IVS® Interactive Voting System

IVS-Risk Analysis **4.3**

IVS-Risk Analysis 4.3

Interactive Voting System

The Interactive Voting System (IVS®) is an interactive means of making presentations and improving communication in all types of groups. It facilitates contact between speakers and listeners. The listener is able to react to the speaker and the speaker is able to respond in turn, thus creating an interaction. In this way, the passive listener becomes an active participant, which allows him to take greater part in the speaker's presentation.

IVS® consists of a network of keypads that pass on information to the cluster (receiver). This cluster collects the data and sends it to the software. The IVS software saves the information and presents the data in clear charts.

The IVS® has many applications. In addition to its basic use during congresses and seminars, where the opinion of the entire group is measured, IVS® offers many other possibilities, such as:

Evaluation of a meeting By evaluating a meeting with IVS®, the data is immediately available electronically. Processing and reporting can therefore take place much faster. Giving feedback of the results to the audience is, in this case, not always wanted or needed. With IVS® you can decide whether you want to show the results in charts, or whether you want to evaluate them afterwards.

Measuring consensus If you want to know whether there is a basis for a decision within the company or within a group, you can measure this with a rating question. In addition to the ratings, this question also displays the mean value and the standard deviation. Asking a reference question prior to this rating question, for instance, "In which sector are you employed", makes it possible to determine the support level for a proposal within a particular group.

Knowledge check Within IVS® you can set up a correct answer. Per question you can set up multiple correct answers. This makes it possible to measure the level of knowledge of your audience. This methodology is widely used in education and training situations. In addition, it also offers the possibility to measure whether a group of people is aware of the changes within a company or within a specialty.

Research IVS® stores the results of every keypad individually. This means that the system is anonymous, but that it is possible to tell what a participant answered per question. The results can be exported to a spreadsheet application (like Microsoft Excel) or to a statistical processing application (like SPSS Statistics). This way you can gather a lot of data in a simple and easy way.

Introduction

IVS-Risk Analysis is a new application in the IVS series of software, that is specifically intended for analyzing risks. You can name any number of threats, that you can rate on any number of freely definable criteria. This rating takes place in IVS-Professional.

After voting in IVS-Professional, a threat is displayed in a risk map by means of a bubble. The position of this bubble on the horizontal and vertical axis is determined by the value of one or even multiple criteria.

A risk score is calculated for each of the threats. You determine how the score is calculated. Depending on this score, the bubbles belonging to a threat can be assigned a certain color, so that you can see in a glance which threats pose a low risk (green bubble) or a high risk (red bubble).

Not only the bubbles can be assigned a different color, but also the background of the map. This results in a so-called heat map. This also allows you to see in a glance, which threats appear in the green area of the map, and therefore pose a low risk, and which threats appear in the red area.

IVS-Risk Analysis is highly configurable. You can define an unlimited number of threats, that can be rated on an unlimited number of criteria. You can also define an unlimited amount of maps, where the threats can be displayed by means of bubbles. For each chart you decide which criteria you want to use for the horizontal and the vertical axis. You can even combine criteria.

IVS-Professional allows you to rate all the threats you named on any of the criteria you defined. If you do this with multiple participants, a mean value is calculated from each of the individual ratings, which is then assigned to the criterion. But you can also choose the have the median or the mode calculated, instead of the mean value.

IVS-Risk Analysis not only displays threats by means of a bubble based on a mean value, it can also display individual bubbles based on the ratings of the individual participants. This allows you to see whether all participants agree with each other – the individual bubbles are plotted close to each other or even on top of each other – or disagree with each other – the individual bubbles are scattered all across the map.

Contents

The risk map

After starting up IVS-Risk Analysis, a so-called heat map is displayed. In this two-dimensional chart, two variables are plotted against each other. Multiplying both variables results in a value that is displayed in the map with a certain color.

In order to carry out a risk assessment, you first have to prepare a list of threats. This list is displayed on the right hand side of the screen. Next, the impact and the likelihood of each of these threats are determined. These two variables are plotted in the heat map. The likelihood is plotted along the X-axis, the impact along the Y-axis. The named threat is then displayed at the intersection of these two values by means of a numbered bubble.

By multiplying the impact and the likelihood you get a risk value. This value is assigned a certain color in the heat map. For a low value, the color is green. For a moderate value, the color becomes more and more yellow. For a high value, the color is red.

The heat map in IVS-Risk Analysis

IVS-Risk Analysis allows you to display threats in multiple charts. Each chart has its own settings. It is also possible to rate a threat on multiple criteria. For instance, it's not only possible to rate a threat on impact and likelihood, but also on control effectiveness. You indicate per chart which criterion is displayed along which axis.

Which chart is displayed can be selected from the drop down box at the top of the chart. By default there are two charts: a risk chart and a control effectiveness chart.

Below the heat map is an overview with the severities of the threats. Depending on its risk, a threat is classified as one of three levels: 'low', 'moderate' and 'critical'. Behind each of these levels you see how many threats belong to this level.

Next to this overview are a number of choices to either display or hide threats. For instance, you can only show the threats with a risk score above a certain value, or display a top 10 with the most severe risks. But it is also possible to manually show or hide the threats.

The keylock

To be able to use IVS-Risk Analysis, you must have a license. This license determines the maximum number of threats you can name. The software comes with one free license. This allows you to name a maximum of 3 threats. For a larger license, you have to connect a so-called keylock to your computer. This will give you a license to name a maximum of 250 threats.

Keylock that connects to a USB port

The keylock needs to be connected to the computer's USB port.

Copying the license

If you want to use IVS-Risk Analysis on more than one computer, for instance to prepare projects, you can copy the license to your computer. It is no longer necessary to connect the keylock to be able to name more than three threats. To copy the license to your computer, select the ***Copy License to Computer*** option from the ***Help*** menu. The license will not be removed from your keylock. You can also still use the keylock.

Removing the license

When you no longer need to use the license, you can remove it from your computer. Select the ***Remove License from Computer*** option from the ***Help*** menu. After removing the license, you have to connect the keylock again to be able to name more than three threats.

Naming threats

In the list on the right hand side of the screen you can name the threats of which you want to determine the risk. For each of these threats you can enter a short description or title, a longer description and, when necessary, some notes. Both the title and description are shown in the list. The risk of a threat is also shown in the list.

When entering the threats, you can make the list wider, so that you have more space available for the threats. To make the list wider, you click on the splitter bar that is located between the risk map
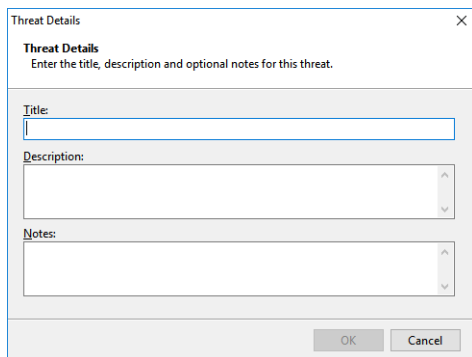
and the list of threats. Move this splitter bar to the left to make the list wider, or to the right to make the list smaller. You can also double-click on the splitter bar to completely hide the risk map and use the full width of the screen for the list of threats.

When the list of threats becomes wider than half of the screen, two edit boxes appear on top of the screen that allow you to immediately enter the title and description of a new threat, or modify the title and description of an existing threat.

Adding a threat

To add a threat to the list, you click on the **Add** button at the bottom of the list. You can also right-click on the list and choose the *Add* option.

Adding a new threat

Enter a title, a description and the notes for this threat. Only the title is required. Once you have entered them, you click on the OK button to add the threat to the list.

When you make the list of threats wide enough, edit boxes for the title and the description appear at the top. You can also use these to add a new threat, by entering the title and description and clicking on the **Add** button or by pressing [Return].

Editing a threat

If you want to modify a threat's title, the description or the notes, you first select the threat from the list by clicking on it. You then click on the **Edit** button. You can also right-click on the selected threat and choose the *Edit* option. Make your modifications and then click **OK** to apply the modifications.

When you make the list of threats wide enough, edit boxes for the title and the description appear at the top. You can also use these to edit an existing threat. First select the desired threat from the list by clicking on it. Next, modify the title or the description and then click on the **Modify** button or press [Return].

Deleting a threat

To delete a threat from the list that you named earlier, select the desired threat and click on the **Delete** button. You can also right-click on the selected threat and choose the *Delete* option. Next, click on **Yes** to confirm the deletion.

Reorganizing threats

After you have named a number of threats, you can still change the order of the threats in the list. Select the threat that you want to move and then click the **Move Up** button to move the threat higher up the list, or click the **Move Down** button to move the threat lower down the list.

Four named threats
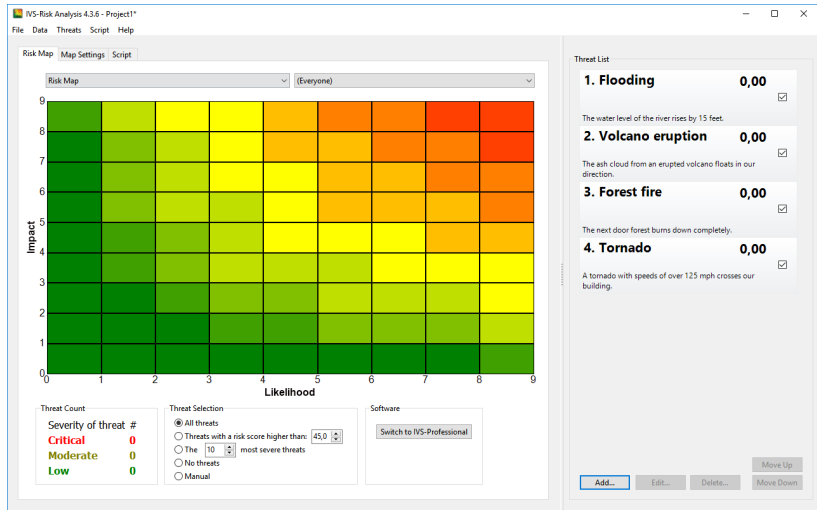
Determining criteria

To be able to determine the risk of a threat, each threat has to be rated on a number of criteria. You determine which criteria you want to rate. Later, in IVS-Professional, you determine the value of each of these criteria for each of the threats. The rating of the different criteria ultimately determines the risk of a threat.

By default, a threat is rated on three criteria: the likelihood, the impact and the control effectiveness. But you can always add other criteria, of remove criteria that you don't want to use.

Using the "Script" tab, you can add, edit or remove criteria. On this tab, you can also save a script for IVS-Professional. With this script you can rate each threat on each of the criteria.

Adding a criterion

To add a criterion to the Voting Criteria list, you click on the **Add** button. A window appears that allows you to enter information about this criterion.

Criterion Details

Criterion Details
Enter the name for this criterion, the question you would like to ask to vote for this criterion and the options you would like people to choose from.

Name:

Question:

Options:

Add

Modify

Delete

Move Up

Move Down

☐ Insert a 'Switch to IVS-Risk Analysis' button on this criterion's slide

OK   Cancel

The name of the criterion is used in the formulas that determine what to display along both axes of the risk map, and in the formulas that determine the risk of a threat. It is recommended to keep this name short, and use only one or two words.

To determine the value of a criterion, you are going to use IVS-Professional to vote on this criterion. In IVS-Professional, you ask a question and present a number of options that can be chosen from. The question you want to ask for this criterion, can be entered in the 'Question' text box. The options that can be chosen from, can be added to the 'Options' list. Enter the text for an option in the text box above the list and click on the **Add** button to add this option to the list. To modify the text of an option, you select the option from the list, modify the text in the text box and click on the **Modify** button. To remove an option from the list, you select the option and click on the **Delete** button.

Enter the options in order of importance, starting with the least important options. When necessary, you can change the order of the options. By clicking on the **Move Up** button, the option moves up one place in the list and becomes less important. By clicking on the **Move Down** button, the option moves down one place and becomes more important.

You don't have to name all options. To leave an option unnamed, you enter a single space. Unnamed options can still be chosen during voting.

If you don't add any options to a criterion, then five options are added automatically, two of which are unnamed. Option 1 is named 'Low', option 2 stays unnamed, option 3 is named 'Moderate', option 4 stays unnamed and option 5 is named 'High'.

If you check the "Insert a 'Switch to IVS-Risk Analysis' button on this criterion's slide" option, a text box with the letters RA will be inserted on each slide where you vote for this criterion. After voting for this criterion in IVS-Professional, you can click on the "RA" text box to jump to IVS-Risk Analysis.

After having entered all the information, you click on the **OK** button to add the new criterion to the "Voting Criteria" list.

Editing a criterion

To edit a criterion, you select the desired criterion from the "Voting Criteria" list and click on the **Edit** button. You can then modify the name, the question and the options. Finally, click on the **OK** button to apply the changes.

Deleting a criterion

If you don't want to use a criterion, you can remove it from the "Voting Criteria" list. Select the criterion that you want to remove and click on the **Delete** button. Click **Yes** to confirm the deletion.

Moving a criterion

With the **Move Up** and **Move Down** buttons you can move the selected criterion up or down the list of criteria.

Saving the risk project

You can save the project you are working on any time you like. All information about the named threats, defined criteria and associated options, and about any saved script for IVS-Professional, is saved in a project file.

To save the project, choose the *Save* option from the *File* menu, or choose the *Save As* option to save the project under a different name.

Automatic backup

A backup file is saved automatically while you are working on your project. If, for some reason, the software or the computer crashes, you only have the restart IVS-Risk Analysis to restore the automatically saved backup. This is even possible when you hadn't saved the project yet.

Rating threats

To be able to determine the risk of a threat, the threat has to be rated. Each threat is rated on each of its criteria. IVS-Professional is used for the rating.

For use in IVS-Professional, a questionnaire has to be composed. This questionnaire contains one question per risk per criterion. Each question has a number of answer options, that determine a value that is assigned to the criterion.

Using reference questions

When you are going to vote on the different criteria for each threat, a mean value is calculated from all the different votes. This mean value determines the rating of the criterion.
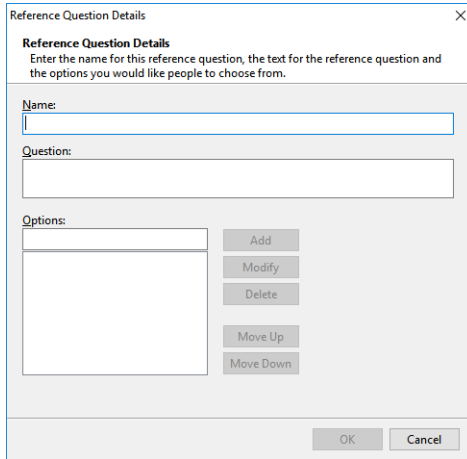
By using one or more reference questions you can divide your audience into different groups. You can then not only show the results of the entire audience in the risk map, but also of each separate group.

To assign themselves to a particular group, the audience has to vote on a reference question. The answer options of the reference question depict the different groups. By voting for one of the answers, one assigns himself to a certain group. Someone who doesn't vote, doesn't belong to any group. When displaying the results for separate groups, the vote of a person who doesn't belong to any group, will be ignored.

Adding a reference question

To add a question to the "Reference Questions" list, you click on the **Add** button. A window appears that allows you to enter information about the reference question.

Reference Question Details   ✕

Reference Question Details
Enter the name for this reference question, the text for the reference question and
the options you would like people to choose from.

Name:
[   ]

Question:
[   ]

Options:
[   ]   Add

                                   Modify

                                   Delete

                                   Move Up

                                   Move Down

                                        OK   Cancel

The name of a reference question is a short description of the question, for instance "Department". This description is only used in the list at the top right corner of the risk map, from which you can select the different groups.

In the "Question" text box, you enter the entire text of the question you want to ask your audience, for instance "In which department are you currently working?".

Under "Options" you enter the possible groups your audience can choose from, for instance "Marketing", "Purchase", "Service", et cetera. To add an option to the list, enter the text in the text box above the list and click on the **Add** button. To modify the text of an option, select the option from the list, modify the text in the text box and click on the **Modify** button. To remove an option from the list, select the option and click on the **Delete** button.

By clicking on the **Move Up** button, the option moves up one place in the list. By clicking on the **Move Down** button, the option moves down one place.

After having entered all the information, you click on the **OK** button to add the new reference question to the "Reference Questions" list.

Editing a reference question

To edit a reference question, you select the desired question from the "Reference Questions" list and click on the **Edit** button. You can then modify the name, the question and the options. Finally, click on the OK button to apply the changes.

Deleting a reference question

If you don't want to use a reference question, you can remove it from the "Reference Questions" list. Select the reference question that you want to remove and click on the **Delete** button. Click **Yes** to confirm the deletion.

Moving a reference question

With the **Move Up** and **Move Down** buttons you can move the selected reference question up or down the list of questions.

Saving the script

On the "Script" tab you can save the script that can be used in IVS-Professional. You can choose whether you want to rate the list of threats once or twice. When you rate a threat twice, it will be displayed as two bubbles in the risk map. The two bubbles are connected with an arrow, so that you can see whether the threat poses a higher or a lower risk, when it was rated the second time.

If you want to rate the threats only once, choose the **Create a single set of threats** option. If you want to rate them twice, to be able to compare them to each other, choose the **Create a double set of threats that can be compared** option.

If you want to rate the threats twice, you can choose to first rate all threats once, and then rate them for a second time. To do this, choose the **Second set of threats follows at the end of the script** option. If, however, you want to rate a threat for the first time, and then immediately for the second time, you choose the **Second threat immediately follows the original** option.

A script normally mentions the threat's title. If you want to display the threat's description rather than the title, check the **Script displays threat description instead of threat title** option.

It is possible to limit the time your participants need to rate a criterion by means of a time bar. As soon as the voting is opened, the time bar starts counting down. When the time bar has reached zero, the voting is automatically closed. If you want to use a time bar, check the **Include time bar on each slide** option.

During voting, the status bar at the bottom of the screen shows how many votes have been received. You can also display this vote counter in the top right corner of the slide, so that your participants can also see how many votes have been received so far. To insert a vote counter on the slide, check the **Include vote counter on each slide** option.

You can also add notes to each threat. It is possible to display these notes in the script. To do this, check the Include threat notes on each slide option. The notes are displayed in a text box, that is placed opposite the chart. It is important that sufficient space is left next to the chart, to be able to display the text box correctly.

Click on the **Save** button to save the script for IVS-Professional. After the script has been saved, it's no longer possible to change the script type. Nor is it possible to change the criteria you rate your threats on, or change the reference questions. If you need to change the criteria or the reference questions after you have saved the script, you have to explicitly indicate that you want to save a new

script by clicking on the **New** button. Please note that by doing so, all threats have to be rated again. Should you already have rated some threats, then these ratings will be lost.

Voting the script

After having opened the script in IVS-Professional, you can start a session and answer all the questions. The script has one slide per criterion. This slide contains the question and the answer options belonging to this criterion. By voting on the question, you determine the value for this criterion. If you vote with multiple participants, the mean value of all the votes is calculated. But is it also possible to calculate the median or the mode as the value for the criterion.

If you indicated that you wanted to insert a 'Switch to IVS-Risk Analysis' button for this criterion, you will find a text box with the letters RA in the bottom right corner of the slide. If you click on this text, IVS-Risk Analysis will be brought to the foreground, so that you immediately can see the risk of the threat. In IVS-Risk Analysis you can click on the **Switch to IVS-Professional** button to bring IVS-Professional back to the foreground.

For more information about the voting process, please refer to the IVS-Professional manual.

Selecting the session

After having started a session in IVS-Professional to rate the criteria, you also have to select that same session in IVS-Risk Analysis to be able to display the risks of the various threats.

First click on the **Refresh** button to renew the session list. From this list, choose the session that you started in IVS-Professional. The voting results are retrieved from IVS-Professional and the risks for the various threats are calculated. If you change to the "Risk Map" tab, you can review the risks in the risk map.

Each time you vote on a criterion in IVS-Professional, the results are automatically retrieved and the risk of the voted threat is calculated. Automatic retrieval of the results only works when you start IVS-Professional after having started IVS-Risk Analysis. If the automatic retrieval does not work, you can always select the session from the session list to update the risks in the risk map.

The threats are
rated on likelihood
and impact
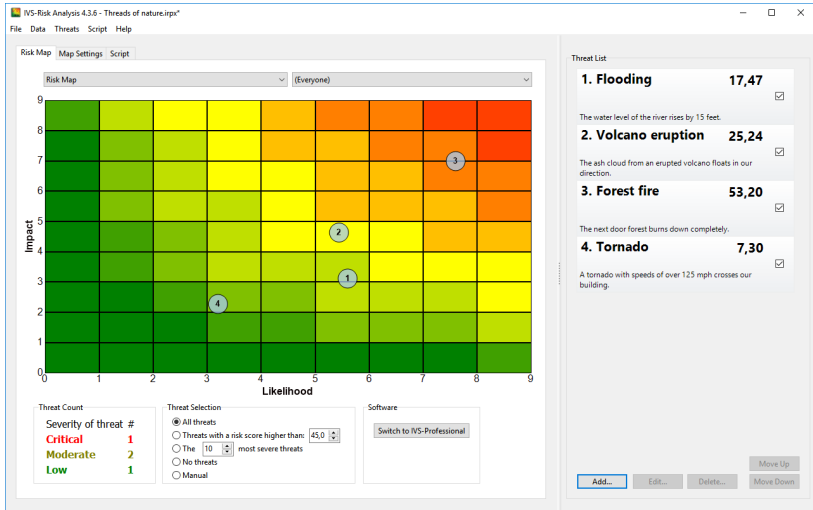
Reviewing risks

After a threat has been rated on all criteria, the risk can be determined. By default a risk score is calculated by multiplying the impact value by the likelihood value. However, you can change the formula for calculating the score yourself.

The risk score is displayed along the threats in the threat list. Each threat is displayed in the risk map by means of a numbered bubble. Based on the position of this bubble, you can see in a single glance which threats pose a small risk and which threats pose a high risk.

Selecting a threat

To highlight a certain threat, you can select it in the threat list. The threat is displayed with a different color in both the threat list and the risk map.

Hiding threats

After having rated several threats, it may happen that the bubbles of some threats are very close to each other or even overlap each other. If that is the case, you can hide certain threats, so that you can better evaluate the other threats.

You can hide a threat by removing the check mark from the threat in the threat list.

Displaying specific threats

Except manually displaying or hiding threats, it is also possible to use the radio buttons at the bottom of the screen to display specific threats and hide other threats.

Besides displaying all threats or no threats at all, you can also choose to only display the threats with a risk score that is above a certain level. All other threats are automatically hidden. Or you can choose to display only a fixed number of threats with the highest risk score.

Sorting threats

After having rated all threats, you can sort the threat list, so that all threats with the highest risk are on the top of the threat list. To sort the list, right-click on the threat list and choose the **Sort** option.

To display the list in the original order again, right-click on the list and disable the **Sort** option.

Displaying individual risk bubbles

If you are rating criteria with multiple people, the mean value of these ratings is determined to be able to place the risk bubble on a certain position in the risk map. But you can also display individual bubbles in the heat map, one for each of the participants.

By displaying the individual risk bubbles, you see in a single glance whether the mean value originated from everyone agreeing with each other on the different criteria – the individual bubbles are close to the main bubble indicating the mean value –, or from everyone disagreeing with each other – the individual bubbles are far apart from each other.

To display the individual risk bubbles, you go to the "Map Settings" tab. Next, check the **Show individual bubbles** option. If you go back to the "Risk Map" tab, you also see the bubbles for each individual rating.

The bubbles for the individual ratings of the criteria are also displayed
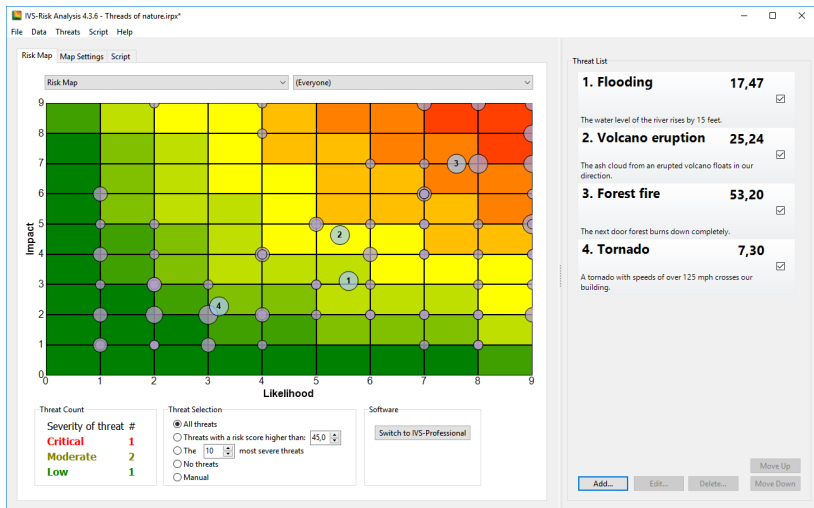
Because criteria are rated on whole values, the bubbles of the individual ratings are always displayed on an intersection of the grid lines. If multiple bubbles of the same threat would end up on the same

intersection, it will be displayed as a larger bubble. If multiple bubbles of different threats would end up on the same intersection, they will be displayed on top of each other.

The individual bubbles aren't numbered. When displaying multiple threats, it's not immediately clear which bubble belongs to which threat. When displaying individual bubbles, it is better to only display a single threat.

Only a single threat is displayed to better evaluate the individual ratings
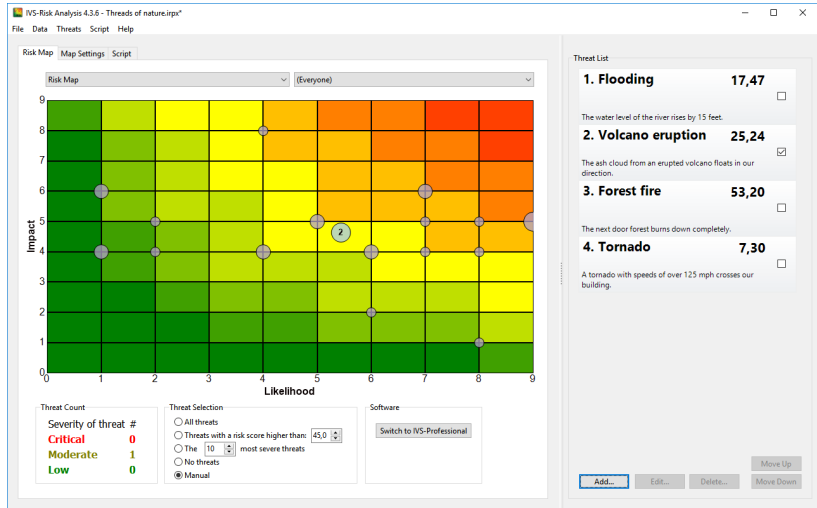
Displaying risks per participant group

If you used reference questions to divide your audience into different groups, you can also review the risks per group. In the combo box at the top right corner of the risk map, you will find a list with all groups from all reference questions. Select a group from this list to only use the ratings of this specific group when determining the risk. This allows you to see whether the "Marketing" group considers a certain threat as a higher risk than for instance the "Service" group.

Changing map settings

On the "Map Settings" tab you can change various settings of the risk map. A set of settings can be saved under a specific name, so that you can apply these settings to the risk map all at once.

By saving two sets of settings, you can create two different charts. For instance, if you rate all threats on four different criteria, you can create one set of settings that uses the first two criteria, and another set of settings that uses the last two criteria. Or you create two sets of settings, where the first one does show the individual risk bubbles and the second one doesn't.

Creating a new set of settings

To create a new set of settings, you first choose a set of settings from the combo box at the top of the "Map Settings" tab, that closely matches the settings you want to use.

Click on the **New** button to create a new set of settings. This set is automatically named "New Map Settings", and is an exact copy of the settings you selected. You can change the name into anything you like, by clicking is the text box containing the name, and then modifying the name.

You can then change any of the settings.

Using a set of settings

On the "Risk Map" tab you can select a set of settings to be used in the map. The combo box at the top of the risk map lists all sets of settings. Choose a set from this list to apply the settings to the map.

Removing a set of settings

If you don't want to use a set of settings any longer, you can remove the set. First, select the set of settings that you want to remove on the "Map Settings" tab. Then, click on the **Delete** button to remove the set. Finally, click on **Yes** to confirm the removal.

There always has to be one set of settings. If there is only one set left in the list, you cannot remove it. A set of settings that is currently in use in the risk map cannot be removed either.

The map settings
that can be
changed
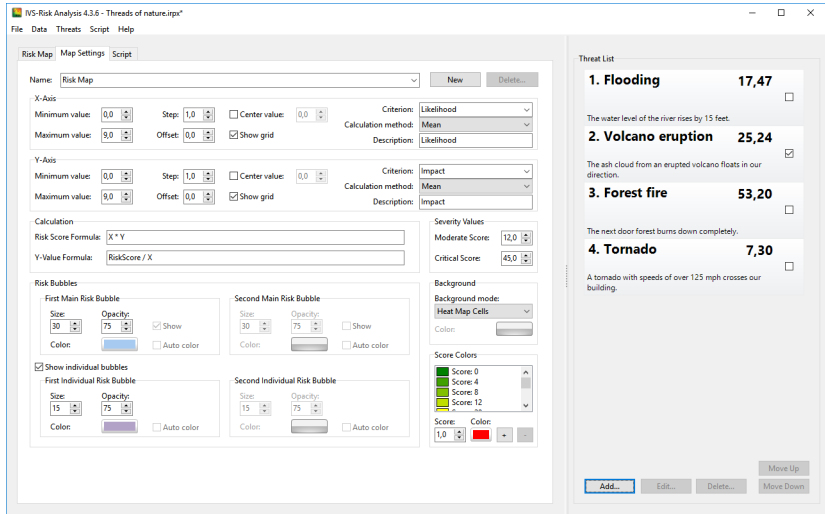
X-Axis and Y-Axis settings

Here you can change settings for both the horizontal X-axis and the vertical Y-axis.

Minimum value

This is the lowest starting value of the axis. This value can be set in steps of 0.1. The minimum value is 0.0 and the value must be at least 0.1 lower than the value set as the maximum value.

Maximum value

This is the highest ending value of the axis. This value can be set in steps of 0.1. The value must be at least 0.1 higher than the value set as minimum value and the maximum value is 999.0.

Step

The axis is divided into blocks with the size of this value. Each block is delimited by a grid line, unless you disabled the **Show grid** option. This value can be set in steps of 0.1. The minimum value is 0.1, and the maximum value is the difference between the set maximum value and the set minimum value.

Offset

This value allows you have the numbers along the axis displayed with an offset from the grid lines. This value can be set in steps of 0.1 and has no minimum or maximum value.

If you the set axis' minimum value to 0.5, the maximum value to 9.5 and the step to 1.0, the axis starts at a value of 0.5. The next gridline will have a value of 1.5, the next one of 2.5, et cetera.

By settings the offset to 0.5, the axis still starts at a value of 0.5. However, the first value displayed along the axis, starts at a 0.5 offset, that is at 1.0. The next value is at 2.0, the next one at 3.0, et cetera. The values along the axis are now display exactly between the grid lines.

Center value

When this option is checked, an extra center line is displayed at the center of the map. The value determines where the center line is displayed. If this value is set to 0.0, the center line will be displayed at the exact center of the map. This value can be set in steps of 0.1. Its minimum value can be the minimum value set for the axis, and its maximum value can be the maximum value set for the axis.

Show grid

Check this option to display the grid lines in the map.

Criterion

Here you determine which criterion is displayed along this axis. You can choose a criterion from the drop down list, that lists all the criteria that you defined on the "Script" tab.

You can not only choose a single criterion to be displayed along the axis, you can also enter a formula, where you can use the criteria as variables.

In the Risk Control Map, for instance, the risk score is used for one axis, and the control effectiveness for the other axis. The risk score is the multiplication of the impact and the likelihood, and is therefore not voted separately. To display the risk score on the axis, you enter 'Impact * Likelihood' as the criterion.

If you enter a formula, use * for multiplication, / for division and ^ for exponentiation. You can use parentheses to control the order of calculation. You can use all defined criteria as a variable. A variable name is not case sensitive, so the variables 'Impact' and 'impact' are the same. If you use a variable that is not defined as a criterion, it will have a zero value. If the formula contains an error, the result is always zero.

Calculation method

If you have multiple people rating a criterion, the calculation method determines how the final value for the criterion is calculated from all the separate values. You can choose from the following calculation methods:

Mean The mean value is calculated from all the separate values.

Mode (lowest multi-modal value) The mode is calculated from all the separate values. If there are multiple modal values, the lowest value will be taken.

Mode (highest multi-modal value) The mode is calculated from all the separate values. If there are multiple modal values, the highest value will be taken.

Median The median value is calculated from all the separate values.

Description

The description is used as a text to display along the axis. Normally, the description matches the criterion, however, if the criterion is a function, it could be clearer to display a description rather than the function itself along the axis. In the Risk Control Map, for instance, where the criterion contains the function 'Impact * Likelihood', the description 'Risk Score' is displayed.

Calculation

Under calculation you enter the formulas that are used to calculate the risk score of a threat.

Risk Score Formula

This is the formula that calculates the risk score of a threat. You can use two variables in the formula. The variable X indicates the value of the threat on the X-axis and the variable Y indicates the value of the threat on the Y-axis.

If you change the Risk Score Formula, you also have to change the Y-Value Formula by solving the Risk Score Formula for Y.

Y-Value Formula

This formula is the Risk Score Formula, solved for Y. You can use two variables in the formula. The variable RiskScore indicates the threat's risk score and the variable X indicates the value of the threat on the X-axis.

If you change the Y-Value Formula, you also have to change the Risk Score Formula by solving the Y-Value Formula for RiskScore.

Severity Values

Here you enter the values that determine the severity of a threat. The values are used to count the number of low, moderate and critical risk. All threats with a risk score lower than the value entered for **Moderate Score**, will be counted as a low risk. All threats with a risk score between the **Moderate Score** and the **Critical Score**, will be counted as a moderate risk. And all threats with a risk score higher than the **Critical Score**, will be counted as a critical risk.

You can set both values in steps of 0.1. The **Moderate Score** cannot be higher than the **Critical Score** and the **Critical Score** cannot be lower than the **Moderate Score**. The difference between both scores can be at least 0.1.

Risk Bubbles

This section allows you to make changes to the risk bubble settings. There are four kinds of bubbles, that you can all set up separately. The first main risk bubble is the most used bubble. It is used to indicate the risk of a threat. The second main risk bubble is only used if you want to compare threats. Therefore, you can only change these settings if, on the "Script" tab, you chose to create a script with two sets of risks that can be compared.

The individual risk bubbles are the bubbles that are used to indicate the individual ratings from the participants. You can enable them by checking the **Show individual bubbles** option. Only then is it possible to change the settings of these bubbles. The second individual bubbles are only used when comparing threats.

Size

This determines the size of the bubble. It is the diameter of the bubble in pixels. You can set this value in steps of 1. The minimum value is 5 pixels, the maximum value is 100 pixels.

Opacity

This percentage determines whether the bubble is transparent or opaque. You can set this value in steps of 1%. The minimum value is 0%, the maximum value 100%. When set to 0%, the bubble is fully transparent. You can only see the black border. At 100%, the bubble is fully opaque. You can see the bubble entirely in its set color.

Color

This allows you to set the color of the bubble. You can choose from one of forty predefined colors. Or you can click on the **More colors** button to select any other color.

Auto color

If you enable this option, the bubble will be colored automatically, depending on its risk score. This option can only be used when the background type is set to "Single color".

Background

With this option you can set up the background color of the risk map. You can choose from the following four background types:

Single Color The entire background is displayed as one single color. Use the **Color** option to determine the color of the background.

Heat Map Cells The background of the map is divided into cells, that are delimited by grid lines. Each cell gets its own color, depending on the risk score of this cell. To calculate the risk score, the X-value and Y-value of the center of the cell are entered into the Risk Score Formula. The color of the cell is then looked up in to score color table.

Heat Map Area This setting also divides the background of the map into cells, that are delimited by grid lines. The cells are not colored separately, but instead the entire background is divided into areas, delimited by a risk score line. All points on this line have the same risk value. The background is divided into just as many areas as there are colors in the score color table.

Custom Image This setting allows you to select your own custom image to use as the background. Please note that when you use this setting, the counting of the risk severities is done as if the option **Heat Map Area** was selected. This means that it might happen that although the risk bubble is plotted in the green area of your own custom image, it is still counted as a moderate risk.

Score Colors

This table determines which colors are used for which scores. These colors are used when the background type is set to "Heat Map Cells" or "Heat Map Area", or when one of the bubbles is set to use the auto color function.

The table lists the color with its associated score. The color is used when the risk score is equal to or higher than the color's associated score.

To add a new color to the table, enter a value for the score in the **Score** field and select the color with the **Color** drop down control. Next, click on the **+** button to add the color to the table. The score is automatically inserted into the table at the correct position.

To remove a color from the table, first select the color in the table, and then click on the **–** button to remove the color.