISK_CATEGORY System Code Table. A Super User can configure the System Codes that are available in this list via the **Risk Category** tab in the Risk Matrix record to which this Risk Category record is linked. The name that you select is used as the tab name in the Risk Matrix. The name does not have to be unique. In other words, you can create more than one Risk Category record with the *same* name.
Category Description	Character	A description of the category.	This field is populated automatically based upon the value in the Category Name field. It is populated with the System Code in the MI_RISK_CATEGORY_DESC System Code Table, which contains the same ID as the System Code that is stored in the Category Name field. A Super User can configure the System Codes that are available via the **Risk Category** tab in the Risk Matrix record to which this Risk Category record is linked.
Index	Number	Specifies the order in which the tab will appear, relative to all other tabs defined for the same Risk Matrix.	Regardless of its index value, the Risk Category record with the selected **Is Financial** check box will *always* appear farthest to the right on the Risk Matrix.

Field	Data Type	Description	Behavior and Usage
Is Financial	Logical	A logical field that specifies that the category is *financial* and will therefore be displayed on the **Financial** tab of the Risk Matrix.	Meridium APM does not provide any logic to enforce that only one Risk Category record per Risk Matrix record be selected as the financial category, but we recommend that you specify only one financial category per Risk Matrix record. After the Risk Matrix has been used by a module in Meridium APM, this field is disabled, and you will not able to modify it.
Weight	Number	Specifies the number by which you want to multiply each selected value in the matrix.	When you create a new Risk Category record, the value in the Weight field is set by default to *1*(one). After the Risk Matrix has been used by a module in Meridium APM, this field is disabled, and you will not able to modify it.

Risk Matrix

The following table provides an alphabetical list and description of the fields that exist in the Risk Matrix family and that are displayed on the baseline Risk Matrix Definition datasheet. The information in the table reflects the baseline state and behavior of these fields.

Field	Data Type	Description	Behavior and Usage
Alias Format Mask	Character	Specifies the format in which you want to display the risk rank values in the cells on the risk matrix.	The format must be defined using the following formula: *{c} - {r} - {pl} - {t}* Where: • *{c}* is the alias for the column. • *{r}* is the alias for the row. • *{pl}* is the alias for the protection level. • *{t}* is the alias for the risk threshold. The delimiter in this formula is a dash (-), but it can be customized. For example, if desired, you could use a colon (:), in place of a dash. You can exclude from the format any parameter that you do not want to see on the risk matrix. The default format is *{c} - {r}*.

Field	Data Type	Description	Behavior and Usage
Consequence Axis	Character	Specifies the axis on which the consequence values are displayed.	You can choose from: • **X-Axis:** Displays the consequence values along the x-axis. • **Y-Axis:** Displays the consequence values along the y-axis. When you change this value, the value in the Probability Axis field is updated automatically to display the opposite value. In the baseline Risk Matrix record and all new Risk Matrix records that you create, the default value is *X-Axis*.
Consequence Sort Order	Character	Specifies the order in which the consequence values are displayed.	You can choose from: • **Ascending:** Displays the consequence values in ascending order. • **Descending:**Displays the consequence values in descending order. In the baseline Risk Matrix record and all new Risk Matrix records that you create, the default value is *Ascending*.

Field	Data Type	Description	Behavior and Usage
Currency	Character	Specifies the unit of measure that appears next to the **Consequence** text box on the **Financial** tab of the Risk Matrix.	After the Risk Matrix has been used by a module in Meridium APM, this field is disabled, and you cannot modify the value. In the baseline Risk Matrix record and all new Risk Matrix records that you create, the default value is *USD*.
Default	Logical	Indicates whether or not this Risk Matrix is the default Risk Matrix.	You can specify only one Risk Matrix record as the default. If you specify a second Risk Matrix record as the default, a message will appear, indicating that you must first clear the **Default** check box on the Risk Matrix record that is currently set as the default before you can specify a different Risk Matrix as the default. In the Standard Practice Risk Matrix record, the **Default** check box is *cleared*. In the Default Risk Matrix record, the **Default** check box is *selected*.
Dialog Title	Character	Specifies the title of the Risk Assessment interface that appears when accessed from an item that uses this Risk Matrix (e.g., an Action in an Asset Strategy).	In the baseline Risk Matrix record and all new Risk Matrix records that you create, the **Dialog title** text box is empty, indicating that the default title is being used.

Field	Data Type	Description	Behavior and Usage
Hide Numeric Risk Rank?	Logical	Indicates whether or not you want to display the numeric risk rank values in the Risk Matrix.	If this check box is *cleared*, the numeric risk rank values are *displayed*. If this check box is *selected*, the numeric risk rank values are *hidden* in the Risk Matrix. In the baseline Risk Matrix record and all new Risk Matrix records that you create, this check box is cleared.
Hide Probability and Consequence Names	Logical	Indicates whether or not the Probability and Consequence names are hidden on the Risk Matrix.	If the check box is *cleared*, the names are *displayed*. If the check box is *selected*, the names are *hidden*. In the baseline Risk Matrix record and all new Risk Matrix records that you create, this check box is cleared.
Hide Protection Level Text	Logical	Indicates whether or not the text boxes below the protection level slider are hidden.	If the check box is *cleared*, the text boxes are *displayed*. If the check box is *selected*, the text boxes are *hidden*. In the baseline Risk Matrix record and all new Risk Matrix records that you create, this check box is cleared.

Field	Data Type	Description	Behavior and Usage
Lock Mitigated Consequence	Logical	Indicates whether or not the mitigated consequence is locked.	When this check box is selected, for mitigated risk assessments, you will be able to modify only the *probability* value. You will *not* be able to modify the consequence value. In the baseline Risk Matrix record and all new Risk Matrix records that you create, the check box is selected.
Logarithmic Scale	Logical	Indicates whether or not the y-axis will use a logarithmic scale on a graph that displays risk values.	In the baseline Risk Matrix record and all new Risk Matrix records that you create, this check box is selected.
Mitigated Risk Rank	Character	Specifies the label of the Risk Assessment interface text box that displays the mitigated risk rank.	The default label is *Mitigated Risk Rank*. In the baseline Risk Matrix record and all new Risk Matrix records that you create, the **Mitigated Risk Rank** text box is empty, indicating that the default title is being used.
Mitigation Label	Character	Specifies the label of the Risk Assessment interface text box that displays the name of the item that is mitigating the risk.	The default label is *Mitigated By*. In the baseline Risk Matrix record and all new Risk Matrix records that you create, the **Mitigation Label** text box is empty, indicating that the default title is being used.

Field	Data Type	Description	Behavior and Usage
Probability Axis	Character	Specifies the axis on which the probability values are displayed.	You can choose from: • **X-Axis:** Displays the probability values along the x-axis. • **Y-Axis:** Displays the probability values along the y-axis. If you change this value, the value in the Consequence Axis field will be updated automatically to display the opposite value. In the baseline Risk Matrix record and all new Risk Matrix records that you create, the default value is *Y-Axis*.
Probability Sort Order	Character	Specifies the order in which the probability values are displayed.	You can choose from: • Ascending: Displays the probability values in ascending order. • **Descending:**Displays the probability values in descending order. In the baseline Risk Matrix record and all new Risk Matrix records that you create, the default value is *Descending*.

Field	Data Type	Description	Behavior and Usage
Risk Matrix Name	Character	The name of the Risk Matrix.	This value is used to identify the record. It does not, however, appear anywhere on the Risk Assessment interface. In the baseline Risk Matrix record, the Risk Matrix name is *Default*. If you copy a Risk Matrix, the value in the Risk Matrix Name field in the new Risk Matrix record will be set to *Copy of <Name>*, where *<Name>* is the name of the Risk Matrix record that you copied. After you create a copy of a Risk Matrix, you can modify it as desired.
Unmitigated Risk Label	Character	Specifies the label of the Risk Assessment interface text box that displays the name of the risk.	The default label is *Risk Of*. In the baseline Risk Matrix record and all new Risk Matrix records that you create, the **Unmitigated Risk Label** text box is empty, indicating that the default label is being used.
Unmitigated Risk Rank	Character	Specifies the label of the Risk Assessment interface text box that displays the unmitigated risk rank. **Note:** If you are using the Asset Criticality Analysis feature, this value will also be used as the label of the column that displays the unmitigated risk rank(in the grid on the **Asset Criticality Analysis Systems** page).	The default label is *Unmitigated Risk Rank*. In the baseline Risk Matrix record and all new Risk Matrix records that you create, the **Unmitigated Risk Rank** text box is empty, indicating that the default label is being used.

Field	Data Type	Description	Behavior and Usage
Use Aliases?	Logical	Indicates whether or not you want to display the aliases that have been defined for the records that are linked to the Risk Matrix record. For example, if the Alias field in the Consequence record *High* contains the value*E*, when the **Use Aliases?** check box is selected, instead of seeing only the value *High* in the Risk Matrix, the value*E* will appear.	In the baseline Risk Matrix record and all new Risk Matrix records that you create, this check box is disabled and cleared. It becomes enabled only when you select the **Use Maximum Risk Rank** check box.
Use Maximum Risk Rank	Logical	Indicates whether or not the overall risk rank will equal the *largest* value of all selected values (except for the Financial value) in Risk Matrix.	If this check box is cleared, the overall risk rank will equal the *sum* of all selected values (except for the Financial value). After the Risk Matrix has been used by a module in Meridium APM, this field is disabled, and you cannot modify the selection. In the baseline Risk Matrix record and all new Risk Matrix records that you create, this check box is cleared.

Risk Threshold

The following table describes the fields that exist on the Risk Threshold datasheet and the values that are provided in these fields in the baseline Risk Threshold records.

Field	Data Type	Description	Behavior and Usage
Alias	Character	An alias for the risk threshold.	When the **Use Aliases?** check box is selected in the Risk Matrix record, when you pause on a cell in the risk matrix, instead of the value in the Description field in the Risk Threshold record, this value will appear. In addition, if the Alias Format Mask field in the associated Risk Matrix record contains the value *{t}*, the value in the Alias field in the Risk Threshold record will be displayed in the cell in the Risk Matrix (according to the complete template that is defined in the Alias Format Mask field).
Color	Character	A value indicating the color that will appear in all cells in the matrix that contain a number that falls within this risk boundary (according to the number in the **Value** text box of this Risk Threshold record and other Risk Threshold records that are linked to the same Risk Matrix record).	None
Description	Character	A description of the risk level.	This value is used to identify the record. This value appears when you pause on a cell in the risk matrix.

Field	Data Type	Description	Behavior and Usage
Value	Number	A number that represents the risk level associated with the number in a cell in the matrix.	If a cell in the matrix contains a number greater than or equal to the risk level and less than the next highest risk level in a Risk Threshold record that is linked to the same Risk Matrix record, the number will be considered to reside within this risk level. For example, if the Value field in the Risk Threshold record *Medium* contains the number 10, and the Value field in the Risk Threshold record *High*, which is linked to the same Risk Matrix record, contains the number 100, then any cell in the matrix that contains a number greater than or equal to 10 and less than 100 will be considered *Medium* risk. Any number greater than or equal to 100 will be considered *High* risk.

Risk

In Meridium APM, the combination of an event or condition that causes something bad to happen and the negative outcome.