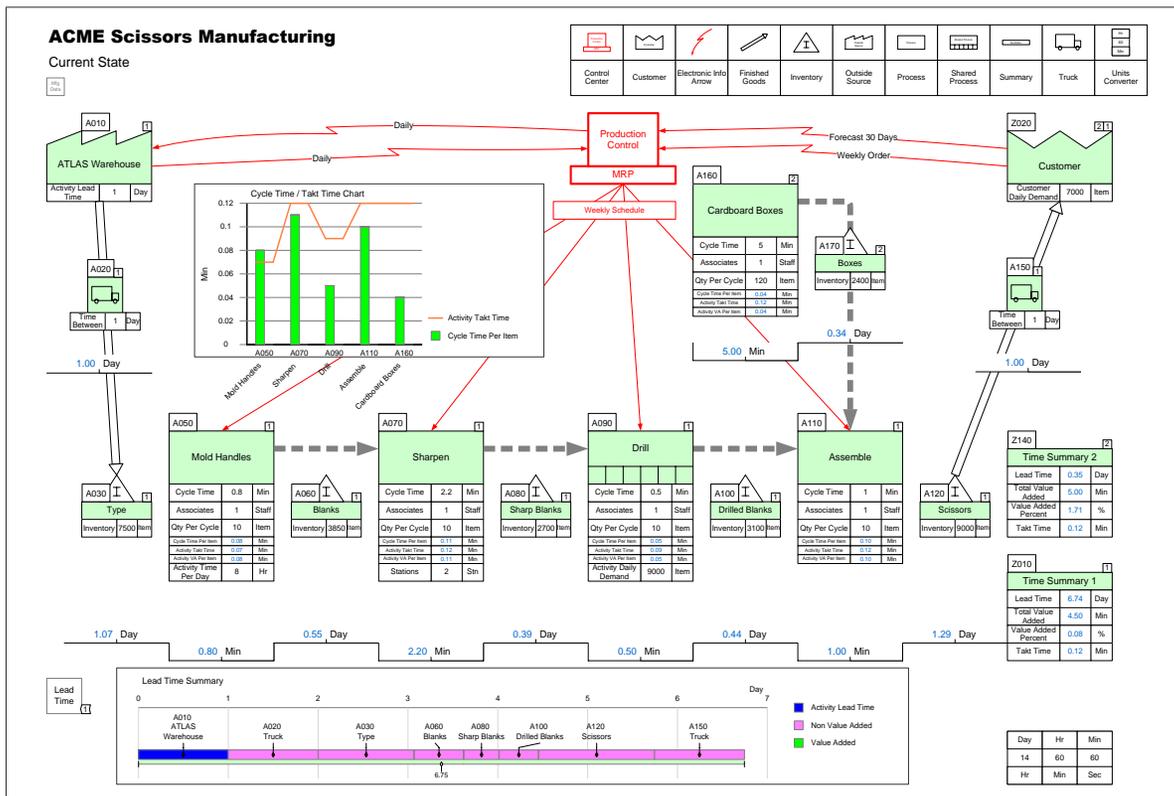# eVSM v8 Functions Reference Manual

eVSM Help materials include tutorials, examples, and reference. This manual contains the reference help. For tutorials and examples, visit evsm.com/help. The manual organization follows the organization of the eVSM Toolbar.

The manual is designed both for on-screen viewing and print. For on-screen usage, the manual is best viewed in Acrobat Reader. To search, use the Ctrl+F shortcut. Also, it is a good idea to set the Acrobat view to "Show two pages side-by-side".

For hardcopy, print the manual on double sided paper and use the table of contents or the index to quickly find answers to your questions.

Use CTRL + F to search within this document

Table of Contents

1. The eVSM Environment

eVSM Overview

Value stream mapping provides a high level view of a lean deployment. Its methodology is well laid out in the series of workbooks from the Lean Enterprise Institute (www.lean.org). The eVSM software has been designed to complement these workbooks and provide lean practitioners a tool to support their value stream mapping activities, starting from paper and pencil through improvement projects, leading to a leaner future state.

The primary modules in eVSM (Sketch, Sequence, Validate, Calculate, Visualize, Improve) are deliberately organized to match the process steps that we have seen practitioners follow in their mapping activities.

We have seen eVSM used in three ways in our user community:

1. By practitioners who simply want to capture a map electronically and want access to a complete VSM icon set that is easy to use.

2. By practitioners that want to draw a map and do simple calculations in Excel corresponding to data on the map.

3. By practitioners who want highly standardized and automated maps to include icons as well as variables, lean equations, charts, and improvement methodology.

While the third approach best leverages the software in a lean deployment, its drawback in the past has been the learning curve associated with its usage. eVSM has introduced ready-built stencils for different application areas to address this issue. In eVSM v8, the following stencils are available.

- Quick Enterprise- supply chain and logistics maps

- Quick Manufacturing- plant level maps for discrete parts

- Quick Processing- plant level maps for food products and chemical processing

- Quick Transactional Pro- transactional processes

- Quick Healthcare- patient flows in hospitals

- Quick MCT- supports manufacturing critical path time calculation assorted with Quick Response Manufacturing

One hour webinars are available to overview each of the stencils. Contact support@evsm.com for details.

Recommended Layout for Quick eVSM
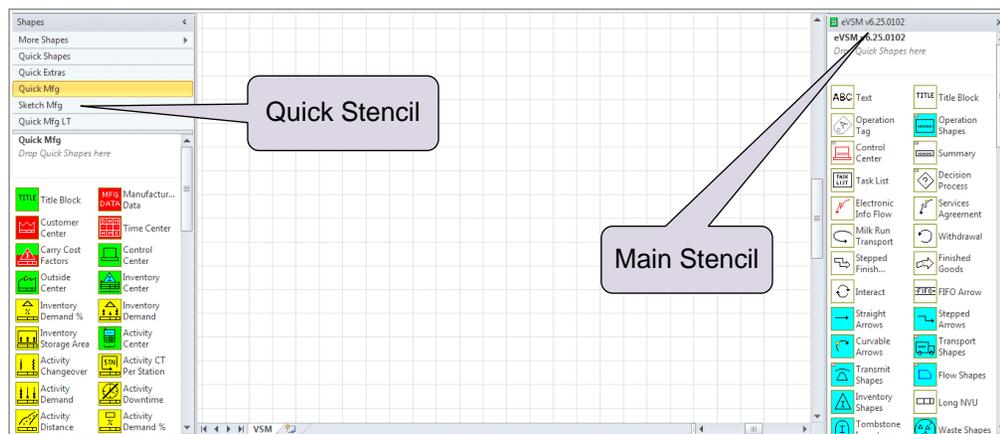
Note that the main eVSM stencil (typically named eVSM vX.XX) is on the right of the screen. We will refer to this as the "Main Stencil". Its important that this stencil is never closed.

Any Quick eVSM stencils (such as Quick Mfg) are docked on the left of the screen. We will refer to such stencils as the "Quick Stencil". Click and drag the Quick Stencil header bar to move it to this docked position.

eVSM Pre-requisites and Updates

eVSM requires Windows XP/Win7/Win8 (32-bit and 64-bit), Visio 2003-2013 (32-bit and 64-bit), and Excel 2003-2013 (32-bit and 64-bit). You can check on the latest eVSM version available at: www.evsm.com/updates

Starting eVSM

The best way to start a blank value stream map is to double-click the eVSM icon on your desktop. If your Visio security setting is set to anything but low, messages will come up asking for permission to "Enable Macros". You must answer "Yes" to these messages for eVSM to operate.

eVSM Help Site

The Help button on the toolbar requires an internet connection and will open up a web browser pointed to the eVSM help site at www.evsm.com/help. Help

The help site is tested with Internet Explorer which is the recommended browser if there are any problems. We offer technical support for the latest release of the eVSM software through our Maintenance, Enhancement, and Support program.. Please email us at support@evsm.com.

eVSM Shapes & Stencils
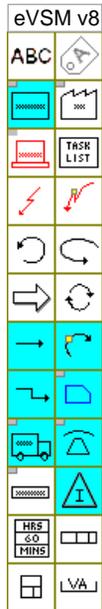
eVSM has a collection of value stream mapping shapes that appear in the main eVSM stencils to the right of the drawing page.

These shapes, behaviors, and corresponding functions have been designed from the outset to support the series of lean workbooks from the Lean Enterprise Institute (www.lean.org) and its worldwide network partners. The primary workbook impacting the design has been "Learning To See".

As software usage has become widespread across multiple industries, the icon language has been extended to keep pace with practitioner requests and lean publications in each industry.

In addition to the basic icons to the right of the drawing page, eVSM includes Quick stencils for Manufacturing, Enterprise, Processing, Transactional, and Healthcare.

These quick stencils offer rapid map development complete with automated analysis and charting.

Page Resizing

To resize the page, hold down the CTRL key and move the cursor to the middle of the edge of the page. The cursor will turn into a double-headed arrow. Simply grab the edge and pull it to the required size.
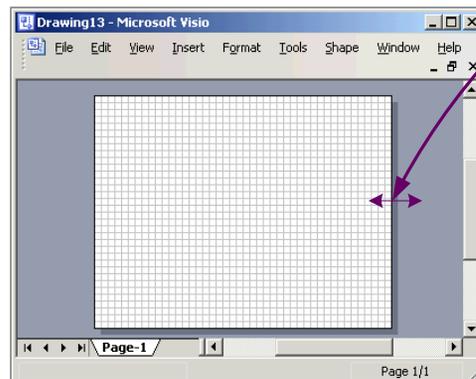
Re-opening eVSM Stencils

eVSM Stencils must always be kept open when working with maps. If you have "lost" the eVSM stencils from your drawing file, here are the steps to re-open them.

In Visio 2003/2007:

- Click "File > Shapes > Open Stencil…"

- Navigate to the following folder: "C:\Program Files\eVSM\Setup\Solutions"

- Select the eVSMIcons.vss stencil file in this folder and then click the Open button.

- Save your Visio file so it "remembers" this stencil for next time.

In Visio 2010/2013:

- In the Shapes pane (on left) click "More Shapes > Open Stencil..."

- Follow the same steps as above.

Note that on 64-bit Windows, the file location is: "C:\Program Files(x86)\eVSM\Setup\Solutions"

Snap To Grid

Shapes are designed to be grid-sized. The drawing page has a grid on it. Snap shapes to grid locations for easy alignment.
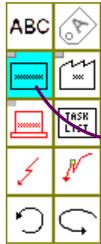
Resizing Shapes

Avoid resizing shapes whenever possible. Shapes are designed to fit together and resizing a shape will make "fitting" shapes together difficult and create extra work.
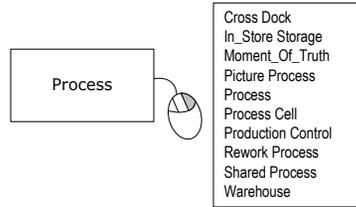
Text Editing

Double-click a shape to edit its text.

Drag & Drop

Drag and drop eVSM icons from the stencil onto the drawing page.

Blue icons represent stacks of shapes. Access the stack by dragging out the shape and then clicking the right mouse button.

Process

Cross Dock
In_Store Storage
Moment_Of_Truth
Picture Process
Process
Process Cell
Production Control
Rework Process
Shared Process
Warehouse

Icons with a blue square in the top right corner symbolize that shapes in that icon stack are used for visual purposes only, and not used for calculations.

Straight Arrows

Manipulating Text

Double-click a shape to edit its text.

The Visio Text Block Tool (located behind the Text Tool in the Visio Standard toolbar) can be used to move the text relative to the shape location.

The Text Block Tool displays control handles around the text belonging to a shape. These control handles can be used to position and size the text block.
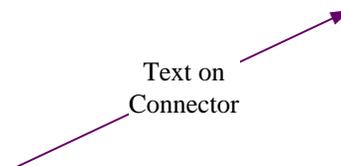
Twice per week

Twice per week

Twice per week
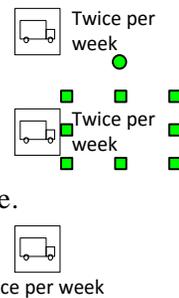
Text Block Tool

Caution: Be sure to de-select the Text Block Tool when finished.

Manipulating Text on Connectors

Text can be added to any connector by double-clicking and typing.

Text on Connector

The Visio Text Block Tool can be used to move the text position along the arrow. Note: The Text Box Tool is part of Visio, not eVSM tools, and can be found in the Visio menu.

Text on Connector

Text on Connector
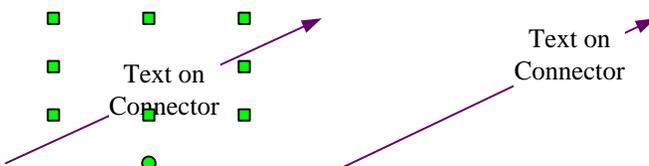
Caution: Be sure to de-select the Text Block Tool when finished.

Visio Pages

Pages can be created, deleted, etc. via the right mouse menu on the page tabs.

	Insert Page…
Current State \ Future State	Delete Page
	Rename Page
	Reorder Pages...
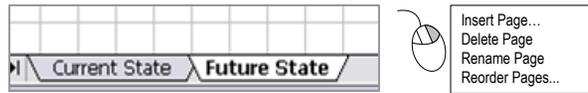
Rules for Visio drawing page naming:

- Page names must start with an alpha character.
- Page names must be limited to 0-9 and A-Z characters. Characters such as [!@#$%^&*()|+-?] are not allowed.
- Page names should be kept as short as possible.

Zooming In and Out

- CTRL-SHIFT-Drag Select region (Zoom into the selected region).

- Try the Visio menu "View > Task Panes > Pan & Zoom" for another navigation option with a mini-window.

- To set up the mouse scroll wheel to zoom, use the Visio menus: "File > Options > Advanced" and check:

  ☑ Zoom on roll with InteliMouse
  ☑ Center selection on zoom

- Visio 2010 has zoom controls at the bottom right of the window.

Copy and Paste into PowerPoint or Excel

Visio shapes can simply be selected, copied and then pasted into other Microsoft office applications like PowerPoint and Excel. Be sure to paste a picture using the "Paste As…" command. This will allow re-sizing of the pasted picture without requiring editing and font adjustments.

Acrobat PDF

Acrobat PDF allows capture of any size drawing in a single file, which can be viewed with the free Acrobat Reader, and is easily printable. On-screen viewing is good, it is searchable, and supports password security. Visio 2010 allows direct creation of PDF files.

Convert to Bitmap

Common bitmap formats such as JPEG, GIF, and TIFF can be viewed in most browsers without any additional software. eVSM maps can be converted to these and other graphic formats from the "File>Save As…" menu. In the "Save As" dialog, click the "Save as type" pull-down and select the format.

Printing

Visio allows drawings of any size. The drawings can then be printed on any size paper supported and available on the printer.

When the drawing size does not match the paper size, you can either print across several sheets, or shrink (or expand) the drawing to fit the paper by clicking "File>Page Setup…" and then checking the "Fit to 1 sheet" radio button.
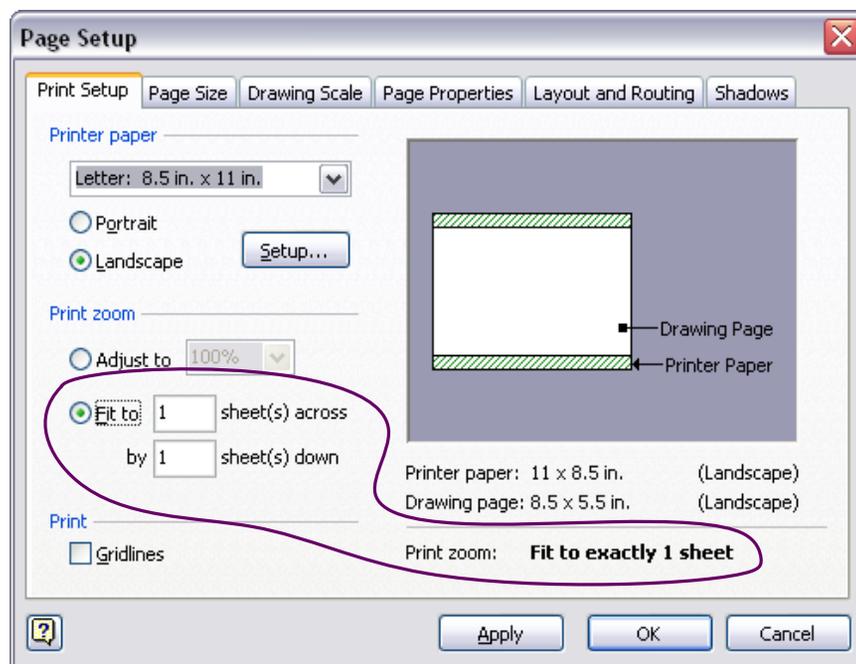
The "File>Print Preview" function can and should be used to assess the print output before committing the drawing to paper.

Printing Problems

The eVSM Software essentially generates a Visio file. The printing of the file is handled by standard Visio functionality. Problems printing from Visio could be due to Visio, the print driver, or the printer.

Here are some suggestions if you have problems printing from Visio:

- Make sure you have the latest Visio Service Patch installed

- Try copy/pasting your VSM to PowerPoint or Excel and then print from there

- Convert your VSM to Acrobat PDF and then print the PDF file

Do's and Don'ts

✓ DO use a mouse to be productive with eVSM.

✓ DO Snap shapes to grid locations.

✓ DO zoom in fast with CTRL-SHIFT-Drag.

✓ DO zoom out quickly with CTRL-SHIFT-W

❗ DON'T resize eVSM Shapes whenever possible.

❗ DON'T close eVSM Stencils.

2. Sketch

Overview

This section is focused on the first electronic capture of a map and data input. This area is ONLY for those using Quick stencils.

Open	Lists the sketcher stencils available and allows one to be selected. The corresponding Quick Stencil will also be activated. Note that only one sketcher stencil can be used per map.
Wall Map	Import a photo of an existing value stream map, and scale for drawing the map in eVSM.
NUM	Opens the Name Unit manager which manages the names, units and equations used on this map. If used in conjunction with a Quick Stencil, its important NOT to modify variable and unit names or equations. Typically a few unit names might be added.
List Variables	View a window showing all data for the selected center.

How Do I Use the Sketch Module?

The Sketch Module allows you to quickly capture a wall map in eVSM. It can also be used to simply capture the flow of the value stream with no data. Built in commands allow you to add the data later when needed. The main steps in the Sketch Module are:

1. Use the Wall Map button to import your wall map picture(s) into eVSM, and scale the image.

2. Use the Open button to select the application area (manufacturing, services, etc.) for your map.

3. Use the Sketch stencil to capture the flow over the wall map image.

4. Once the initial capture has been done, add data to the map and enter the data.

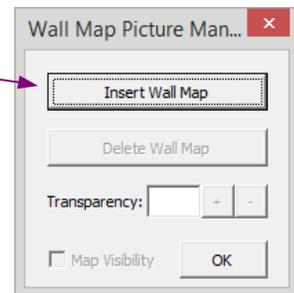# 1a. Import Single Image Wall Map

The Wall Map function provides an efficient way to convert an image of the wall into an electronic VSM. If your wall map is simple enough to capture in a single clear photo (must be able to read all text), then import the image into eVSM with the steps below. If the map is complex and requires multiple images then see section 1b on the next page.
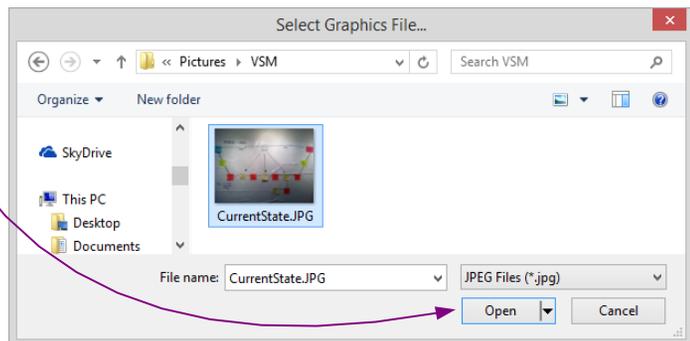
Try this:

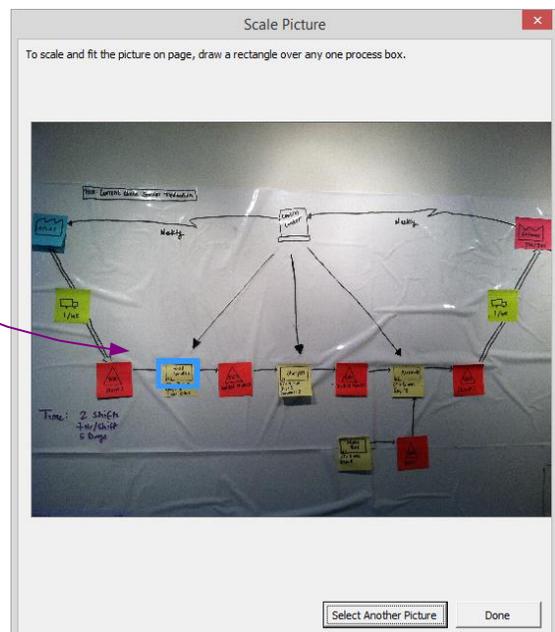1. Click the Wall Map button in the toolbar.

Wall Map

2. Click the Insert Wall Map button to browse for your wall map picture on your computer.

Wall Map Picture Man... ✕

Insert Wall Map

Delete Wall Map

Transparency: [ ] [+] [-]

☐ Map Visibility   OK

3. Select the picture and click Open.

Select Graphics File... ✕

Pictures ▶ VSM   Search VSM

Organize ▾   New folder

SkyDrive
This PC
    Desktop
    Documents

CurrentState.JPG

File name: CurrentState.JPG   JPEG Files (*.jpg)

Open ▾   Cancel

4. To scale the picture, draw a rectangle over any one process box. Click the Done button when finished.

Scale Picture ✕

To scale and fit the picture on page, draw a rectangle over any one process box.

Select Another Picture   Done

5. Next a form will appear allowing you to change the transparency of the picture, make it visible/invisible on the page, or delete the picture. After you click OK, if you need to get back to this form, click the Wall Map button in the toolbar again. 🔴 Wall Map
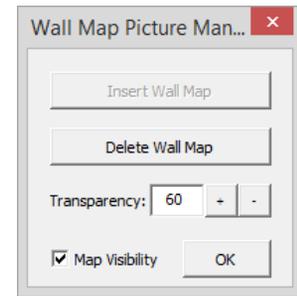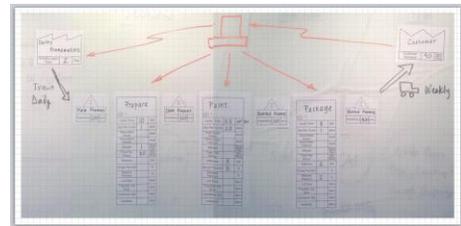
6. The image will become the background of the Visio drawing page, allowing you to drop shapes on top without it moving. To delete the image, click the Wall Map button in the toolbar. 🔴 Wall Map

1b. Import Multi-Image Wall Map

For more complex maps requiring multiple images, here are some tips for good results:

a.) Take all photos from approximately similar distance from the wall. This will ensure similar scale.
b.) Capture sufficient overlap between pictures so nothing is missed.
c.) Ensure lighting is similar for all photos.
d.) Hold camera square to the wall to minimize skewing of the image.

1. Use the Insert>Picture option in Visio to import all of the pictures onto your Visio page.
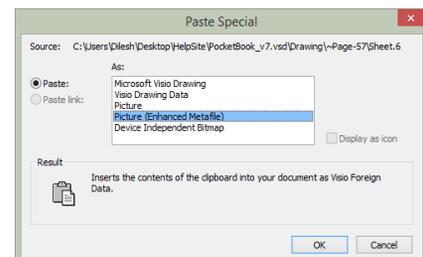
2. Line up the pictures so that the wall map is aligned properly.
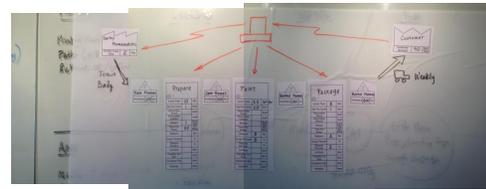
3. Hold down the SHIFT key and select each picture. Right-click on the selected images and choose "Copy".

4. Delete the images from the Visio page.

5. Right-click on the page and select "Paste Special". Choose the "Picture (Enhanced Metafile)" option and click OK.

6. All of the images should now be joined into one single image now. Crop or resize the image to fit the desired drawing page size.
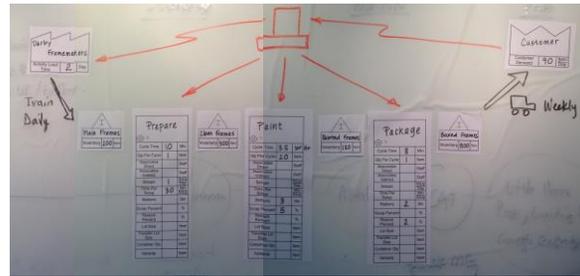
7. Click File>Save As. Name the image and then in the "Save as Type" dropdown, select "Graphics Interchange Format (*.gif)". Click Save.

File name:	WallMaps.gif
Save as type:	Graphics Interchange Format (*.gif)

8. Click the Wall Map button in the toolbar, and follow the steps on the previous page of 1a.

2. Select Stencil Using the Open Form

Try this:

1. To start drawing on your map, click on the Open button in the toolbar to open up the Sketcher stencil. From the pop-up menu, select which kind of map you're drawing, for example, Quick Manufacturing. There is a separate Sketcher stencil for each of the Quick Stencils used in eVSM. **Open**

2. Once you select what type of map you're drawing, the corresponding Quick Stencil will be placed in the forefront of the other Quick Stencils. Also, the Sketcher stencil will open with all of the shapes associated with that type of map.
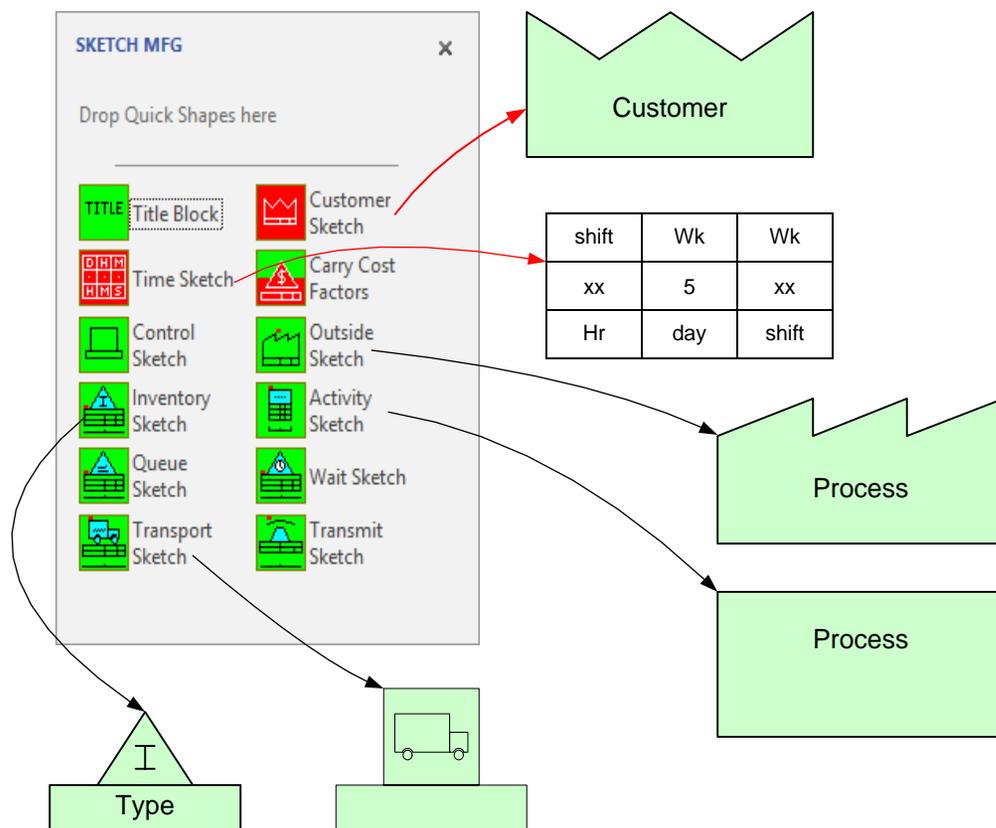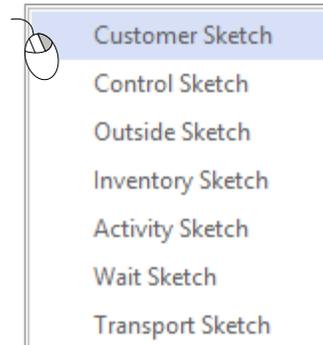

The shapes shown above are those used in the example map.

As with all eVSM drawings, start your map by dragging out the red shapes (Customer Sketch and Time Sketch) first.
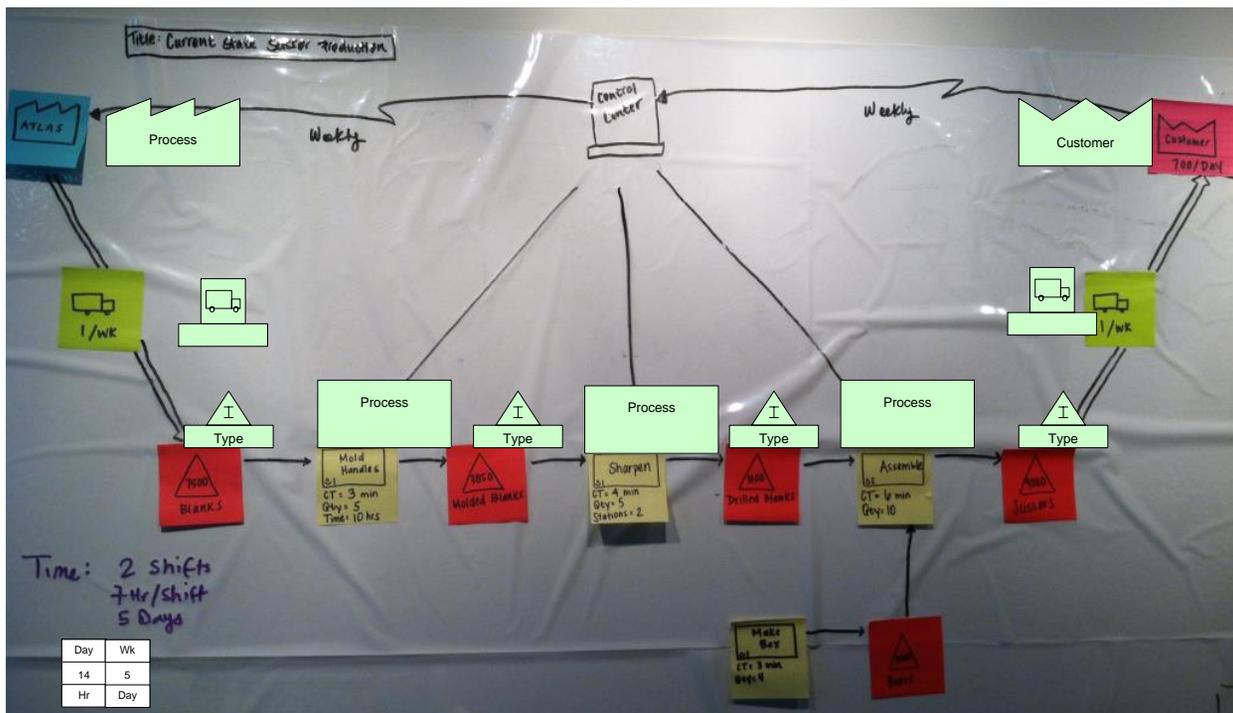
---

3. Capture the Flow with the Sketch Stencil

If you're using a picture of a hand-drawn map as a guide, start dragging out the different Sketch shapes on top of each process as shown below. Otherwise, just recreate your basic process using the different Sketch shapes.

An alternative method can be done once a red shape has been placed on the drawing page. You can use the right mouse button menu (shown to the right) and select the various Sketcher shapes to drop them at the location clicked on the page.

Note: If you need additional map space, hold down CTRL and click and drag the edge of the page.

Customer Sketch
Control Sketch
Outside Sketch
Inventory Sketch
Activity Sketch
Wait Sketch
Transport Sketch
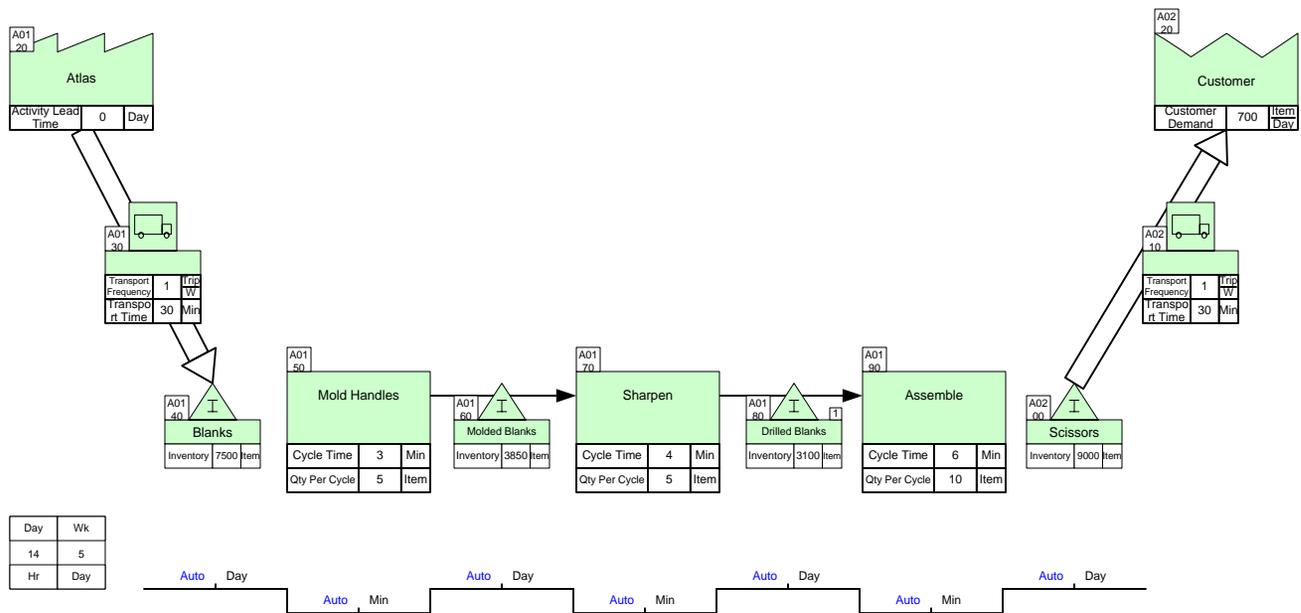
4. Add data to the map

Now you can either add data to an individual shape or to the whole map. If you right-click on any shape, you will see 4 options regarding the adding and removing of data:

- Add all data (shape): adds input and calculated data to the specific shape that you have selected

- Add all data (page): adds input and calculated data to all shapes on that particular page

- Remove all data (shape): eliminates the input and calculated data from the specific shape that you have selected

- Remove all data (page): eliminates the input and calculated data from all shapes on that particular page

For this example, right-click on any shape and select "Add all data (page).
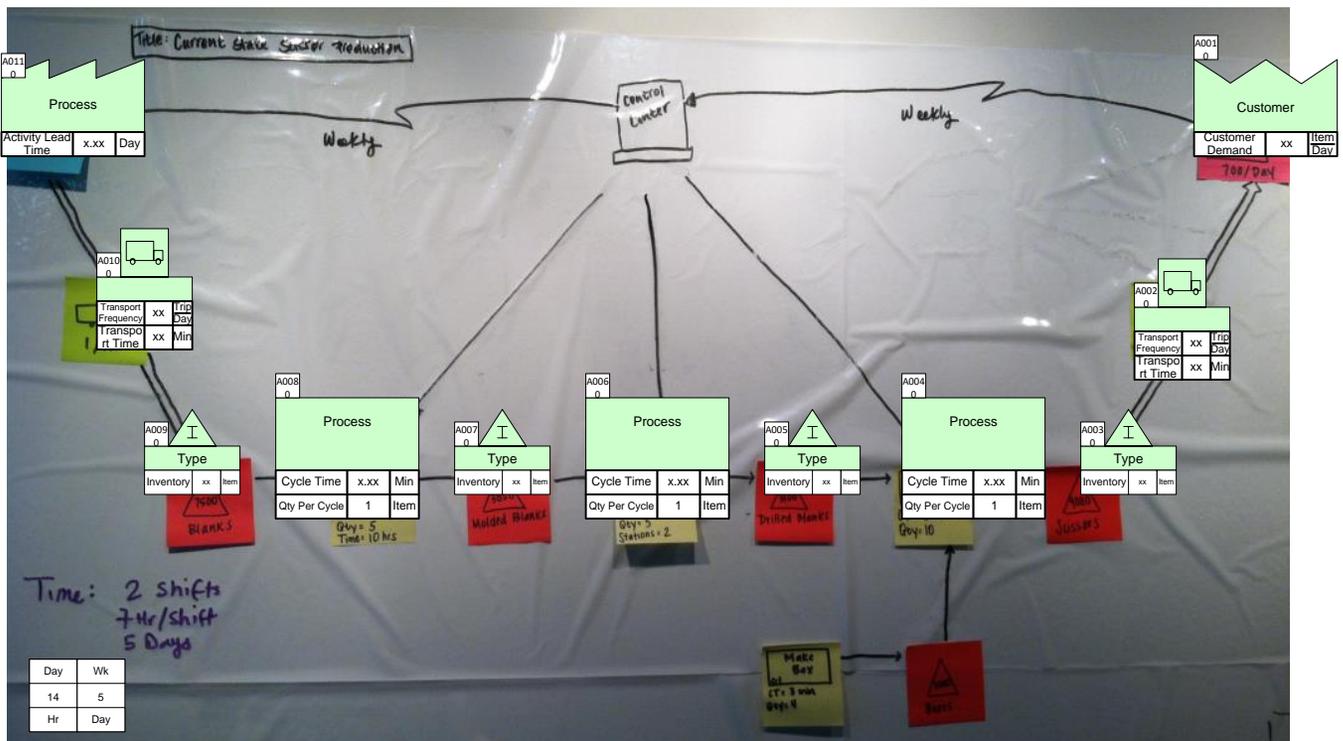
Annotate the map and fill in the values according to your wall map. Now you can finish the map by adding arrows from the eVSM main stencil and add-on variables from the Quick stencil.

A01 20	
Atlas	
Activity Lead Time	0	Day

A01 30

| Transport Frequency | 1 | Trip W |
| Transport Time | 30 | Min |

A01 40		
Blanks		
Inventory	7500	Item

A01 50		
Mold Handles		
Cycle Time	3	Min
Qty Per Cycle	5	Item

A01 60		
Molded Blanks		
Inventory	3850	Item

A01 70		
Sharpen		
Cycle Time	4	Min
Qty Per Cycle	5	Item

A01 80		
Drilled Blanks		
Inventory	3100	Item

A01 90		
Assemble		
Cycle Time	6	Min
Qty Per Cycle	10	Item

A02 00		
Scissors		
Inventory	9000	Item

A02 10

| Transport Frequency | 1 | Trip W |
| Transport Time | 30 | Min |

A02 20		
Customer		
Customer Demand	700	Item Day

Day	Wk
14	5
Hr	Day

Auto   Day
Auto   Min
Auto   Day
Auto   Min
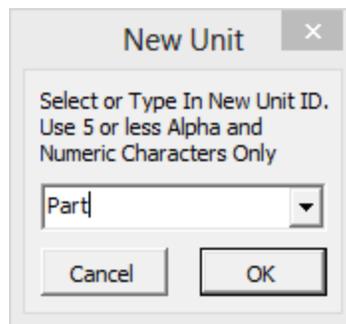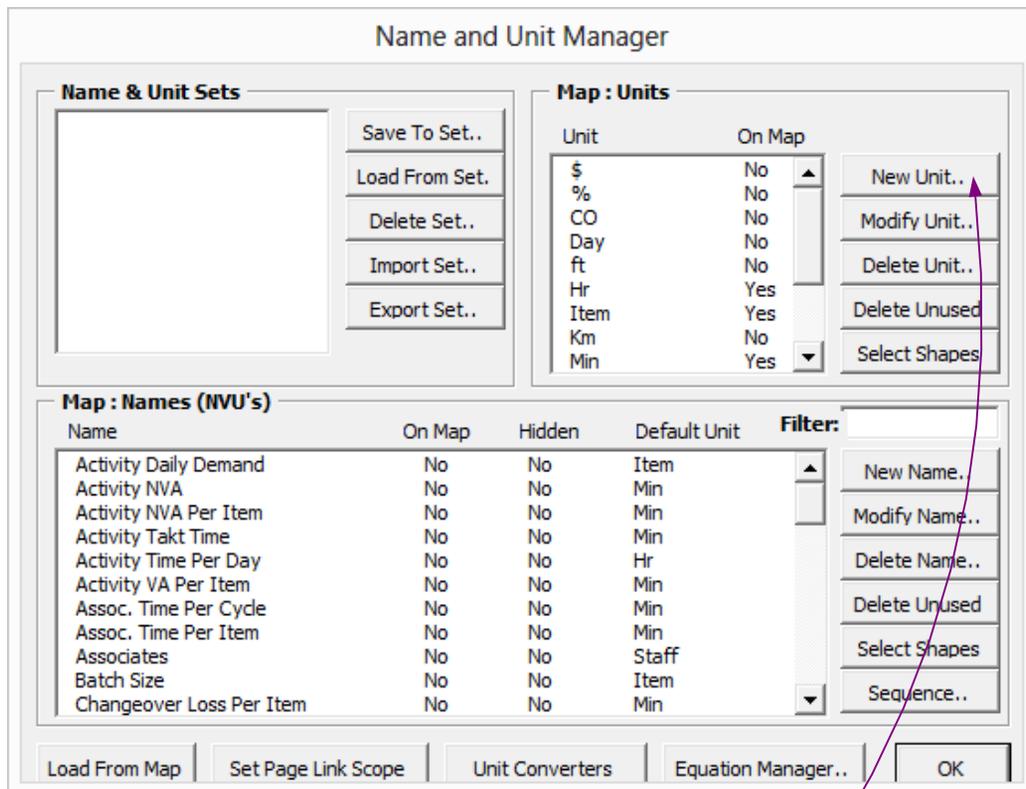Auto   Day
Auto   Min
Auto   Day

17

Units Handling

If you want to create a custom unit that you would like to use throughout the map, start with the Name and Unit Manager. If you want to use a built-in unit but need to convert it, such as Weeks to Days, start with Step 3.
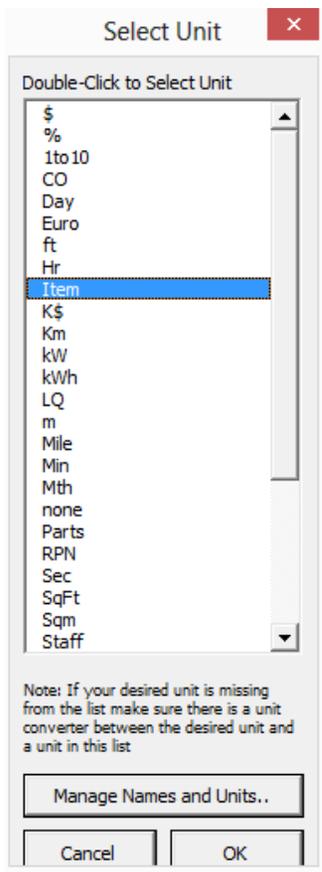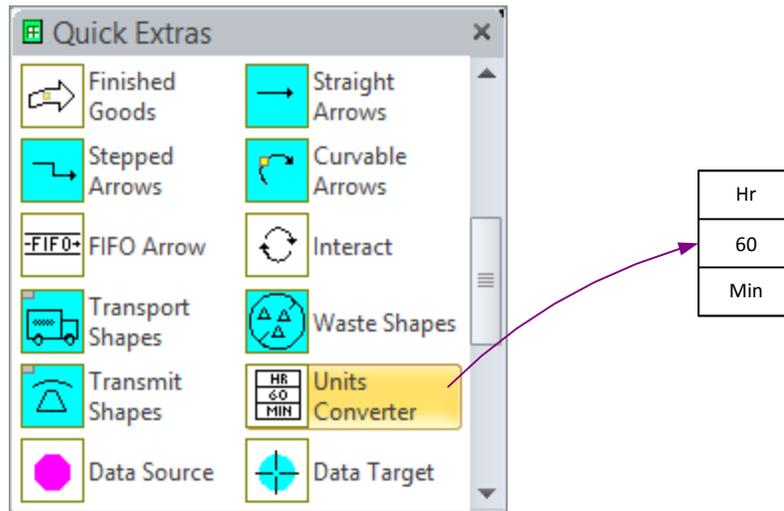
Try this:

1. Click the Name and Unit Manager button in the eVSM toolbar.   NUM

2. Click on the "New Unit" button in the form and create a new unit named "Part".

3. Drag out a Units Converter shape from the Quick Extras stencil or the main stencil on the right of the screen.


4. Double click on the default unit "Hr" to change the top unit to "Part" and the default unit "Min" to change the bottom unit to "Item." This allows the calculator to account for the new unit. The top unit is the original unit, while the number specifies how many of the bottom unit makes up one of the top unit.
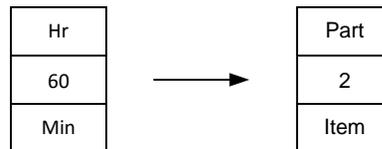
5. If you have more than one custom unit, repeat step two and three.

Part	Box
2	60
Item	Part

Note: Only the custom units that you created via a unit converter(s) will appear in the form when trying to change a variable unit on a center. This is to avoid (for example) people converting quantity units to time units for a center, like the Inventory Center. To ensure that the units you want to change appear in the form, create the converters first between any units you plan to use.
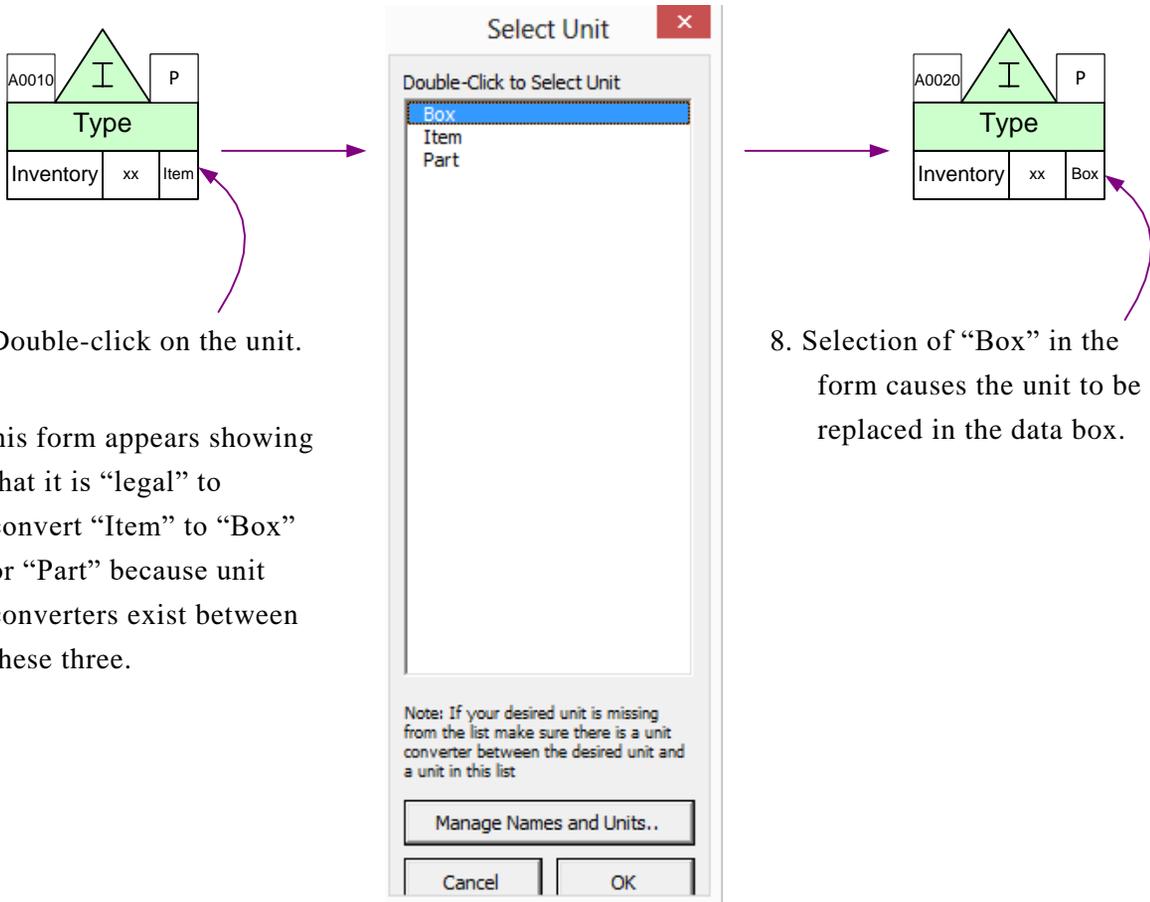
6. Double-click on the unit.

7. This form appears showing that it is "legal" to convert "Item" to "Box" or "Part" because unit converters exist between these three.

8. Selection of "Box" in the form causes the unit to be replaced in the data box.

Miscellaneous Tips

eVSM comes with built-in basic unit conversions that don't require a Units Converter. To check and see which unit conversions are included, open the NUM and click "Unit Converters."
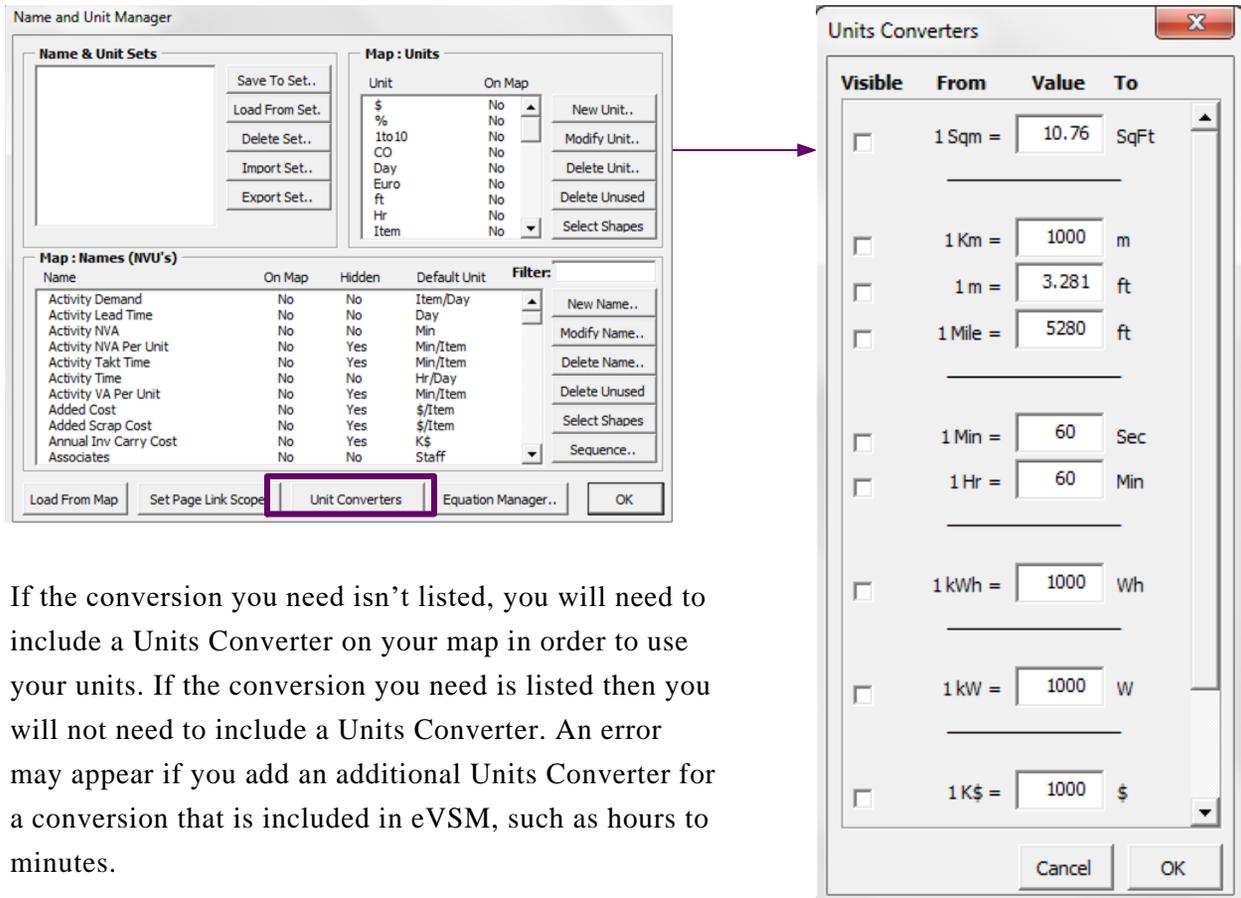
If the conversion you need isn't listed, you will need to include a Units Converter on your map in order to use your units. If the conversion you need is listed then you will not need to include a Units Converter. An error may appear if you add an additional Units Converter for a conversion that is included in eVSM, such as hours to minutes.

Managing Names & Units

The Name & Unit Manager (NUM) provides a simple way of managing the names and units on a map via this toolbar button.
⊡ NUM

The purpose of this management environment is to:

1. Provide a means to type in a name only once and then use it consistently through out the map.

2. Provide a means to associate a default unit with a name so that when a name is selected, the unit is automatically set.

3. Provide a means of creating a starter set of names and units for different application areas such as manufacturing, healthcare, etc. This will allow a company to create standard variable sets and deploy them easily.

The NUM function does not allow editing of names and units directly in the data shapes. New names must first be added to the NUM form. Then they can be accessed via right mouse button menus on the following data shapes.

| Long NVU | Short NVU | Value Added | Non Value Added | Units Converter |
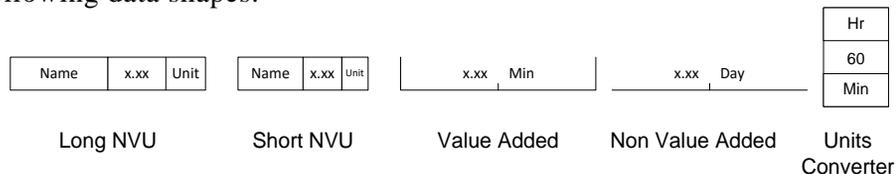
The NUM form is divided into three parts: Sets, Units, and Names. Names and units visible in this dialog box represent the Current Set. Only the Current Set names and units are available on the right mouse button menu of datasets.
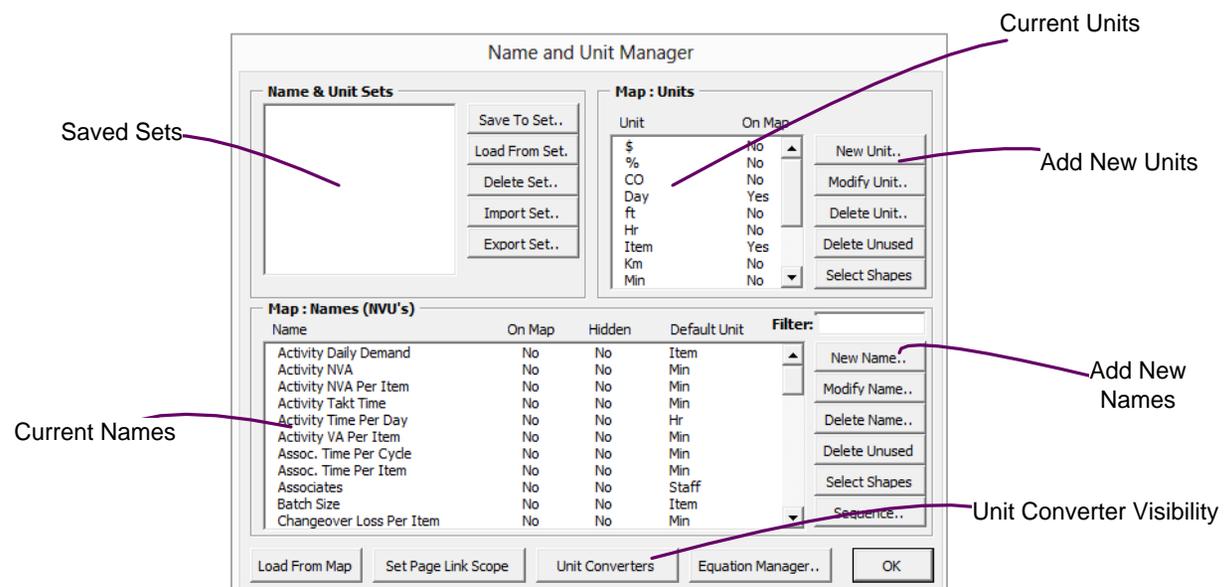
Fractional Units

Fractional units make computing demand or production much easier.
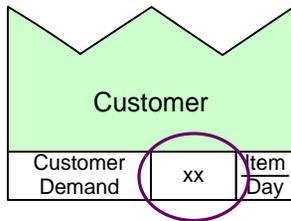
For the Customer Center, the default unit is items per day. If demand is calculated on a different basis though, it is simple to change the units.

Try this:

Double-click on "Item/Day," which will bring up a Unit Selection option. The Numerator can be changed to a different name, such as "Screw" rather than "Item," and the Denominator can be adjusted to a different demand, such as items per hour.

If you need to add a new unit, click on "Manage Names and Units…" which launches the Name and Unit Manager.
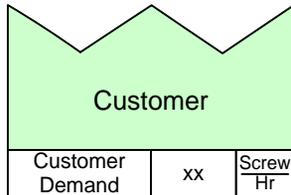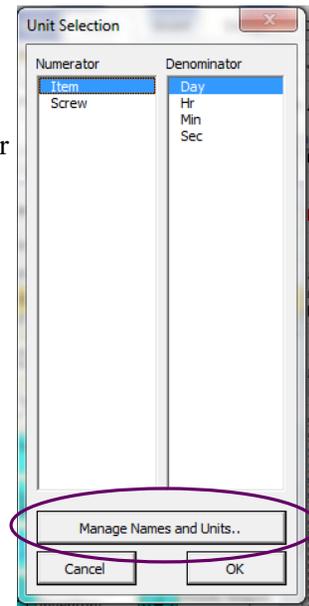

This shows the original Customer Center converted to screws per hour.

When adding a custom unit as a numerator or denominator, it needs to be linked to its units family using a Units Converter shape. For example, if you're trying to change a unit into "$/ Screw," instead of "$/Item," create a Units Converter showing how many Screws are equal to one Item.

If you need to add a different unit of time, such as year, drag out another "Units Converter" shape from the eVSM stencil, add a new unit using the Name and Unit Manager, and specify the conversion rate. Make sure you add a Units Converter shape before trying to use a customer unit as a numerator or denominator in fractional units. It is easiest to keep track of any time conversions by placing them next to the Time Center.

In this example, "Week" was added as a new unit and the conversion to days was made using the Units Converter. Next, the Customer Demand was changed to items per week. The new unit "Week" can be used in any place requiring a unit.

Week	Day	Hr	Min
5	8	60	60
Day	Hr	Min	Sec
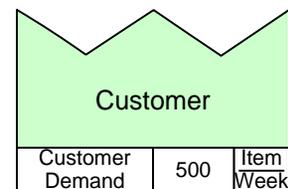
List Variables

To see a list of all of the data on a selected center, using the "List Variables" button will bring up a form of all of the hidden and visible data.

List Variables

Try this:

1. Select the green part of any center on your map.

2. Click the List Variables button in the toolbar to bring up this form.

A0080		P
Process		
◯ 1		
Cycle Time	10	Sec
Qty Per Cycle	2	Item
Capacity	Auto	Item/Day
Pre OEE Capacity	Auto	Item/Day
OEE Percent	Auto	%

	Auto	Sec

View Center Data

Process

A0080

|	
Activity Resource Cost	*Auto $/Item*
Activity Takt Time	*Auto Sec/Iter.*
Activity VA Per Unit	*Auto Sec/Iter.*
Added Cost	*0.00 $/Item*
Added Scrap Cost	*Auto $/Item*
Associates	*1 Staff*
Capacity	*Auto Item/Da*
Computed Activity Time	*Auto Hr/Day*
Computed Demand	*Auto Item/Da*
Cumulative Cost	*Auto $/Item*
Cycle Time	*10 Sec*
Cycle Time Per Unit	*Auto Sec/Iter.*
Downstr Capacity Loss	*Auto Item/Da*
DownStr Loss	*Auto Sec/Iter.*
Duration	*Auto Min*
Effective Capacity	*Auto Item/Da*
End Time	*Auto Min*
OEE Availability	*%*
OEE Capacity Loss	*Auto Item/Da*
OEE Loss	*Auto Sec/Iter.*
OEE Operating Time	*Auto Hr/Day*
OEE Percent	*%*
OEE Quality	*%*
OEE Rem Capacity Loss	*Auto Item/Da*
OEE Remainder Loss	*Auto Sec/Iter.*
Pre OEE Capacity	*Auto Item/Da*
Qty Per Cycle	*2 Item*
Rolling Scrap Loss	*Auto Sec/Iter.*
Rolling Scrap Percent	*%*

Double-Click Variables to Edit

3. Using the "List Variables" form, you can quickly edit any variable by double-clicking on it. For example, the Added Cost for the process was changed the $2 per item, even though it is a hidden variable.

There is also a useful browsing feature that makes it easier to quickly look at all the variables involved with each center. With the "List Variables" form still open, select another center and the data form will change to reflect the data of the new selected center. This allows you to update and add values without having to select each center separately.

Selecting & Aligning Timeline

eVSM is designed as a grid system and each shape should fit neatly into the lines. If the shapes aren't in the grid, it could lead to later issues and so lining everything up should become a habit. It is best to line up the bottoms of each green center and then adjust the timeline, as shown below.
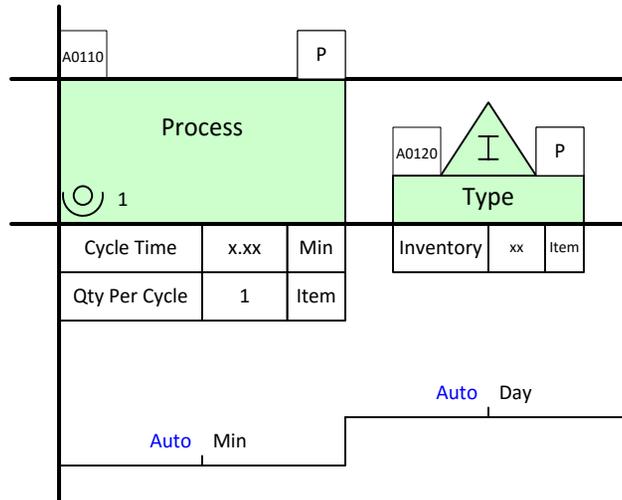
Try this:

1. To move the timeline and get it aligned, you can simply click on the VA or NVA shapes and manually move them.

2. Alternatively, if you want to shift the entire timeline up or down you can right-click on any of the timeline shapes and choose "Select Timeline." If that option doesn't appear in the menu, make sure you have the entire VA or NVA shape selected and try again.

3. With the entire timeline selected, you can then move it to where you'd like it.

4. Similarly, in the right mouse menu there is an "Align Timeline" function that will create the ladder timeline for you if the VA and NVA shapes are not correctly aligned, as shown below.
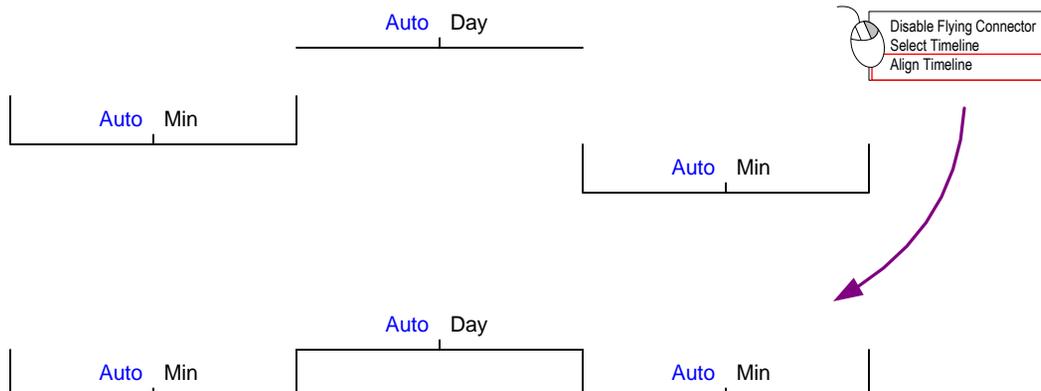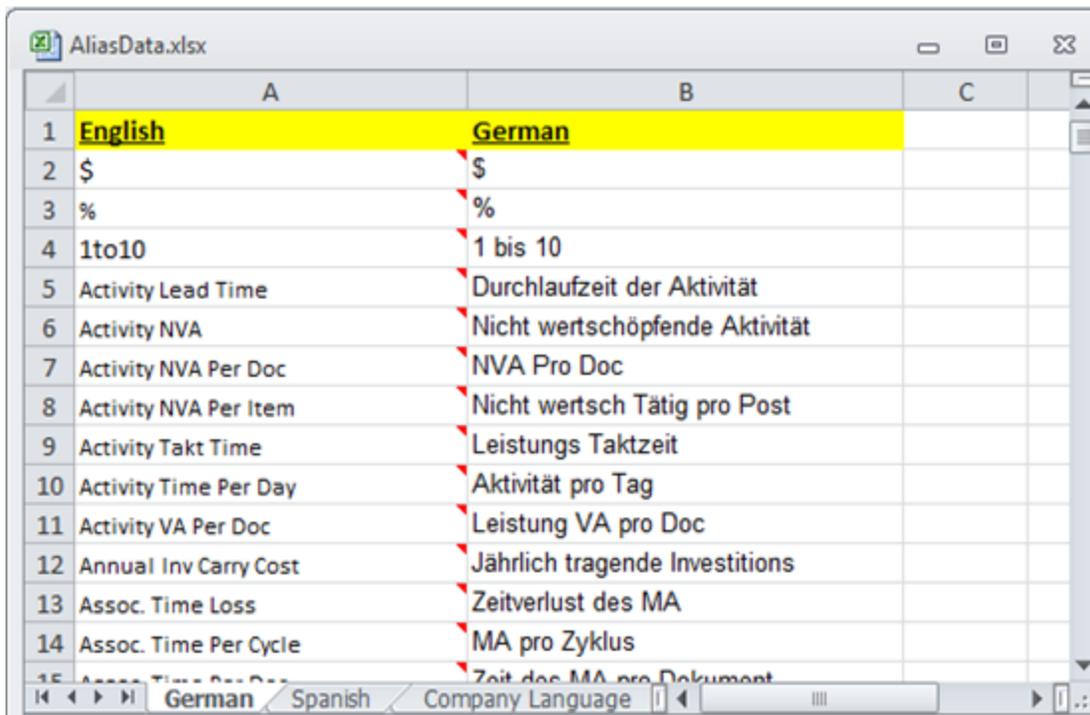
Aliases

Aliases are a feature in eVSM that allow a user to convert the variables into another language. They can also be used for companies that have a common language that is different than eVSM, such as referring to "Stations" as "Worktables." Using Aliases allows a map's names and variables to be easily updated to fit your needs.

Try this:

To start, first create an Excel file with two columns. In the first column, make a list of all the variables you would like to create an alias for. In the second column, list whatever you would like to variable to be changed to, like using the term "Employees" instead of "Associates," or translating the eVSM term to another language.

In this example, the English eVSM terms are converted to German. Make sure that you label each column since the Alias converter starts on the second row in the Excel file.

Also, label each page in your Excel file to whatever alias you're using, such as Spanish or the company language.
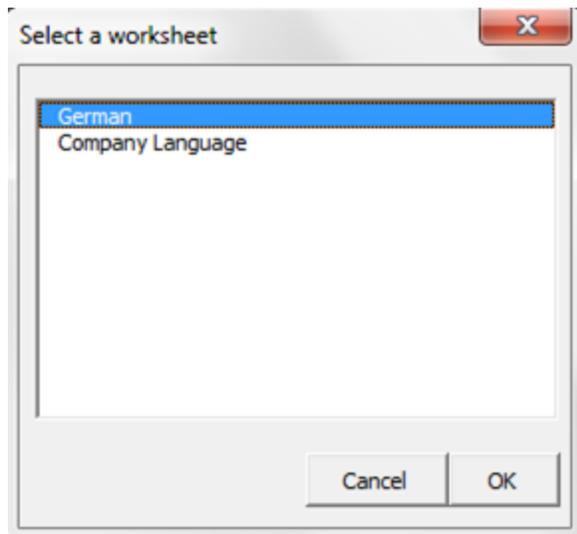
The conversions can be done on the entire list of variables and units or just on a select few. In the example below, the company only wants to use aliases for a few of the variable names so that their maps closer resemble terms used in the company.

Once your alias Excel file is complete, draw your map in eVSM or open an existing map. Open up the NUM by using the button on the eVSM toolbar or by double-clicking on the NUM data shape.
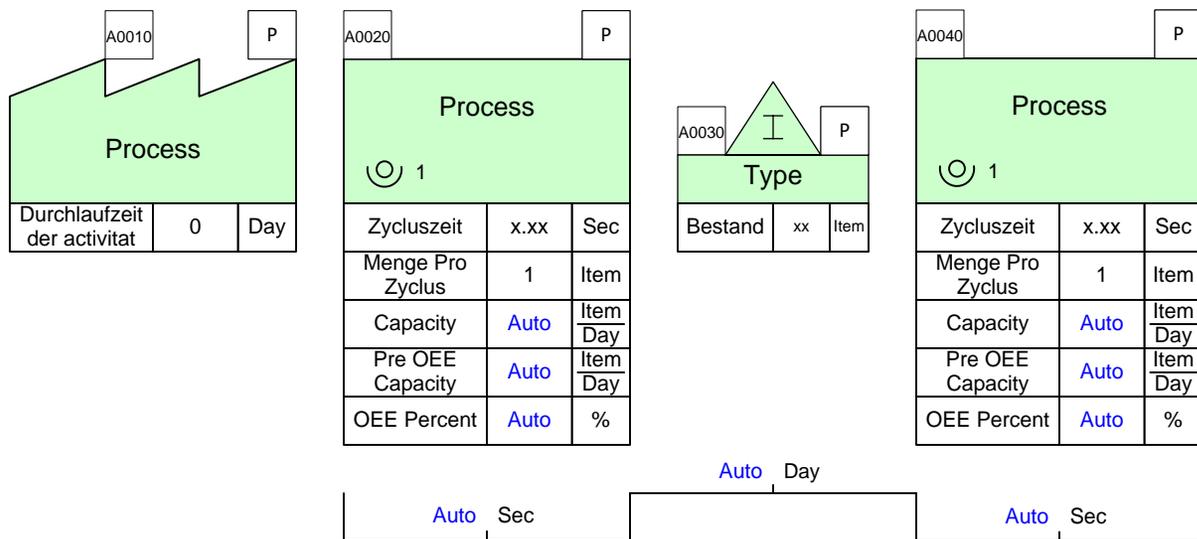
Click on the "Import" button in the NUM.

Locate the file on your computer and open it. A dialog box will appear asking which worksheet you would like to use. This example will start with the German worksheet.
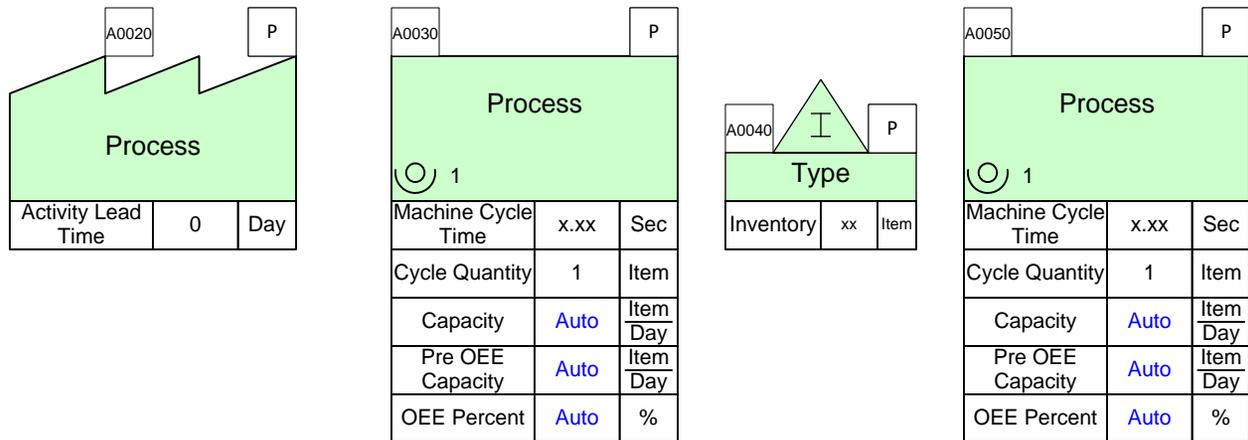
Once you hit "OK," the variables and units in the map will be changed to whatever was listed as the Alias. The map below shows the updated terms.

If you would like to switch back to the default eVSM names, open up the NUM and turn the Import Mode off.
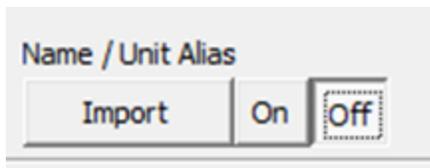
To use a different set of aliases, copy the map to a new page (except for the NUM) and drag out a new NUM. Import the same data file as before but use the Company Language worksheet instead. Now, the map shows terms that are used by the company.

A0020		P
Process		
Activity Lead Time	0	Day

A0030		P
Process		
◯ 1		
Machine Cycle Time	x.xx	Sec
Cycle Quantity	1	Item
Capacity	Auto	Item/Day
Pre OEE Capacity	Auto	Item/Day
OEE Percent	Auto	%

A0040		P
Type		
Inventory	xx	Item

A0050		P
Process		
◯ 1		
Machine Cycle Time	x.xx	Sec
Cycle Quantity	1	Item
Capacity	Auto	Item/Day
Pre OEE Capacity	Auto	Item/Day
OEE Percent	Auto	%

Adding a new variable
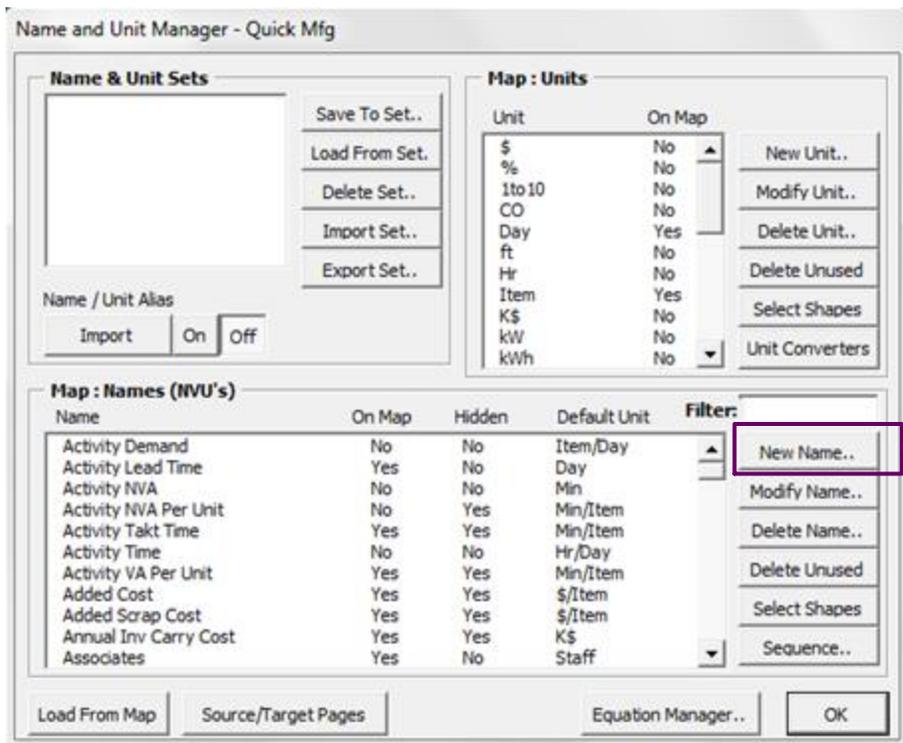
If you want to add in a new variable with an Alias, click on the "New Name" button in the NUM.
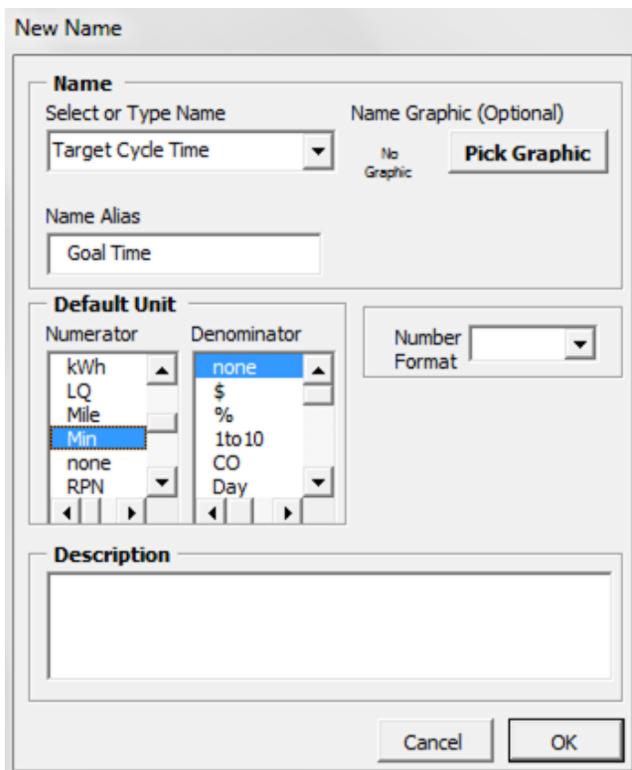
Fill in the Name and then the Name Alias. Note that the Name will be used when the Alias Mode is off and the Name Alias will be used when the Alias Mode is on.

Now that the name is added to the NUM, it can be added to the map and it will change when the Alias Mode is on or off.

3. Sequence

Overview

Many of the calculations on the value stream map rely on the process sequence. This is defined on the map by using process tags, path numbers, and sequence arrows.

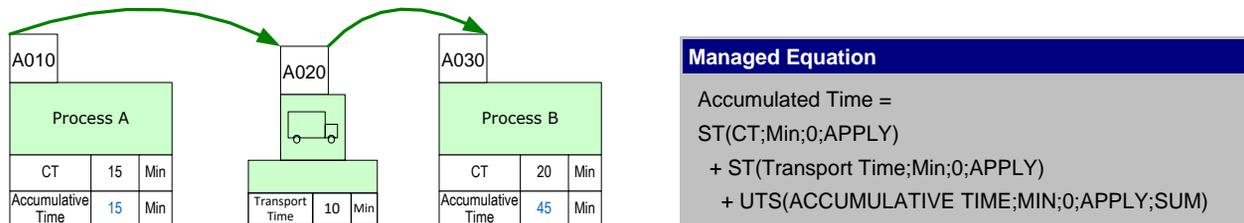|		
	Tags	Set tag defaults that are used for auto-numbering shapes as they are dropped on the page.
	Sequence	First select the activity shapes using the shift key and in the CORRECT sequence and then click this button to create sequence arrows. This can be done a few shapes at a time. Note that the 'Check' section in the toolbar does have a hide/show for sequence arrows. Sequence arrows are critical to upstream/downstream calculations on the map. No sequence arrow loops are allowed.
	Seq One to Many	Select the source activity and using the shift key, select all downstream activities to connect the source to with tag sequence arrows. This button is located in the dropdown of the Sequence button.
	Seq Many to One	Using the shift key select the source activities from which to originate tag sequence arrows, to a single downstream activity (the final shape you select while still holding down the shift key). This button is located in the dropdown of the Sequence button.
	Auto Pipe	Select the activity from which to originate the pipe arrows, then hold down the shift key and select one or more activities to pipe to.
	Auto Pipe – Many to One	Select the activity to be at the head of the pipe arrow(s), then hold down the shift key and select or more activities to pipe from.
	Auto Path	Identifies each unique path through the value stream (via tag sequence arrows) and adds path ID's to steps.
	Auto Tag	Assigns tags in the order provided by tag sequence arrows.

Sequence

The Tag Seq Arrow is used with Managed Equations and allows you to perform upstream and downstream calculations. This example shows how Accumulative Time can be calculated along the value stream with the use of Tag Seq Arrows.

Managed Equation

Accumulated Time =
ST(CT;Min;0;APPLY)
  + ST(Transport Time;Min;0;APPLY)
   + UTS(ACCUMULATIVE TIME;MIN;0;APPLY;SUM)

There are two ways to attach tag sequence arrows to tags. The first is to drag out the sequence arrow from the quick stencil and then glue the two arrow ends to the tags. The second method is to select a series of tags (or activities) in the correct sequence and then click the Sequence button in the toolbar.

Try this:

1. Select the shapes in the correct order using the SHIFT key.
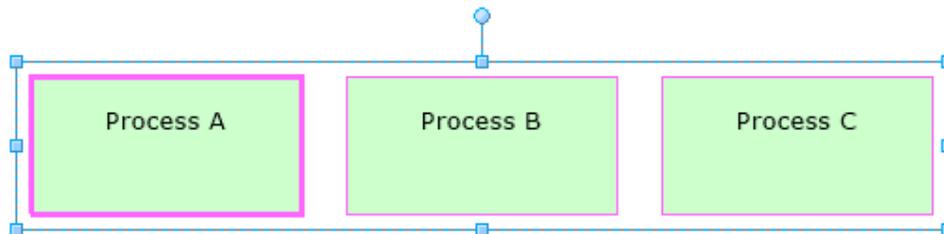
2. Click the Sequence button in the toolbar to automatically create sequence arrows to the shapes. If these shapes do not already have tags, using the Sequence button after having selected them in order will automatically attach tags to each shape.   Sequence

---
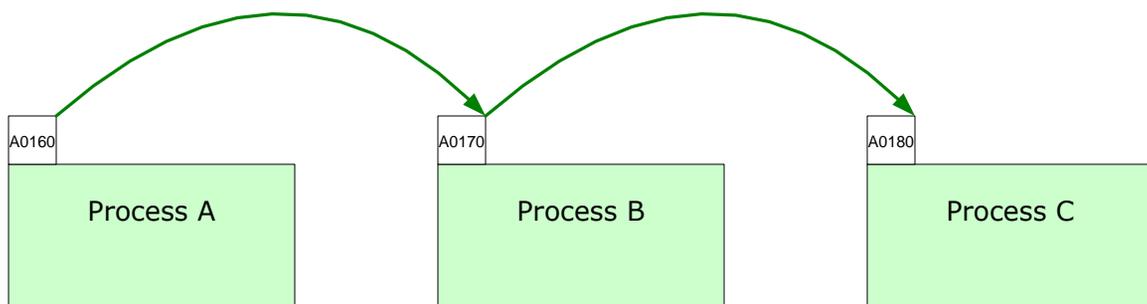
AutoTag

A quick way to tag activities in order automatically, based on the sequence arrows is to use the eVSM Auto Tag button.　　　　　Auto Tag

The Auto Tag function works by re-tagging the whole map, so it disregards what you want as the "Next Value" in the Tag and Paths form. It orders the shapes by tag sequence arrows and then z-order (for un-sequenced rows). Then, it goes through the sequence, and it increments each tag by the user-assigned interval (in the Tag and Paths form), but otherwise numbers start at 0010 for each letter prefix.

Tag numbers can also be named manually by double-clicking to edit the text. However, the name must be unique and must be one letter followed by four numbers.

Each tagged shape will generate a row in the spreadsheet. Any data associated to that shape (via gluing) will appear in that row. Excel rows are alphabetically sorted by tag number.

The activities will be tagged starting with the tag number and increment value as specified in the form under the 'Tags' button.

The activities will be tagged starting with the tag number and increment value as specified in the form under the 'Tags' button. To add or change an Operation Tag, first select the shapes you wish to attach a tag shape to. Click on the "Tags" button in the toolbar.　　　Tags

This will open a dialog box that allow you to choose a tag prefix letter, next value, and increment value. After deciding those factors, click the "Add Tags" button.
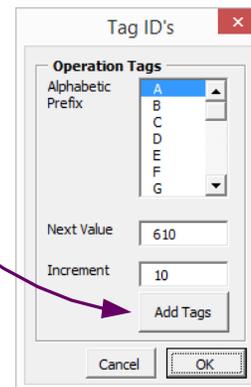
Auto Path

After your shapes have been sequenced, there is an option to automatically generate the path IDs for all the possible paths on the map based on the sequence arrows. After shapes have been sequenced using the "Sequence" button in the toolbar, click "Auto Path" in the toolbar. This will automatically give paths to the shapes in the order that they have been sequenced.　　　Auto Path

Warning: AutoPath regenerates path numbers for all shapes connected by sequence arrows and without consideration of the current path number on these shapes.

Try this:

1. After shapes have been sequenced using the "Sequence" button in the toolbar, click "Auto Path" in the toolbar. This will automatically give path IDs to the shapes in the order that they have been sequenced.
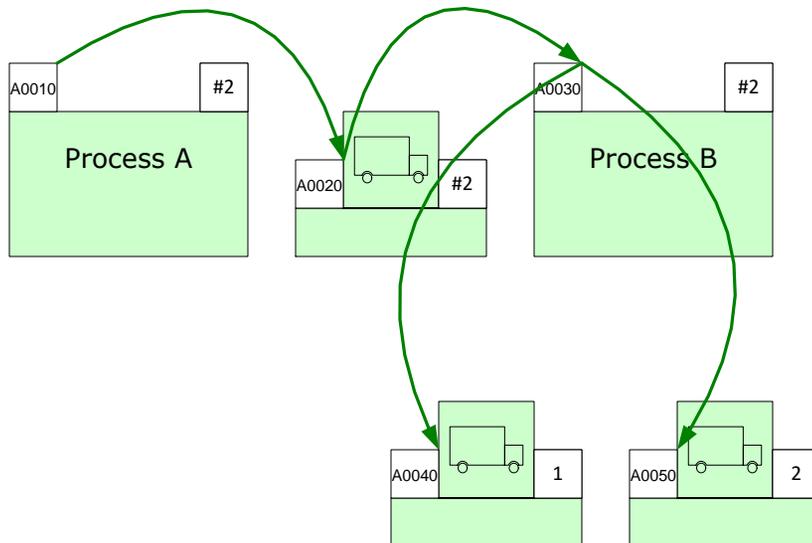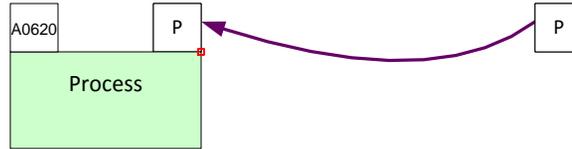
P | Auto Path
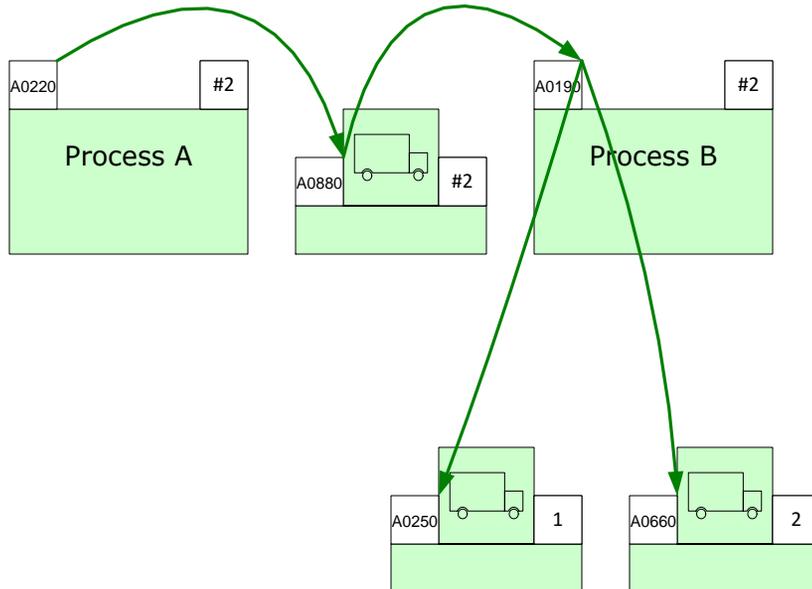
2. Next, you can use the Auto Tag button to automatically re-order the operation tags in sequence, based on the sequence arrows.

Auto Tag

The Path List

The Path List is used to identify a path or paths that a center belongs to. The shape is glued above the top right corner of the shape.

An activity can belong to no paths, one or more, or all paths. The benefit of assigning path numbers to activities is that the associated activity variables (like NVA time) can be summed up across the map in a path specific sense.

After you have run the "Auto Path" button, each Path List could look like the following:

1:3   This is the range of the paths the center is on. This center is on
       paths 1, 2, and 3

All   The center is on all paths

#3   The center is on 3 different paths

Show Paths on Center
Show Paths on All
Hide Paths on Center
Hide Paths on All
Select Shapes with Paths
All Paths

Right clicking on the Path List   P   will pull up a list to display all the path numbers on each icon. You can also hide or show all paths and perform various functions as shown.

Path Filter List

The Path Filter List, found in the Quick Extras stencil, is used instead of a Path List to get summary calculations by path or for specifying paths for charts.

The right-mouse menu option of "All Paths" will set the Path Filter List to "all".
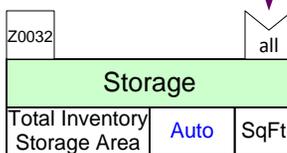
If you would like to specify the paths plotted on a chart or summary center, use the right-mouse menu option "Select Paths", to choose which paths to model.

Path Filter Manager

All Paths: all, 1, 2, 3   Selected Paths: 1, 3
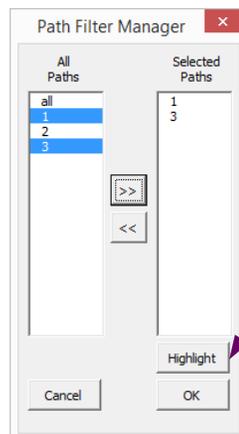
The Lead Time Chart will be plotted two paths.

Use the "Highlight" button to highlight the selected paths on the map.

Auto Pipe

This function allows you to automatically create pipe arrows from one center to many centers. Alternatively, you can create the pipe arrows from many centers to one center. The main use is for resource allocation. By adding pipe arrows you can determine which resources are used for which activities.

Try this:

1. To use this function, select the center from which to originate the pipe arrows then hold down the SHIFT key and select one or more centers to pipe to. Resource A was selected and then while holding the SHIFT key, Activity B and C were selected.

2. Click the "Auto Pipe" button to automatically create pipe arrows from one activity to many activities. Auto Pipe

3. Fill in the pipe arrow data of Resource Process Time which shows that Resource A is used for 2 minutes per item for Activity B and 5 minutes per item for Activity C.
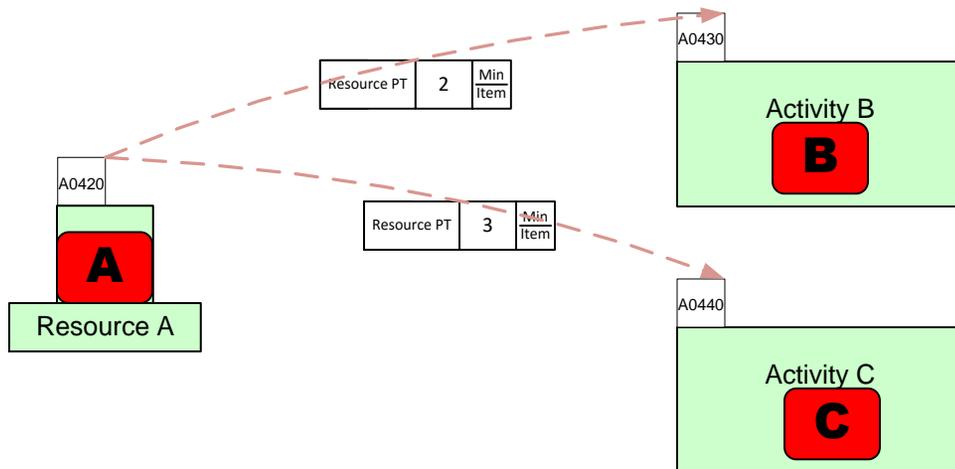
Alternately, you can use the Auto Pipe – Many to One button, which is in the dropdown menu of the Auto Pipe button, to create pipe arrows from multiple Resources into an Activity. Auto Pipe – Many to One
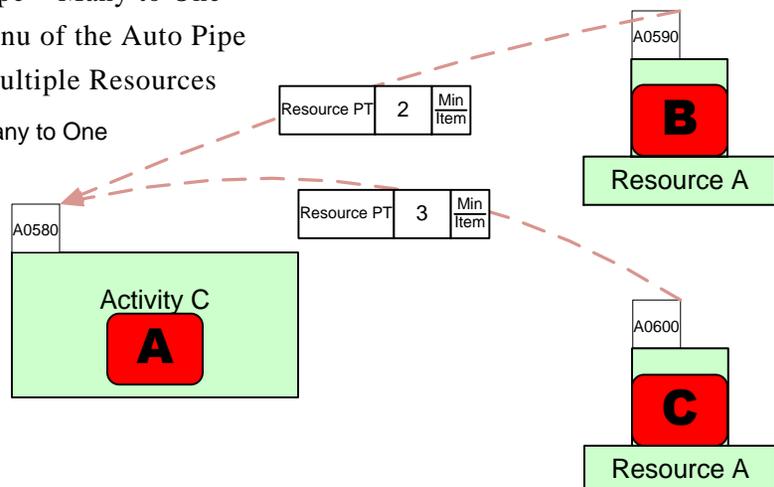
4. Validate

Overview

This section contains checking functions to validate the model ahead of analysis.

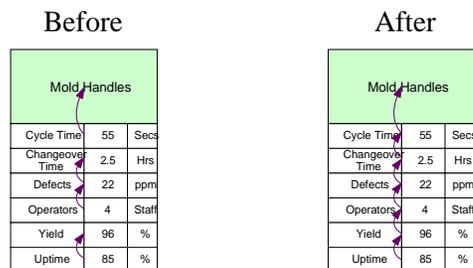|	
Check	Must do this before using the Solve button. Performs numerous checks on the model and reports back any problems.
Show Seq.	A visibility toggle switch for tag sequence arrows. Generally recommended that you work with these visible so you can fix sequence arrows as you modify the map.
Show Pipes	Just a visibility toggle switch for pipe arrows. Generally recommended that you work with these while visible so you can fix pipe arrows as you modify the map.
Clear	Removes various highlighter shapes used for glue display or problems displayed by the software.

Check

The Check function highlights some common problems on the map with a red circle and checks the model. To run, click this toolbar button: Check

Problems fixed by the Check function include:

1. Removes hidden data shapes: sometimes when using copy/paste, multiple copies are created and duplicates are hidden under visible data shapes. Finding and removing these can be tedious, so 'Check' automatically deletes such duplicates.

2. Automatically glues data shapes and arrows based on proximity.

	Before	
Mold Handles		
Cycle Time	55	Secs
Changeover Time	2.5	Hrs
Defects	22	ppm
Operators	4	Staff
Yield	96	%
Uptime	85	%

	After	
Mold Handles		
Cycle Time	55	Secs
Changeover Time	2.5	Hrs
Defects	22	ppm
Operators	4	Staff
Yield	96	%
Uptime	85	%

3   Works around the Visio glue limitation of 10+ shapes.

Missing Data: Data Shapes which are not properly associated to Rowmaker Shapes (via gluing) will be missed in the data transfer and are highlighted.

Missing Units Converter: If a variable is used with more then one unit (eg. Cycle time in minutes and seconds), then a units conversion factor must be provided. Standard time units (e.g. sec, min, hr, day) are already included in the time center and don't require a units converter.

The Tag Sequence Arrow visibility can be set with the switch in the eVSM Toolbar:

 Show Seq.
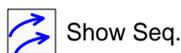
The Tag Pipe Arrow visibility can be set with the switch in the eVSM Toolbar:

 Show Pipes
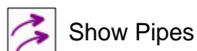
Use the button below to clear any highlighters off of the map:

 Clear

5. Calculate

Overview

This section links the map to an underlying Excel spreadsheet to perform lean calculations with the results displayed back on the map.

 Solve

Writes data out to excel, performs any calculations specified via managed equations and displays results back on the map. Also updates gadgets and charts on the map.
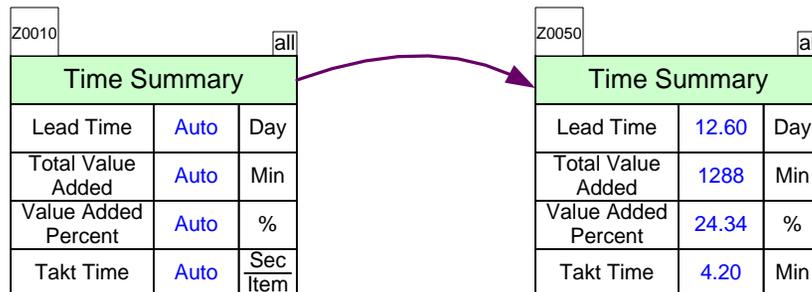
 Variational Solve

Calculates values using variational data.

The eVSM Calculator

The eVSM Solve button in the toolbar provides bi-directional transfer of information between the map and a spreadsheet. When the button is clicked for the first time in a map, eVSM automatically creates a new Excel file and puts it in the same folder the Visio file is saved in. The function only operates on the current map page. All blue "Auto fields" will calculate to the appropriate values on the map.
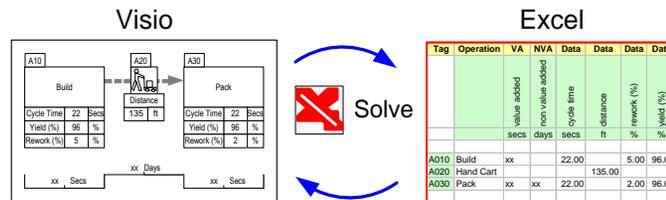
Variational Data

eVSM now supports simple means of specifying variation in data for selected input values and creates variational output for designated calculated values. The example below pulled from a Quick Manufacturing example map. Note that this functionality does not with the Quick Transactional Pro stencil.

Try this:

1. Drag out a Normal Distribution icon from the main stencil and glue to the Cycle Time variable. Make sure a red glue connection appears to make sure it is glued properly.

2. The mean and standard deviation for the activity's cycle time was entered.

A0070			P
Assemble			
⊙ 1.00			
Cycle Time	10	Min	10 4
Qty Per Cycle	1	Item	
Capacity	84.00	Item/Day	

600.00	Sec

eVSM v8
- Triangular Distribution
- Exponential Distribution
- **Normal Distribution**
- List Distribution
- Output Variation
- Variation Percentile

3. We want to see what effect this will have on the Lead Time. The Output Variation icon from the main stencil has been glued to the Lead Time of the Summary Center.

Var Solve

Z0080		P
Time Summary		
Lead Time	2.52	Day
Total Value Added	15.00	Min
Value Added Percent	0.71	%
Takt Time	2520.00	Sec/Item
Process Time Per Unit	900.00	Sec/Item

4. The Variational Solve button is selected and the user selects '75' solve iterations. Each solve uses a random number generator to "pick" a value from each variational input. It also creates a sample output for each designated out variable. This is a simple type of Monte Carlo analysis.

5. Right-click on the Output Variation shape and select "Plot Output Distribution".

6. The Lead Time has been plotted with the various confidence levels.

50% < 2.52 85% < 2.52 95% < 2.52 99% < 2.53
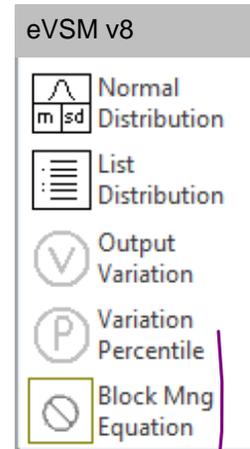
Normal Distribution
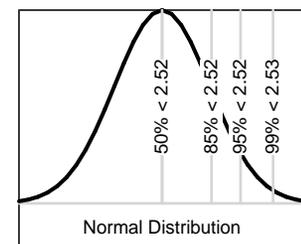
Variation Percentile Shape

The Variation Percentile shape, when attached to a variable that is calculated via an equation, provides a way to access percentile values for any terms in the equation that have an associated distribution. In the example below, lets say we want to calculate a lead time that will not be exceeded 95% of the time.

Try this:

1. Connect a Variation Percentile shape from the main stencil to the target variable (lead time in the example below), and set it to 95.

2. Create a managed equation (refer to page 96 for help) that equates lead time to the sum of the cycle time.

3. Press the Solve button in the toolbar and note that the lead time solves to 63.16. Without the percentile specification the answer would have been 50. ✖ Solve

eVSM v8

⋀ m sd	Normal Distribution
☰	List Distribution
Ⓥ	Output Variation
Ⓟ	Variation Percentile
⊘	Block Mng Equation

A0020

Process		
Cycle Time	20	Min

A0030

Process		
Cycle Time	30	Min

A0040

Summary		
Lead Time	63.16	Min

Source and Target

Data Source and Data Target is used to link the data from different shapes or pages. In this example, the main map has an Assembly station that is actually a multi-machine. The data from the Multi-Station Wizard will be linked to the main map for the center.

The main map is below, with the multi-machine beneath it.

A0030		P
	Atlas	
Activity Lead Time	0	Day

A0040		P
	Blanks	
Inventory	7500	Item

A0050		P
	Sharpen	
	1	
Cycle Time	1	Min
Qty Per Cycle	5	Item
Capacity	Auto	Item Day
Pre OEE Capacity	Auto	Item Day
OEE Percent	Auto	%

A0070		P
	Moulded Blanks	
Inventory	3000	Item

A0080		P
	Assemble	
	1	
Cycle Time	2	Sec
Qty Per Cycle	10	Item
Capacity	Auto	Item Day
Pre OEE Capacity	Auto	Item Day
OEE Percent	Auto	%
Stations	1	Stn

A0090		P
	Scissors	
Inventory	5000	Item

A0010		P
	Customer	
Customer Demand	7000	Item Day
Share %	100	%
Effective Demand	Auto	Item Week

Auto Day   Auto Sec   Auto Day   Auto Sec   Auto Day

A0100		P
	M1	
Cycle Time_M	4	Min
Qty Per Cycle_M	1	Item
Stations_M	2	Stn
Activity Time_M	10	Hr Day
OEE Percent_M	80	%
Cycle Time Per Item	2.00	Min
CT Capacity Per Day	300.00	Item
Capacity Per Day	240.00	Item
QPC Contributor	300.00	ItSq
All Stations Time	20.00	Hr Day

A0110		P
	M2	
Cycle Time_M	2	Min
Qty Per Cycle_M	1	Item
Stations_M	1	Stn
Activity Time_M	12	Hr Day
OEE Percent_M	90	%
Cycle Time Per Item	2.00	Min
CT Capacity Per Day	360.00	Item
Capacity Per Day	324.00	Item
QPC Contributor	360.00	ItSq
All Stations Time	12.00	Hr Day

A0120		P
	M3	
Cycle Time_M	6	Min
Qty Per Cycle_M	1	Item
Stations_M	1	Stn
Activity Time_M	14	Hr Day
OEE Percent_M	85	%
Cycle Time Per Item	6.00	Min
CT Capacity Per Day	140.00	Item
Capacity Per Day	119.00	Item
QPC Contributor	140.00	ItSq
All Stations Time	14.00	Hr Day

Z0050		P
Multiple Station Equiv		123
Cycle Time	3.45	Min
Qty Per Cycle	1.00	Item
Stations	4.00	Stn
OEE Percent	85.38	%
Activity Time	11.50	Hr Day
MS CT Capacity Per Day	800.00	Item
MS Capacity Per Day	683.00	Item
MS Cycle Time Per Item	0.86	Min

The Assemble activity center on the main map is represented by the equivalent multi-machine. The goal is to populate the input fields for the Assembly activity from calculated values on the multi-machine map. The Multi Station Wizard has been purposely designed so that it calculates the values that the activity on the main map needs AND has the SAME variable names (Cycle Time, Stations, etc.). In the special case where source and target variable names are identical, source and target identifiers can be glued to the center shape as shown below.

Linking Variables with the Same Name: Try This

1. In the same file as your main map page, create a new page. Click the Open button and use the Mfg Multi Station Wizard to create the example map shown on the previous page. After you have created it, name the page to MS. Drag out the "Data Source" marker from the Quick Extras stencil (or the main stencil) and glue to the Multi Station Summary Center. Note that source variables can be located on the same page as the target variable or on another page in the same file. Enter an ID, like 123 which will be used for the target marker as well.

2. Go back to the main map page and drag out a "Data Target" marker and glue to the side of the Activity Center. Enter 123 for the ID. In order for the calculation to be correct, the first five variables from the multi-station summary center MUST be on the Activity Center. If they are not, you will have to manually drag them out from the Quick stencil and glue to the Activity Center.

A0040		P
Assemble		
○ 1		123
Cycle Time	x.xx	Min
Qty Per Cycle	1	Item
Stations	1	Stn
OEE Percent	x.xx	%
Activity Time	x.xx	Hr/Day

Auto	Min

Quick Extras ✕

- Transport Shapes
- Waste Shapes
- Transmit Shapes
- Units Converter
- Data Source
- Data Target
- Kaizen Cloud
- Kaizen Starburst
- Key Creator
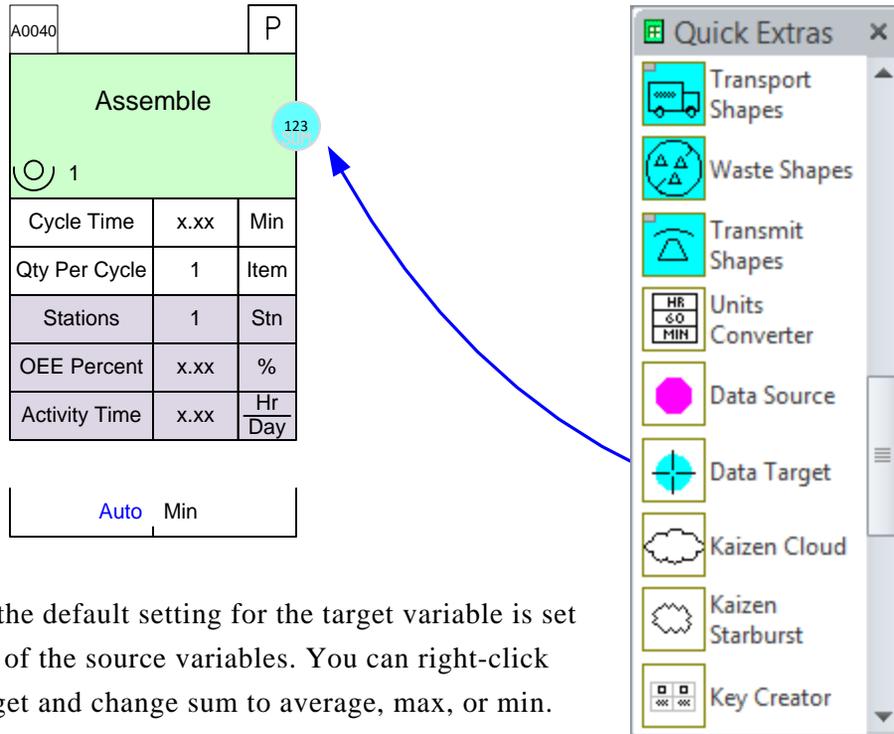
Note that the default setting for the target variable is set to sum all of the source variables. You can right-click on the target and change sum to average, max, or min.

3. If the source and target variables are on separate pages, the page where your target variable is must be linked to the source page. Make sure each page in your Visio File has a memorable name in order to differentiate pages when setting the scope.

4. In this example, go to the main map page where your target is and click the NUM button in the toolbar to open the dialog box to set the page scope. NUM

5. Click "Source/Target Pages" at the bottom of the box and select the page on which your source marker is located.
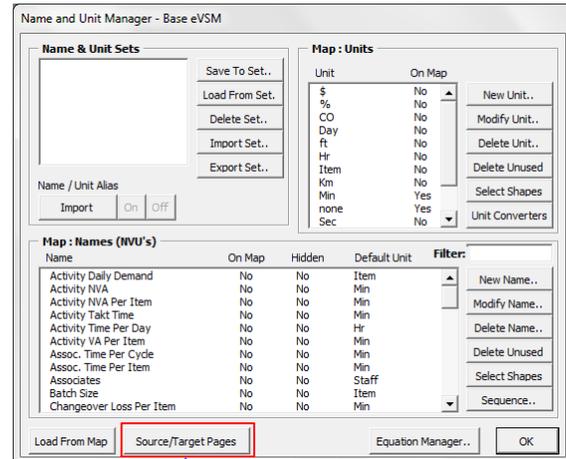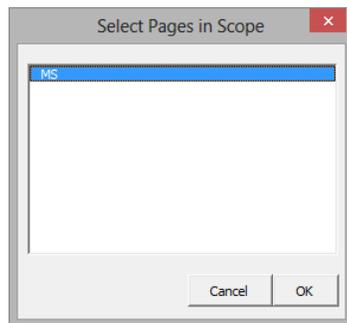
6. On the main map page, click the "Solve" button in the toolbar. See how the target variable is able to access the source variable values automatically as part of the solve as seen in the Assemble activity center. You must have a value entered in each of the x.xx fields, even if it is 0, or the solve function won't run.

 Solve

Notice how the Assemble activity matches the values of the multi-station equivalent machine summary center.

A0010		P
Assemble		123
⟳ 1		
Cycle Time	3.45	Min
Qty Per Cycle	1.00	Item
Stations	4.00	Stn
OEE	85.38	%
Activity Time	11.50	Hr/Day

Linking Variables with Different Names/Units

In the general case when you are trying to link values of variables with different names, you should glue the source/target markers onto the side of the variable as opposed to the whole center.

Target Page

A0050		P
Activity		
◯ 1		
CT	0.13	Hr
Qty Per Cycle	1	Item

If the units are not the same, there must be compatible unit converters, like Min to Hr, located on the source page for the solve function to convert the value. If the units are not compatible and you try to solve, an eVSM Warning message will appear telling you to create a unit converter. See the example below which shows different variable names and units, but was able to link the values because of the correct unit converter.

Source Page

| Z0010		P		
Multiple Station Equiv.				
Cycle Time	7.93	Min		
Qty Per Cycle	1.00	Item	Hr	
Stations	4.00	Stn	60	
OEE	56.90	%	Min	
Activity Time	11.50	$\frac{Hr}{Day}$		
MS CT Capacity Per Day	348.00	Item		
MS Capacity Per Day	198.00	Item		
MS Cycle Time Per Item	1.98	Min		

XL Reports

eVSM has an XL Report builder that will export the tag, operation, type, and custom variables one directionally to Excel.

Try this:

1. After your map has been solved, drag out the XL Report icon the eVSM Icons stencil.
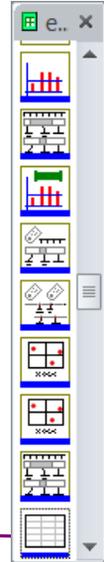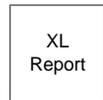
XL Report

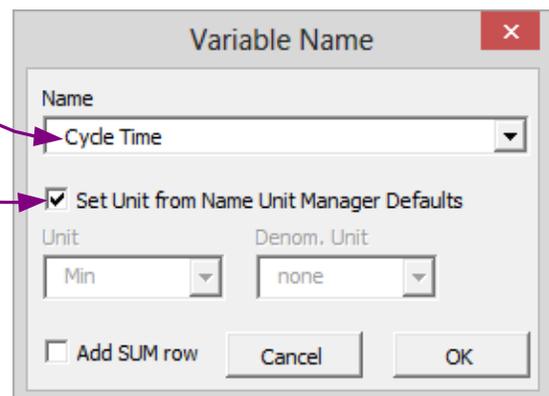2. Right-click on the XL Report shape and select "Edit Report Data".
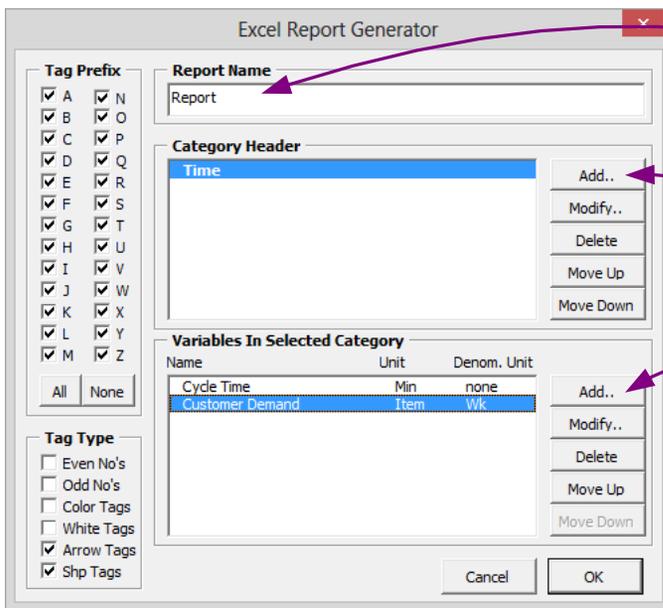
3. Enter a Report Name which will be the page name in the Excel file.

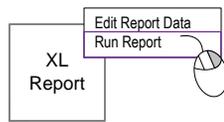4. Click "Add" to create a category header.

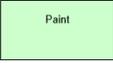5. Click "Add" to select the variables to the export to the XL Report.

6. Select the desired variable from the dropdown menu.

7. If you don't want the default unit, uncheck this box and change the units manually.

8. After you have finished adding the desired variables, right-click on the XL Report shape and select "Run Report".

XL Report
Edit Report Data
Run Report

Tag	Operation	Type	Time	
			Cycle Time	Customer Demand
			Min	Item/Wk
A0010	Prepare	Prepare	5	
A0010_A0020				
A0020	Paint	Paint	10	
A0020_A0030				
A0030	Package	Package	8	
A0030_A0040				
A0040	Customer	Customer		100

6. Visualize

Overview

The view capability simplifies maps with better utilization of map space. Also allows the visualization of the numbers using gadgets and charts.

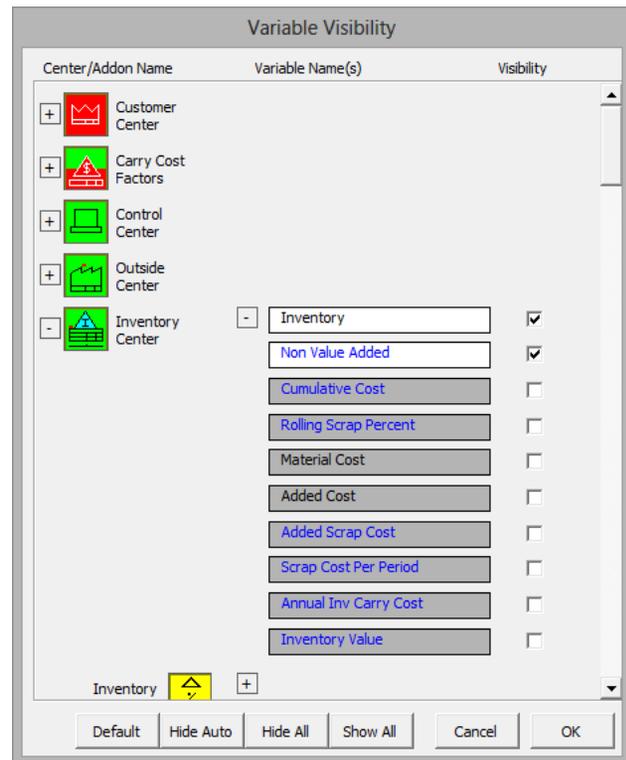|	
Views	Opens a window for modifying variable visibility settings for the map.
Gadgets	Allows management of gadget families providing geometric views of key numbers of the map with color coding, scale factors and hide/show.
Update	Updates all the geometric gadgets based on the current map values.

Hiding & Showing Variables

To prevent maps from looking crowded, there are a large number of variables in eVSM that are hidden. The views capability allows you to manage which variables you would like to be hidden/visible on the map. 👁 Views

Try this:

1. Click the Views button in the toolbar.

2. This will open the form below which allows you to manage the visibility of variables on the map. The dark gray boxes indicate the hidden variables on the map, and white boxes represent that the visibility is on.

3. Check the boxes of some variables that are currently grayed out.

4. Click OK and the changes will apply to all centers on the map.

Variable Visibility		
Center/Addon Name	Variable Name(s)	Visibility
Customer Center		
Carry Cost Factors		
Control Center		
Outside Center		
Inventory Center	Inventory	☑
	Non Value Added	☑
	Cumulative Cost	☐
	Rolling Scrap Percent	☐
	Material Cost	☐
	Added Cost	☐
	Added Scrap Cost	☐
	Scrap Cost Per Period	☐
	Annual Inv Carry Cost	☐
	Inventory Value	☐
Inventory		

Default | Hide Auto | Hide All | Show All | Cancel | OK

There are four options at the bottom of the menu for various quick views.

1. Default: Reverts back to how the centers and variables look when dragged out from the stencil.

2. Hide Auto: Hides all blue calculated variables.

3. Hide All: Hides all variables on the page.

4. Show All: Makes all variables visible.

Using Gadgets to Visualize Data

Any data on the map can be linked to visual gadgets that change in size and color with change in the data. Some gadget types are shown below:

| Bar Height Gadget	Sq. Area Gadget	Tr. Area Gadget	Slider Percent Gadget	Arc Angle Gadget	Line Tk Gadget	Curve Tk Gadget

Each gadget has exactly one size parameter that can be tied to a data value on the map. Here's the typical means used to apply and manipulate gadgets:

Try this:

1. Drag out the gadget from the main eVSM stencil and position it near the data value with which it will be associated (in this case the "Cycle Time"). In this example the Bar Height Gadget is being used.

Process

Cycle Time	2	Min

Bar Height Gadget
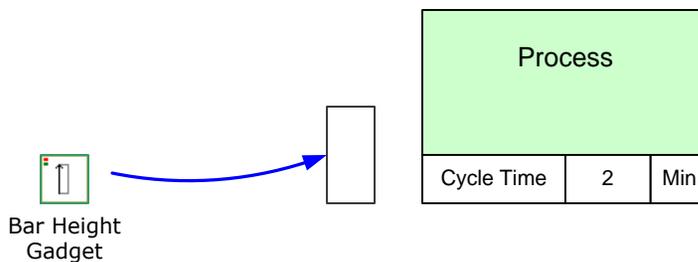
2. This system shape will be automatically dropped on the page the first time a gadget is used. If you copy a map to a new page make sure you also copy this shape because it is used to hold gadget data for the map.

3. Select the gadget, drag and glue the gadget's yellow flying connector to the side of the NVU data shape (avoid gluing to the top or bottom of the data shape).

Process
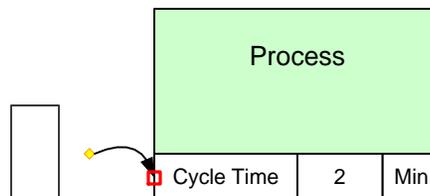
Cycle Time	2	Min

4. Right-click on the gadget and use the "Activate Gadget" option to create a new gadget collection. The collection name will be "Bar_Cycle Time". The name is created from the gadget type and the data variable name.

    A gadget can only belong to one collection. Each collection can only have a single type (eg. "Bar") of gadget.

    Activate Gadget
    Create Gadgets By Example
    Show Gadget Collection
    Manage Gadget Collections
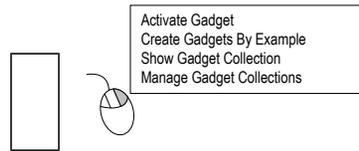
5. You can change gadget scale factors and color code them by modifying the properties of the associated Gadget Collection. You can easily create additional gadgets tied to other instances of the same data on the map. Just click on the gadget and use the right mouse button to select "Create Gadgets By Example" to create the gadget for Process B below.

Process A		
Cycle Time	2	Min

Process B		
Cycle Time	6	Min

    Activate Gadget
    Create Gadgets By Example
    Show Gadget Collection
    Manage Gadget Collections

6. Note that the new gadget is automatically positioned, scaled and put into the same "Bar_Cycle Time" collection. If you do not wish to have new gadgets created for the whole map than select the original gadget, then sub-select an area of the map before using the "Create Gadgets By Example" menu.

Process A		
Cycle Time	2	Min

Process B		
Cycle Time	6	Min
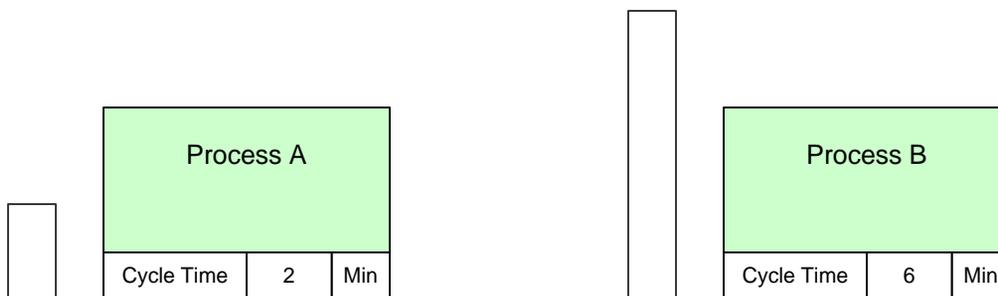
7. To modify a gadgets scale factor or to color code it, you need to change the properties of its associated collection. Right mouse click on the gadget and select "Manage Gadget Collections," or click the Gadgets button in the toolbar.
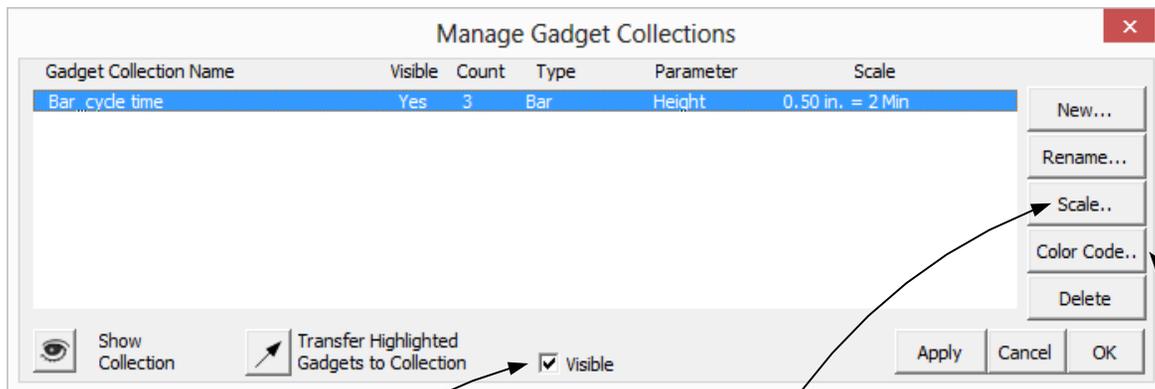
 Gadgets

To hide or show gadgets in a collection, first select the collection from a list, then click this button.

Note: the collection list has a column indicating visibility status.

You can modify the scale factor for a collection that controls gadget size in relation to data value. Use the Apply button to see the new gadget sizes on the map before exiting the form.

You can color code the gadget fill and font colors based on the value of the data to which the gadget is glued. You can also simply "inherit" the color from the data shape or assign a color to a gadget manually.

Gadget Tips:

- Gadgets have a single size parameter that will scale to the data value in which a gadget is glued via the flying yellow connector.

- Gadgets are typically glued to NVU, VA or NVA shapes. When gadgets in a collection are glued to data shapes with different units, Units Converters are needed on the map to compute the correct scale factors.

- Gadgets have to belong to a collection. They can be put in a collection using the Activate Gadget command or by transferring them into a collection via the Manage Gadgets form.

- Gadget scale factors and color coding can be controlled via the Manage Gadgets form.

- An easy way to create a gadget "set" after creating a first gadget is to use the Create Gadgets By Example in the right mouse button menu.

- The Visible switch on the Manage Gadgets form is very useful in showing different metrics on the map in a presentation environment.

- See the "Examples" section on the eVSM help site (www.evsm.com/help) for usage examples of the different gadget types.

- A starter set of gadgets is provided with eVSM. Additional gadgets can be requested by contacting support@evsm.com.

Conditional Color Gadget

The Conditional Color Gadget allows the ability to color code values based on value ranges.

Conditional Color Gadget

1. Drag out the Conditional Color Gadget from the eVSM Icons main stencil.

A0020		P
Process		
⊙ 1.00		
Cycle Time	15	Sec
Qty Per Cycle	1	Item
OEE Percent	95.00	%
Scrap Percent	5	%

15.00	Sec

2. Use the yellow flying glue connector to glue to any variable. Make sure a red glue connections appear, confirming that it is glued.

3. Right-click the gadget and click "Activate Gadget" if there is only one on the map, or select "Create Gadgets by Example" if you would like to add a gadget for that variable map wide.

4. Click the Gadgets button in the toolbar. Gadgets

5. Select the Gadget collection.

Manage Gadget Collections

Gadget Collection Name	Visible	Count	Type	Parameter	Scale	
CondColor_OEE Percent	Yes	1	CondColor	Height	0.50 in. = 95 %	New...
						Rename...
						Scale..
						Color Code..
						Delete

Show Collection   Transfer Highlighted Gadgets to Collection   ☑ Visible   Apply   Cancel   OK
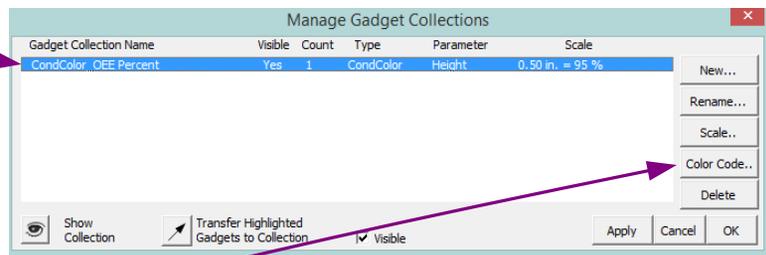
6. Click the "Color Code…" button.

7. Select "Based on Value Ranges(s).

8. Fill in the desired ranges with the fill color.

Color & Text Attributes | NAME : CondColor_OEE Perce...

Color Display
- ○ Assign Manually
- ○ Same as Attached Shape
- ● Based on Value Range(s)

Text Value Display
- ● Hide Value
- ○ Show Value

Color Value Range(s)

From:		To:			Fill Color	Font Color
0	%	75	%	abc	Color..	Color..
75	%	100	%	abc	Color..	Color..
0	%	0	%	abc	Color..	Color..
0	%	0	%	abc	Color..	Color..

Cancel   OK
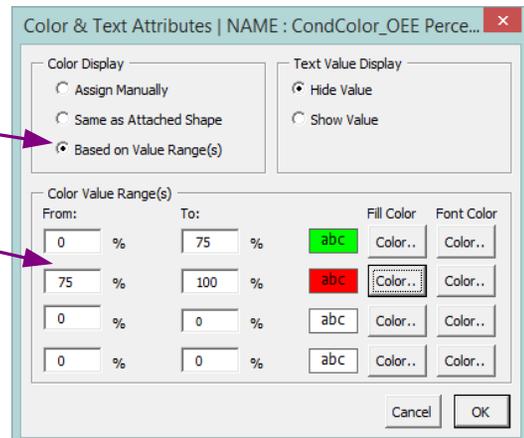
9. The Gadget will change to the color chosen. If values change, so will the gadget color after Solve is run.

A0030		P
Process		
⟲ 1.00		
Cycle Time	15	Sec
Qty Per Cycle	1	Item
OEE Percent	95.00	%
Scrap Percent	5	%

15.00	Sec

Plot Name Value

There is now the option to plot the name values for all variables on the map.

Try This:

1. Drag out three activity centers and fill in the values.

2. Right-click on Cycle Time and select "Plot Name Values" in the menu.

A0040		P
Drill		
⊙ 1		
Cycle Time	2	Min
Qty Per Cycle	1	Item

A0030		P
Wash		
⊙ 1		
Cycle Time	4	Min
Qty Per Cycle	1	Item

A0050		P
Inspect		
⊙ 1		
Cycle Time	6	Min
Qty Per Cycle	1	Item

Enable Flying Connector
Name Help

Select all with Name
Select all with Name on Path
Edit Name.. (Cycle Time)
Edit Unit.. (Min)
Plot Name Values
Plot Distribution Values

	Auto	Min

	Auto	Min

	Auto	Min

VSM - Cycle Time

(Bar chart: Drill (A080) = 2, Wash (A090) = 4, Inspect (A100) = 6; Y-axis "Min" from 0 to 6)

Legend: ▮ Cycle Time
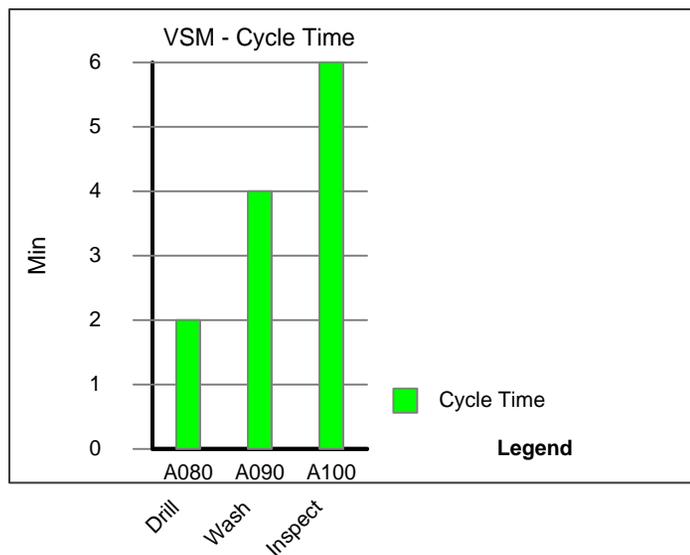
Plotting VSM Charts

XY Charts (Combination & Pareto Charts) - Any numeric data available for analysis in eVSM can be plotted on a chart such as this:
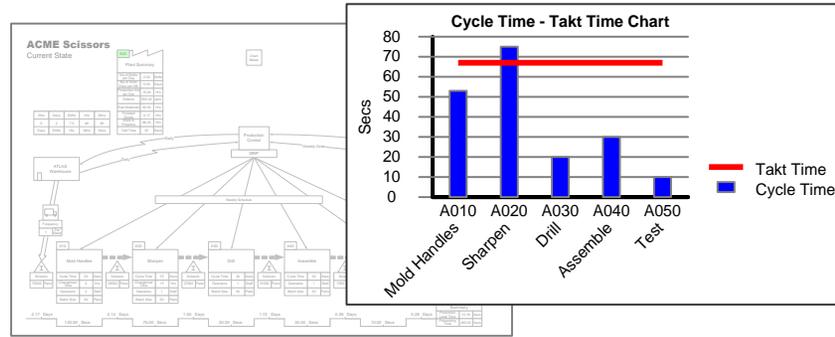
Before creating a chart, you must ensure that the data to be plotted is:

- Contained in eVSM data shapes

- The data shapes are glued to the parent rowmaker shapes

- Rowmaker shapes are tagged with Operation Tags

Hint: Use the Glue Check and Excel Check buttons in the eVSM toolbar to verify

Try this:

1. Drag out the XY Chart icon from the stencil, and place it anywhere on the map.

Right mouse click on the shape and select the "Edit Chart Data" command.
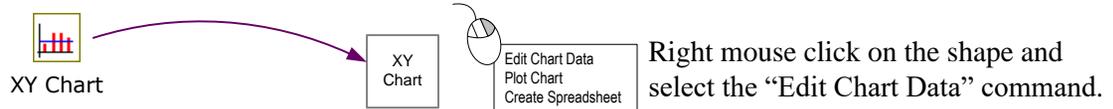
2. Set up chart parameters and click "Plot Chart" command in the right mouse button menu.
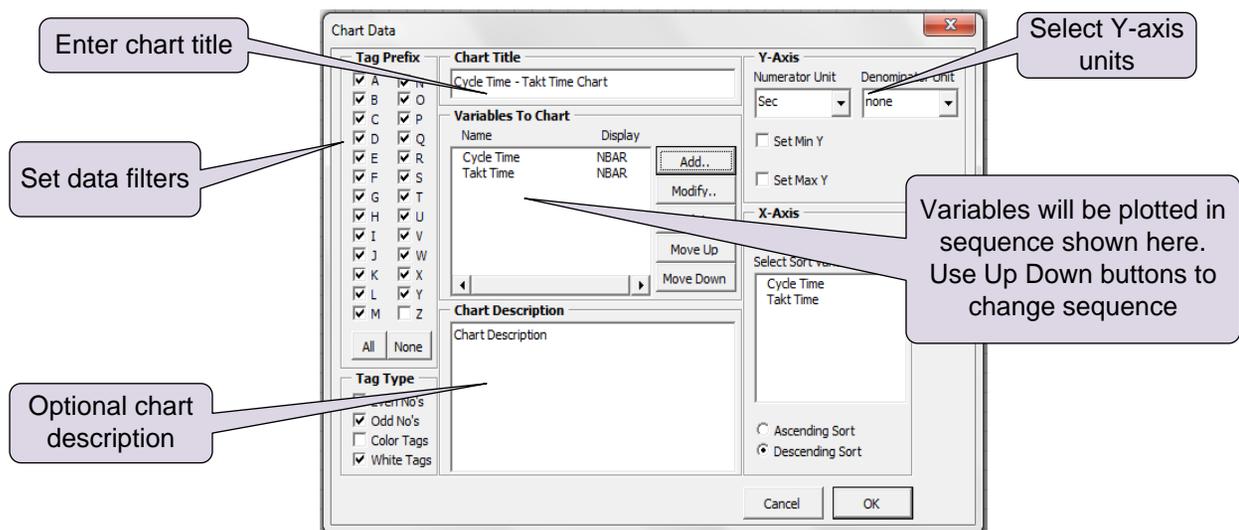
Options for Chart Variables:

Set a default value for non-existent plot points

Select Variables to plot

Select Display Type

Enter Tag number for single tag data plot

Set color of fill or lines

3. Click the Plot Chart command in the right mouse button menu.

Edit Chart Data
Plot Chart
Create Spreadsheet

Notes:

▪ Each eVSM Chart is a group of simple shapes. Avoid ungrouping these as this may displace some of the shapes.
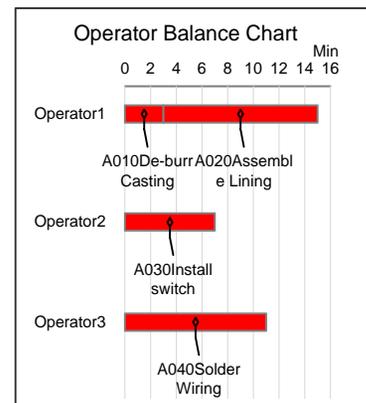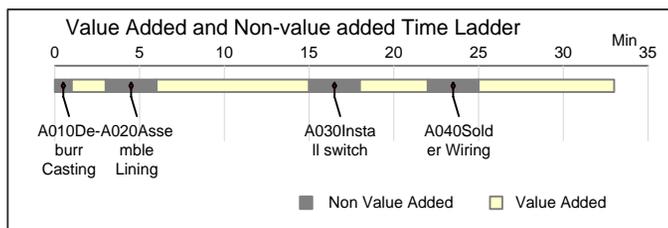
▪ Chart will update automatically when the Calculator is run. To update the chart manually, use the "Update command in" the chart's right mouse button menu.
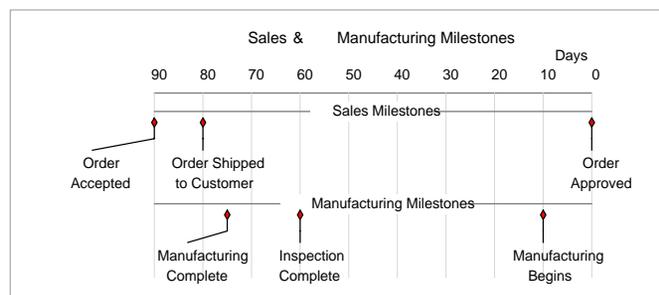

Milestone Charts

Try this:

1. Get data ready in this format:

2. Drag out the Milestone Chart icon and click the "Edit" command in its right mouse button menu.

3. Complete the form:

4. Plot chart.

5. Use the "Update.." command in the chart's right mouse button menu to update the chart when the data changes.

Cumulative Bar Charts

The Cumulative Bar Chart allows you to visualize the phases of a value stream on a timeline.
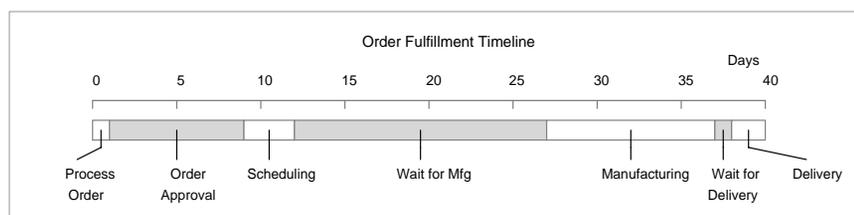
1. Get data ready in this format:

Order Fulfillment Timeline		
Process Order	1	Days
Order Approval	8	Days
Scheduling	3	Days
Wait for Mfg	15	Days
Manufacturing	10	Days
Wait for Delivery	1	Days
Delivery	2	Days

B070

2. Drag out the Cumulative Bar Chart icon and click the "Edit" command in its right mouse button menu.
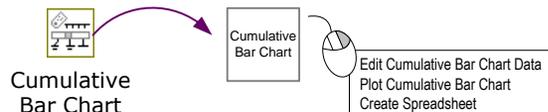
3. Complete the form:

4. Plot the chart:
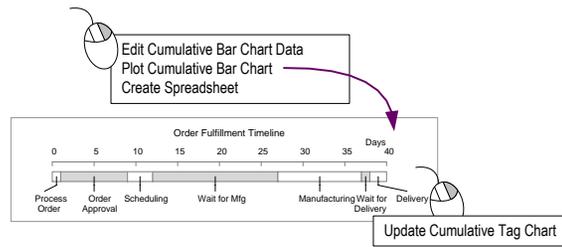
5. The chart will update automatically when the Calculator is run. To update the chart manually, use the Update command in the chart's right mouse button menu.

Ladder Charts

The Ladder Chart shape allows you to create timeline and operator balance charts such as the following:
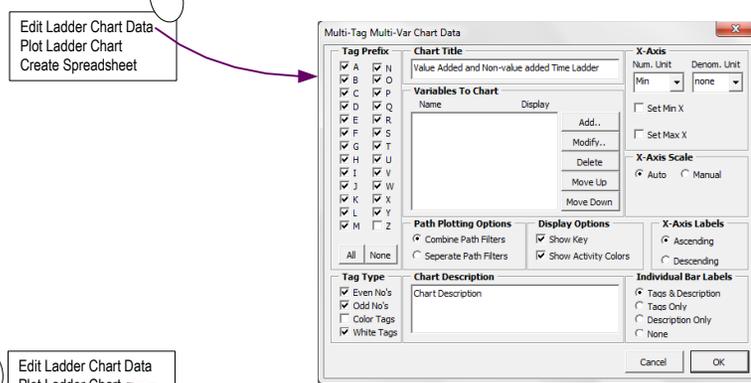
Try this:

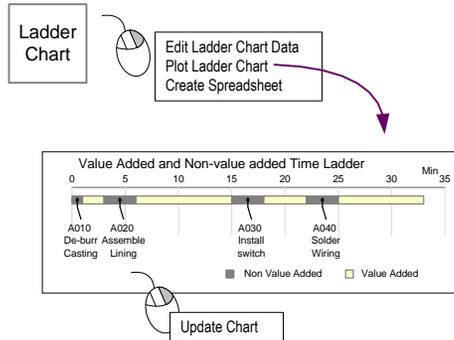We will plot a Timeline Ladder for the VA/NVA times from this VSM.
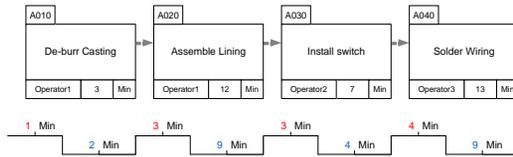
1. Drag out the Ladder Chart icon and click the "Edit" command in its right mouse button menu.

2. Complete the form:

3. Plot chart:

4. The chart will update automatically when the Calculator is run. To update the chart, manually, use the "Update Chart" command in the chart's right mouse button menu.

7. Improve

Overview

Allows addition of improvement ideas on the map supported by Impact matrix, Risk matrix, and Kaizen Report.

	Kaizen Properties	Select the kaizen/project property set for the map.
	Kaizen Export	Creates an Excel spreadsheet of Kaizens with their property data.
	Kaizen Import	Reads an Excel spreadsheet of Kaizens with property data back to eVSM.
	Renumber Kaizens	Renumber the Kaizen shapes in the order they are selected. Numbering starts at 001, and any un-selected Kaizen shapes get numbered after the selected Kaizen shapes.
	Map Copy	Allows a map to be copied to another page in the file.

Kaizen Standardization

You can now standardize your kaizen custom properties by selecting the set of data for the Kaizens on the map. The Kaizen Properties button in the toolbar will bring up a form allowing you to select which properties to standardize on for the map. Kaizen Properties

Generating Kaizen Report
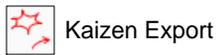
 Kaizen Export

The Kaizen Export toolbar button scans the map for all Kaizen shapes (Starbursts) and exports custom properties associated with the shapes to Excel spreadsheets (Pagename_Kaizen). This Excel spreadsheet will show the connectivity of Kaizen bursts with activities and other Kaizen bursts. If you want to edit the custom properties data via Excel, you may do so and import the data back into eVSM using the Kaizen Import button. Kaizen Import
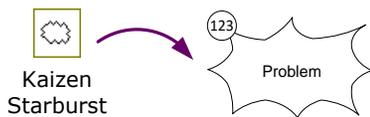

Problems can be documented using Kaizen starbursts, which can now be connected to activities as well as other Kaizens.

Try this:

1. Open a blank Visio drawing page with the Quick Manufacturing stencil.

2. Drag out an Activity Center.

3. Drag out two Kaizen Starbursts from the Quick Extras stencil. Edit the descriptions to "Reduce Changeover Times" and "More Frequent Deliveries".

4. Click the Kaizen Properties button in the toolbar to bring up the form to see which properties are available as well as a description of each. Kaizen Properties
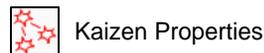
Double-click the word "Visible" to toggle all of the properties on or off.

Check or uncheck the boxes to add/remove properties to the standard custom properties list when editing each kaizen on the map.

5. Click the Kaizen Export button in the toolbar to create a Kaizen Report in Excel. 　🌟 Kaizen Export

ID	Kaizen	Process Step	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data	Data
			action type	category	comments	ease of implementation	estimated annual saving	estimated one time savi	impact	owner	priority	problem description	risk likelihood	risk severity	target area
			Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
1	Reduce Changeover Times	Process				1			1				1	1	
2	Make Frequent Deliveries	Process				1			1				1	1	

Kaizen Impact Matrix

The Kaizen impact matrix was introduced in a late version of v5 and uses the "Impact" and "Ease of Implementation" custom properties of kaizen starbursts to plot an impact matrix. The goal of the matrix is to help select projects for implementation to improve the value stream.

The mini-Kaizens in the matrix copy the custom properties of the originals (map Kaizens). They are numbered based on the ID's of the Kaizens on the map (ID's are circles glued to the top left of the kaizen shapes). A right-mouse click on any of the mini-Kaizens allows for selection and highlighting of the parent map kaizen.

Highlight Kaizen

6
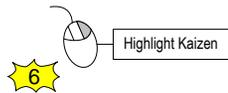
Try this:

1. Change the Impact and Ease of Implementation properties of each starburst by right-clicking the burst and selecting "Edit Kaizen". A form will appear allowing you to edit the various properties. Similarly, you could also edit the values via Excel spreadsheet and use the Kaizen Import button to bring the values back into eVSM.
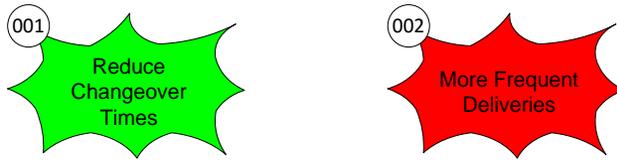
🌟 Kaizen Import

Impact (1-5): What impact this project will have on the value stream.
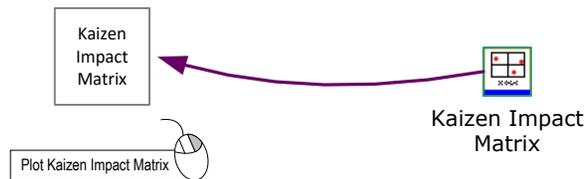1 = Low, 5 = High

Ease of Implementation (1-5): How easy/difficult will it be to implement this measurable improvement to the Value Stream?
1 = Difficult, 5 = Easy

2. Change the fill color of each starburst if you wish.

3. Drag out the Kaizen Impact Matrix icon from the Quick Extras stencil and right-click to plot the matrix, which is shown on the next page.

4. If map Kaizens are modified, then the Impact matrix can be updated by selecting it with a right mouse click and the command "Update Chart".

5. Using the Renumber Kaizen button in the toolbar, Kaizens can be renumbered in order starting at 001. Select the bursts in the sequence you want using the Shift key, and then click the Renumber Kaizens button. Any un-selected kaizen shapes will get numbered after the selected kaizen shapes.

 Renumber Kaizens
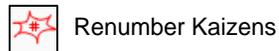
6. Drag out the Kaizen Key Creator from the eVSM Main stencil to differentiate each burst by description which is shown under the matrix.

KAIZEN
KEY

Kaizen Key
Creator

Kaizen Impact Matrix

Impact On Value

Ease Of Implementation
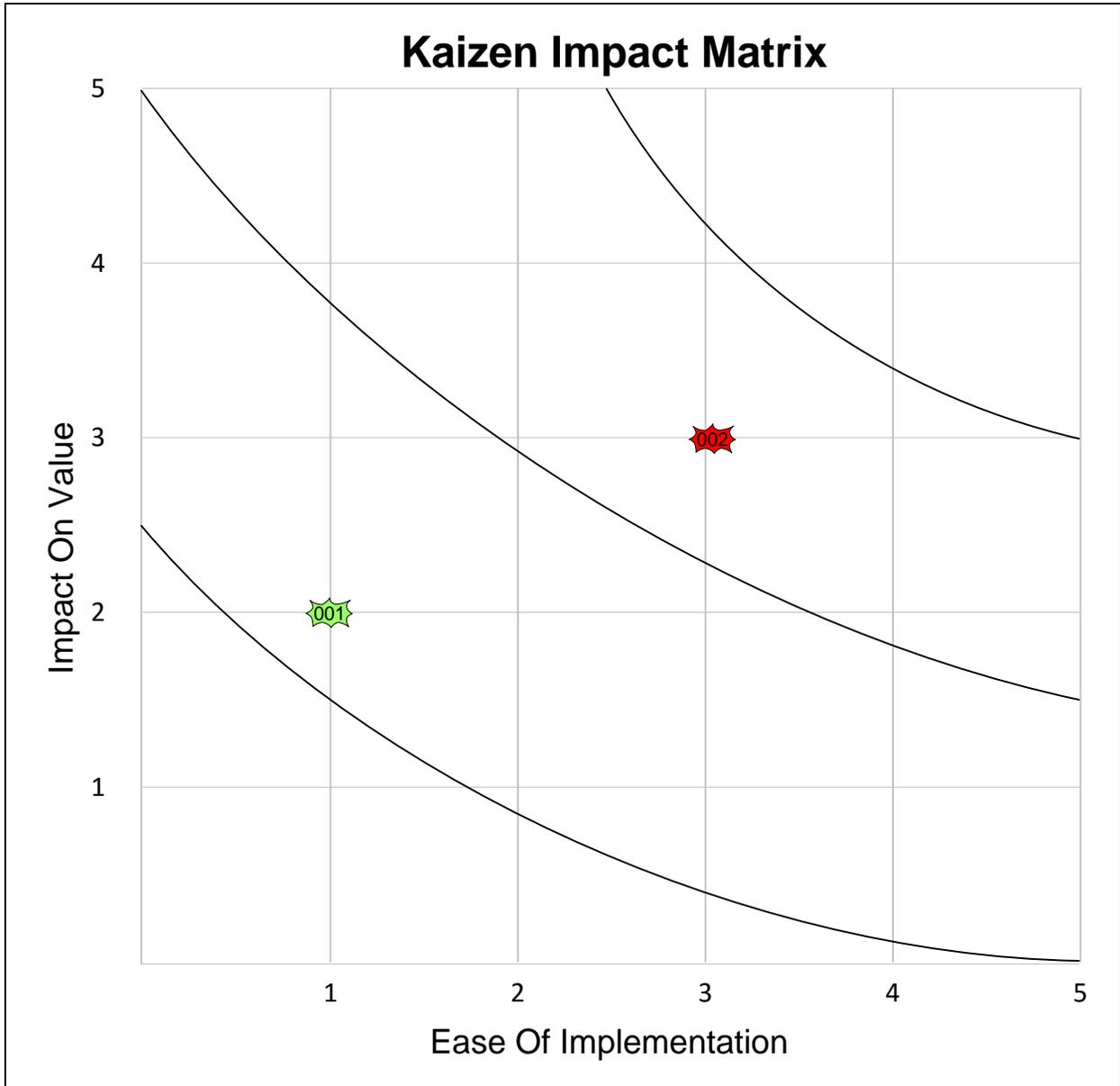
(001) Reduce Changeover Times

(002) More Frequent Deliveries
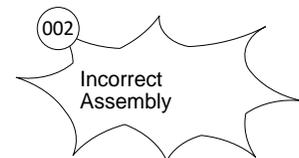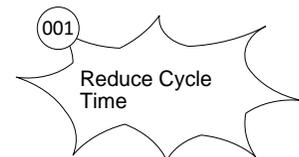
Kaizen Risk Matrix

The Kaizen Risk Matrix plots the kaizen starbursts based on the risk likelihood and risk severity values set up in the "Kaizen Properties" form brought up from the right-mouse menu. It also multiplies the values together to create an RPN number between 1 to 25.

Risk Likelihood (1-5): What is the likelihood of risk to the Value Stream if this project is not done/issue is not addressed?
1 = Low, 5 = High

Risk Severity (1-5): What is the likelihood/impact in the Value Stream if this identified risk did actually occur?
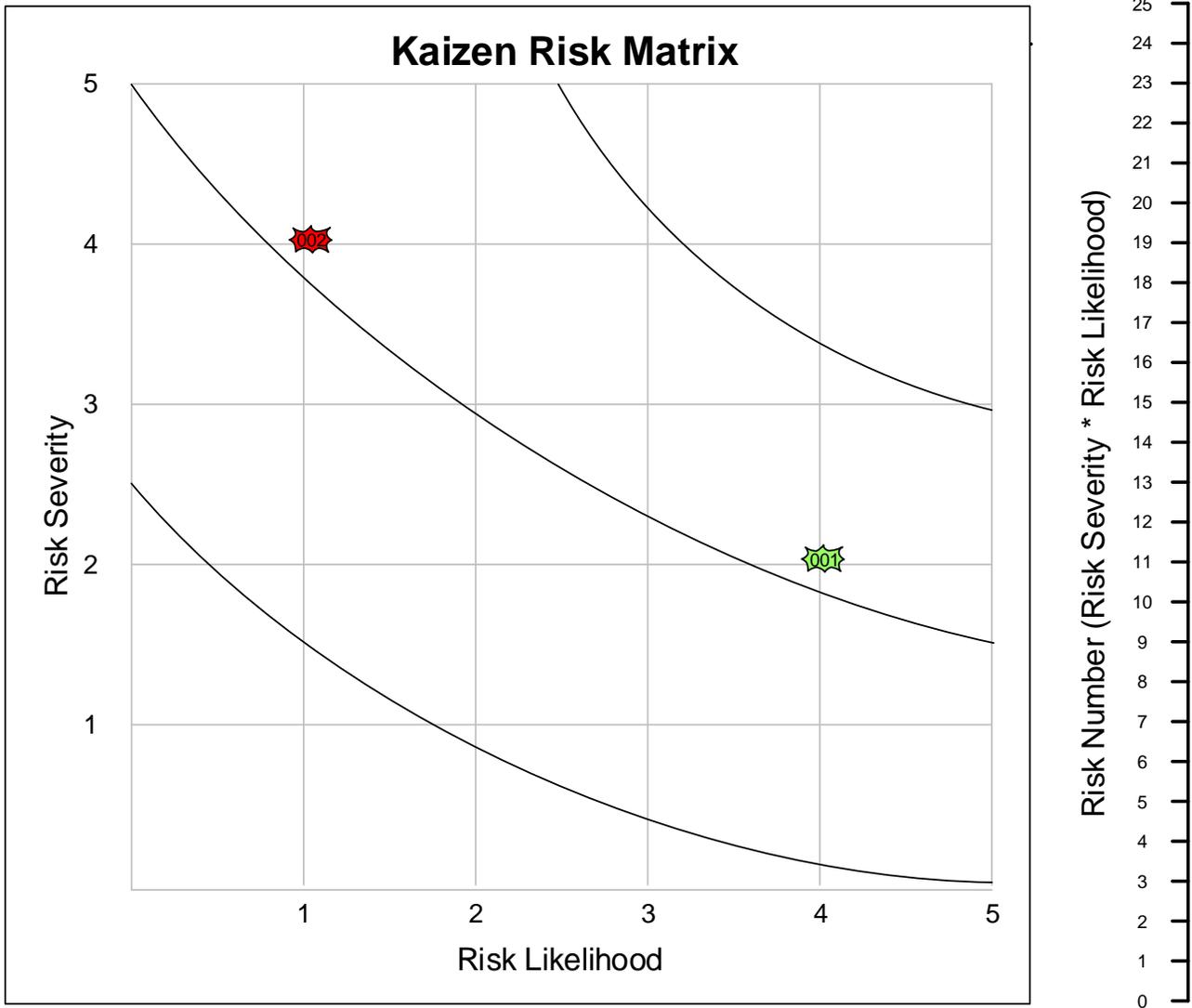1 = Low, 5 = High

Try This:

1. Drag out a Kaizen starburst shape from the Quick Extras stencil. Type "Reduce Cycle Time" into the burst. Enter the values for the likelihood and severity by clicking "Edit Kaizen" via right-mouse menu.

2. Drag out another Kaizen Starburst. Type "Incorrect Assembly" into the burst. Enter the likelihood and severity values via the Edit Kaizen form.

3. Drag out the Kaizen Risk Matrix from the Quick Extras stencil.

4. Right-click the chart shape to plot.

Kaizen
Risk
Matrix

Kaizen Risk Matrix

Risk Severity (vertical axis, values 1–5)

Risk Likelihood (horizontal axis, values 1–5)

002 (red marker at approximately Risk Likelihood 1, Risk Severity 4)

001 (green marker at approximately Risk Likelihood 4, Risk Severity 2)

Risk Number (Risk Severity * Risk Likelihood) (vertical axis, values 0–25)

001 (green marker at 7)

002 (red marker at 3)

.

Kaizen
Data

Formatting the Kaizen Report in Excel

The Kaizen Report in Excel can be formatted with custom properties of color, font, visibility, and row height. In order to be able to edit this formats, you need a specific Excel file. To get this file in the correct location for usage:

Try This:

1. Create a new folder called "eVSM Standards" at the same level as the "eVSM" folder on the C: drive>Program Files (x86)

2. Copy the templates file called "eVSMExcelTemplate.xlt" from the C:Drive>Programs Files (x86)>eVSM>Setup>Resources folder to the newly created "eVSM Standards" folder

3. Customize the templates file as needed by following the instructions below

Once you have clicked the Kaizen Export button in the toolbar and your Excel spreadsheet appears, there should be a page named "KaizenFormat". The changes made on this page will effect the actual report which is page named "PageName_Kaizen".
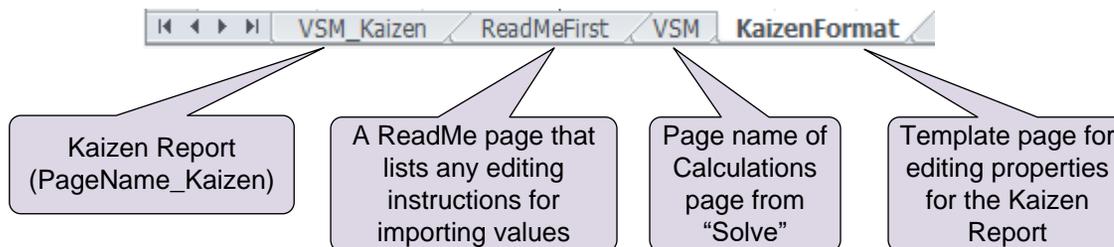
In the "KaizenFormat" page in the spreadsheet:

- D1: Change the font color of this cell to set these properties for all Data headers

- D2: Change the font color, boldness, or italics of this cell to set the default for the Property names

- D3: Change for the fill color or row height of this cell to set these properties for all units

- B5: Change the fill color of this cell to set this color for all kaizen numbers

- Each Property header can have a unique fill color, set by this page

- To hide an entire row or column, right-click the row number or column letter and choose "Hide". To unhide that row or column, select the row before and after the hidden one by holding down the SHIFT key, or the column before and after the hidden one, and then right-click and select "Unhide".

Map Copy

Using the Map Copy button in the toolbar, eVSM can copy your map to another page in the file. This function saves time as opposed to using Visio's regular copy and paste functions.

Try This:

1. Click the Map Copy button in the toolbar.　　Map Copy

2. A box will appear asking you to enter a page name for the new page in the file.

Enter copy page name	×
Enter new page name (limit 25 chars	OK
	Cancel
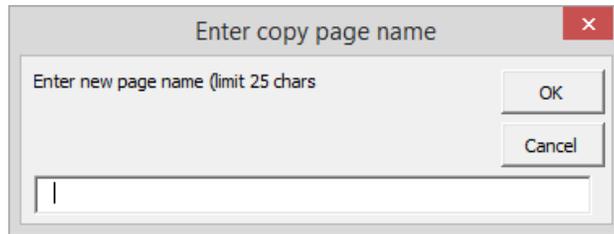
3. Type in a new name for the page that is going to be created and click OK.

4. Your entire map will be copied to this new page in the same file.

8. Extras

Overview

v8 Migrate   Provide utilities for upgrading older eVSM maps to v8.

Migrate Maps to eVSM v8

The following button in the toolbar will migrate eVSM v5, v6, and v7 maps to eVSM v8 format.

 Migrate

Once a map is migrated to v8, it cannot be opened in older releases of eVSM.

If you need to open an eVSM v8 file in, say v3 (or any earlier version of eVSM) for viewing/printing purposes only, here is a workaround:

1. Start eVSM and switch VB Macros Off. Click "Tools > Options > Security".

2. Switch "Off" this checkbox.

3. Exit Visio and open the eVSM v8 file.

Note: Remember to reverse Step 2 above when you wish to use eVSM v8 again.

9. Learn

Overview

Provides an on-line access to help resources, example maps, and training options.

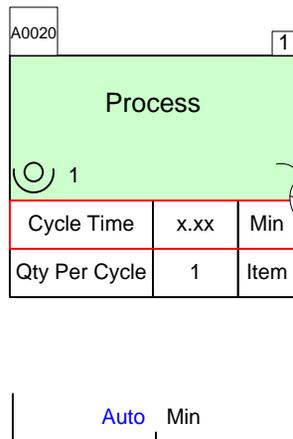|		
Help	Accesses the eVSM on-line help site.
Icon Search	Search for shapes in eVSM stencils.
Stack Help	Builds a page full of all the choices available in an eVSM Stack shape master. Select a blue or green eVSM icon from Quick Extras or any Quick stencil before running this tool.

Name Help

For variable name help, right-click any variable and select "Name Help" in the menu for a description of the variable.
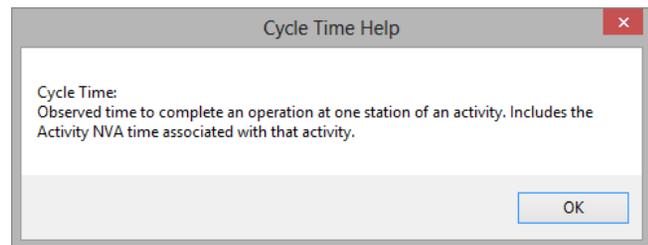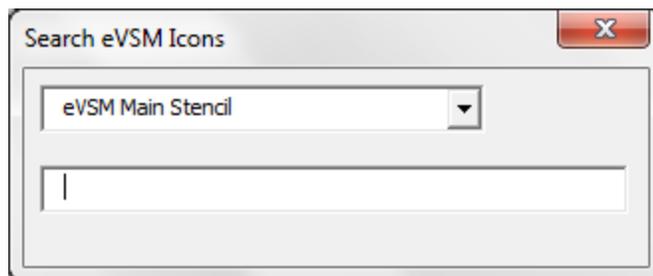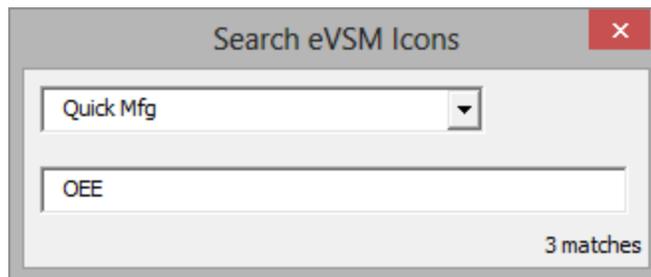
Icon Search

The Icon Search button in the eVSM toolbar allows you to search for icons in any of the eVSM stencils. The search looks at the name and the brief help behind each icon and presents results in a separate search stencil.
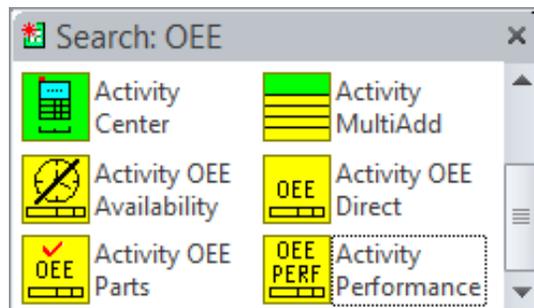
Try This:

1. Click the Icon Search button in the Learn module of the eVSM toolbar.

2. Look for "OEE" in the Quick Mfg stencil.

3. The resulting shapes associated with OEE will be brought up in a new search stencil.

Stack Help

The Stack Help button creates a new page in the file with all of the available shapes for a selected stack. An icon can be identified as a stack shape if it is blue or green in an eVSM stencil.
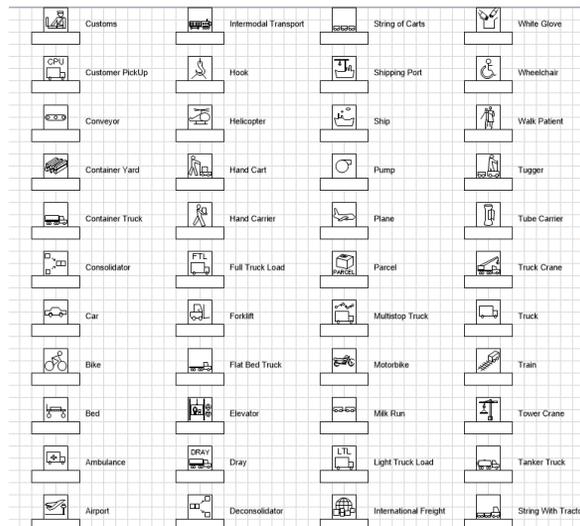
Try This:

1. Select the blue stack Transport Shape from the Quick Extras stencil.

2. Click the Stack Help button in the eVSM toolbar. Stack Help

3. A new page will be created with the page name "Transport Shapes_Stacks" in the file with all of the shapes in the Transport stack.

10. Quick eVSM

Overview

Quick eVSM consists of ready-built stencils for specific application areas. Using these Quick Stencils will increase productivity and reduce learning time. Application areas supported include:

- **Quick Manufacturing** – plant level maps for discrete parts

- **Quick Manufacturing Network** – supply chain, logistics, and distribution for discrete parts and assemblies

- **Quick Transactional** Pro – transactional processes

- **Quick Healthcare** – patient flows in healthcare

- **Quick Enterprise** – supply chain and logistics maps

- **Quick Processing** – plant level maps for food products and chemical processing

- **Quick Processing Network** – supply chain, logistics, and distribution for food products and chemical processing

- **Quick Warehouse** – warehousing process mapping

- **Quick MCT** – supports manufacturing critical path time calculation assorted with Quick Response Manufacturing
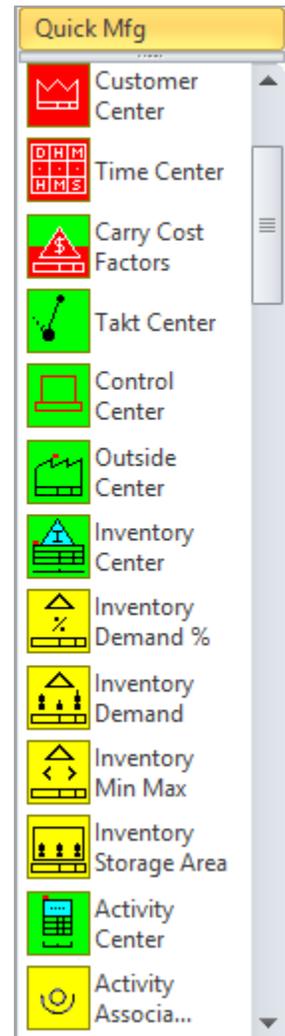
To access a Quick stencil, click the Open button in the toolbar. Open

The Quick Stencils will be located on the left side of the Visio drawing page. Quick stencils contain macro shapes which are collections of individual shapes, sometimes with names, units and calculation equations built-in.

Quick eVSM maps must be initiated with the red icons found at the top of each Quick stencil. Once the red icons from a Quick stencil have been dropped on a page, the page is locked for use with that Quick stencil. You cannot add content from other Quick stencils. You can however add icons from the main stencil (right side) at any time. Some icons (eg. Arrows) are available only in the main stencil.

Quick Stencils Icon Colors

Red icons are used to initiate the map for the chosen application area. Red icons must be dropped first on the new map. The red icons block the map from being used with any other Quick stencil.
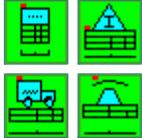
Green icons, called "Centers", are used to represent the flow.

Yellow icons, called "add-ons" are additions to "centers" for optional calculations. These add-ons must be properly glued to the data shapes under the Center. The yellow icons that follow a Center in the Quick stencil can only be used with that Center. Note the first word in the add-on names matches the parent Center.
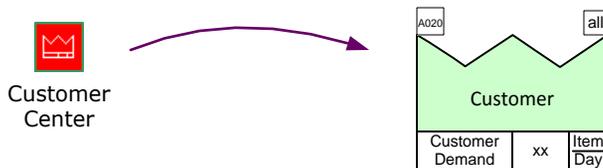
Magenta icons represent charts.

White icons used for miscellaneous macro shapes.

Red Icons in the Quick Stencils

Manufacturing
Data

The red Data icon acts as the vault for all of the system data for the map such as names, units, equations. Each stencil has its own data icon that must be dragged out first.
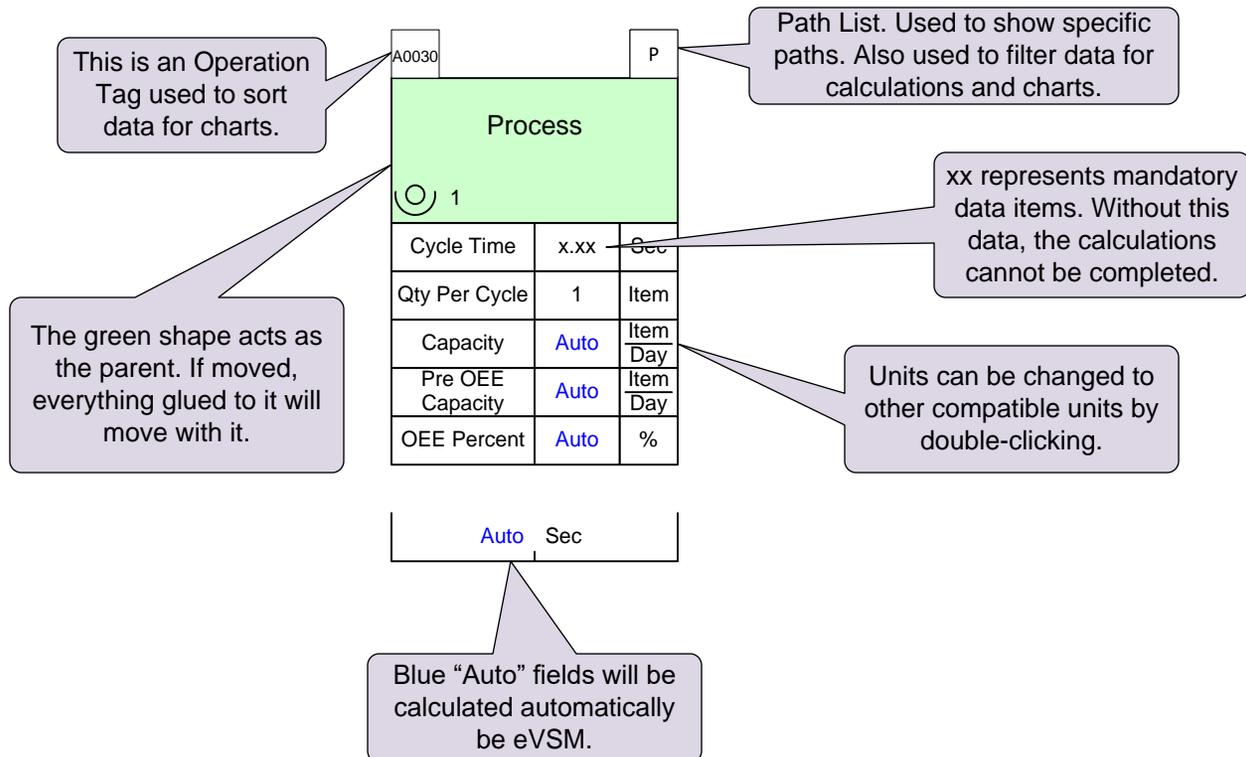
Customer
Center

The Customer Center represents the customer is where the customer demand is specified. Where multiple customers exist, a separate Center can be used to represent each customer.

Units	Week	Year	Week
	xx	52	5
	Hr	Week	day
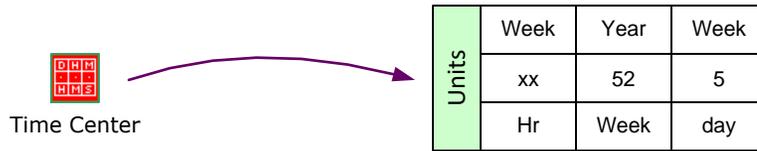
Time Center

The Time Center shows the actual time (after deducting break times) the value stream operates for. Activity level local time can be specified for activities which work to a different schedule. Other units are available.

Quick Stencils Centers (Green Icons)

The Centers typically come out with tags and data shapes properly glued to the parent shape (green icon)

This is an Operation Tag used to sort data for charts.

Path List. Used to show specific paths. Also used to filter data for calculations and charts.

A0030   P

Process

1

Cycle Time	x.xx	Sec
Qty Per Cycle	1	Item
Capacity	Auto	Item Day
Pre OEE Capacity	Auto	Item Day
OEE Percent	Auto	%

xx represents mandatory data items. Without this data, the calculations cannot be completed.

The green shape acts as the parent. If moved, everything glued to it will move with it.

Units can be changed to other compatible units by double-clicking.

Auto	Sec

Blue "Auto" fields will be calculated automatically be eVSM.

Quick Manufacturing

The Quick Manufacturing stencil is designed to represent discrete parts flowing through plant level manufacturing value streams. Both, the material and information flow may be represented.

The Quick Manufacturing stencil includes built-in calculations for:

- Lead Time, Value added time, Takt time
- Scrap, OEE, and other common activity losses
- Energy and space calculations
- Multi-stations, part-time, over-time, shared resources
- Cost of activities, inventory, transport, scrap
- Transport distances
- Multi-paths

For tutorials and examples visit: http://www.evsm.com/help

Quick Transactional Pro

Used to draw office, administrative, and general services value stream maps. May be used for any value streams concerned primarily with information flow.

Supported calculations include:

- Lead Time, Value added time, Takt time, Cumulative Rolling Time
- %Complete & Accurate (%C&A)
- Multi-stations, part-time, over-time, shared resources
- Multi-paths and looping

For tutorials and examples visit: http://www.evsm.com/help

Quick Healthcare

Used to capture value streams that require following a patient through admin and non-clinical processes.

Supported calculations include:

- Lead Time, Value added time, Takt time, Cumulative Rolling Time
- %Complete & Accurate (%C&A)
- Multi-stations, part-time, over-time, shared resources
- Multi-paths and looping

For tutorials and examples visit: http://www.evsm.com/help

Quick Enterprise

The Quick Enterprise stencil is designed to provide mapping support for enterprise, supply chain and logistics maps. The stencil was developed after a review of the workbooks "Seeing The Whole" and "Lean Fulfillment" from the Lean Enterprise Institute (www.lean.org). The stencil has been subsequently refined through enterprise mapping projects the eVSM group has been involved in.

For tutorials and examples visit: http://www.evsm.com/help

Quick Processing

The Quick Processing stencil is designed to provide mapping support for plant level manufacturing in Process Industries. The stencil was developed after a review of the Peter King's book "Lean for the Process Industries". It is an adaption of standard Value Stream Mapping methodology to address the non-discrete nature of process manufacturing.. The stencil has been subsequently refined through processing mapping projects the eVSM group has been involved in.

For tutorials and examples visit: http://www.evsm.com/help

Quick Processing Network

The Quick Processing Network stencil is designed to provide mapping support for supply chain, logistics, and distribution value stream mapping of chemicals and food processes, that allows calculation of demand, cost and lead times. It is designed to work with Quick Processing.

For tutorials and examples visit: http://www.evsm.com/help

Quick Manufacturing Network

The Quick Processing Network stencil is designed to provide mapping support for supply chain, logistics, and distribution value stream mapping of chemicals and food processes, that allows calculation of demand, cost and lead times. It is designed to work with Quick Processing.

For tutorials and examples visit: http://www.evsm.com/help

Quick Warehousing

The Quick Processing Network stencil is designed to provide mapping support for supply chain, logistics, and distribution value stream mapping of chemicals and food processes, that allows calculation of demand, cost and lead times. It is designed to work with Quick Processing.

For tutorials and examples visit: http://www.evsm.com/help

Quick MCT

The Quick Processing Network stencil is designed to support manufacturing critical path time calculation within the QRM (Quick Response Manufacturing) methodology. Quick MCT has a small set of drag & drop shapes and a set of units converters that allows data to be input in production, office or calendar units and then converts values to calendar units for consistent output. It has been designed to complement the MCT Quick Reference Guide by Rajan Suri. The "critical path" provides the MCT number and this is seen visually with its gray and white space components on the MCT chart.

For tutorials and examples visit: http://www.evsm.com/help

11. eVSM Wizards

Overview

eVSM Wizards are simpler stencils that are meant to be used in conjunction with the Quick stencils. They do detailed side calculations related to some aspect of the main map, which the values can then be imported into the main map. The Wizards cover areas such as:

- **Kanban** – to calculate kanban sizing and quantities

- **Facility Time Pro** – allows direct specification by each weekday of times, shift patterns, and related costs.

- **Manufacturing Multi Station** – calculates the properties of an equivalent machine that has the same capacity as multiple machines with differing properties.

- **Processing Multi Station** - calculates the properties of an equivalent machine that has the same capacity as multiple machines with differing properties.

- **EPEI (Every Part Every Interval)** – calculates min possible and actual EPEI intervals for multiple products going through a single station with differing demands and lot sizes.

- **POLCA (Paired-cell Overlapping Loops of Cards with Authorization)** – is a variant of Kanban, suitable for companies which produce many different and/or customized products.

- **Standard Work** – allows layout of standard work with manual, machine, and walk times and creates a standard work chart.

- **Spaghetti Diagram** – allows you to draw paths on a floor plan and then export a Path Report with distances to Excel.

- **A3 Report** – Creates A3 Reports in Visio with a starter template and a dedicated stencil of standard shapes from eVSM.

- **Event Circle** – allows you to visualize all the transactions in a given pathway or process.
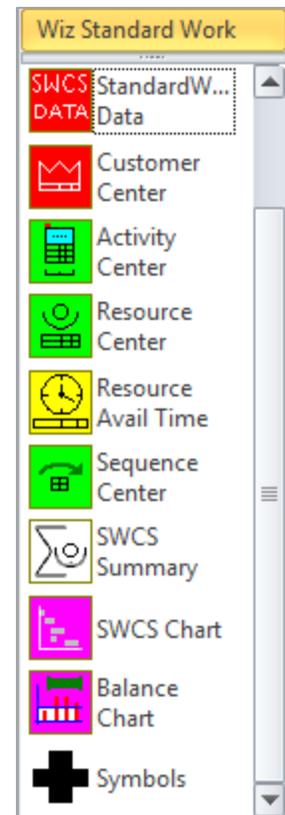
To access a Wizard stencil, click the Open button in the toolbar. 🚪 Open

Wizards contain macro shapes which are collections of individual shapes, sometimes with names, units and calculation equations built-in. The icon colors represent the same shapes as in the Quick stencils.

Wizard pages must be initiated with the red icons found at the top of each stencil. Once the red icons from a Wizard stencil have been dropped on a page, the page is locked for use with that Wizard. You cannot add content from other Quick or Wizard stencils. You can however add icons from the main stencil (right side) at any time. Some icons (eg. Arrows) are available only in the main stencil.

The table below shows which Wizards are designed to work the different Quick stencils.

	Quick Manufacturing	Quick Manufacturing Network	Quick Processing	Quick Processing Network	Quick Transactional Pro	Quick Healthcare	Quick Enterprise	Quick Warehousing	Quick MCT
Wiz Kanban	✔		✔					✔	
Wiz Facility Time Pro	✔	✔	✔	✔	✔	✔	✔	✔	✔
Wiz Mfg Multi Station	✔								
Wiz Proc Multi Station			✔						
Wiz EPEI	✔		✔						
Wiz POLCA	✔		✔						
Wiz Standard Work	✔		✔		✔	✔		✔	✔
Wiz Spaghetti	✔	✔	✔	✔	✔	✔	✔	✔	✔
Wiz A3	✔	✔	✔	✔	✔	✔	✔	✔	✔
Wiz Event Circle	✔	✔	✔	✔	✔	✔	✔	✔	✔

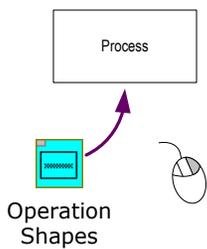# Appendix A : Drawing with Base eVSM

Identifying Customers
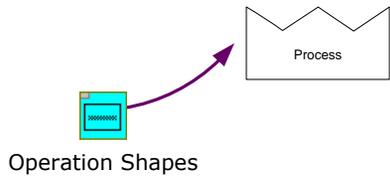
Start the map at the customer end.

Drag out the 'Operation Shapes' icon and right-click the shape to change it to a customer shape.
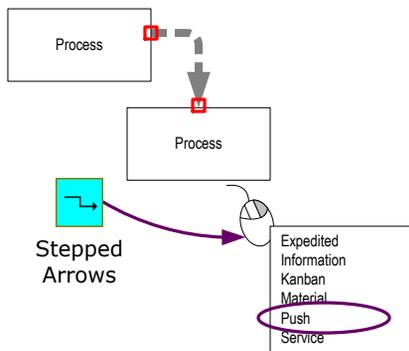
Operation Shapes

Identifying Operational Steps

Identify operations in the value stream and start at the customer end.

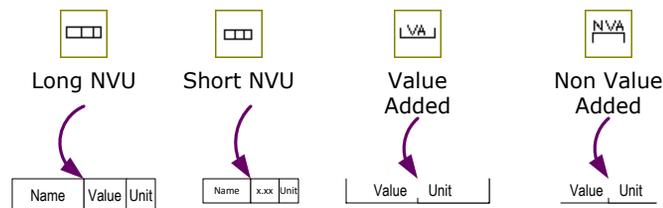Use the right mouse button to swap to another process shape.

Operation Shapes

Connecting Operational Steps with Arrows

Drag and drop, then glue arrows to the operations or their data shapes for easy future modification of the map.

Use the right mouse button to swap to another arrow type (like this Push arrow)

Stepped Arrows

Expedited
Information
Kanban
Material
Push
Service

Adding Operational Data

Value stream data which you may later want to use in calculations must be represented in eVSM data shapes. eVSM has the following data shapes:

Long NVU   Short NVU   Value Added   Non Value Added

Name | Value | Unit

Name | x.xx | Unit

Value | Unit

Value | Unit

Data shapes consist of two or three fields. To move or delete a data shape, you MUST click on the Value field. To edit any of the fields, simply double-click on the desired part and you will be able to make any changes.
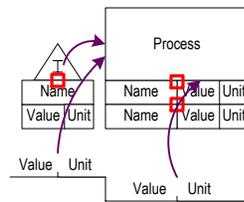
Data shapes must be glued directly, or via other shapes, to the activity they represent.

Variable Names and Units

To add variable names/units to the right mouse button (RMB) menu, follow these steps:

1. Click the following button in the eVSM Toolbar to open the Name & Unit Manager (NUM) dialog. NUM

2. To add a new unit, click the "New Unit…" button.

3. All variable names must have a default unit. When adding new variable names, first make sure that the unit you wish to make the default for the new variable, exists in the units list. Then, click the "New Name…" button and follow the prompts.
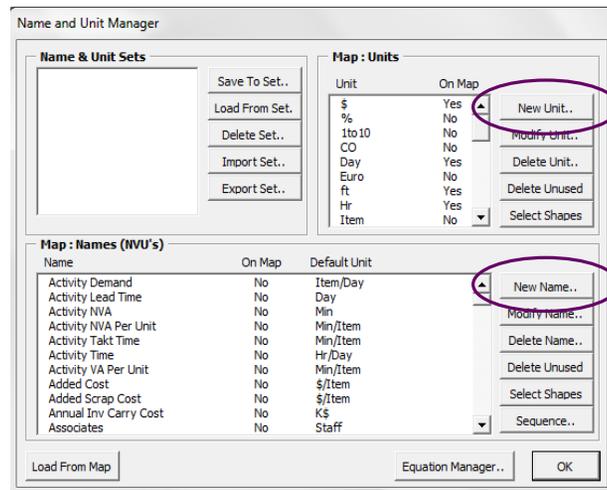
Adding Additional Data Shapes
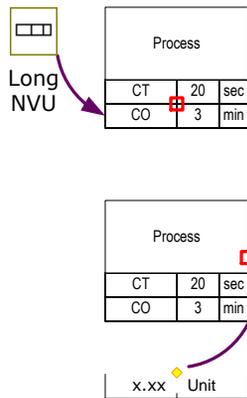
Additional data can be added to a process. Drag & glue a new NVU to the bottom of an existing NVU.

Data shapes that do not touch the operation or its data shapes directly should be associated with the operation by dragging the flying yellow connector and gluing it to the operation.

Note: Flying connectors should NOT be used where shapes are touching.
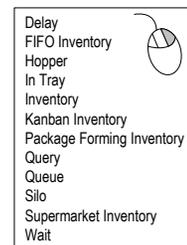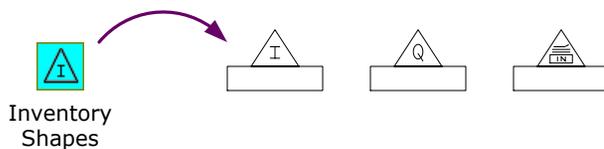
Representing VA & NVA data
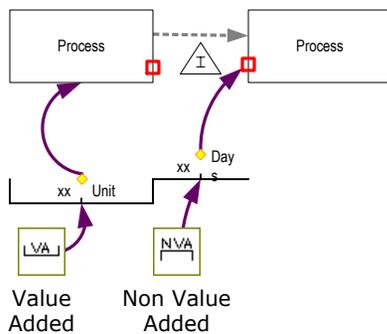
VA and NVA shapes are available to construct a timeline on the map.

Glue these shapes to operational shapes with a flying connector.

When there are several VA/NVA metrics to be tracked, the Long NVU shape should be used instead of the specific VA, NVA shapes.

Representing Inventory & Queues

| Delay |
|---|
| FIFO Inventory |
| Hopper |
| In Tray |
| Inventory |
| Kanban Inventory |
| Package Forming Inventory |
| Query |
| Queue |
| Silo |
| Supermarket Inventory |
| Wait |

After an inventory shape has been dragged out, it can be changed to a variety of inventory shapes. Use the right mouse button to swap to another inventory shape (Queue, In-tray etc..).

Representing Inventory Data
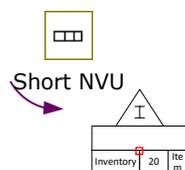
Drag out the NVU shape and glue it to the bottom of the inventory rectangle to document inventory type and quantity. Use additional triangles and NVU blocks for each inventory type.

Representing Supermarkets and Buffers
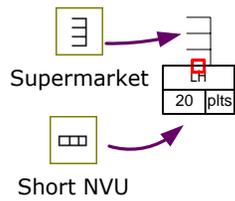
Supermarket and Buffer shapes work in a similar way to the Inventory Shape. Any data must be glued to the base of the shape.

Supermarket

Short NVU

Representing Transport Method and Data
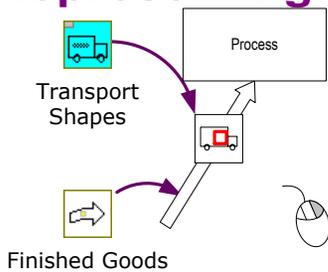
Drag out Transport Shapes and place them on the map or glue them to arrows. NVU shapes holding related variables can be attached to the base of the icons.
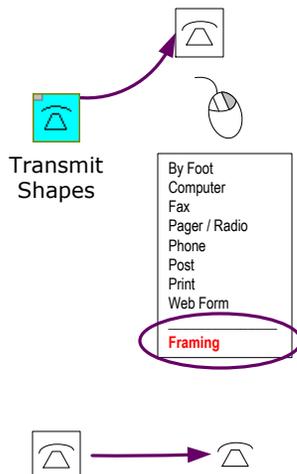
Transport Shapes

Finished Goods

Process

Use the right mouse button to swap to another transport type (Train, Helicopter etc..).

Representing Transmit Method and Data

Control Activity
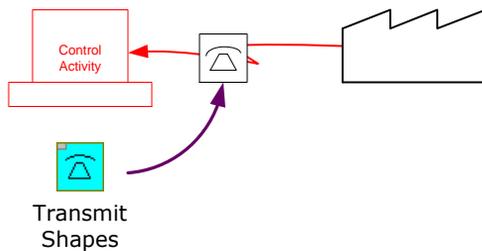
Transmit Shapes

Transmit Shapes work in a similar way to Transport Shapes and are generally applied to information flow.

Frameless Transport & Transmit Shapes

Transmit Shapes

By Foot
Computer
Fax
Pager / Radio
Phone
Post
Print
Web Form

Framing

Right-click on a transmit or transport shape on the map to show alternate methods.

At the bottom of the list is a "Framing" option that allows the outer box around the shape to be turned on or off. When turned off the shape looks as below:

Working with Tables

The eVSM Table shape was introduced to allow easy creation of box-score tables on the map.
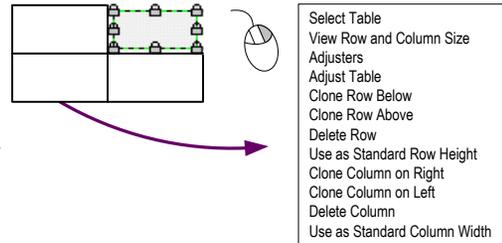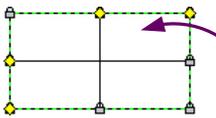
Starter Table

Table

This is a simple starter table that can be further customized:

A right mouse click on any of the table cells brings up a table modification menu (right) allowing for row / column addition and modification.

Select Table
View Row and Column Size
Adjusters
Adjust Table
Clone Row Below
Clone Row Above
Delete Row
Use as Standard Row Height
Clone Column on Right
Clone Column on Left
Delete Column
Use as Standard Column Width

Resizing Rows and Columns

Pick the "Select Table" command in the right mouse menu to highlight the yellow diamonds. Move these yellow diamonds to the required width and height positions. Then click the "Adjust Table" command in the right mouse menu.

Editing Text

Double-Click on a table cell to change its text.

Moving the Table

To move the table to a new position on the map, click the "Select Table" command in the right mouse menu. Then drag the table to the desired location.

Tables and Spreadsheets

You can transfer table cell data to the spreadsheet with the "eVSM Calculator" button

 Solve

To transfer the data, the table has to be tagged first.

Each table creates its own worksheet page in the Excel Workbook. If the page name is "CS" and the tag is "A010" then the worksheet in Excel will be called "CS_A010". If formulas are created within cells in the spreadsheet, the results of those formulas will appear in the table when the eVSM Solve button is clicked.

| A010		
Header1	Header2	Header2
Value1	Value2	Value2

Operation Tag
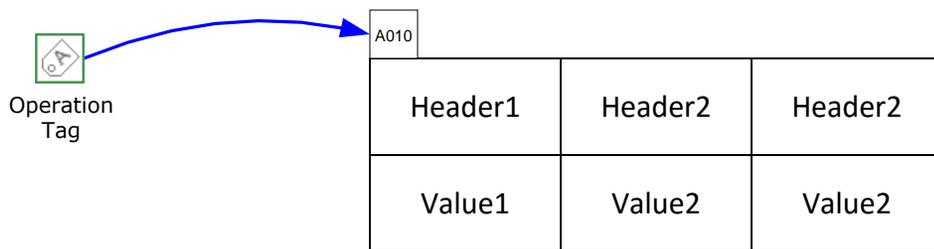
Swimlanes

The eVSM Swimlane function allows drawing of VSMs and flowcharts in swimlane layout, horizontally or vertically. The eVSM Swimlane shape is an implementation of the eVSM Table function.
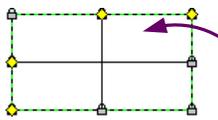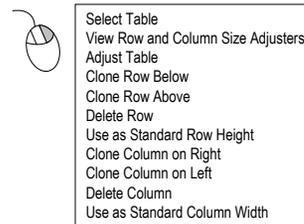
To calculate totals or plot charts for each lane, see the Path List function.

Note: The swim lane function in native Visio is NOT supported with eVSM. The eVSM Calculator will not work if the Visio swim lane shape is on your drawing page.

Horizontal Swimlane

Vertical Swimlane
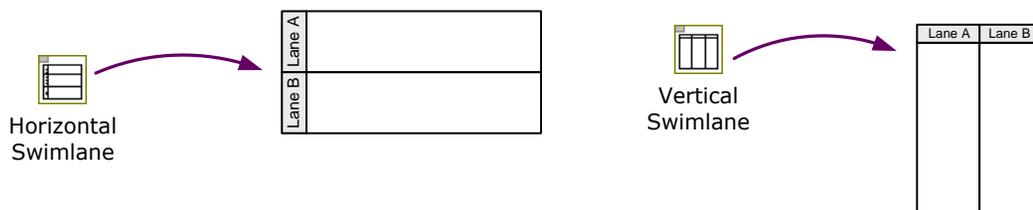
Try This:

1. Drag out the Horizontal Swimlane from the main stencil.

2. Right mouse click on any of the lanes to bring up the modification menu allowing for row/column addition and modification.

Select Table
View Row and Column Size Adjusters
Adjust Table
Clone Row Below
Clone Row Above
Delete Row
Use as Standard Row Height
Clone Column on Right
Clone Column on Left
Delete Column
Use as Standard Column Width

3. Pick the "Select Table" command in the right mouse menu to highlight the yellow diamonds. Move these yellow diamonds to the required width and height positions. Then click the "Adjust Table" command in the right mouse menu.

4. Double-click the "Header" to edit the text.

5. To move the table to a new position on the map, click the "Select Table" command in the right mouse menu. Then drag the table to the desired location.

Appendix B : Analysis with Base eVSM

Excel Rowmaker Shapes

Only shapes with a grey corner in the stencil can be tagged. These are called Excel rowmaker shapes since each of these creates its own row in the spreadsheet.

Row shape examples:

Operation Shapes   Transport Shapes   Table   Transmit Shapes
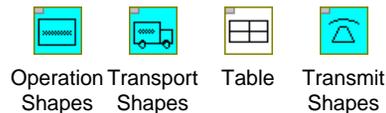
Common Calculator Problems

The eVSM Calculator has some requirements, and if these are violated, the calculator will stop and display an error message. The problem area will be highlighted on the map with a red circle for you to correct. We recommend using the Check button before clicking Solve.

Excel and Visio File Naming

Map.vsd   Solve   Map.xls

When the eVSM Calculator is run for the first time, the Excel file is created automatically and saved in the same folder as the Visio file. The Excel file is given the same name as the Visio file.

Unit conversion variables in Excel are also scoped by the page name.

Common Calculator Problems

Duplicate or Unglued Tags: Each Operation Tag on the map must have a unique value and must be glued to a valid Row Shape.

Overlapping Data Shapes: Some Data Shapes are hidden behind others because of overlap, and is not allowed.

Duplicate Data Shapes: Each Data Shape within a Row Shape collection must have a unique variable name.

Grouped Shapes: eVSM Shapes should not be grouped. The Calculator will abort if grouped shapes are found.

Data in Excel

Data columns sorted by variable name

One row per Rowmaker Shape

All items in a column have same units

Tag	Sketcher	Operation	Data	Data	Data	Data	Data	Data	Data	Data
			activity lead time	added cost	associates	customer demand	cycle time	inventory	qty per cycle	queue
			Day	$/Item	Staff	Item/Day	Min	Item	Item	Day
A020	Customer	Process				xx				
A030	Inventory	Type						xx		
A040	Outside	Process	x.xx	xx						
A050	Inventory	Type		0				xx		
A060	Activity	Process				1	x.xx		1	
A070	Transport									

Rows sorted by Operation Tag number

Calculations in Excel

Equations may be entered in the spreadsheet cells in which Data Shapes are represented.

Steps:

The next time the Calculator is run, the result of the equation will be displayed in the appropriate data shape on the map. The calculated value will be color coded red to show it is controlled by Excel.

3 Click the Enter button

2 Type "=" followed by an equation

1 Select Cell

	B	C	D	E	F	G	H	I
1	Tag	Operation		NVA	Data	Data	Data	Data
2			value	non va	cycle time	distance	rework (%)	yield (%)
3			secs	days	secs	ft	%	%
4								
5	A010	Build	xx		22.00		5.00	96.00
6	A020	Hand Cart				135.00		
7	A030	Pack	xx	xx	22.00		2.00	96.00
8								

Note: After the "=" sign, instead of an equation (eg. =C3*D12), static values (eg. =216) can also be entered. This allows entry of measured metrics directly in the spreadsheet.

---

eVSM Equation Manager

All eVSM calculations are done via an integrated Excel spreadsheet. The spreadsheet is created automatically when the "eVSM Calculator" function is invoked. Results from calculations in the spreadsheet are automatically displayed on the map. eVSM supports two types of equations to perform the calculations:
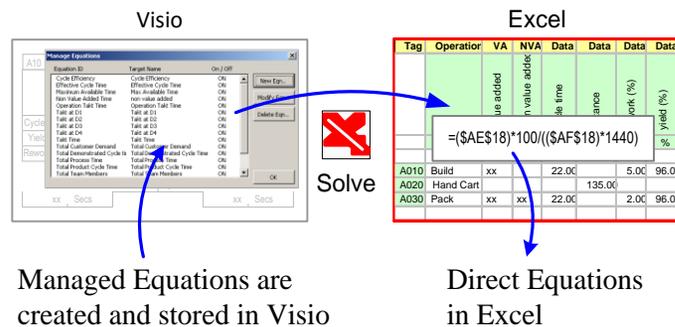
1. Direct Equations – formulas entered directly into cells in Excel.
2. Managed Equations – equations managed by eVSM and automatically inserted as formulas in Excel.

This section shows the Managed Equations capability in eVSM.

Managed Equations are created in Visio and stored in the NUM shape. When the eVSM Calculator is run, they generate Direct Equations in Excel.

Managed Equations are created and stored in Visio

Direct Equations in Excel

The Equation Manager form is accessed through the Name and Unit Manager.

List of Managed Equations

On/Off switch controls whether or not equation will be applied when Calculator is run
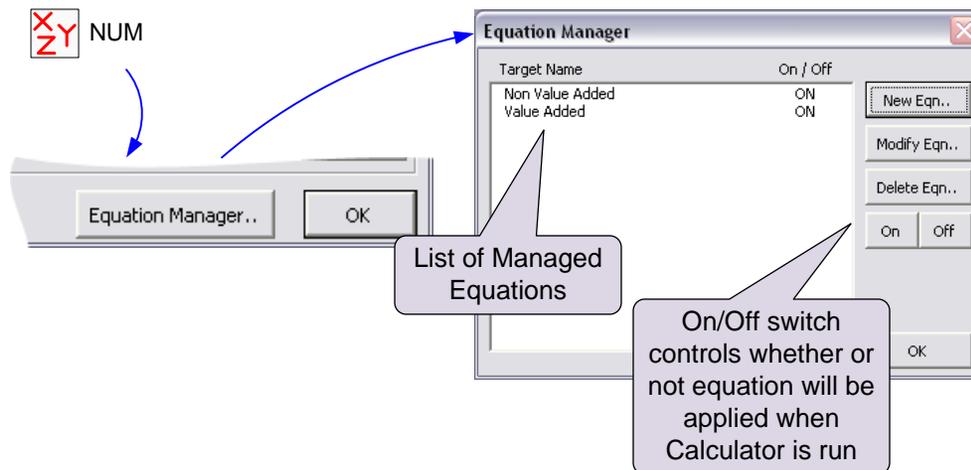
Creating Managed Equations

In this example, we will set up a Managed Equation to calculate the Non-Value added (NVA) times associated with inventory and daily demand. The equation is:

$$\text{Non Value Added (Days)} = \frac{\text{Inventory (Units)}}{\text{Daily Demand (Units/Day)}}$$

Our goal is to use a single equation for the variable "Non Value Added" that is applied everywhere on the map where this variable exists. We will assume two key rules of the Equation Manager:
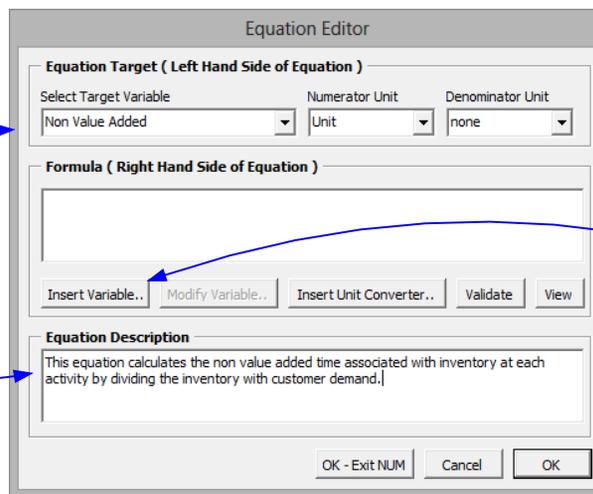
- There is only one equation for each target variable name (left-hand side of the equation).

- An equation is either applied to the whole map (when it is ON), or not applied at all (when it is OFF).
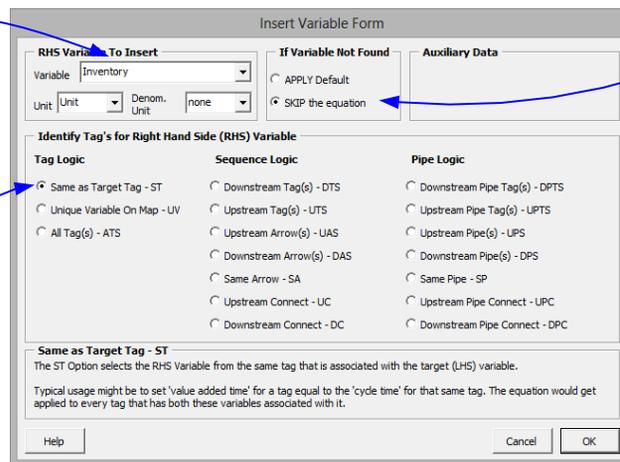
Steps:

1. Click the New Eqn.. Button.
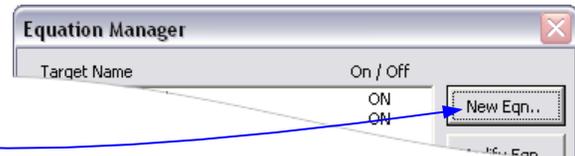
2. Select the variable name to calculate and its corresponding units. This represents the left-hand side (LHS) of the equation.

3. Enter a name and description (optional) for the equation.

4. Click Insert Variable for the right-hand side (RHS) of the equation.

5. Select "Inventory" for variable name and select the unit

6. Specify action to take if variable is not found on map

7. Select the "ST" option. This specifies how data will get selected from the map. The selections are based on the Operation Tag and are explained further in the following pages.

8. Click "OK" to return to the previous form.

9. Type "/" for the divide sign

10. Insert the next variable for the RHS. Here is the resulting equation:

"ST(Inventory;Unit;0;SKIP)/ST(Customer Daily Demand;Unit;0;SKIP)"

To edit variables in the equation, place the cursor on the variable and click the "Modify Variable.." Button.

11. To convert the Managed Equation into Direct Equations, click the Solve button.   Solve

Equation Manager Variables Options

- **Same as Target Tag (ST)** – Used to select the RHS variable from the same operation tag as the LHS variable.

- **Unique Variable On Map (UV)** – Can be used when a variable occurs only once on the map, so there is no need to specify the operation tag ID for it.

- **All Tags (ATS)** - Selects the RHS variable from every tag on map where it exists, and makes a list to put in the Excel function. Typical usage: sum all VA times.

- **Downstream Tags (DTS)** – Selects the RHS variable from the downstream tag as specified by the Tag Seq arrows connecting the tags. Typical usage might be for cumulative calculations starting downstream and moving upstream, like effective yield calculations.

- **Upstream Tags (UTS)** - Selects the RHS variable from the downstream tag as specified by the Tag Seq arrows connecting the tags. Typical usage: cumulative time or cost calculations.

Block Managed Equations

Each target variable (left-hand side of equation) can be driven by only one Managed Equation. When the Calculator is run, the Managed Equation will be applied to every instance of the target variable. Sometimes, you may want to block the Managed Equation from being applied to some instances of the target variable. This can be done with the "Block Managed Equation" shape in the eVSM Icons stencil.
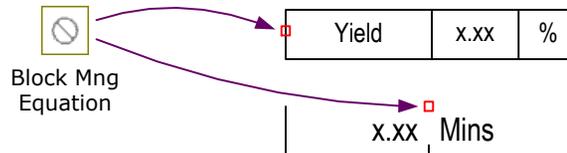
Simply glue the "Block Manage Equation" shape to any data shape which you want omitted from the Managed Equations calculation.

Note: If the "Block Managed Equation" shape is attached to a data shape AFTER it has already been calculated, then you must manually delete its direct equation in Excel before the next Calculator run, otherwise the OLD equation will remain in the spreadsheet.

Sequence Arrows & Pipe

The eVSM Equation Manager has additional variable options for usage with variables on sequence arrows and pipes. These are primarily development tools for eVSM's quick stencils and their usage without developer training is NOT recommended.

Index