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QUICK START MANUAL

BowTieXP





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BowTieXP

Software Manual

For BowTieXP 8.0

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Introduction

1.1. Thank you

Thank you for your interest in the bowtie methodology and BowTieXP software. Risk management professionals worldwide have discovered the value in implementing this methodology by using BowTieXP; a powerful and easy-to-use tool.

1.2. Structure of this document

This document is divided into the following parts:

1. Step by step guides to get you started:
    - Chapter 2, Quick installation guide on page 7. This guide quickly describes how to install BowTieXP on your computer.
    - Chapter 3, Quick getting started guide on page 11. This guide briefly discusses bowtie methodology and then gives a step-by-step guide on how to create a bowtie diagram using the software. Some important software concepts are explained.
    - Chapter 4, Support & Helpdesk. Information about how to reach our helpdesk with any questions you may have.

After reading this quickstart manual, you should be able to build your first BowTie diagram. If you want to learn more about the software features or want an in depth look at the methodology, please refer to the full software manual or the method manual.

2
Quick installation guide

In this chapter we will walk you through the steps to install BowTieXP.

2.1. Introduction

Installing BowTieXP onto your computer is in most circumstances very simple. If however, you run into trouble and want to have more detailed information about the installation procedure, about the software prerequisites and compatibility, this is available in the full software manual. Please contact CGE Risk Management Solutions to receive the full software manual if required.

2.2. Installing BowTieXP

NOTE for people on Windows Vista:

BowTieXP needs the .NET Framework 3.5 SP1 to be installed. Windows 7 and later come with the .NET Framework version 3.5 SP1 already installed out of the box, or will detect the need and install automatically. On Windows Vista, you need to do this manually, if it is not yet installed. Please download and run the installer:

http://www.microsoft.com/en-us/download/details.aspx?id=22

Open an internet browser and navigate to:

http://www.cgerisk.com/downloads/bowtiexp/

Download and run the BowTieXP installer (.msi).

2.3. Activating BowTieXP

When you start BowTieXP for the first time, you are asked for either a trial code or an activation code:

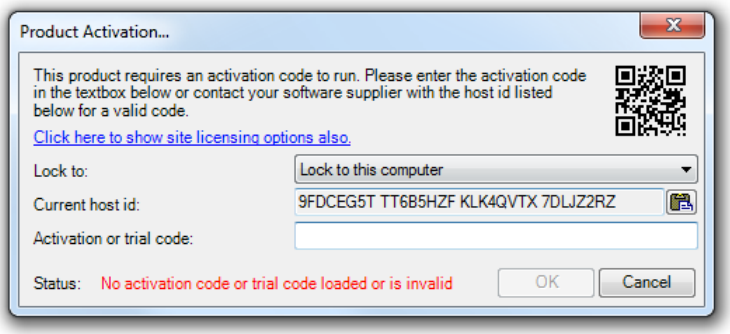


Figure 1 - Activation dialog

If you have a valid trial code, you can enter that in the activation or trial code text box, and BowTieXP will run.

If you have purchased BowTieXP, you will need to obtain an activation code to perpetually activate BowTieXP. Please copy the code shown in the current host ID text box and paste it into an email to CGE at support@cgerisk.com. We will then send you an activation code. After entering this code in the activation or trial code text box, BowTieXP will run forever.

2.3.1. Activating with an old host-id

Sometimes, due to the use of a laptop docking station, a switch in Windows version or changes in the computer hardware, it can happen that the host ID changes. If that happens, your activation code will no longer match with the host ID. If this happens, you will have to activate the software based on the original host-ID (the original host-ID that was used for creation of the activation code, the one you sent to CGE).

To do so, select the "Lock to this computer with an old host id" option from the "Lock to" dropdown menu in the Product Activation screen (see Figure 2). The screen will then display the current, as well as the activated host-id (the one you sent to us initially) (see Figure 3).

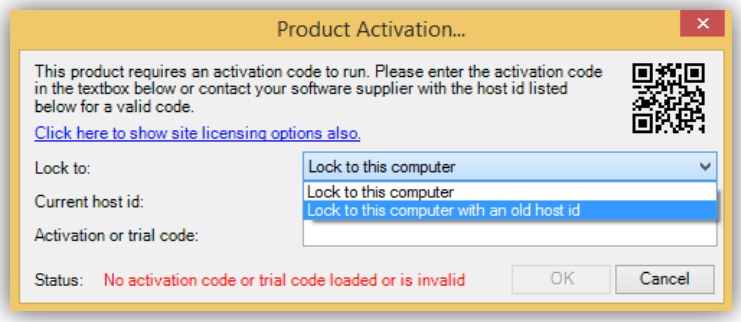


Figure 2 - Activate with original host id

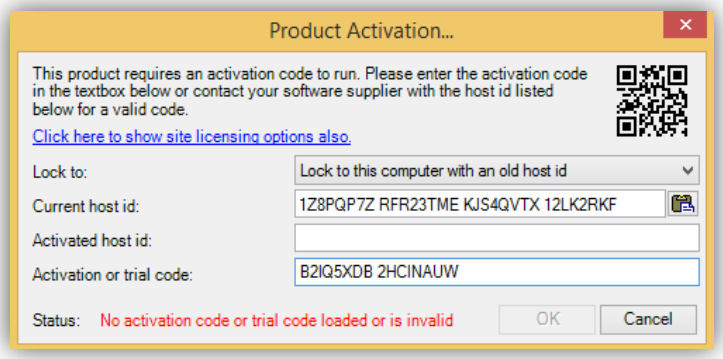


Figure 3 – Host id and activation code do not match anymore

We do not need to send you a new code. You just need to tell it the host id which belongs to the activation code. You can do this by copy/pasting the old host id which was used to generate the activation code into the 'activated host id' field. The host id that was used to generate the activation code is always included in the same email as the activation code, usually in a bit of text that looks like Figure 4:

```
Code Type:   BowTie Host Locked Code
Host ID:     4Z6PQP7Z RFR22TEN KLK4QVTX 79LJ2PKV
Code:        B2IQ5XDB 2HCINAUW
Features:    BowTieXP and IncidentXP Advanced SharePoint - Spreadsheets Audits - BSCAT Tripod BFA RCA
Expiry:      None
```

Figure 4 - Activation code email message

The host-id that was used to generate the activation code is the one pointed out by the arrow in Figure 4. When this host-id is copied into the 'Activated host id' field, the software will pick it up and the match it to the activation code. This should result in an accepted code, returning the status 'OK'. Now click the OK button, and the software should be activated once more.

Please note that BowTieXP will check what has changed on your computer. If too many parts have changed, or you are trying this on a different computer, the code will still not work and you will need to contact us for an updated code.

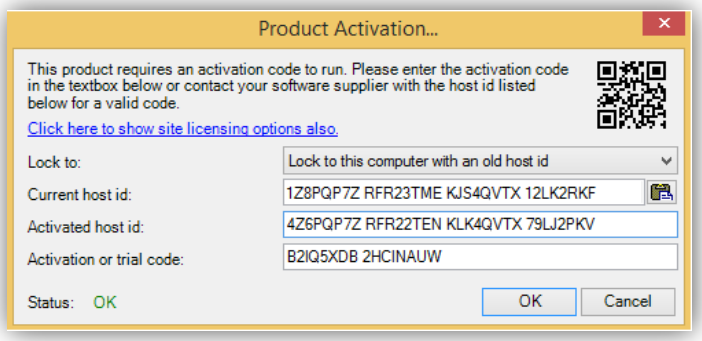


Figure 5 – Changed host-id

3
Quick getting started guide

In this section we will lead you through the steps needed for creating a simple bowtie diagram.

3.1. A brief description of bowtie methodology

Note: Look in the methodology manual for a more thorough elaboration.

The bowtie methodology is used for risk assessment, risk management and (very important) risk communication. The method is designed to give a better overview of the situation in which certain risks are present; to help people understand the relationship between the risks and organizational events.

The strength of the methodology lies in its simplicity; the phrase “less is more” is certainly applicable.

Risk management is all about risk-perception management, since most accidents happen because of actions or inactions of people. People working in hazardous environments should be aware of the present organizational risks and should have an accurate understanding of their role in it. This can only be accomplished by sufficient risk communication adjusted to the abilities of that part of the workforce you want to address, leading to the establishment of operational ownership.

Many risk assessments are done using quantitative instruments. These may be sufficient for certain types of equipment but are less valuable for organizational risk assessment. Human beings are less easy to predict than machinery and the operational combination of all factors present (think of people, equipment, time, weather, organizational factors, etc.) leads to even more difficulties. Making accurate predictions of the future in an environment that is as complex as the world itself, is simply impossible. In many organizations the stakes of certain consequences (resulting from an accident) are too high to leave unmanaged. Therefore it is wise to be prepared for ‘everything’; think of all possible scenarios and assess how your organization is prepared to deal with them. This is exactly what the bowtie method and BowTieXP will help you accomplish.

Risk in bowtie methodology is elaborated by the relationship between hazards, top events, threats and consequences. Barriers are used to display what measures an organization has in place to control the risk.

3.1.1. Hazard

The word “hazard” suggests that it is unwanted, but in fact it is the opposite: it is exactly the thing you want or even need to make business. It is an activity or state of something with the potential to cause harm but without it there is no business. For example the oil industry; oil is a dangerous substance (and can cause a lot of harm when treated without care) but it is the one the thing that keeps the oil industry in business! It needs to be managed because as long as it is under control, it is of no harm.

3.1.2. Top event

Thus as long as a hazard is controlled it is in its wanted state. For example: oil in a pipe on its way to shore. But certain events can cause a deviation of or loss of control over the hazard. In bowtie methodology such an event is called the top event. The top event is not a catastrophe yet, but the dangerous characteristics of the hazard are now in the open. For example: oil is outside of the pipeline (loss of containment). Not a major disaster, but if not mitigated correctly it can result in more unwanted events (consequences).

3.1.3. Threats

Often there are several factors that could cause the top event. In bowtie methodology these are called threats. These threats need to be sufficient or necessary: every threat itself should have the ability to cause the top event. For example: corrosion of the pipeline can lead to the loss of containment.

3.1.4. Consequences

When a top event has occurred it can lead to certain consequences. A consequence is a potential event resulting from the release of the hazard which results directly in loss or damage. Consequences in bowtie methodology are unwanted events that an organization 'by all means' wants to avoid. For example: oil leaking into the environment.

3.1.5. Barriers (also known as controls)

Risk management is about controlling risks. This is done by placing barriers to prevent certain events form happening. A barrier (or control) can be any measure taken that acts against some undesirable force or intention, in order to maintain a desired state.

In bowtie methodology there are proactive barriers (on the left side of the top event) that prevent the top event from happening. For example: regularly corrosion-inspections of the pipelines. There are also reactive barriers (on the right side of the top event) that prevent the top event resulting into unwanted consequences. For example: leak detection equipment or concrete floor around oil tank platform.

Note the terms barrier and control are the same construct and depending on industry and company, one or the other is used. In this manual we will use the term barrier.

3.1.6. Escalation factors/defeating factors/barrier decay mechanisms

In an ideal situation a barrier will stop a threat from causing the top event. However, many barriers are not a 100% effective. There are certain conditions that can make a barrier fail. In bowtie methodology these are called escalation factors. An escalation factor is a condition that leads to increased risk by defeating or reducing the effectiveness of a barrier. For example: earthquake leading to cracks in the concrete floor around a pipeline.

Escalation factors are also known as defeating factors or barrier decay mechanisms – which term is used is dependent on industry and company. In this document we will use the term escalation factor.

3.1.7. ALARP

If you want to be completely sure that there is no risk present you have to get rid of the hazard. But since the hazard is part of normal business this is simply not possible. We accept there is a risk and we try to do everything possible to keep the risk "*As Low As Reasonably Practicable*" (ALARP). For a risk to be ALARP it should be demonstrable that the cost involved in reducing the risk further would be grossly disproportionate to the benefit gained.

What ALARP means is different for every organization; it depends on what risks an organization does or does not want to take and what an organization wants to spend (in time & money) on barriers/control measures.

3.1.8. Terminology recap

The following terms should now be familiar to you:

- The hazard, part of normal business but with the potential to cause harm, can be released by:
- A top event, no catastrophe yet but the first event in a chain of unwanted events.
- The top event can be caused by threats (sufficient or necessary causes).
- The top event has the potential to lead to unwanted consequences.
- (Proactive) barriers are measures taken to prevent threats from resulting into the top event.
- (Reactive) barriers are measures taken to prevent that the top event leads to unwanted consequences.
- An escalation factor is a condition that defeats or reduces the effectiveness of a barrier.

We will be covering the following steps in the next sections:

- A quick overview of the software layout,

- Adding/defining a bowtie location,
- adding a hazard and top event,
- adding threats,
- adding consequences,
- adding barriers,
- And adding escalation factors.

3.2. The BowTieXP screen

When starting BowTieXP for the first time, you will be asked a couple of questions and given some information:

- if you agree to the EULA,
- The version history / release notes are shown,
- If BowTieXP can check for updates and some other preferences,
- What language you want to use.

After agreeing to the EULA, you can leave everything at their defaults.

This screen in only shown the first time. Once it is finished, BowTieXP will start normally.

After starting BowTieXP, the following screen will appear:

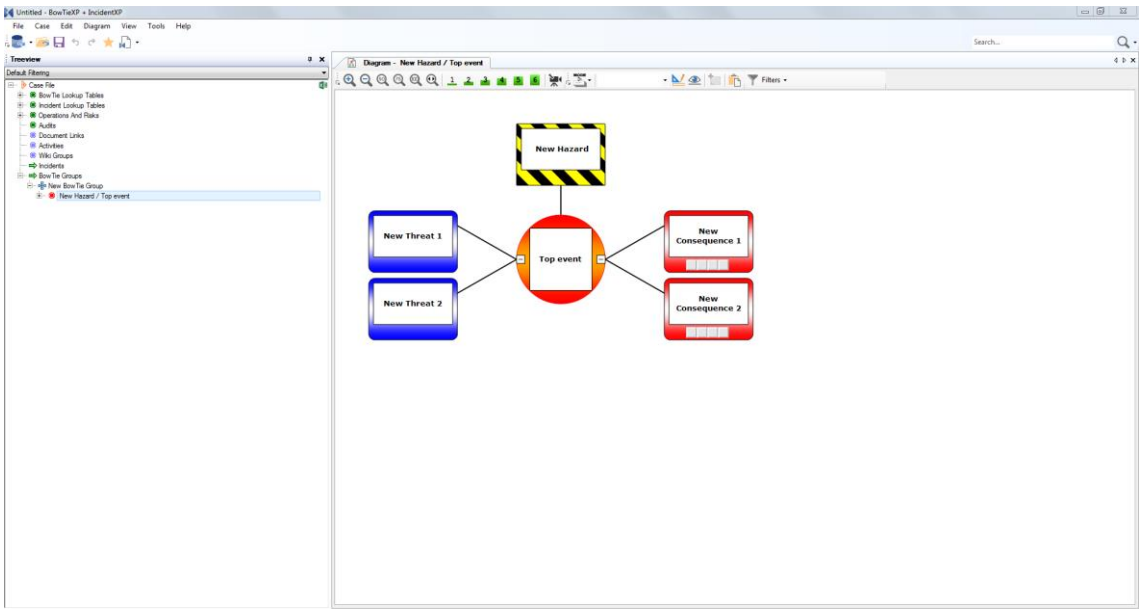


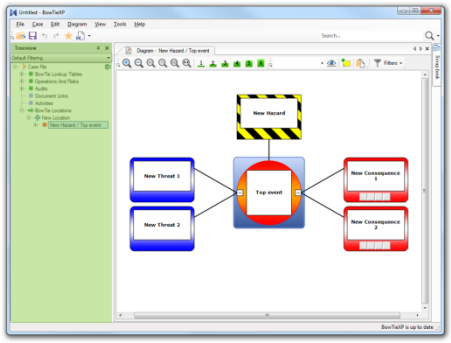
Figure 6 - Main application screen

This screen consists of several parts that you will need to familiarize yourself with before you will be able to start building your case. They are explained below. Please note the titles in the various windows in the screenshot – throughout the documentation we will refer to these windows by those names.

The windows we will need in this chapter are highlighted and discussed below.

NOTE: Your screen layout might be slightly different if you are running a different edition of BowTieXP – some extra features will be available if you have purchased the advanced version and/or the IncidentXP and/or the AuditXP add-on. All features which are not in the standard version of BowTieXP will be marked in the text.

Screenshot with highlight	Description



Treeview – The treeview window helps you easily navigate through your bowtie case file. In this window you have access to your case file, including the lookup tables associated with your file, the activities, documents, and bowtie locations. It is also a quick and easy way to jump to different portions of your diagram by clicking on them in the treeview – the diagram will follow.

Note you can click on the '+' or the '-' icons to expand or hide the details associated with each item.

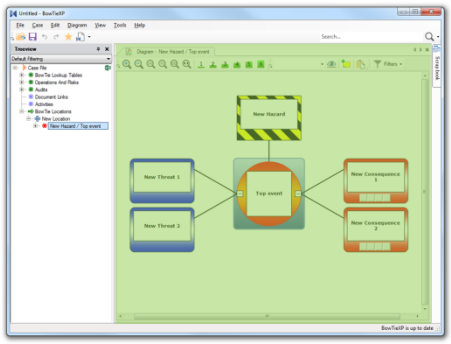
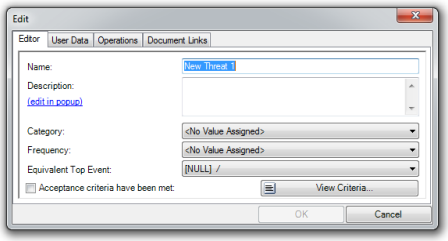


Diagram – The diagram window is where the visual portion of your diagram will take shape.

There are distinct shapes associated with each portion of the bowtie diagram which represent different aspects of your case. Think of the diagram window as your drawing board.



Editor – In the editor window you can submit and edit all written content within your diagram. By double clicking on items on the treeview or diagram, the editor window will appear which allows you to edit the various fields of an item.

Note: you can also call up the editor by clicking once on an item to select it, and then press F2.

If you would like to know more about the treeview, diagram, and editor windows or any of the other windows not covered in this chapter; please refer to the rest of the manual - starting at chapter **Error! Reference source not found.**, **Error! Reference source not found.** on page **Error! Bookmark not defined.**, and continuing in the next chapters, every component is described in detail.

Some tips if you get lost:

1. Pressing F2 will bring up the editor window for the selected item.
2. Pressing Shift + F12 restores all windows to their default location – the layout as seen in the screenshots is restored. You can also press the star icon on the toolbar.
3. If you can't find your diagram, you either have not selected a hazard/top event, or you have selected a different tab such as the case overview tab in the diagram window instead of the diagram tab.
4. Pressing the '+' symbol in the treeview shows the hidden branches, pressing the '-' symbol hides them.

You are now ready to create your first bowtie diagram. A sample bowtie diagram is already created for you – you can change this to your liking. If you want to create a new one from scratch follow the instructions below.

3.3. Quickly adding a diagram

As adding a new hazard is an often done job, you can go into the Diagram menu and choose the "Add new BowTie Diagram" option:

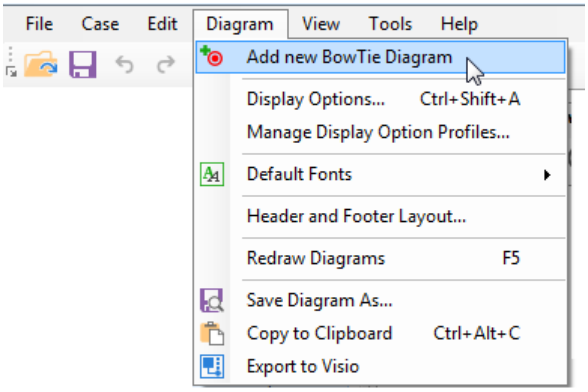


Figure 7 - Add new Bowtie diagram

This adds a new empty bowtie diagram in one go which you can then adjust to suit your purposes. Double click items to edit them. Look for the green buttons on the diagram to add new items:

Figure 8 - Green "+" buttons

3.4. Step by step - step 1: Add a bowtie group

Each bowtie diagram belongs to a bowtie group. Using the shortcut in the previous paragraph you might have noticed a new default bowtie group was created to hold the new default diagram. We'll now explain how to make them step by step. It is very easy – just right click items to see what you can do to manipulate them.

Adding a bowtie group is how you begin your bowtie diagram. You are creating the case for one or more groups. A bowtie group could be a warehouse or an oil-drilling platform, but also an airplane or a car. Each group can contain multiple bowtie diagrams, one diagram for each Hazard/Top Event combination.

To create a bowtie group, go to the treeview window and do the following:

1. Right click your mouse on the tree node called bowtie group.
2. Select New BowTie Group…

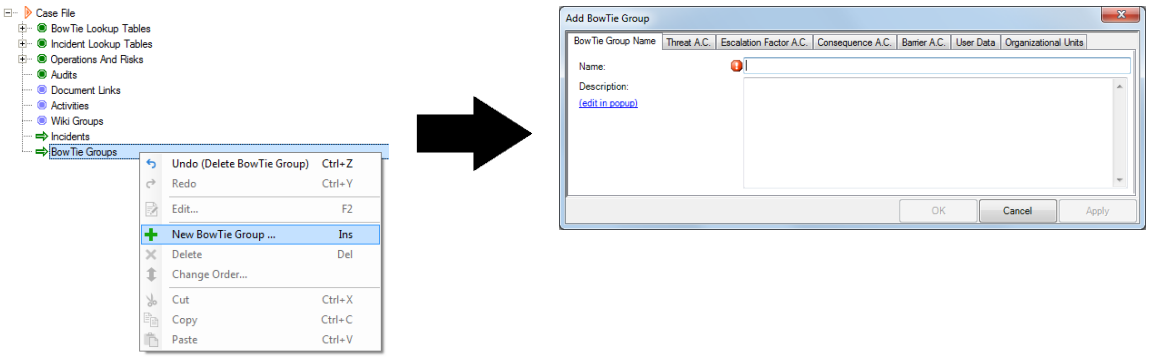


Figure 9 - Adding a location

3. The editor dialog box appears.
4. Enter a bowtie group name in the name text box.

Note: Notice the name field has a red exclamation mark next to it. This means it is a mandatory field and you must fill it in.

5. Enter a more elaborate description, if desired.
6. Press OK to add the bowtie group.

This new location will appear in your treeview as shown in

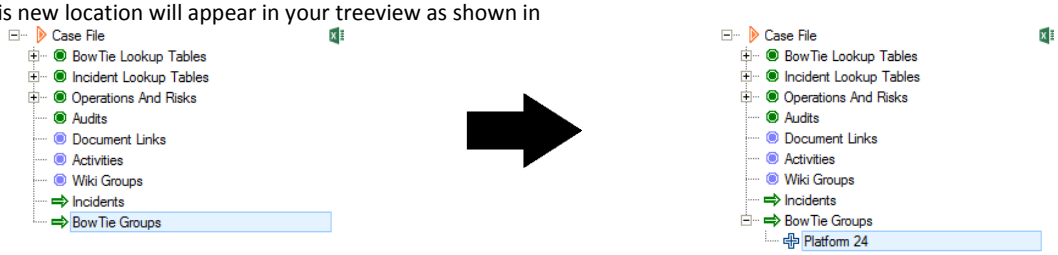


Figure 10.

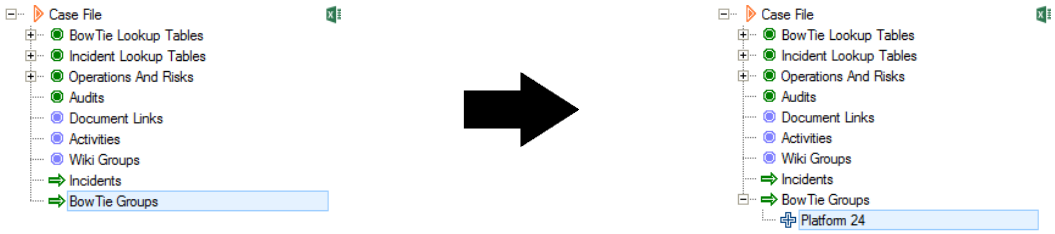


Figure 10 - Adding a location - treeview changes

3.5. Step 2: Add a hazard and a top event

Now you need to add a hazard and a top event to your new bowtie group.

1. Take a look at the treeview. You will see the bowtie group you created in step 1.
2. Right mouse click on the bowtie group node.
3. Select New Hazard from the menu and the editor dialog will appear.

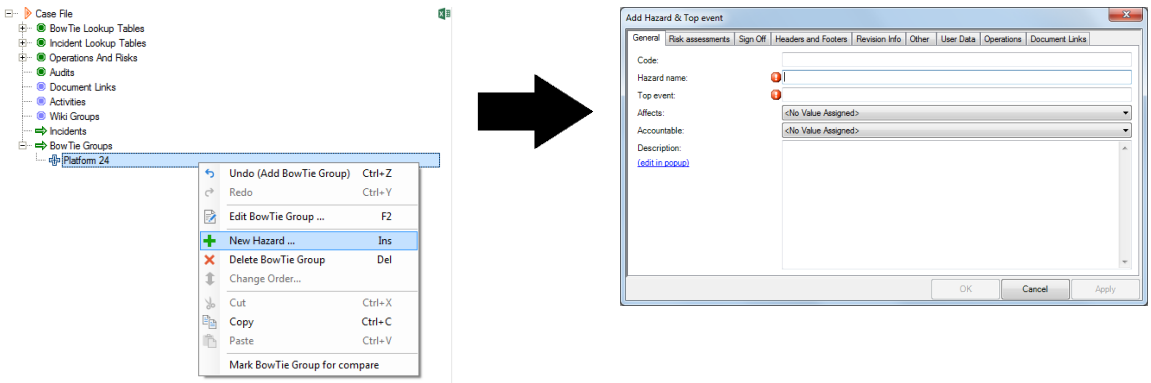


Figure 11 - Adding a hazard & top event

4. Enter a hazard name and a top event in the text boxes.
5. Click on the ok button to save.

Notice that your hazard and top event now appear in the diagram window. You are now ready to begin working with your bowtie diagram.

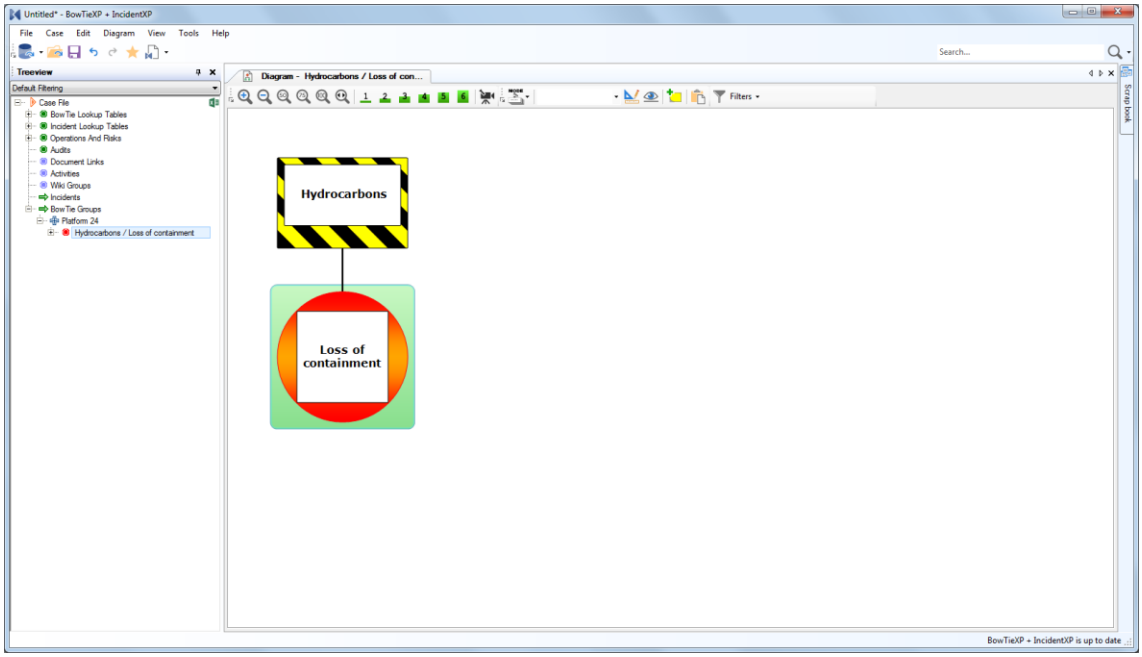


Figure 12 - After adding a hazard & top event

3.6. Step 3: Adding threats

Your treeview window will now look like this:

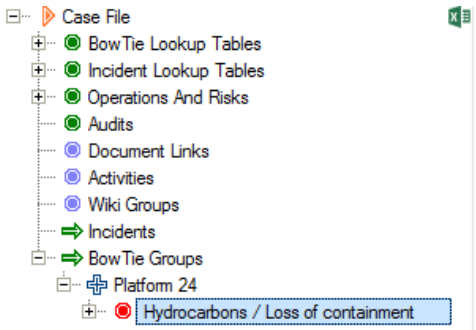


Figure 13 – The selected hazard in the treeview

And your diagram window will look like this:

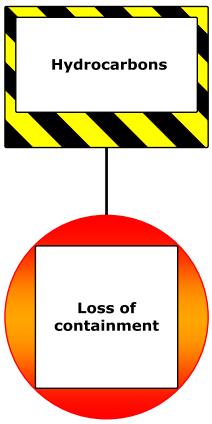


Figure 14 - A minimal bowtie diagram

Now you can start adding threats to your hazard/top event combination. This can be done directly on the diagram or via the context (right-click) menu.

Move the mouse to the left of the red round top event shape. A little green plus will appear. Clicking this will add a threat. Notice the position of the mouse pointer:

Figure 15 - Green "+" buttons (threats)

A dialogue box appears where you can name the threat you wish to add to the diagram. Enter a description and press ok. Your diagram has now expanded.

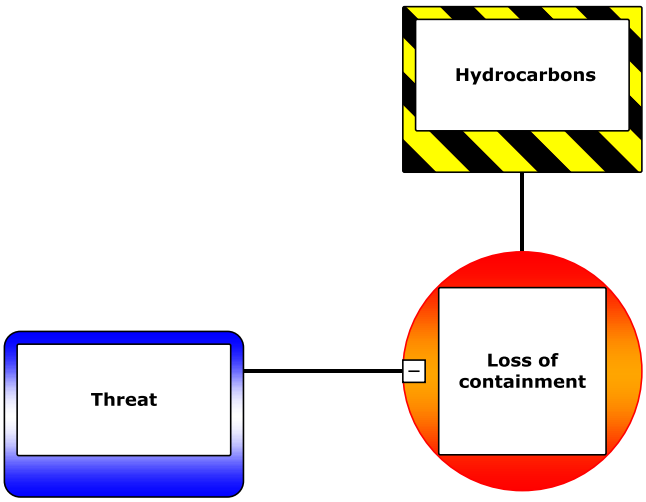


Figure 16 - The newly added threat

You can also right-click the top event and find the Add -> New Threat menu item.

Continue to add threats until you are satisfied you've covered them all.

Note: Use the scroll bars and the zoom in/out buttons on the toolbar to navigate through your diagram. Turn to paragraph **Error! Reference source not found.**, **Error! Reference source not found.** on page **Error! Bookmark not defined.** for more information about the diagram and its toolbar icons.

3.7. Step 4: Adding consequences

If your top event were to occur, you would want to have an understanding of possible outcomes and necessary reactions to such an event. Consequences in a bowtie diagram allow you to analyze both sides of a top event.

You can add consequences to your diagram similar to how we added threats – click the green button on the right hand side of the top event:

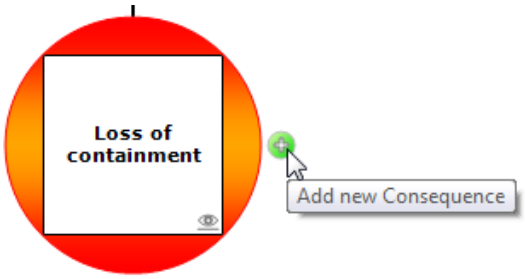


Figure 17 - Green "+" buttons (consequences)

The editor will pop up. Enter a description for the consequence. Click ok or hit return. Now your diagram looks like this:

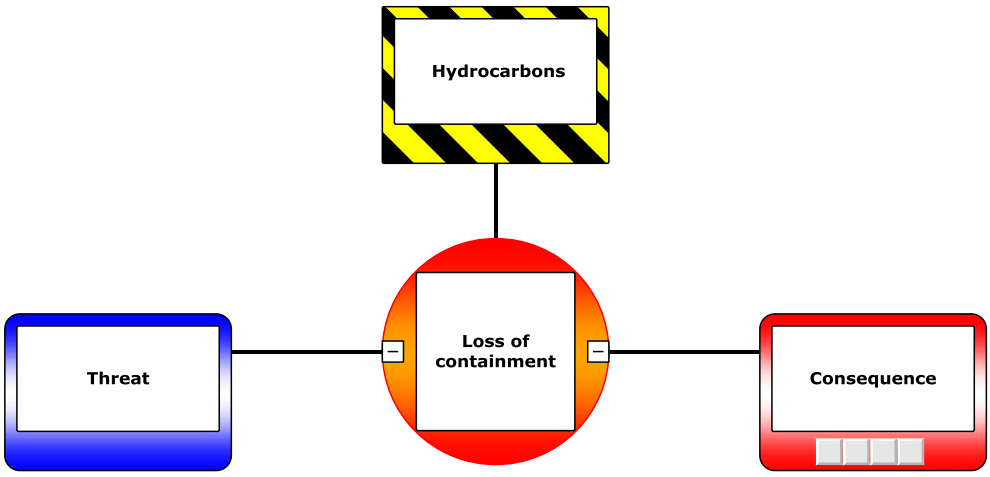


Figure 18 - The newly added consequence

Note: You can also right mouse click on the top event in the diagram or treeview. Then select Add → Consequence.

You have now created the bare bones of your bowtie diagram. Next, you need to populate that diagram with information about the measures that are in place to prevent threats from triggering the top event, and what measures are in place to mitigate or prevent the consequences from becoming a reality if your top event has occurred. These measures are known as barriers.

3.8. Step 5: Adding barriers

Now, you will add a barrier to your bowtie diagram.

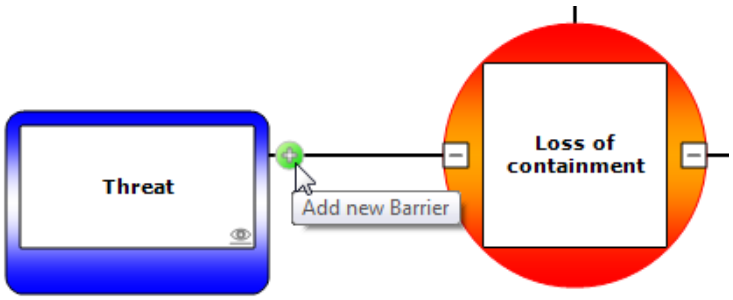


Figure 19 - Green "+" buttons (barriers)

Click the green plus button next to the threat. The editor will appear. Enter the description of your barrier and click OK.

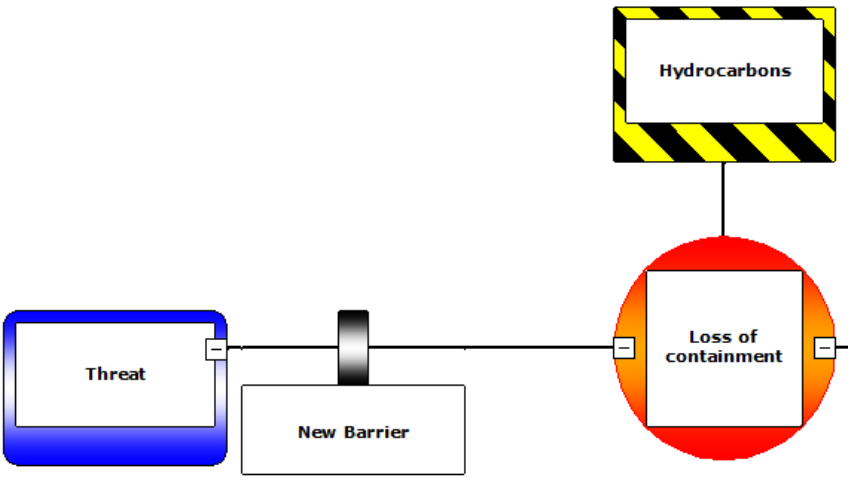


Figure 20 - The newly added barrier

Continue to add barriers to each threat or consequence until you feel your diagram is complete. You can add barriers to the left or right of existing items.

You can reorder controls by dragging them around. You can also reorder threats and consequences in the same manner.

Note: You can also add a barrier by right-mouse-clicking on a threat in the diagram. You can also add barriers via the treeview. Expand the threat and you will see a node titled "Barriers". Right click that and select to add a new barrier.

3.9. Step 6: Adding escalation factors

Escalation factors are conditions that lead to increased risk by defeating or reducing the effectiveness of barriers. To add an escalation factor to a barrier in your diagram you click the green button on the bottom of a barrier:

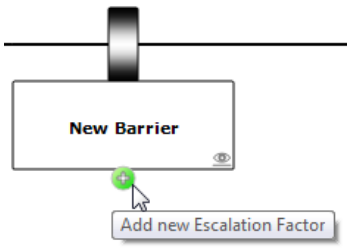


Figure 21 - Green "+" buttons (escalation factors)

If you have barriers in place to prevent this escalation factor from defeating this barrier, they can be added similar to how barriers are added to threats and consequences.

3.10. Bowtie diagram complete

By following steps 1 through 6, you have now completed a simple bowtie diagram. With the diagram laid out, you can now add more variables to each part of the diagram in order to drill down to more specific tasks such as categorizing your barriers and attaching activities, document references and a host of other things. Some are described below.

3.11. Taking it to the next level

There is of course much more to the BowTieXP software then just drawing diagrams. In the next sections we will give you the background needed for taking your analysis to the next level, and we will do this with examples.

As you have seen in the previous sections, there are different kinds of information in each case file which are used in a variety of ways. In this section we will explain the different types of data and how they interlink: some objects which you create have special 'abilities' such as being able to be referenced from other places. We will also talk about the theory behind some of these.

3.11.1. Normal entities

In the previous sections you have created a sample diagram by adding a location, a hazard, threats, consequences, barriers and escalation factors. These items are known as normal entities and have no special abilities like the "special" items we will discuss next. Most normal entities are diagram parts.

3.11.2. Lookup tables

One of the things you might have noticed on the editors is that the normal items have various properties, which might be plain text, such as descriptions and codes, but also various drop-down lists such as e.g. the effectiveness rating on a barrier.

The options available for the effectiveness ratings are actually defined in your case file and you can modify them yourself. Like all data in the case file you can find them in the treeview, in this case under Case File → BowTie Lookup Tables → Effectiveness.

All the different reference information used throughout your case file is defined under the "lookup tables" node.

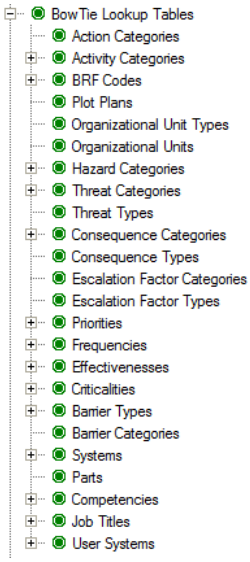


Figure 22 - Lookup tables

Adding items here will make them available on the various drop-down boxes in the editor.

Removing items here will remove them of course. If a value is in use, you will be warned and asked if you would like to select another value to replace it with, as you can see in Figure 23 - Deleting a lookup table value below.

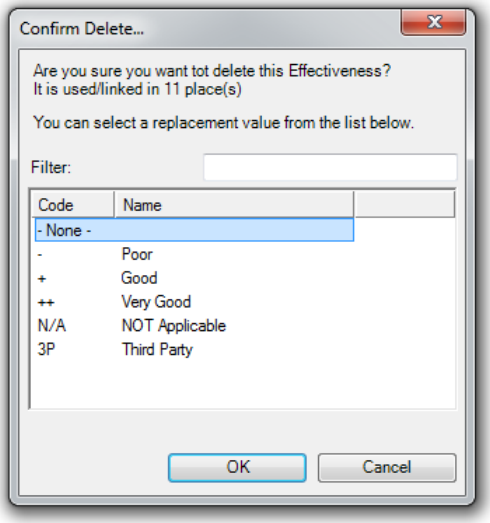


Figure 23 - Deleting a lookup table value

In BowTieXP the following lookup tables exist:

Lookup table type	**Description/usage**
Action Categories	Used on actions to categorize the different actions
Activity Categories	Used on activities to categorize the different activities
BRF Codes	Used on barriers to indicate the Basic Risk Factor (BRF) the barrier belongs to. For more information on basic risk factors and Tripod theory, refer to the methodology manual.
Plot Plans	Used to add plot plans to Organizational Units
Organizational Unit Types	Used to categorize Organizational units
Organizational Units	Used on BowTie Groups, Audits and Incident to indicate to which organizational unit the bowtie diagrams, audit fill outs and/or incident diagrams belongs to.
Hazard Categories	Used on Hazards to categorize the hazard.
Threat Categories	Used to categorize and color-code threats.
Threat Types	Used on Threats to categorize the threats into different types.
Consequence Categories	Used to categorize and color-code consequences.
Consequence Types	Used on Consequences to categorize the consequences into different types.
Escalation Factor Categories	Used to categorize and color-code escalation factors.
Escalation Factor Types	Used on Escalation Factors to categorize the Escalation Factors into different types.
Priorities	Used on actions to prioritize them.
Frequencies	Used on activities to indicate the frequency of activity execution.
Effectiveness	Used on barriers and management actions to signify the effectiveness of the barrier in preventing the top event or consequence from occurring.
Criticalities	Used on barriers to signify critical barriers.
Barrier Types	Used on barriers to categorize the barriers into different types.
Barrier Categories	Used to categorize and color-code Barriers.
Systems	Systems are linked to on barriers. Systems are used in various forms of barrier classification. One common usage is to identify different barrier systems present in your organization and use those to categorize your barriers into those, on a different axis then the barrier types.

	Because you can assign/link multiple systems to barriers this allows for different classifications.
Competencies	Used on activities to show which competencies are needed to perform the activity.
Job Titles	Job titles are abstractions for people tasked with a certain responsibility. Another word for this concept could be post indicator. They are used on activities to indicate e.g. the person responsible for the activity and who signed off on the activity. On barriers and hazards they indicate the accountable person. On hazards they are also used for the sign off information. On actions they are used to indicate the person who has to execute the intended action.
User Systems	Used on barriers to show which systems (e.g. power supply system) are needed to operate a barrier. Note: User Systems are only available in BowTieXP Advanced.

3.11.3. Linkable entities by example: activities

For some properties it is not enough to be able to select only one value, you need to be able to assign multiple items from a limited list of items.

Let's clarify this fairly abstract idea with an example.

In most organizations there's a management system of activities/tasks which define how your organization is run. A lot of these management system activities are essential for keeping barriers from working correctly – for example, an automatic fire suppression system needs regular maintenance, inspection and testing to ensure it will function correctly when needed.

To leverage the usability of your bowtie diagrams, mapping between your management system and your diagrams is important: It enables you to analyze which tasks and therefore which persons/posts are managing threats, how many different activities and therefore also how many people are responsible for this and if any threat is sensitive to single points of failure in your management system.

For example a threat, which is controlled by barriers, which is supported by a number of activities, which all rely on the same person, might be considered more vulnerable than one with controls and activities who are not all dependent on one person.

It also allows for better communication on why certain activities are critical, which helps the persons responsible from understanding why they are to do the mentioned task and therefore ensuring better execution.

To support this analysis you can define a hierarchy of activities within BowTieXP. After creating / inputting this hierarchy of activities into BowTieXP, you can assign various activities to your barriers.

See the example below:

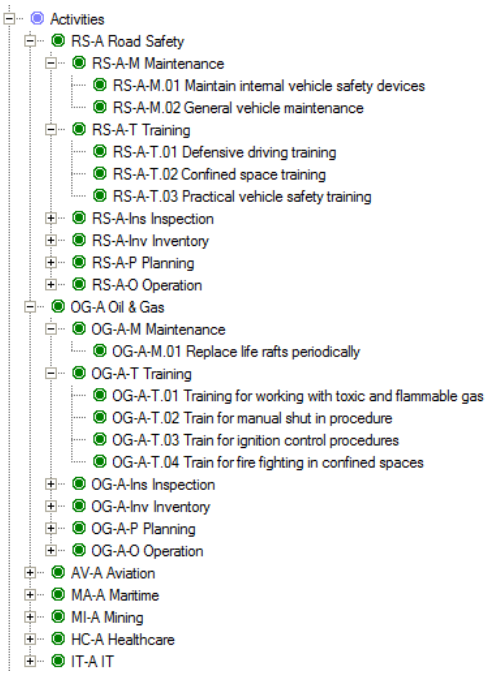


Figure 24 - An example activity hierarchy

After the hierarchy has been defined, we can now link the activities onto barriers. You can do this in a couple of different ways: Drag and drop and via the Editor.

3.11.3.1. Drag and drop

All link assignments can be made using drag and drop, similar to how you copy files in Windows Explorer.

To assign an activity to a barrier using drag and drop, ensure that the barrier you want to assign to, is visible in the diagram and the activity you want to assign, is visible in the treeview.

1. Click the activity and keep the mouse button pressed down.
2. Move the mouse over to the diagram whist holding the mouse button. You will see the mouse pointer indicate when it is valid to let go.
3. Release the mouse button when the mouse pointer is over the barrier where you want to assign the activity.

The link has now been made. You might have notice the following popup when dropping the activity:

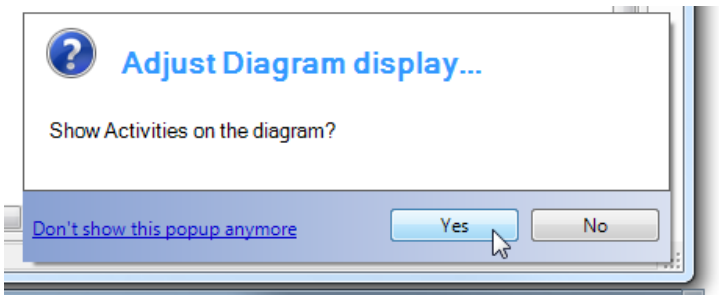


Figure 25 - Diagram display popup

If you click yes, the assigned activities will be shown on the diagram:

Figure 26 - Activity linked to barrier

If we missed the dialog, we can also manually adjust the display settings. To do so, take the following steps:

1. Click the little eye icon on the barrier:

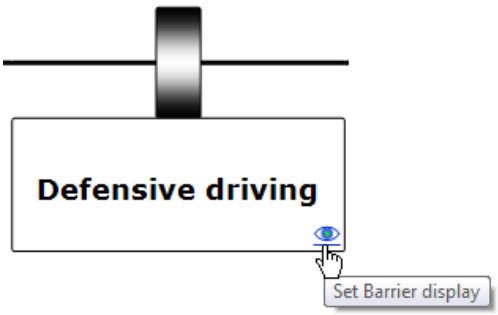


Figure 27 - Barrier display - eye-icon

This will bring up a dialog which allows you to adjust display options for barriers. Note that all shapes have this little icon.

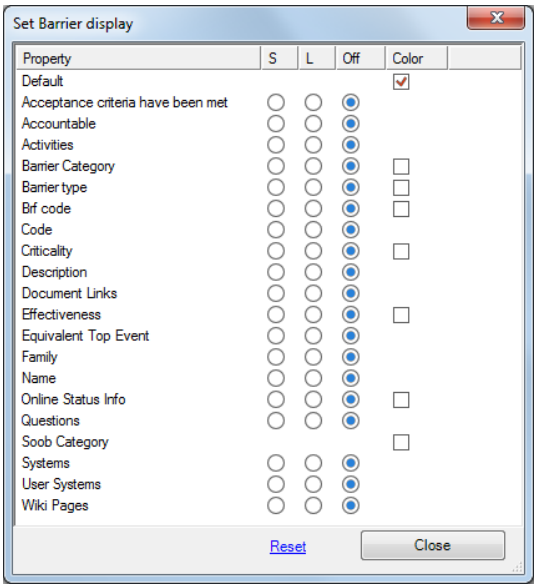


Figure 28 - Set barrier display window

Select the S column for activities – this will show the activities of the barrier in **S**hort format. You can also choose L for **L**ong format.

If you have many settings to change, you can also open up the diagram display options menu:

1. Go to the diagram menu,
2. Choose diagram options,
3. In the tree, open up the barrier settings.
4. Select the 'S' column radio button under barrier for activities.

Please refer to the screenshot which button to click – note the mouse position.

The diagram will change and show all the assigned activities below each barrier. Verify the link you just made.

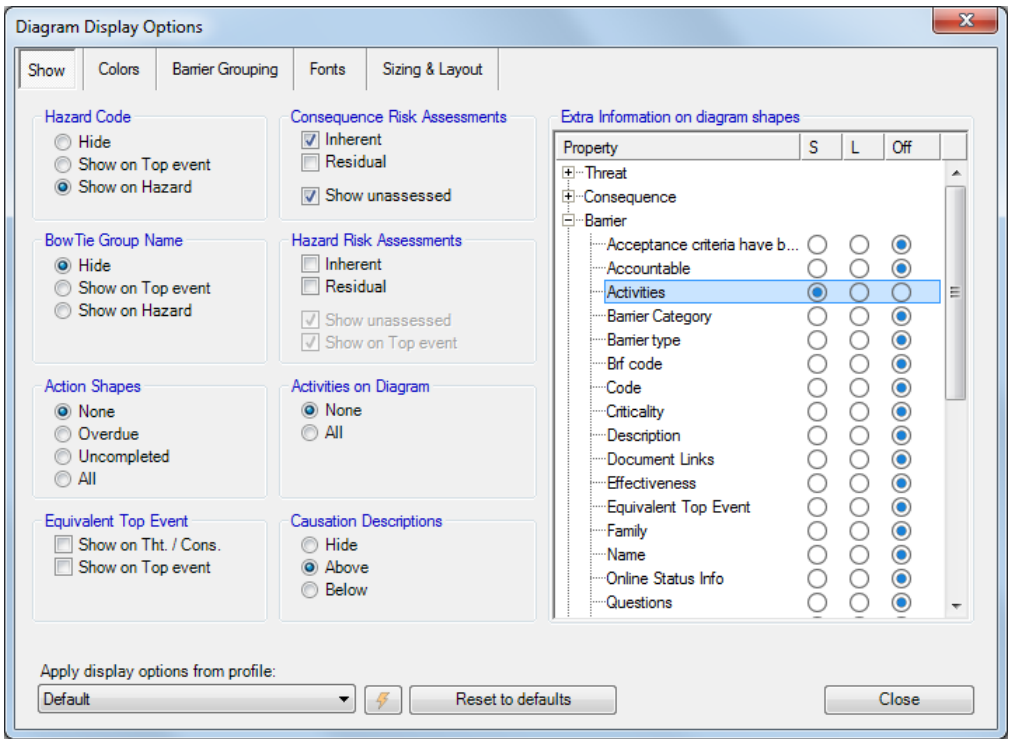


Figure 29 - Showing activities on the diagram

The second method is the method which allows us also to remove the link: via the treeview.

In the treeview we can open it up further by clicking the plus sign, which will show all the child collections the activity has. One of those is named Activities. Open it up and you should see the activity there in a gray color.

The gray color is to tell you that it isn't actually defined there but only a link.

Dragging and dropping is possible from most windows within BowTieXP – you can drag and drop within the treeview, from the treeview to the diagram, from the listview to the diagram, etc. The listview is especially useful for assigning links – click the activity container in the treeview and the listview will show all the activities defined.

3.11.3.2. Editor

Double click the barrier to bring up the editor. Select the activities tab:

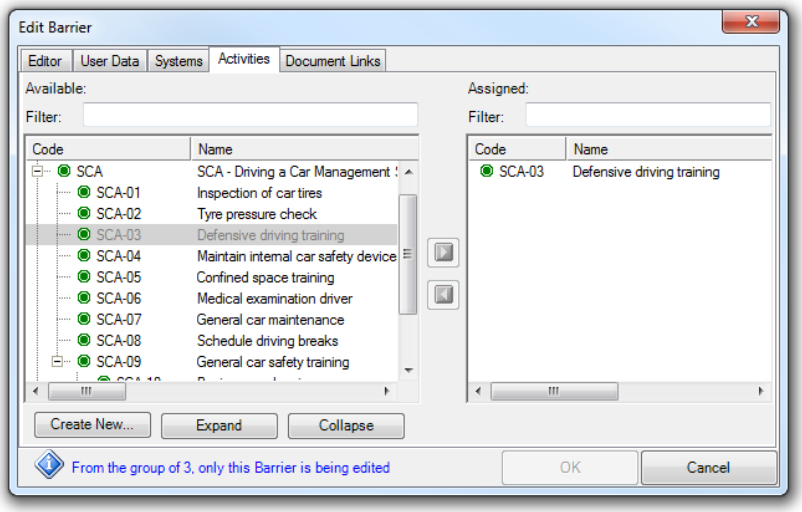


Figure 30 - Editor window / activities tab

The left hand side of this screen shows all the items which can be linked to the barrier. The right hand side shows all the entities already assigned. To move items between the two sides, you can select them and press the relevant arrow icon between the two halves of the screen. You can also drag and drop items between the two sides.

Note that items which are drawn in gray have already been assigned / moved to the right hand side.

Also note that you can filter the items shown by typing information into the filters. You can also sort on each column by clicking the headers.

You can also create a new item by clicking the “create new” button. This will allow you to add a new item to the item currently selected in the left hand pane.

When assigning document links and activities the screen described above is used, due to the hierarchical nature of these items. For flat data such as e.g. systems, the dialog looks slightly different, and can be seen below:

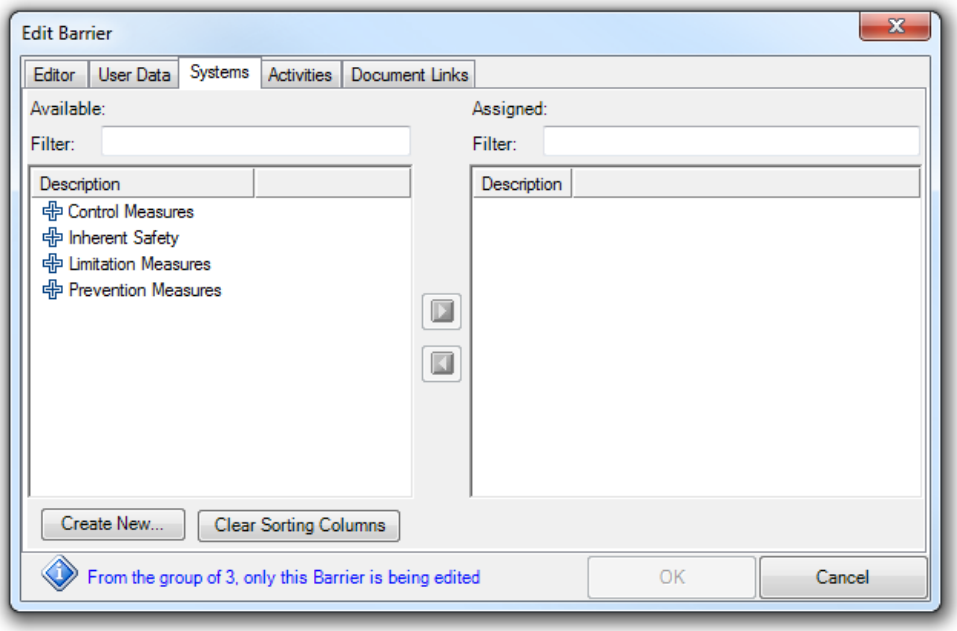


Figure 31 - The assign links screen showing flat data

One thing to note is that now assigned items aren’t shown in gray on the left hand side, but are removed and only visible in the right hand side.

3.11.3.3. Deleting linkable items

Note that when deleting an item which has been used, you will get a popup similar to the popup when deleting a lookup table item (see Figure 23 - Deleting a lookup table value on page 22): You are allowed to select an optional replacement value.

3.11.3.4. Overview of linkable items

Linkable entity type	Description/usage
Activity	Described above. Activities are linked to on barriers.
Document Link	Document links are references to external documentation which can be added to various elements in the case file. Like all linkable entities, they are defined centrally and then referenced from other elements in the form of links. Linking to document links is possible from hazards, threats, consequences, barriers, escalation factors and activities.
Wiki Groups / pages	Wiki pages are references to internal documentation which can be added to barriers in the case file. Wiki pages are often imported using the Wiki module in BowTieServer, but wiki pages can also be used for BowTieXP only.
Operational Risk Factor	NOTE: This functionality is advanced only Operational risk factors are used to specify certain dimensions of operations which need to be considered separately in Soob matrices from the operation as a whole, such as critical equipment and e.g. weather conditions. See chapter **Error! Reference source not found.**, **Error! Reference source not found.** on page **Error! Bookmark not defined.** for further details.
Operation	NOTE: This functionality is advanced only An operation in BowTieXP is used to describe a specific operation which can take place in your organization and should be present on the Soob matrix. See chapter **Error! Reference source not found.**, **Error! Reference source not found.** on page **Error! Bookmark not defined.** for further details.

3.11.4. Show usage references / backlinks

When an activity is referenced on say, a barrier, there's a virtual arrow pointing from the barrier to the location in the Treeview where the activity is defined. The figure below demonstrates this. It shows a part of a bow-tie diagram. Listed below each barrier are the activities assigned to that barrier.

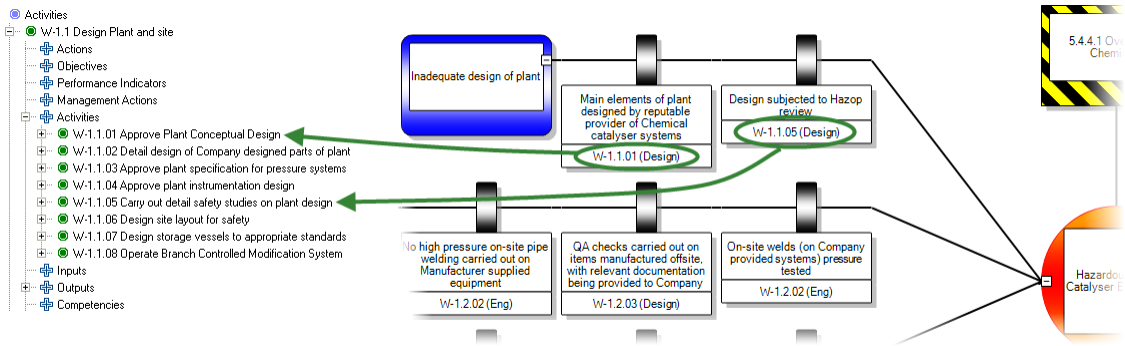


Figure 32 - Treeview and diagram, explaining links

This arrow is called the link. We can also follow this arrow in the *reverse* direction, from the activity to *all* the barriers where it is used. These are called the backlinks.

A similar concept applies to lookup table values.

For each linkable entity and each lookup table value we can find out where they are used by showing us their backlinks / usage references.

This is done by right clicking the item of which you want to see where it is referenced, and selecting the option in the context menu called “Show usage references”. The Listview will show all the places where the item is in use.

See also section **Error! Reference source not found.** starting on page **Error! Bookmark not defined.**, the **Error! Reference source not found.**.

3.12. Actions

Actions are designed for activities that do not recur. They can be used in two ways, as TODO items when developing a bowtie, or as an improvement plan on an existing bowtie.

3.12.1. Actions as a TODO list

Let’s say you have a barrier in your bowtie, but you’re unsure who is accountable for it. Creating an action lets you track all the elements in your bowtie that need more investigation.

3.12.2. Actions as improvements

You could also use actions as a more formal improvement plan. After completing the bowtie and seeing how your organization manages risk currently, there are often scenarios that could be improved by adding new barriers or improving existing ones. You can use actions to highlight those areas.

Some examples of actions as improvements are: correcting an error in a procedure, adding a new smoke detector or changing the accountable party for a barrier. These are performed once to improve safety, but do not need to be repeated regularly.

Actions to create a new barrier are usually displayed on the associated Threat or Consequence, while improvements on existing barriers are usually put on the barrier itself.

3.12.3. The difference between actions and activities

BowTieXP also allows you to add activities, and there’s often confusion about the difference between actions and activities. Activities are used to describe regular recurring tasks like maintenance and training. These are part of your safety management system.

Actions on the other hand, are one-off improvements on a safety management system or barrier. For example, an activity could be maintenance on an engine, an action for that activity could be to create a new checklist to make the maintenance less error prone.

3.12.4. Adding an action

Adding an action is done by selecting any element in the bowtie and either clicking the action icon in the toolbar

Figure 33 - Action button in the toolbar

or right clicking on the element → Add → Action

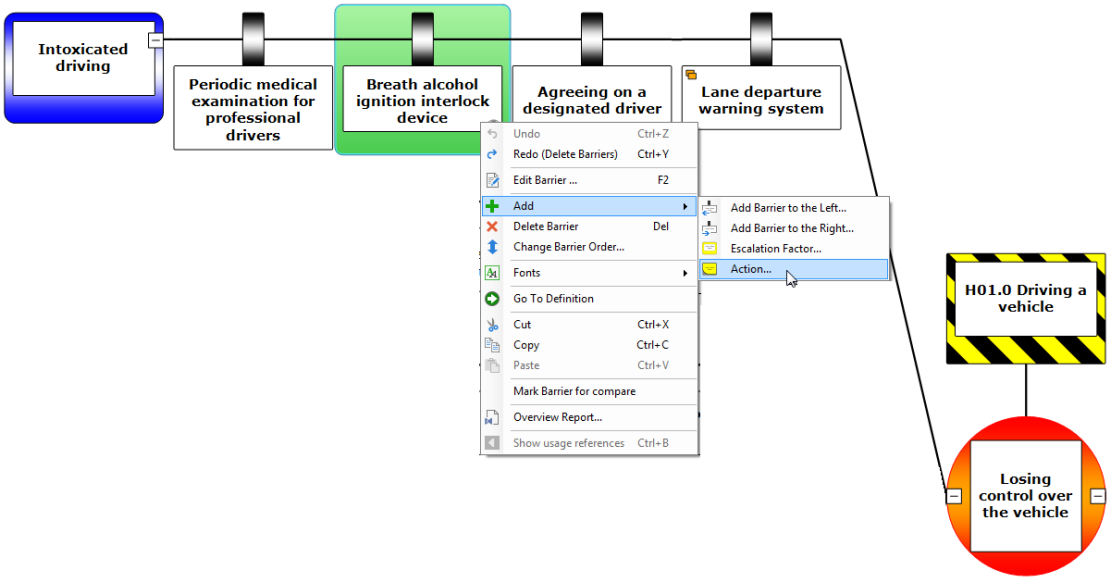


Figure 34 - Add action by right clicking

3.12.4.1. Action properties

The fields on an action are:

- **Code**: the action code is displayed on the diagram.
- **Name**: describes what the action is about.
- **Description**: a detailed description of the action.
- **Category:** categorizes actions (e.g. TODO's or improvements).
- **External Reference**: this field can be used to fill in a reference to an external action tracking system.
- **Action party**: the job title responsible for completing this action. The Job titles are defined in the Lookup tables
- **Target**: gives the date before which the action has to be completed.
- **Priority**: gives a priority to an action. The list of priorities is defined in the Lookup tables
- **Completed**: this box is ticked once the action has been completed.
- **Sign off authorized by**: the job title that authorized the completion.
- **Sign off date**: the date on which the action was signed off.
- **Sign off comment**: an optional field to provide comments when signing off an action.

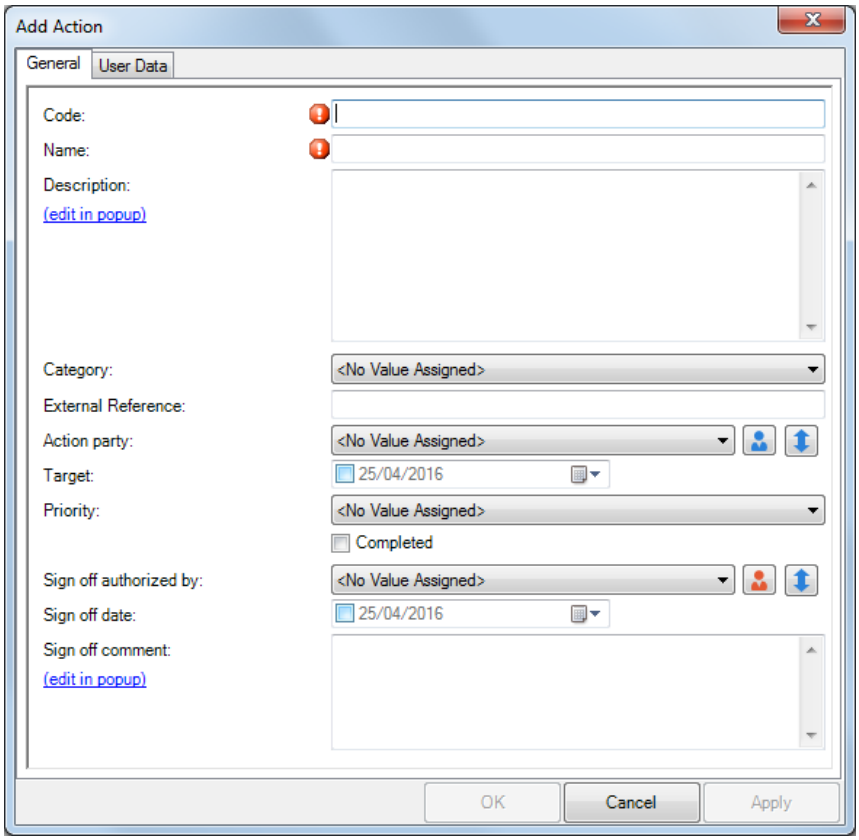


Figure 35 - Add action window

3.12.5. Visualizing actions

Actions are visualized on the bowtie as post-it shapes. The code is also displayed.

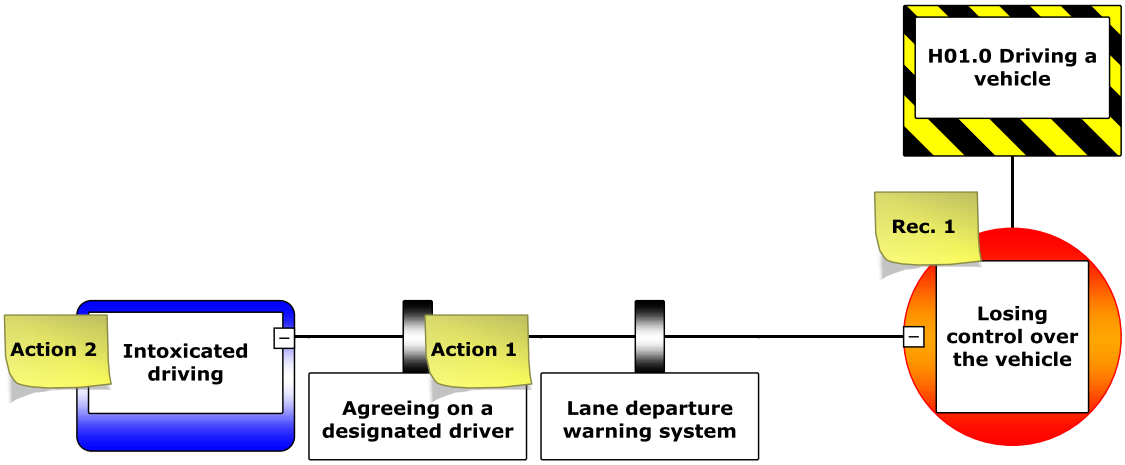


Figure 36 - Display of actions

Go to Diagram → Display options and under Action Shapes, select either None to hide all actions, Overdue to show all uncompleted actions with the target overdue, Uncompleted to show only uncompleted actions or All to see both completed and uncompleted actions.

In the Colors tab you can also select Action Colors. Coloring can be done by Priority, or completion status.

3.12.6. Action reports

Go to Tools → Reports and expand the Actions section to see the following action reports:

- **Actions in XL**: a flat list of Actions, opens in Excel
- **Actions in BowTie context**: Actions in BowTie context, with empty fill in lines, opens in Excel
- **Actions in BowTie context**, condensed version: Actions in BowTie context, opens in Excel. No empty fill in lines, only listing the objects that actually have Actions descendants
- **Action of a selection of Hazards**: a report with all actions for particular Hazards, opens in Word
- **All Actions**: a list of all actions in alphabetical order based on code, opens in Word
- **Actions by Action party**: a report that prints out all actions sorted by Action party, opens in Word
- **Actions by Priority and Action party**: a report with all actions sorted by Priority, opens in Word
- **Actions of a specific Action party**: a report with all actions for a specific job title, opens in Word

4
Support

For users that have bought BowTieXP with support and maintenance a helpdesk is available. This helpdesk assists people that have technical and user-related questions regarding BowTieXP, how to install it and how to use it to its fullest extent.

You can reach the BowTieXP helpdesk by e-mail at support@cgerisk.com or by telephone on +31 (0) 88 1001 350.

Please refer to www.cgerisk.com for our BowTieXP Support & Maintenance Brochure. It explains what customers receive when purchasing support & maintenance.