



# *LeanView*<sup>TM</sup>

## *User's Guide*



*For use with versions 4.0.39 – 6.0.0 of LeanView*

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## Section I: Introduction to Lean and Value Stream Mapping

### A. What is Lean?

Lean is a systematic approach to identifying and eliminating waste (non-value-added activities) through continuous improvement. The approach calls for product flow at the pull of the customer and in pursuit of perfection. The term 'Lean' is used because Lean manufacturing uses less:

- human effort in the factory
- manufacturing space
- capital investment
- materials
- time between the customer order and the product shipment

### B. Why Do Companies Transition to Lean?

Most companies view Lean as a means to an end. By embracing and implementing Lean, they are able to achieve and maintain competitive strategic advantage by providing:

1. Quality Product - Standard expectation of Global Customer
2. Cost Competitive Product/Service and Process
  - High Productivity
  - Minimum WIP / Inventory
3. Flexibility - Process are responsive to rapidly changing conditions
4. Speed - First To Market
  - Lead-time Competitive
  - New Products/Timely Introduction
5. Simple Processes
  - Dependable
  - Capable Processes
  - Repeatable

### C. What is Value Stream Mapping?

Lean follows a structured process that starts with Value Stream Mapping. The Value Stream is a collection of processes that create value for the customer. A Value Stream consists of the activities, transports, queues and inventories, both value added (VA) and non-value added (NVA), required to bring the product or service from raw material to customer.

The Value Stream includes:

- People
- Tools and technologies
- Physical facilities
- Communication channels
- Policies and procedures

## *Section I: Introduction to Lean and Value Stream Mapping*

A Value Stream Map (VSM) helps companies document and visualize the flow of information and materials through the various process/manufacturing steps required to transform raw materials into finished goods. By analyzing a Value Stream, companies can identify improvement opportunities that, when implemented, will enable the company to do more with less while meeting or exceeding customer expectations.

### **D. The role of LeanView in Value Stream Mapping & Analysis**

The traditional approach to Value Stream Mapping & Analysis usually involves Lean or Six Sigma practitioners walking a product or service Value Stream from end-to-end. This process enables the practitioner to "see" the flow of information and materials at point-of-use. The process of "seeing the flow" is fundamental to Lean and must be performed.

The next step in the process is to create a picture of the Value Stream which is called the Value Stream Map (VSM). Most practitioners draw the VSM using paper and pencil and then create an electronic version using Microsoft Visio, PowerPoint or Excel. The practitioner must then capture and analyze all of the operational and financial data associated with the Value Stream. Practitioners routinely use Excel to perform these steps.

As with any such manual process, information technology solutions can go a long way towards enabling and sustaining the process. An increasing number of Lean and Six Sigma practitioners are looking to LeanView to help enable and sustain the process. LeanView's capabilities go beyond basic drawing and analysis to provide a robust tool for Value Stream Mapping, Lean Process Design, Lean Analysis, and Lean Implementation.

By using LeanView, companies stand to realize the following benefits:

- **Connectivity**
  - Collaborate more effectively as a Lean team
  - Access Lean project information at all levels in the organization, at the desired level of detail
  - Give practitioners training and information when they need it, relevant to the context
- **Productivity**
  - Maximize Lean results with project and resource planning, forecasting, and tracking
  - Improve Lean and business processes continuously
  - Automate routine report creation
  - Increase training efficiencies
- **Dependability**
  - Use reliable, proven Microsoft technology and services from Microsoft and certified partners
  - Plan firm goals, achieve desired results
  - Achieve solid top-level executive support for Lean and its critical role in your organization

## *Section I: Introduction to Lean and Value Stream Mapping*

LeanView was developed with one formula in mind: Lean = fewer required resources. That is, Lean allows organizations to use less space, less capital, less material and less time to produce a given set of products or perform a given set of functions.

To that end, Bluespring provides a comprehensive Value Stream Mapping, Analysis, and Reporting tool that leverages and extends the most commonly used Microsoft Office Products, thereby allowing Lean practitioners to rapidly adopt and utilize the tools, power, and extensibility in a highly flexible and collaborative environment.

LeanView Improves and Integrates Lean and Six Sigma processes and programs.

- Streamline drawing, distribution, and updating of value stream map (VSM) diagrams.
- Automatically calculate key operational metrics for each VSM state.
- Transform raw financial and process data into business intelligence as a Microsoft Excel document depicting key performance indicators for each VSM state.
- Seamlessly transform process improvement opportunities into actionable project plans.
- Assist the finance department with Sarbanes-Oxley compliance by closing the gap between reported Lean savings and actual bottom-line performance.

Communicate information clearly and collaborate more effectively.

- Create comprehensive management reports for each value stream.
- Add hyperlinks between parts of a LeanView diagram, to other LeanView diagrams, or to supporting files or Web pages for enterprise-level views.
- Share LeanView diagrams from within Microsoft Visio® interface using Document Workspaces that reside on Windows SharePoint Services sites.
- Populate management dashboards with Solution XML and Visio XML output from LeanView.
- Identify and prioritize opportunities to improve your value stream.
- Project operational improvements to your value stream.

### **LeanView and the Supply Chain**

LeanView allows practitioners and managers to assess overall performance of their supply chains by linking to Value Streams at the supplier level and allowing “Roll-Up” analysis of process performance data.

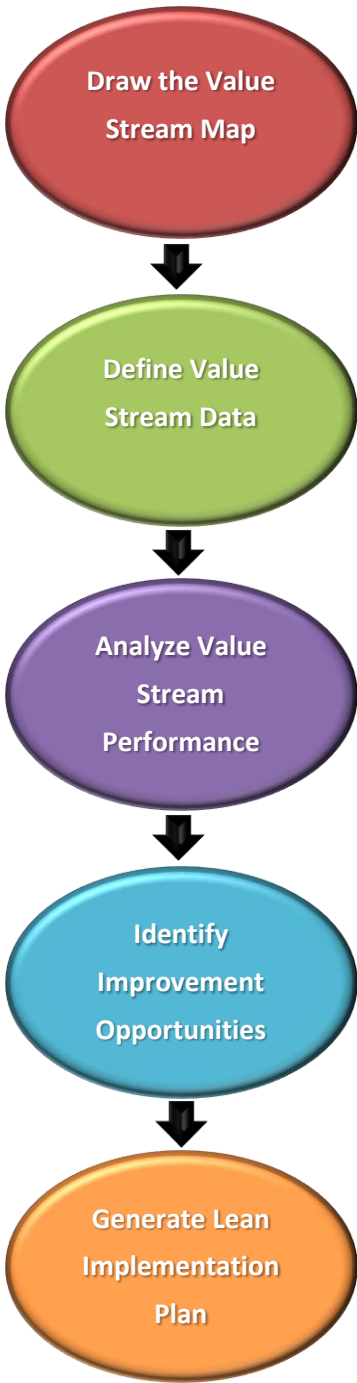
Organizations can request that suppliers utilize LeanView to create Current state Value Stream Maps, and can use Microsoft collaboration technologies such as Microsoft Windows SharePoint Services and Microsoft Office Project Server to share and collaborate with suppliers to reduce costs throughout the entire supply chain.

Whether through collaborative use or standalone use by suppliers, LeanView allows opportunities for improvement to be identified and quantitatively analyzed, thus reducing the costs of materials and parts supplied to your production or service lines. Please contact Bluespring Software if you are interested in incorporating LeanView into your Supply Chain.

Section I: Introduction to Lean and Value Stream Mapping

LeanView provides a toolset that allows the improvement team to clearly visualize, fully define, and confidently validate any product or service value stream.

Value Stream Mapping and Analysis with LeanView



**LeanView 'Map Sequence' for Auto-Drawing**

**LeanView Shape Stencils**

**LeanView Input dialogs standardize VSM data collected.**

**LeanView provides preconfigured analysis reports to provide value stream performance information in an actionable format.**

**Burst Shapes denote improvement actions within the VSM and contain tasks, responsibilities, and notes.**

**Centralize Rep Assignment Information**

**Export improvement task information to Microsoft Project automatically.**

Type	Process	Filter	Pg.	All				
	Title	Starts With	Ends With	Flow Time (FT)	Units	Manual Time (MT)	Units	Auto Ti (AT)
1	Review Order			10.00	Mins			
2	Log Order			25.00	Mins			
3	Lookup Rep			5.00	Mins			
4	Review			10.00	Mins			
	Check Product							

Unit of Inventory	Total	Average	Consumption	Turns
Item Measure	Quantity	Cost	Value	in Period
Material/WIP	19	\$1,160	1,360	59.94

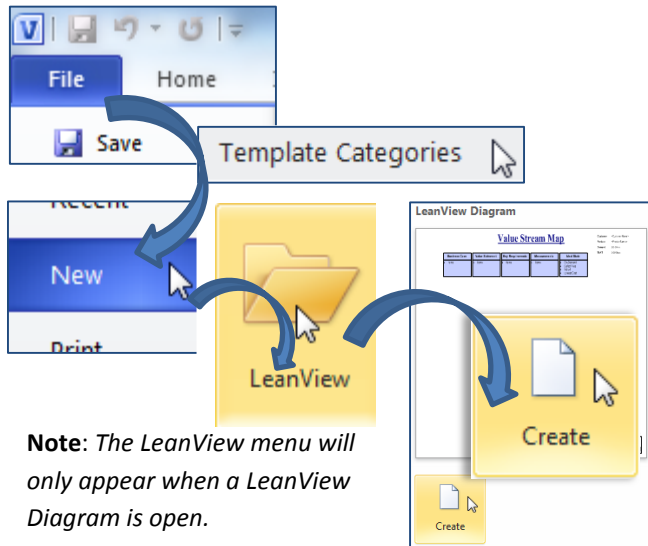
NVA Time	Process	Flow Time (FT)	Proce
0.42 hrs	Log Order	0.42 hrs	Log Or

Goal	Start	End	Resources	Fixed
1 Identify existing rep assignment storage repositories.	08/11/2010	08/12/2010		
2 Estimate development effort to centralize data.	08/11/2010			
3 Draft desired UI for access to new repository.	08/11/2010			
4 Determine security/access/credentialing for use of the new repository.	08/11/2010			

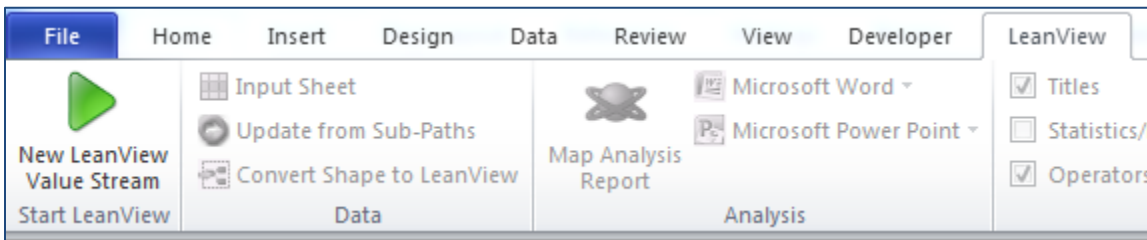
## Section II: The LeanView Environment

LeanView provides a drawing template and shape stencils to make value stream map construction easy.

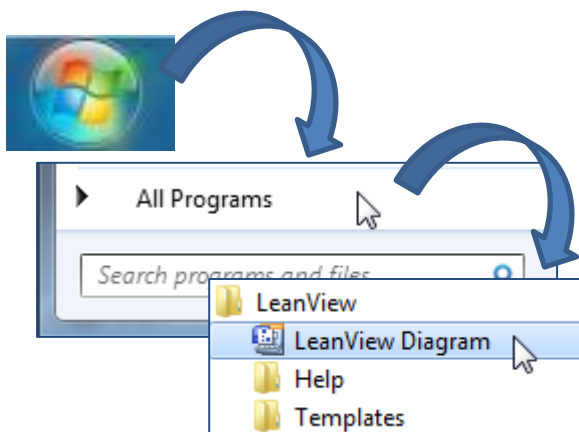
A LeanView drawing can be quickly created through the Visio File menu. To open a LeanView diagram, launch Microsoft Visio (2007 or 2010) and, through the Visio File menu, choose New → LeanView → LeanView Diagram.



If utilizing LeanView 6.0 in Visio 2010, users may also create a new LeanView drawing by launching Microsoft Visio 2010, accessing the LeanView ribbon, and clicking the 'New LeanView Value Stream' button.



In LeanView version 4, a new LeanView drawing may be created through the Windows Start menu.

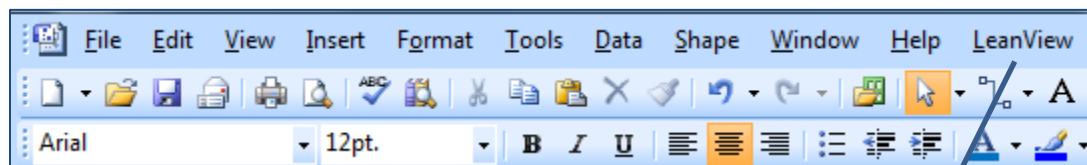
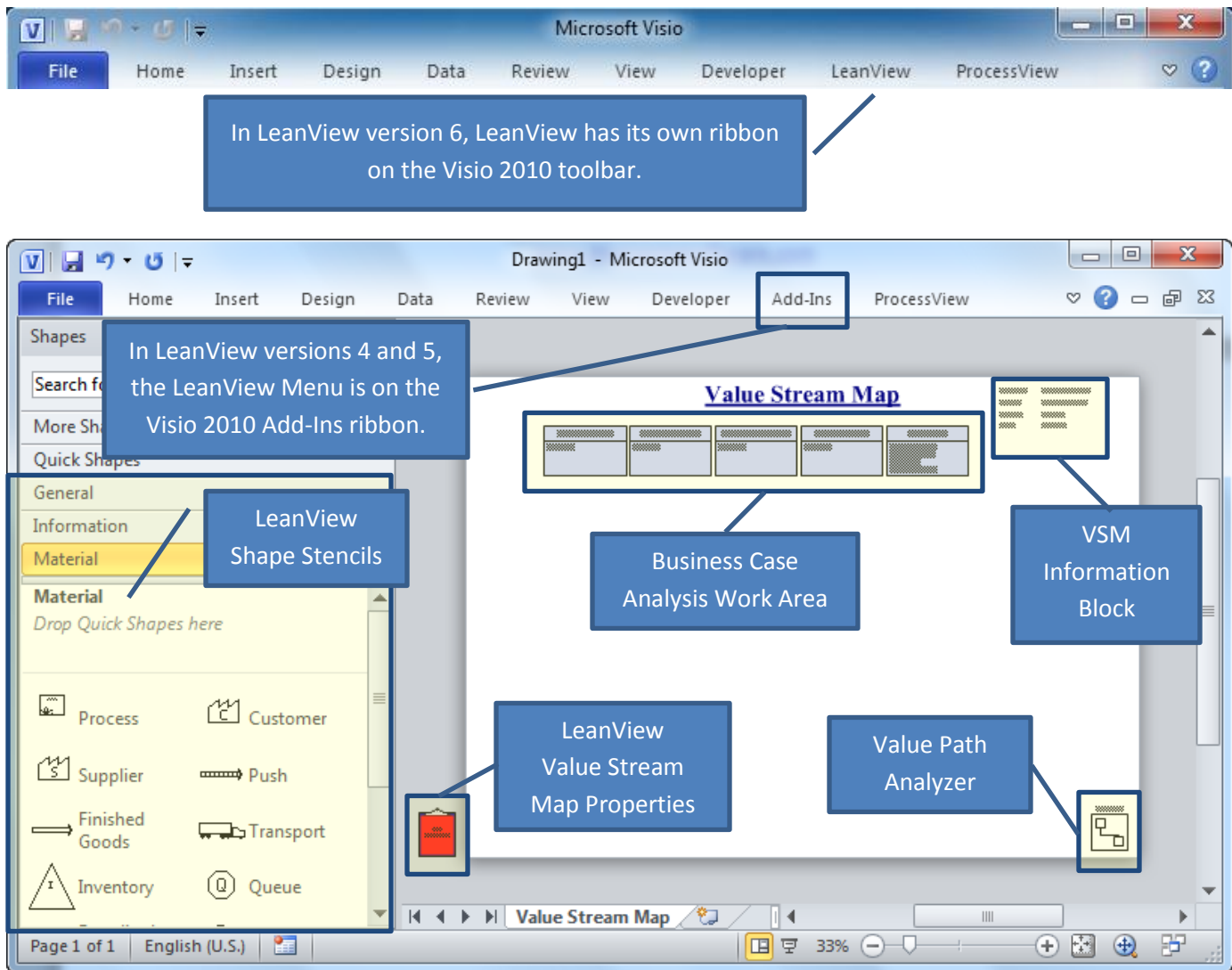


*Note that, in LeanView versions 4 and 5, the LeanView menu is only visible when a LeanView drawing is active.*

*In LeanView version 6, the LeanView ribbon is always visible, but only active when a LeanView drawing is open.*

## Section II: The LeanView Environment

Once a diagram is created with the LeanView template, a drawing canvas and shape stencils are presented.

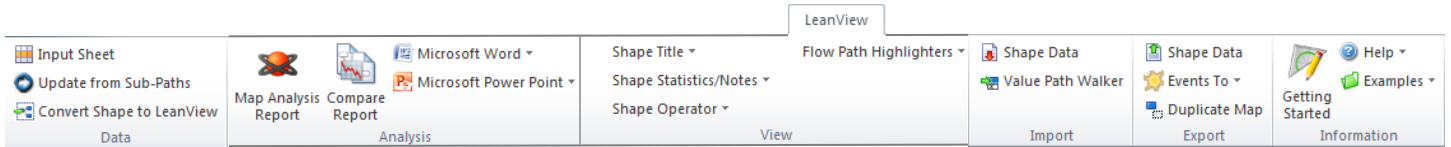


With Visio 2007, with LeanView versions 4, 5 and 6, the LeanView menu will appear to the right of the Visio menus.

## Section II: The LeanView Environment

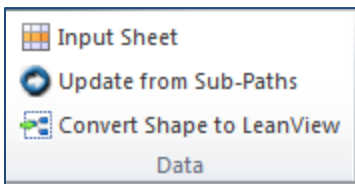
### LeanView 6.0.x Ribbon (Visio 2010)

The LeanView ribbon is divided into six sections: Data, Analysis, View, Import, Export, and Information.



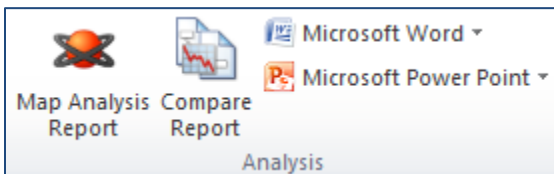
#### Data

The Data menu provides access to an input sheet where LeanView shape properties can be reviewed and revised. Properties for process shapes linked to sub-value paths can be automatically updated; any Visio shape can be converted into a LeanView shape using the Data menu.



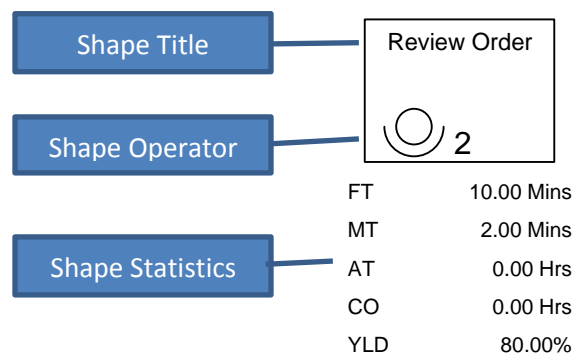
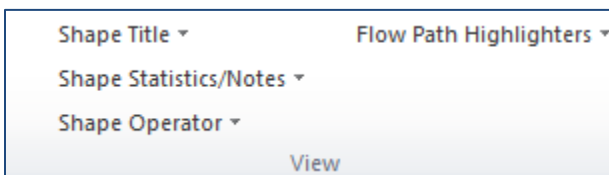
#### Analysis

Value Stream performance information can be reported to Microsoft Excel in the Map Analysis Report. Performance metrics and information about improvement opportunities may also be reported to Microsoft PowerPoint and Word. The performance of any two value paths may be compared in Microsoft Excel using the LeanView Compare Report.



#### View

The View menu provides the ability to 'show' or 'hide' flow paths highlighters and shape titles, statistics, and operators.

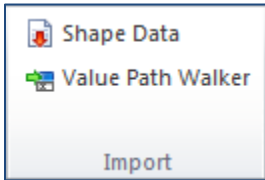


## Section II: The LeanView Environment

### LeanView 6.0.x Ribbon (Visio 2010)

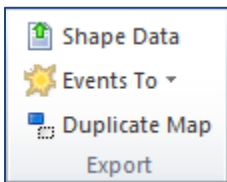
#### Import

Shape properties data can be imported from an Excel worksheet. Value stream maps can be automatically drawn and shape properties imported using an Excel worksheet created with the LeanView Value Path Walker template.



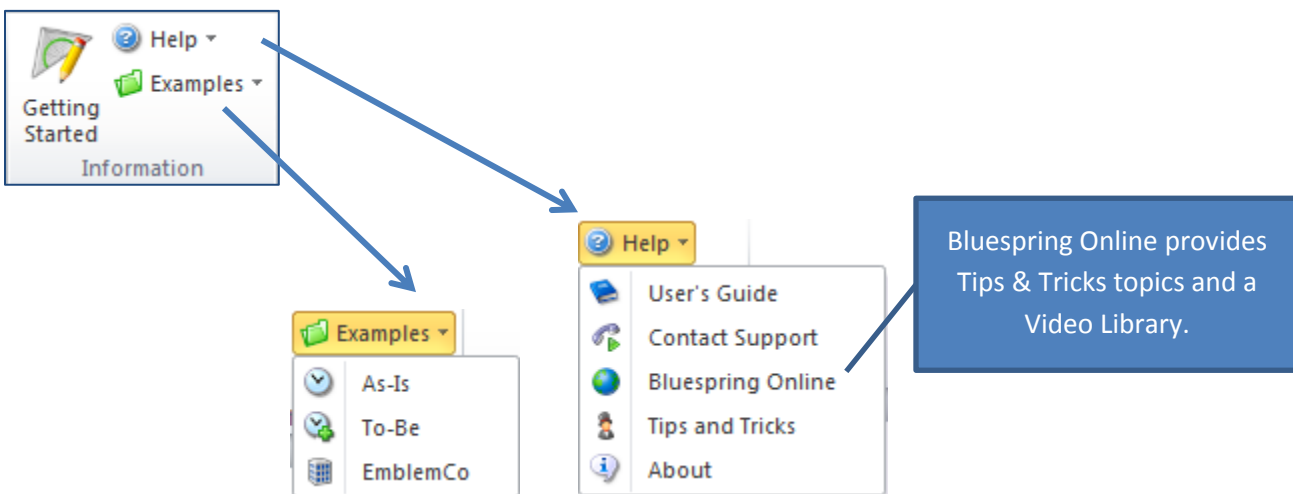
#### Export

Shape properties data can be exported to Microsoft Excel. Additionally, kaizen burst shape properties to describe improvement actions, tasks and resources can be exported to Microsoft Excel or Microsoft Project. LeanView diagrams created with older versions of LeanView (< 5.0.0) can be updated using the new LeanView template with the 'Duplicate Map' option.



#### Information

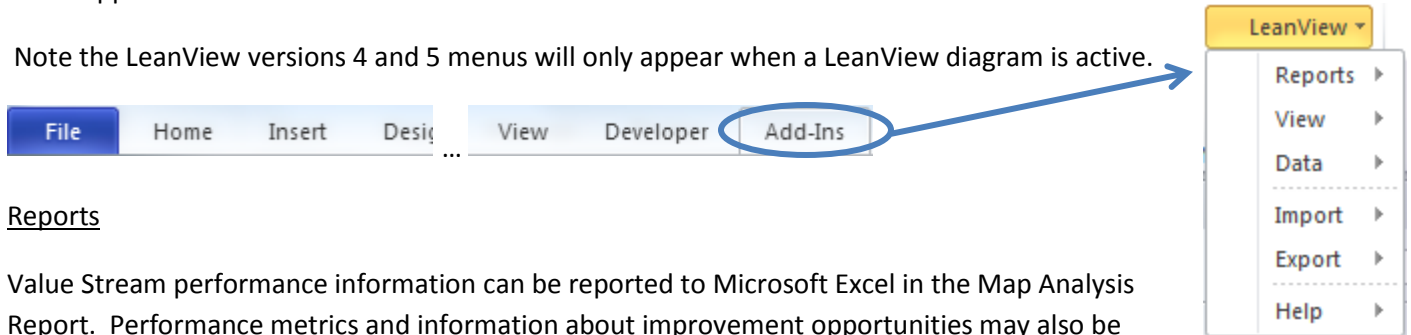
Access to the LeanView Getting Started Tutorial, example value streams, and LeanView Online Resources can be obtained using the options in the information section of the LeanView ribbon. Additionally, information about the LeanView version and license can be reviewed by selecting the 'About' button.



## Section II: The LeanView Environment

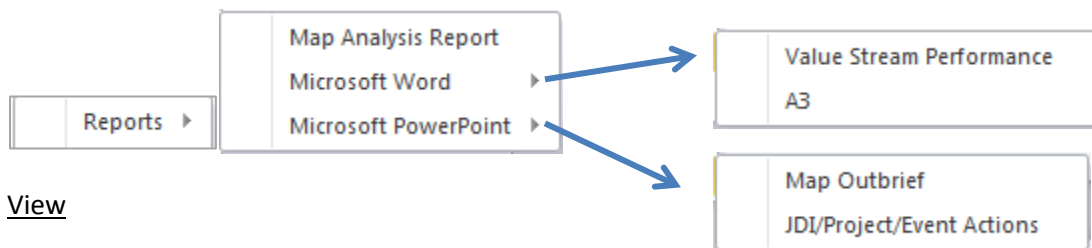
### LeanView 4.0.x, 5.0.x Menu (Visio 2007 & 2010)

In Visio 2007, the LeanView menu appears to the right of the Visio menus. In LeanView versions 4 and 5, the LeanView menu appears on the Add-Ins ribbon of Visio 2010.



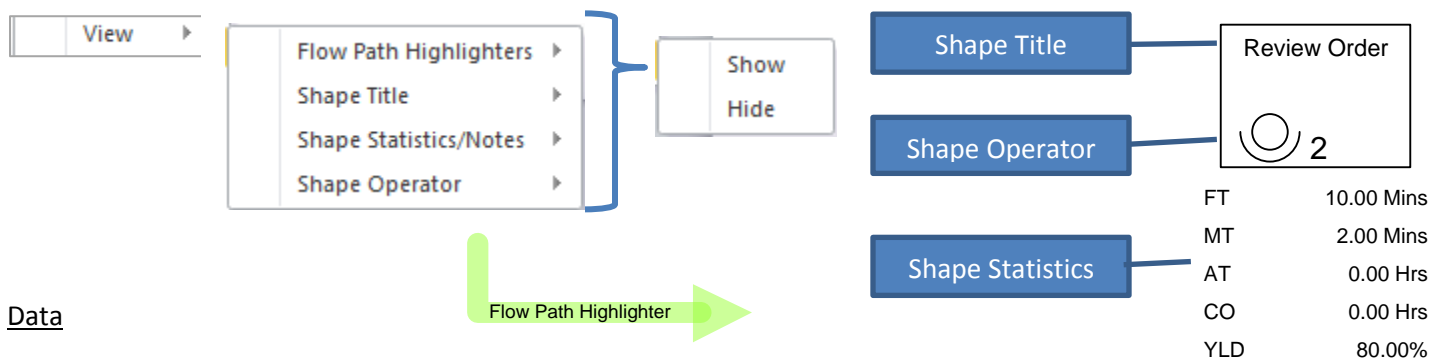
### Reports

Value Stream performance information can be reported to Microsoft Excel in the Map Analysis Report. Performance metrics and information about improvement opportunities may also be reported to Microsoft PowerPoint and Word.



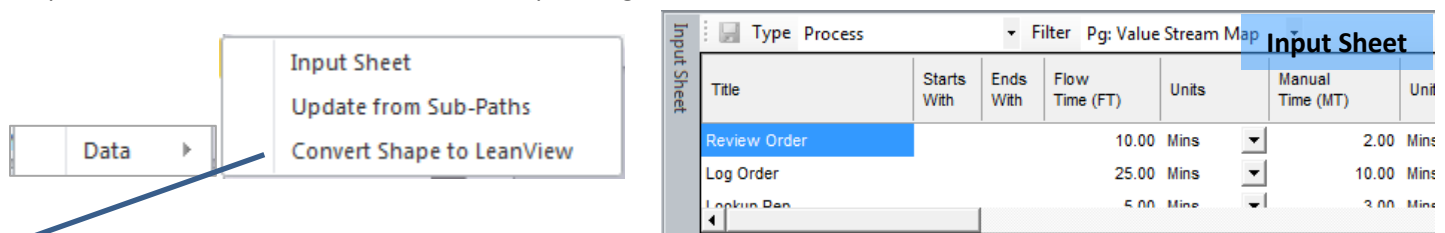
### View

The View menu provides the ability to 'show' or 'hide' flow paths highlighters and shape titles, statistics, and operators.



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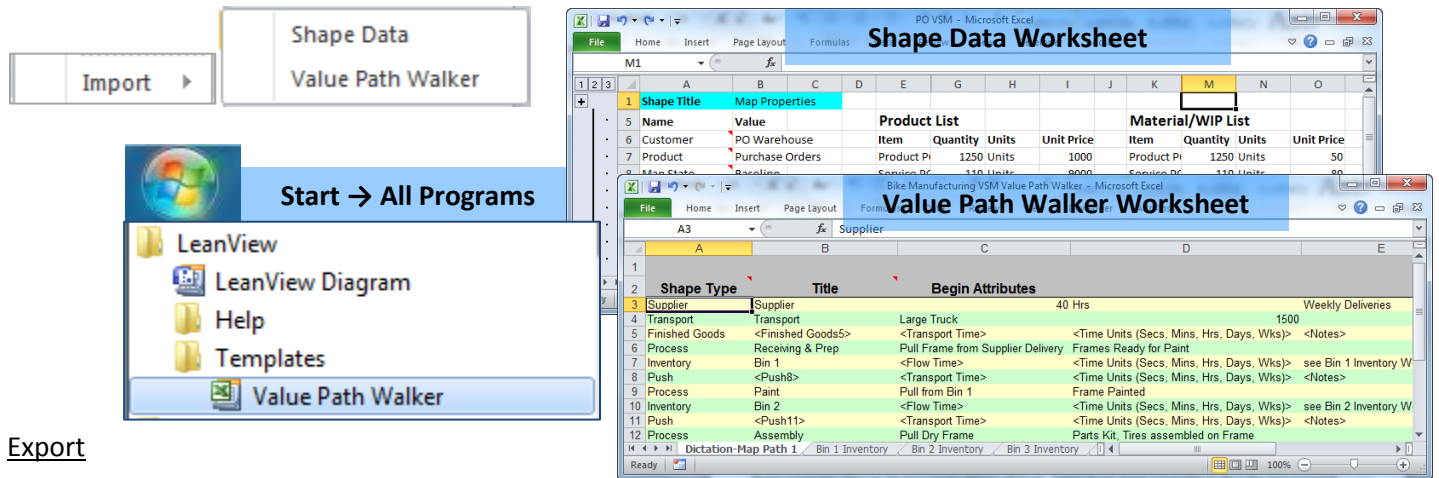
Create sub-paths and 'roll' performance metrics to update 'parent' process properties automatically. Leverage custom shapes... Any Visio shape can be converted into a LeanView shape.

## Section II: The LeanView Environment

### LeanView 4.0.x, 5.0.x Menu (Visio 2007 & 2010)

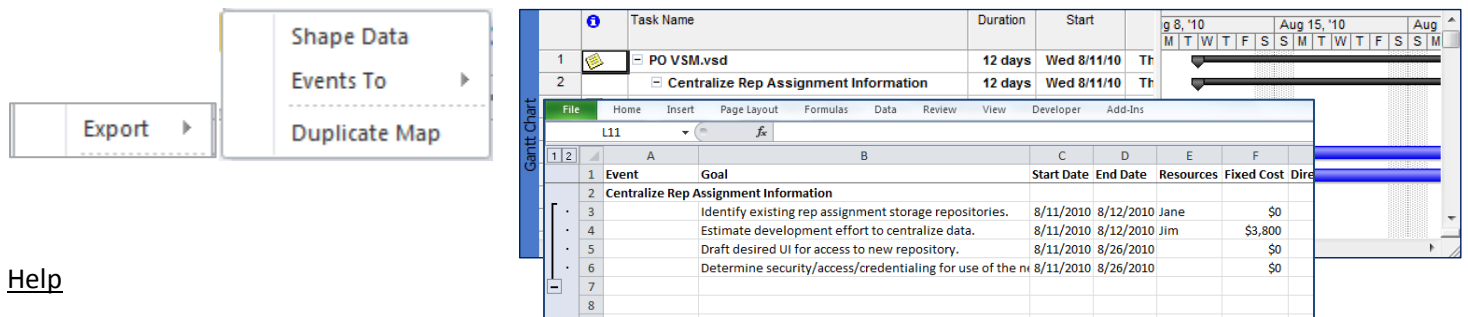
#### Import

Shape properties data can be imported from an Excel worksheet; a shape data worksheet can be created with the LeanView export shape data option. Value stream maps can be automatically drawn and shape properties imported using an Excel worksheet created with the LeanView Value Path Walker template.



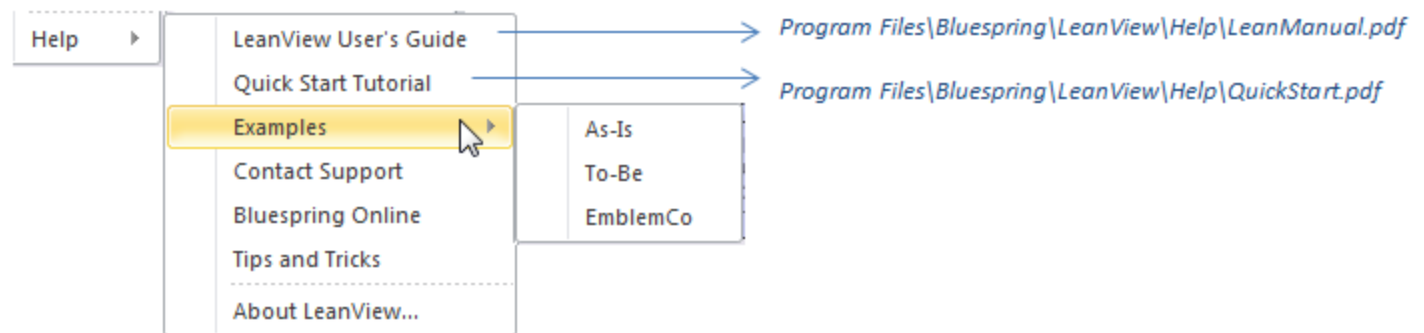
#### Export

Shape properties data can be exported to Microsoft Excel. Kaizen burst shape properties to describe improvement actions, tasks and resources can be exported to Microsoft Excel or Microsoft Project. LeanView diagrams created with older versions of LeanView (< 5.0.0) can be updated using the new LeanView template with the 'Duplicate Map' option.



#### Help

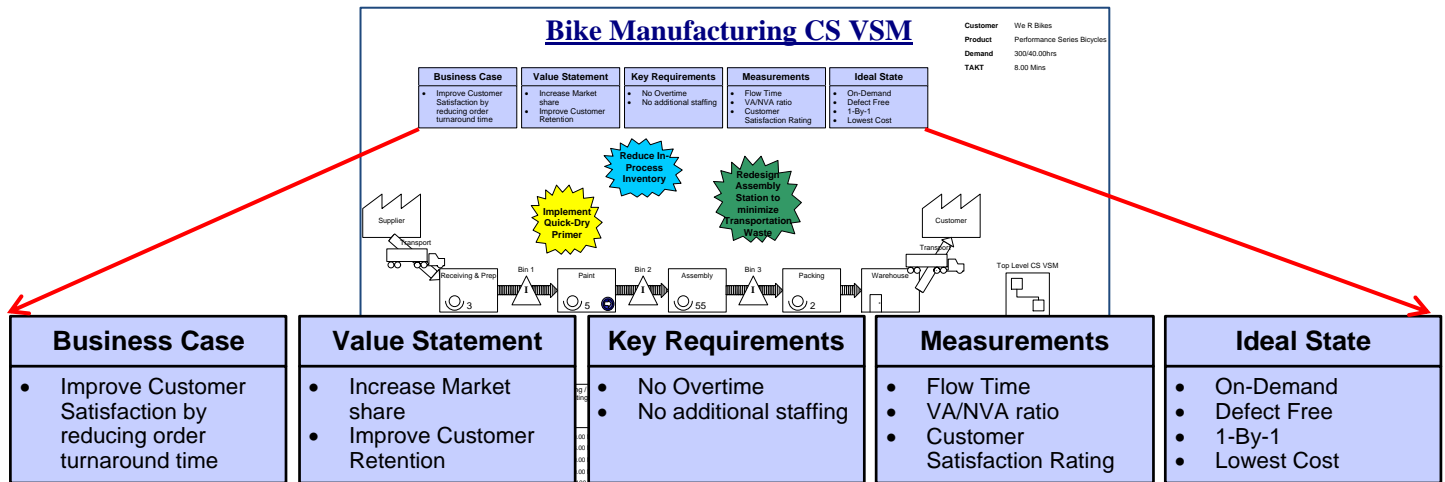
This User's Guide, a Quick Start Tutorial and example value stream maps are available in the LeanView Help. Additionally, LeanView version information and access to the LeanView support team are also available in the Help.



## Section II: The LeanView Environment

### Business Case Analysis Work Area

The Business Case Analysis Work Area allows you to define the Business Case for creating the Value Stream Map, the **Value Statement** or what you expect to achieve from this exercise, the **Key Requirements** or what operational requirements are to be met upon completion and implementation of this process, the **Measurements** or how you will be measuring success and the **Ideal State** which you are seeking to obtain by this process.



### LeanView Value Stream Map Properties

The LeanView value stream map properties shape is used to store information about the product or service being analyzed. The Map Properties shape stores information about the quantity and cost of finished goods to be produced and raw materials to be consumed in the demand period. Additionally, the work schedule and default properties can be defined in the map properties dialog.

(See Section IV: Defining Map Properties)

Map Properties

Material/WIP | Work Time | Workbook | Options | Event | Notes

7/ 6/2011 | End: 9/12/2008

Performance of the bike manufacturing

TAKT\* = 8.00 mins

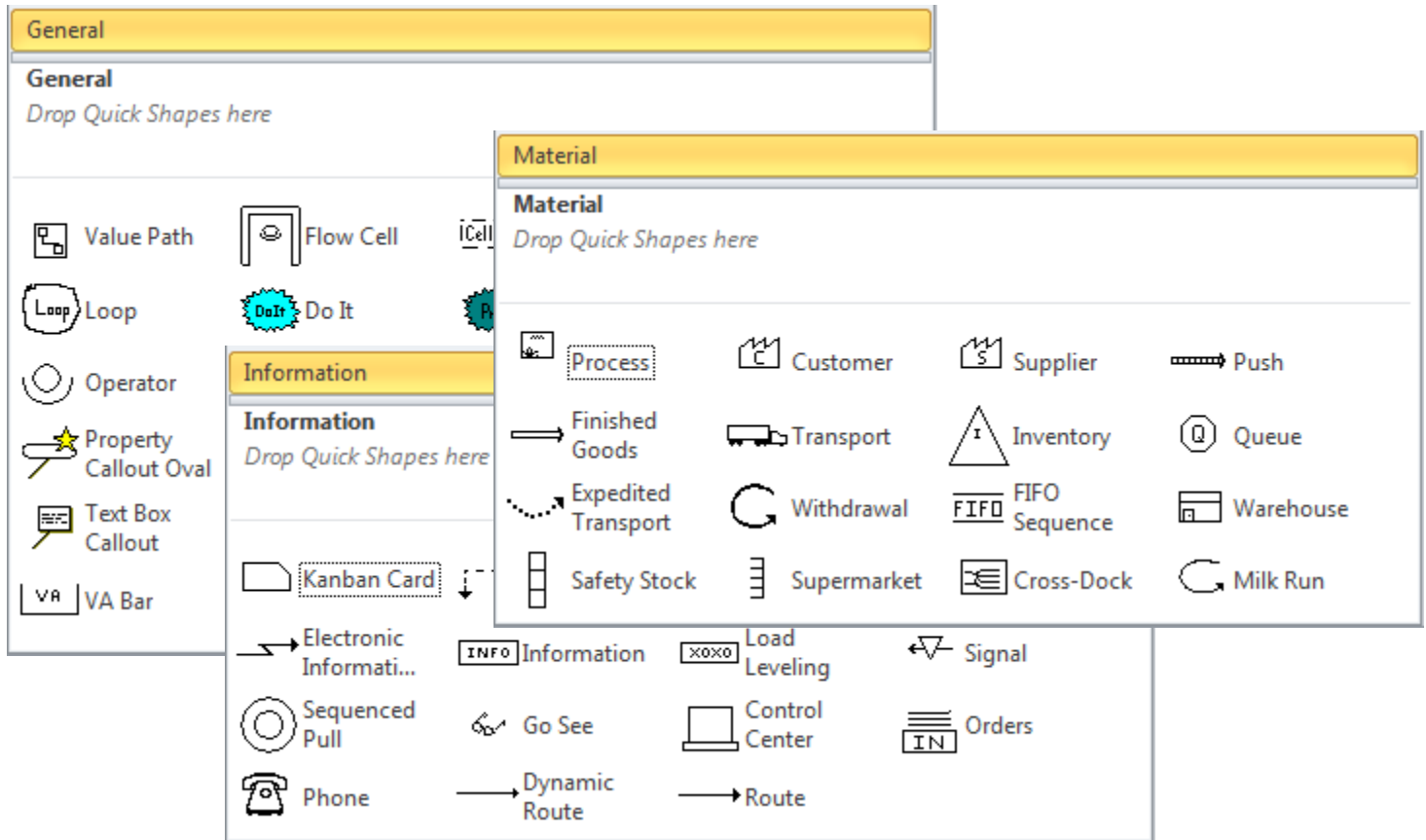
Name	Quantity per Demand Period	Units	Price per Unit	\$'s/Demand Period
Frames	300.00	Units	\$38.00	\$11,400.00
Parts Kit	300.00	Units	\$44.99	\$13,497.00
Tires	600.00	Units	\$14.50	\$8,700.00

Save

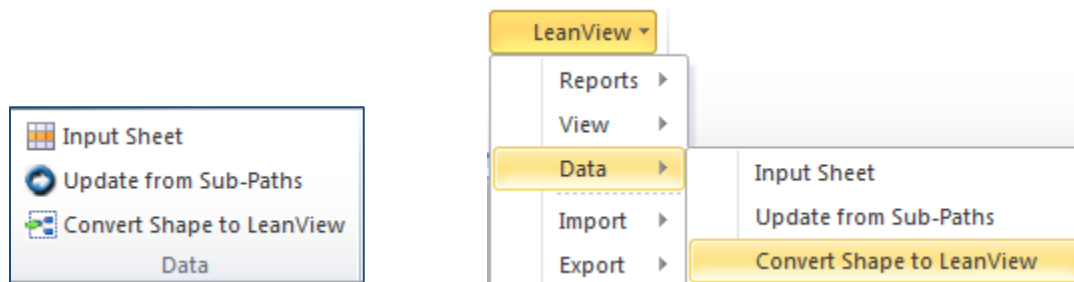
## Section II: The LeanView Environment

### LeanView Shape Stencils

The standard LeanView shapes are preconfigured to store various shape attributes and Lean data items. The General stencil contains Value Path and various data and loop shapes. The Information stencil contains shapes to represent how data or information is gathered and sent, and the Materials stencil contains shapes to track the movement of materials throughout the process. (See Section V: LeanView Shapes and Properties)



Note, any Visio shape can be used for map construction, but only shapes pulled from the LeanView General, Information and Material stencils are preconfigured to store lean process data. If other Visio shapes are used to build a value stream map, these shapes will need to be converted to LeanView shapes. (LeanView → Data → Convert Shapes)

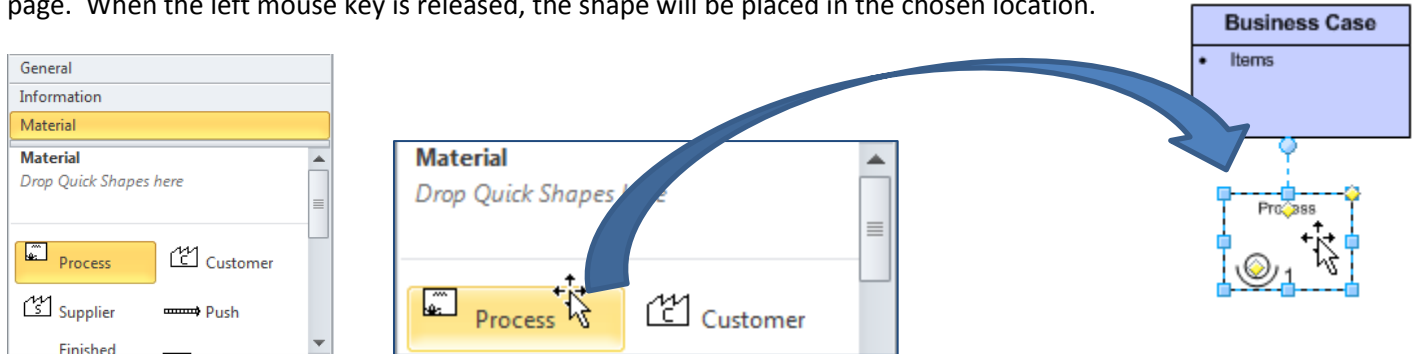


### Section III: Drawing the Value Stream

LeanView provides pre-configured shapes to construct a value stream map or custom shapes may be converted into LeanView shapes. There are several ways a map can be drawn: Drag and Drop, Auto-Draw, Map Sequence and Value Path Walker.

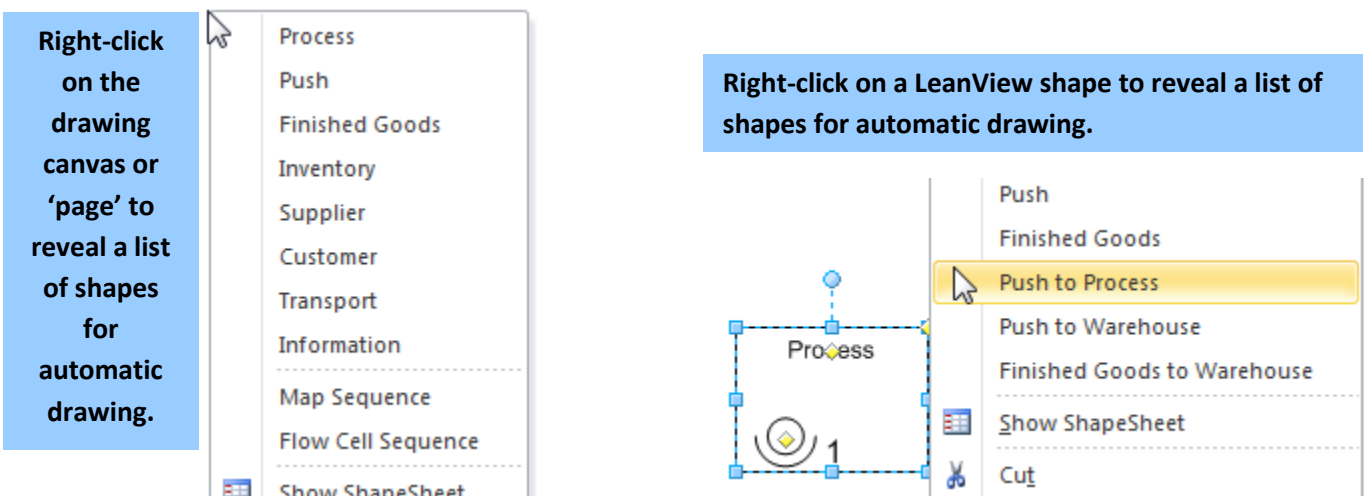
#### Drag and Drop

To drag a shape from a LeanView stencil onto the drawing canvas, simply hover over the desired shape, hold down the left mouse key and, while continuing to hold down the left mouse key, drag the shape into the desired location on the page. When the left mouse key is released, the shape will be placed in the chosen location.



#### Auto-Draw

When working in a LeanView diagram, a right-mouse click on the drawing canvas or on a LeanView shape will reveal a list of LeanView shapes for automated drawing.

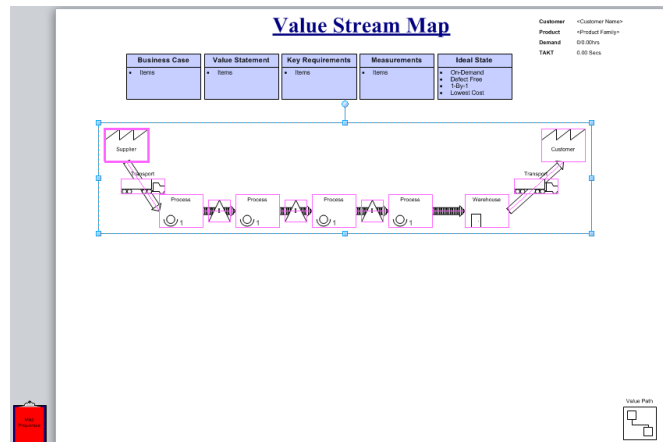
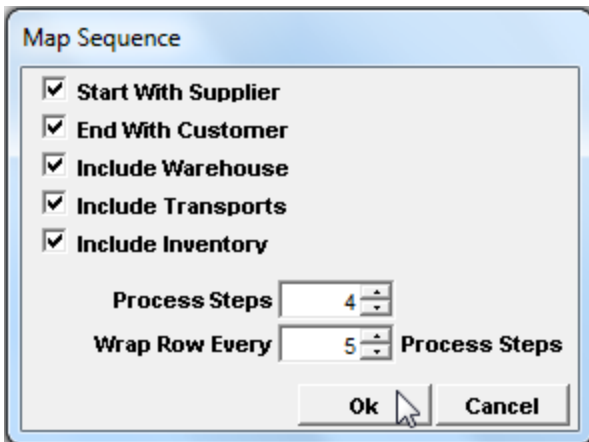


Note, while shapes placed on the 'Quick Shapes' stencil in Visio 2010 can be used for drawing with a drag and drop method, the Visio auto-drawing function may not be leveraged.

## Section III: Drawing the Value Stream

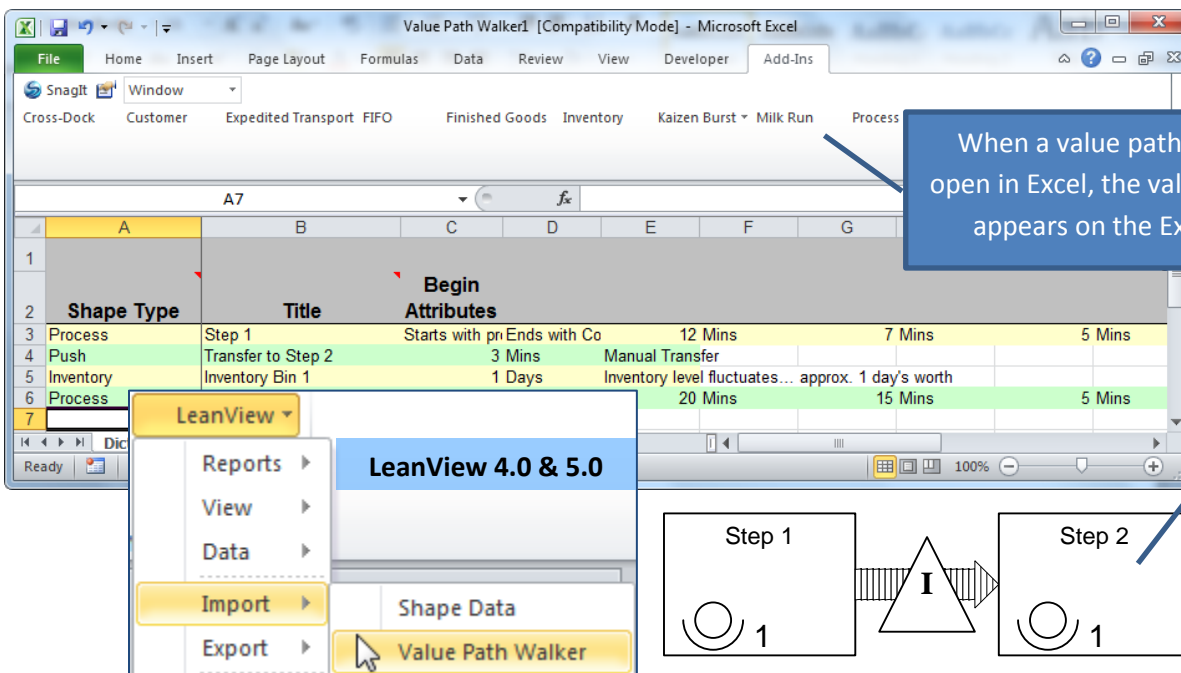
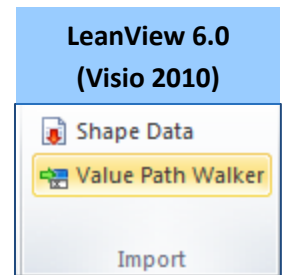
### Map Sequence

When working in a LeanView diagram, a right-mouse click on the drawing canvas will reveal a list of options. Selection of the Map Sequence option will provide a dialog to select shapes to be incorporated in the value stream map. Once the dialog is complete, the full value stream will be drawn automatically. Note, automated drawing will begin at the location of the right-click.



### Value Path Walker

The value path walker utility provided with the LeanView installation allows the user to capture the lean shapes and lean data items for the value stream in a worksheet format. The LeanView Data Import option will not only draw shapes listed in a value path walker worksheet, but will also import the associated lean data items. (The value path walker template is located in the 'Templates' folder of the 'Bluespring LeanView' folder in the Program Files.)



When a value path walker worksheet is open in Excel, the value path walker toolbar appears on the Excel Add-Ins ribbon.

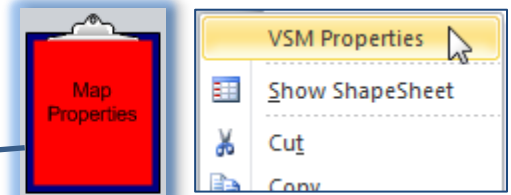
LeanView shapes and lean data items in the value path walker worksheet can be automatically imported.

## Section IV: Defining Map Properties

The LeanView Map Properties shape stores information about the quantity and cost of finished goods to be produced and raw materials to be consumed in the demand period. Additionally, the work schedule, default properties, and much more, can be defined in the map properties dialog. The Map Properties dialog is composed of several tabs: General, Demand, Material/WIP, Work Time, Workbook, Options, Event, and Notes.

To open the Map Properties, right-click on the Map Properties shape and select 'VSM Properties'.

The Map Properties shape appears in red until the Demand data is entered.



### General

The general tab contains basic information to describe the value stream title, type, state, author and more. Data defined here will be incorporated into the LeanView Map Outbrief written to Microsoft PowerPoint, and the LeanView Value Stream Performance and A3 reports written to Microsoft Word.

### Demand

The demand tab is where information about the length of the demand period and the quantity and cost of finished goods or services being delivered can be defined. Data defined here will be incorporated into the LeanView Map Analysis Report to Excel, the LeanView Map Outbrief written to Microsoft PowerPoint, and the LeanView Value Stream Performance report written to Microsoft Word.

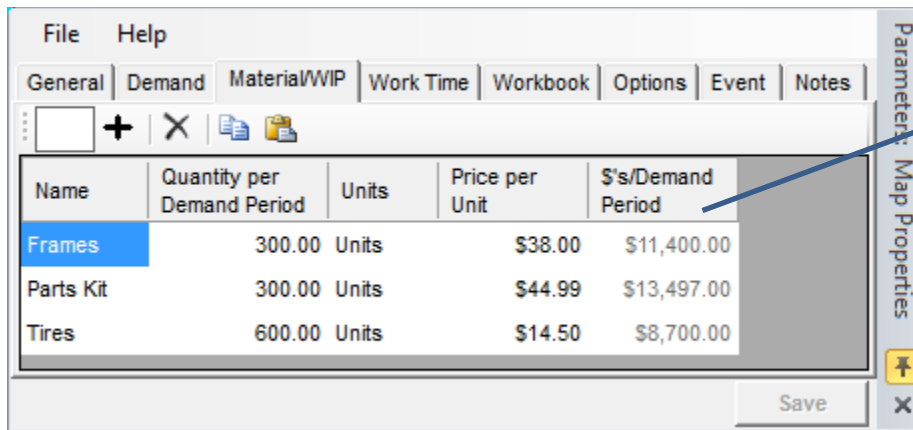
Once the Demand Period and Quantity of finished goods/services demanded is defined, LeanView automatically calculates the Takt time.

If the Price is defined, the subsequent sales revenue in the demand period will be calculated (\$'s/Demand Period).

## Section IV: Defining Map Properties

### Material/WIP

The Material/WIP tab is designed to store information about the raw materials that will be consumed to satisfy the demand described on the Demand tab. Information defined here is incorporated into the LeanView Map Analysis Report written to Microsoft Excel, and the LeanView Value Stream Performance report written to Microsoft Word.



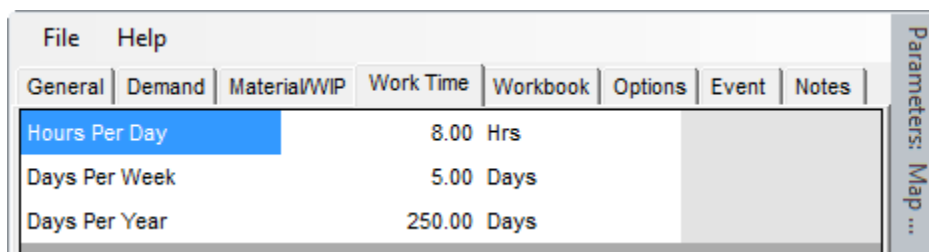
Name	Quantity per Demand Period	Units	Price per Unit	\$'s/Demand Period
Frames	300.00	Units	\$38.00	\$11,400.00
Parts Kit	300.00	Units	\$44.99	\$13,497.00
Tires	600.00	Units	\$14.50	\$8,700.00

In defining the quantity per demand period and price per unit for the raw materials to be consumed in the demand period, a consumption rate is established.

LeanView uses this rate to automatically calculate the flow time and cost associated with raw material/WIP items in inventory.

### Work Time

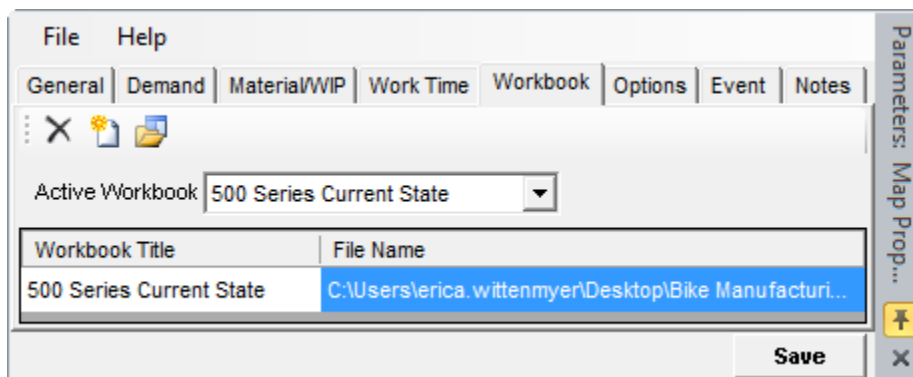
The work time tab is designed to allow the user to describe the size of the work week (available work time). Values defined here will be used to convert time units. (i.e. Hours Per Week = Hours Per Day \* Days Per Week)



Hours Per Day	8.00 Hrs
Days Per Week	5.00 Days
Days Per Year	250.00 Days

### Workbook

To use the LeanView import shape data option, a workbook must be loaded into the workbook tab of the Map Properties shape. Once the location of an Excel Shape Data workbook is defined, value stream map data can be automatically imported into the value stream shapes from workbook cells.



Workbook Title	File Name
500 Series Current State	C:\Users\lerica.wittenmyer\Desktop\Bike Manufacturi...

## Section IV: Defining Map Properties

### Options

The options tab is used to establish the default time units, decimal places, and calculation mode.

LeanView shapes added to the value stream will use the default options for decimal places, time units, and calculation mode.

LeanView will automatically calculate the Flow Time for process and inventory shapes if desired.

Flow Time-Input (FT)  
Flow Time-Input (FT)  
Flow Time-Calculated (FT)

People-Total (FTE)  
People-Total (FTE)  
People-Per Station (FTE)

### Event

The event tab is used to store information related to the scope, mission and objectives for the value stream mapping and analysis event being conducted. Information defined here is incorporated into the LeanView Value Stream Performance report written to Microsoft Word.

Start: 7/ 6/2011 End: 7/ 6/2011

**Mission**  
Evaluate the current performance of the bike manufacturing value stream.

**Objectives**  
Quantify current state flow time.  
Quantify the value added versus non-value added time.

**Scope**  
Order Receipt to Customer Delivery

Team Members

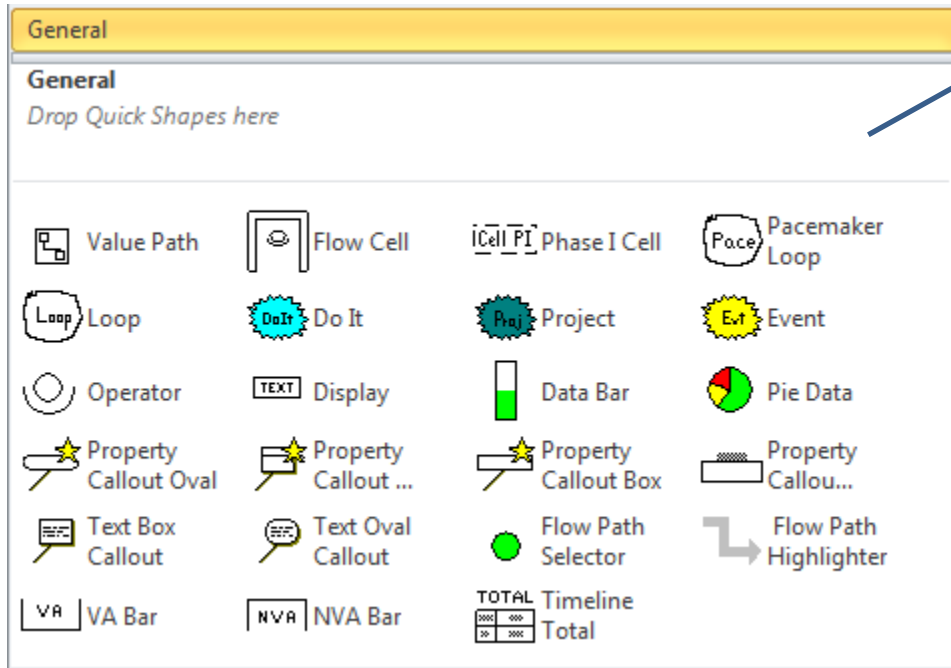
### Notes

Additional information about the value stream may be defined in free-form text within the notes tab of the map properties shape.

## Section V: LeanView Shapes and Properties

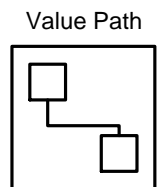
### General Stencil Shapes

The General stencil contains Value Path and various data display, loop and callout shapes.

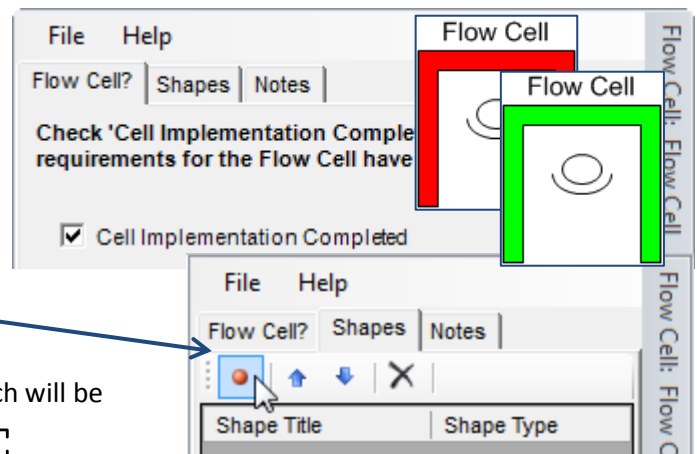


To access the properties dialog for any LeanView shape, simply right-click on the shape and select the first option at the top of the menu that appears.

**Value Path** – this shape is used to identify the shapes that make up a value stream; shape groups and parallel processes can also be identified in this shape. (See Section VI: Recording the Value Stream Path)



**Flow Cell** – this shape is used to provide a visual indication of the degree to which a production cell conforms to Lean characteristics; red would indicate little to no conformance and green would indicate full conformance to Lean characteristics. The Shapes tab of the flow cell properties dialog can be used to 'record' the shapes that belong to a production flow cell.



**Phase I Cell** – this shape is used to highlight process steps which will be prototyped as a Lean flow cell.



**Pacemaker Loop** - this loop shape is used to visually identify the pacemaker step or steps in the value stream (bottleneck identifier).



**Loop** – this loop shape is used to encircle a group of shapes to visually identify a process loop.



## Section V: LeanView Shapes and Properties

### General Stencil Shapes

Loop shapes contain several tabs in the properties dialog to capture information about proposed improvement actions:

#### Team Tab

These input fields are used to identify the project owner and team members.

#### Event Tab

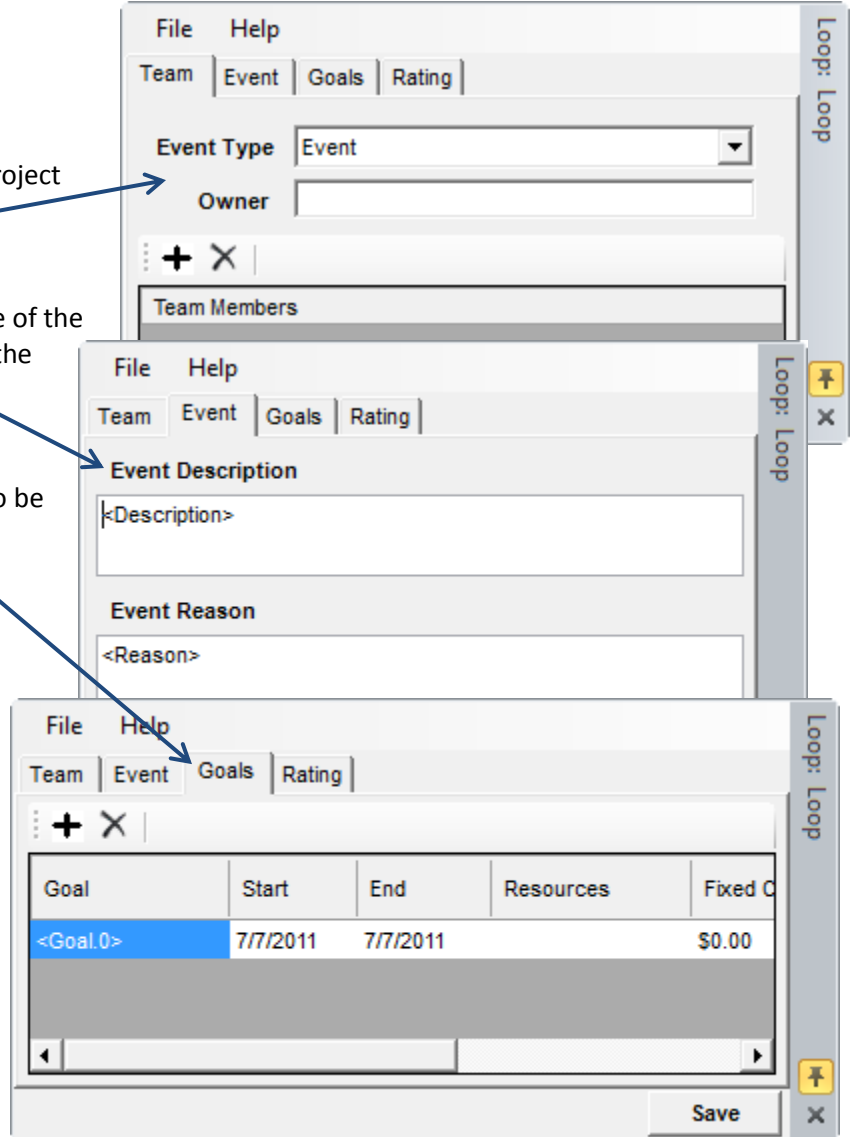
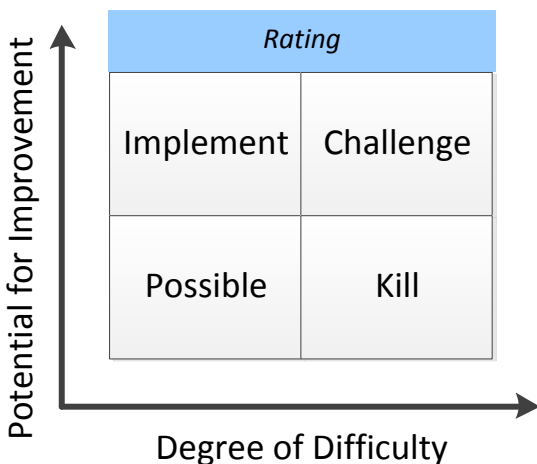
These fields are used to capture the purpose of the proposed actions and a brief description of the improvement tasks to be performed.

#### Goals Tab

These fields store information about tasks to be completed to improve value stream performance.

#### Rating Tab

This tab allows you to rate an Event/Project according to its Potential for Improvement and Degree of Difficulty.



**Do It, Event, Project** – these shapes are used to store information related to improvement opportunities and actions. A 'Do It' or 'JDI' (Just Do It) shape denotes obvious process improvement actions that should be implemented without additional approval or decision making. An 'Event' identifies additional kaizen events or process improvement events that must be scheduled. A 'Project' shape is used to capture information about improvement projects and a list of the essential tasks associated with each. These 'burst' shapes will have a properties dialog like that described above for loop shapes.

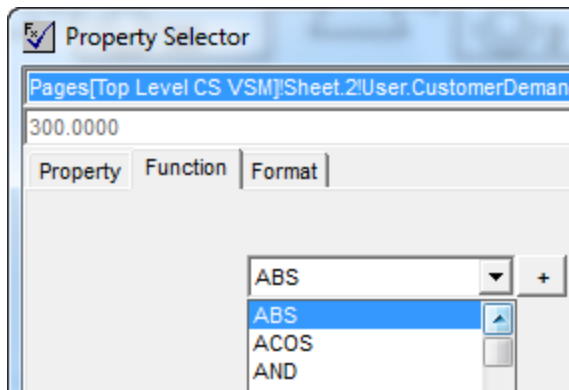
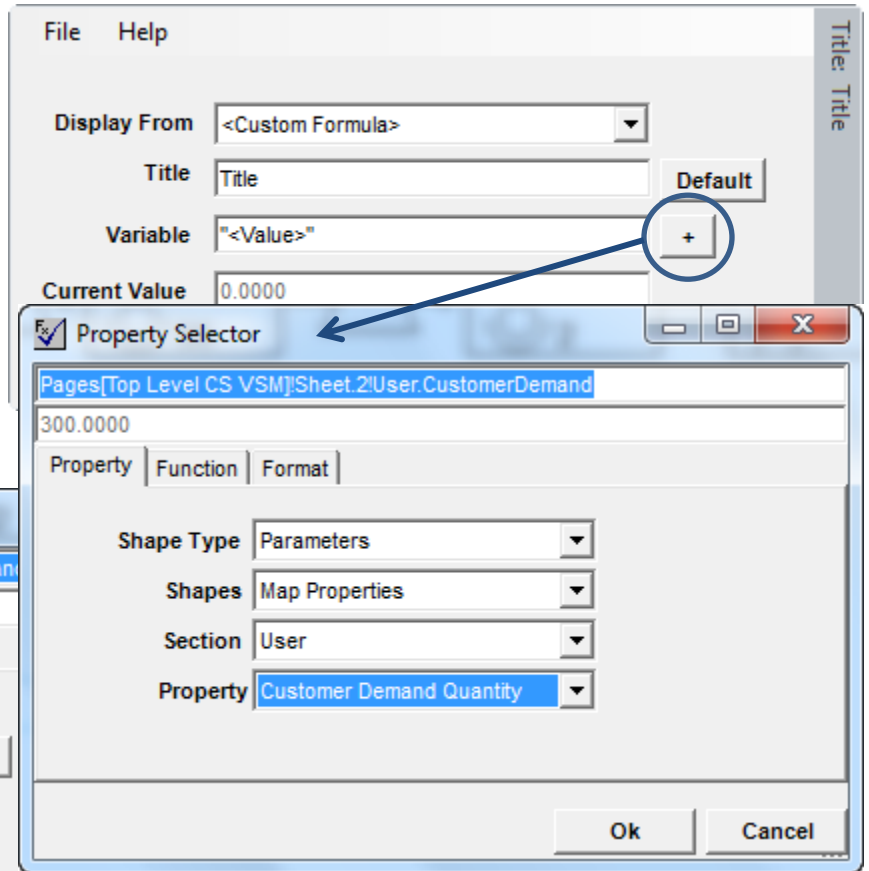


**General Stencil Shapes**

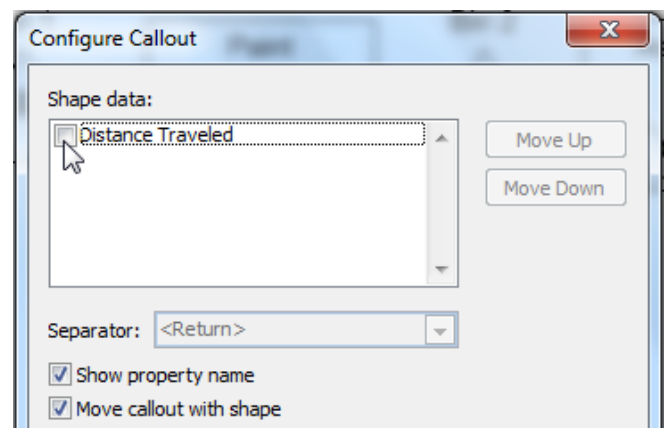
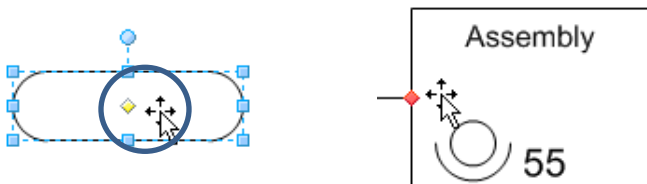
**Operator** – this shape is used to incorporate operators that are not associated with a specific process; the number of operators displayed on this shape may be changed by double-clicking on the shape and typing the desired number.



**Text Display** – this shape is used to display values from map properties (such as Takt time) or other information using a custom formula. In the text display properties dialog, the 'Title' is the text that will appear as a label on the shape. The 'Variable' field describes the value that will be displayed; clicking the '+' sign reveals a list of options for the development of a custom formula.



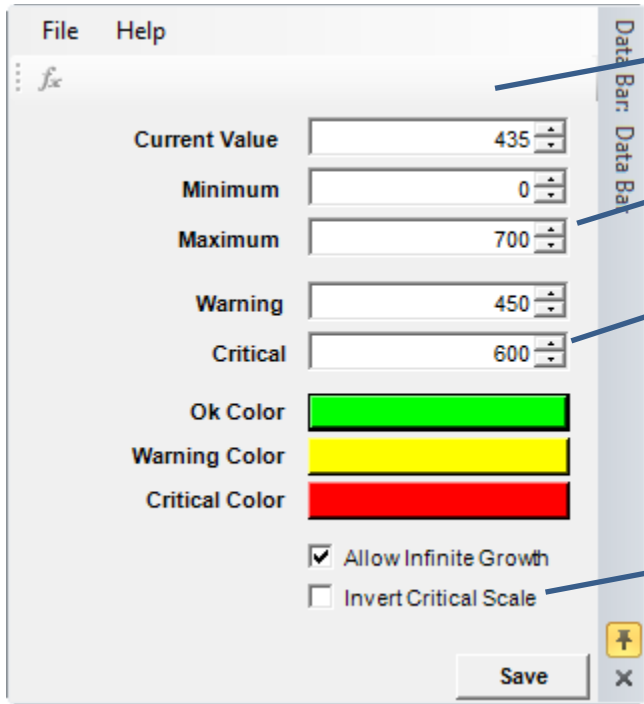
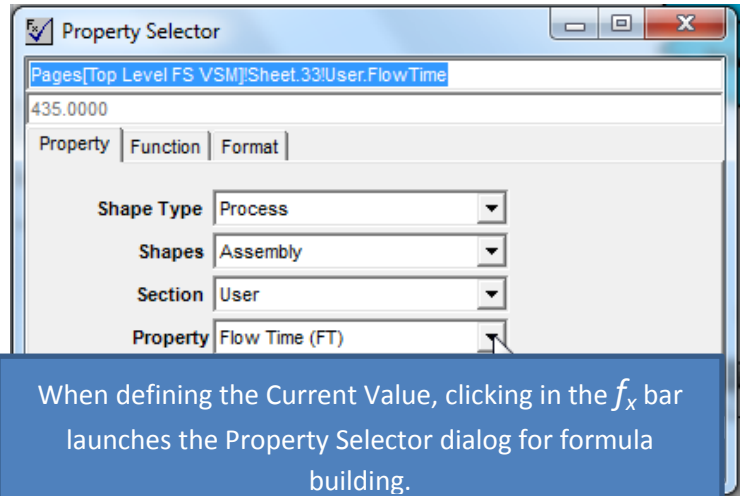
**Property Callout Oval, Property Callout w/ Title, Property Callout Box** – these shapes are designed to display the Visio shape data attributes that exist in a shape to which a callout is connected. To connect a callout shape to a LeanView shape, click and drag the yellow diamond in the middle of the callout shape and connect it to a connection point on a LeanView shape; once a callout is connected, a dialog is presented to configure the callout and determine which Visio shape data attribute values will be displayed.



Section V: LeanView Shapes and Properties

General Stencil Shapes

**Data Bar, Pie Data** – these shapes are used to display data from LeanView shapes in the value stream using custom formulas.



Minimum and Maximum values define the scale.

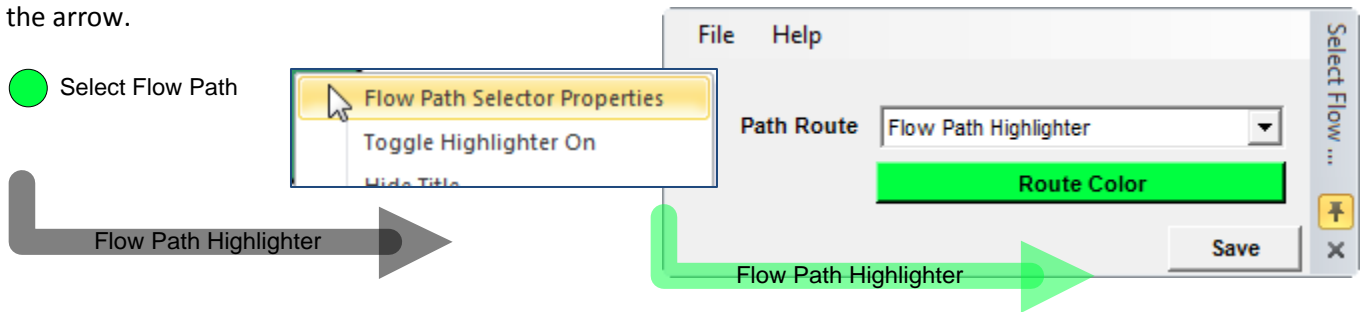
The Warning and Critical values determine when the Warning and Critical colors will be used. The Warning and Critical Values should be between the Minimum and Maximum values.

Allow Infinite Growth allows the Maximum Value to be infinite. Invert Critical Scale defines the critical scale to be all values between the minimum and critical value, rather than values between the critical value and the maximum.

**Text Box Callout, Text Oval Callout** – these shapes are designed to capture supplemental textual information within the context of the value stream map.

Select box and type. Control handles change width & height of box.

**Flow Path Selector, Flow Path Highlighter** – the flow path highlighter shape is placed over value stream shapes to draw attention to a particular path or flow for documentation or presentation purposes; the flow path selector shape, once associated with a flow path highlighter arrow, can be used to toggle the arrow on and off and to determine the color of the arrow.



Section V: LeanView Shapes and Properties

General Stencil Shapes

**Timeline Total, VA Bar, NVA Bar** – these shapes are used to construct a visual indication of where the value-added and non-value added time occurs in the value stream. The VA Bar and NVA Bar shapes can be dragged from the general stencil onto the drawing canvas to manually construct a VA/NVA Timeline. The timeline total properties dialog, however, allows the user to construct a timeline automatically.

To ask LeanView to automatically construct a VA/NVA Timeline, drag a timeline total shape onto the canvas and open the timeline total properties dialog. Select the Value Path shape that identifies the value stream for which the timeline will be constructed. Select the time units to be used for display of VA Time and NVA Time total time values and click Ok.

VA Bar

NVA Bar

Timeline Total

0.00 Hrs

0.00 Hrs

Timeline Total	
NVA	0 Hrs
VA	0 Hrs

File Help

NVA Time Units

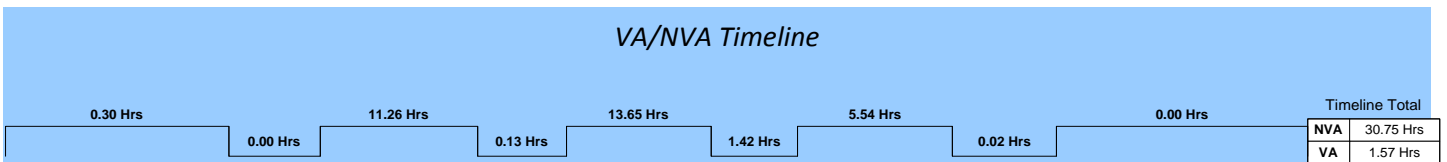
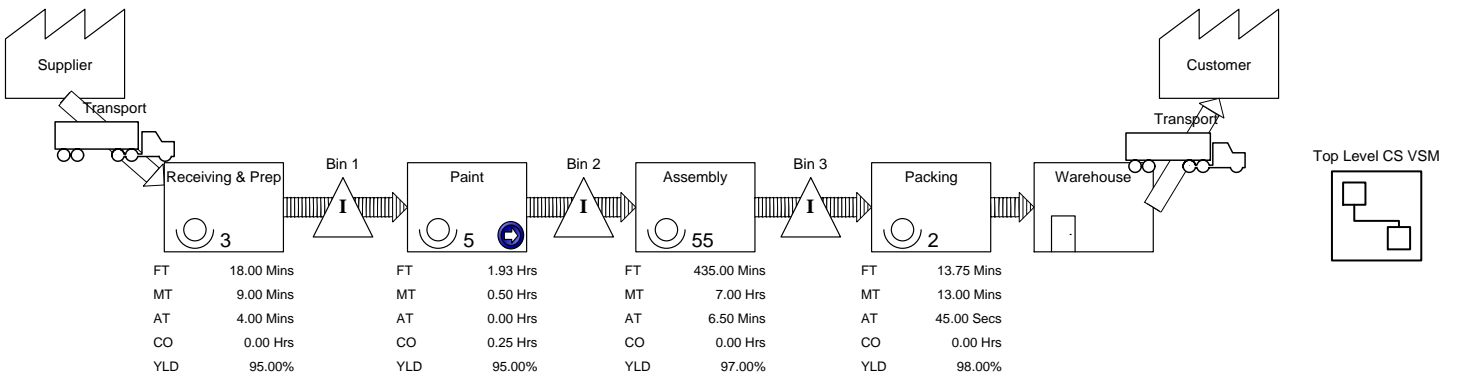
VA Time Units

Value Path Shape

Timeline Total

Draw Timeline

Save



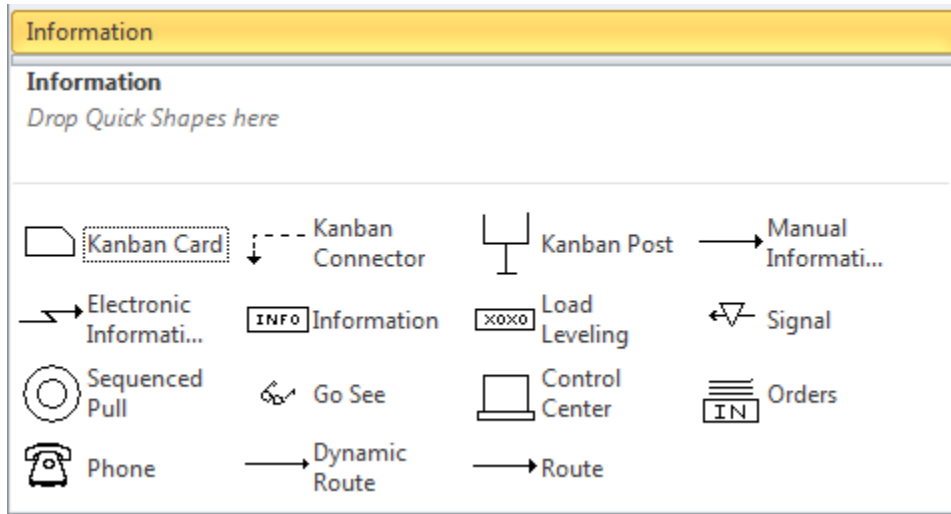
Timeline Total

NVA	30.75 Hrs
VA	1.57 Hrs

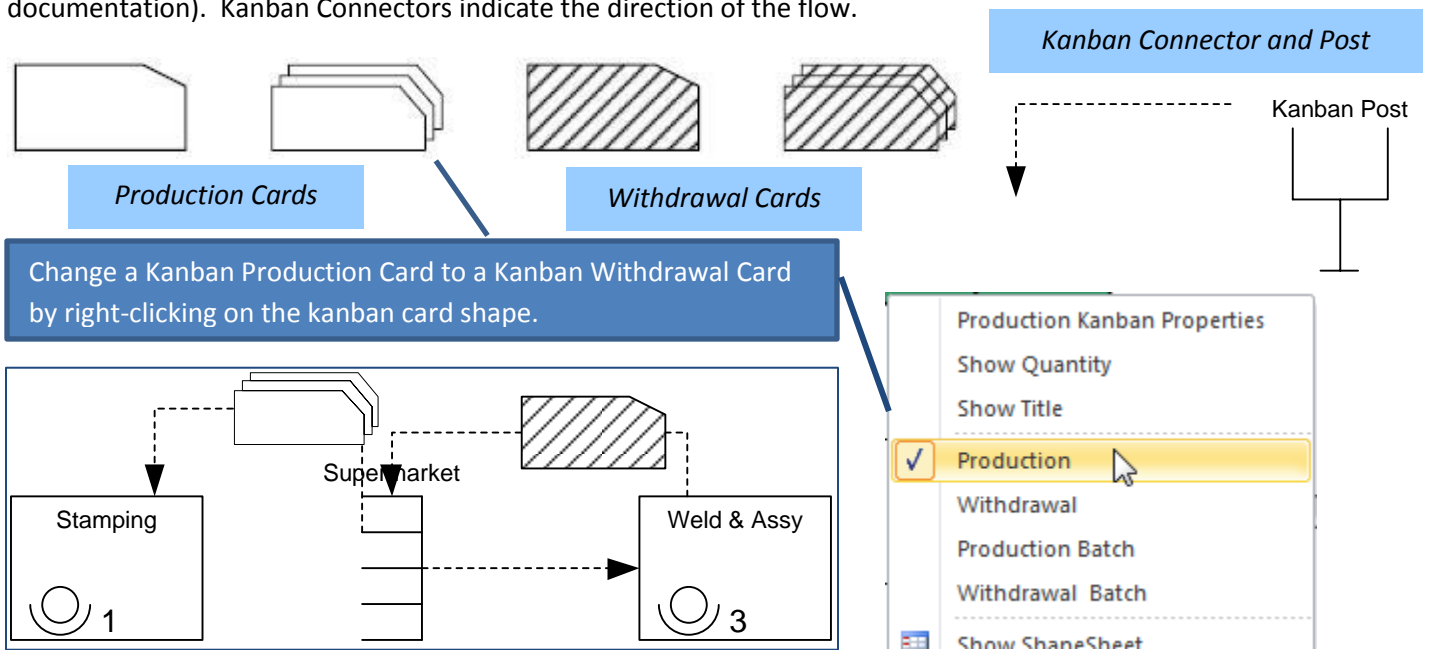
## Section V: LeanView Shapes and Properties

### Information Stencil Shapes

The Information stencil contains shapes to represent how data or information is gathered and sent.



**Kanban Card(s), Kanban Connector, Kanban Post** – these shapes are used to depict pull-based flow; kanban cards, residing in a kanban post, are used to signify the need for withdrawal or production (request materials, inventory, documentation). Kanban Connectors indicate the direction of the flow.



**Manual Information** – this shape is used to depict the movement of information between two points in a manual (non-electronic) fashion

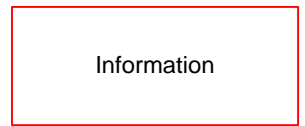


**Electronic Information** – this shape is used to depict the flow of electronic information between two points



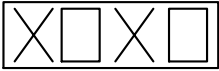
## Section V: LeanView Shapes and Properties

### Information Stencil Shapes

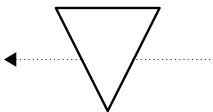
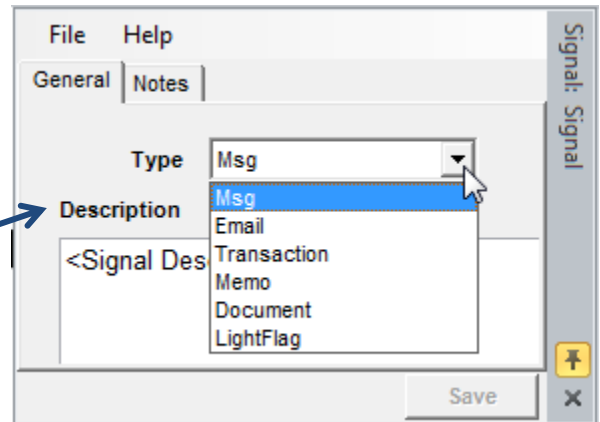


**Information** – this shape is used to represent an information source; in a manufacturing process, this may be an MRP system.

**Load Leveling** – this shape is used to represent a tool to capture kanban batches and level the volume and mix of them over time; a target batch size can be defined in the load leveling properties dialog.

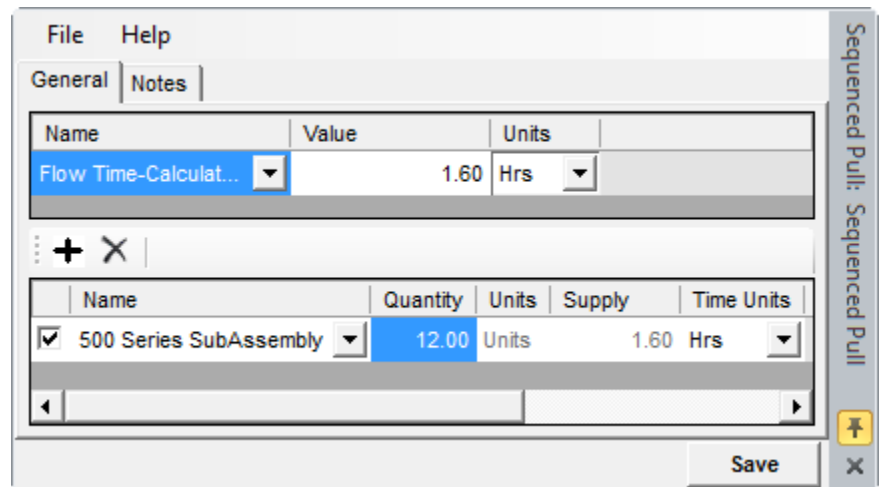
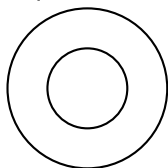


**Signal** – this shape can be used to represent any indicator or signal that is used to synchronize or coordinate activities within the value stream; a description of the message/signal sent and the type of transmission can be defined in the signal properties dialog.

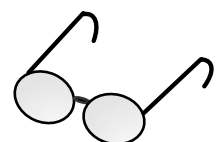


**Sequenced Pull** – this shape is used to indicate an area at which a pull system for subassembly processes is used as an alternative to a supermarket; the technique is to produce a predetermined type and quantity of items within a product family. The flow time in this shape will be automatically calculated based on the quantity and mix of raw material/WIP or finished good/demand items at the location.

Sequenced Pull



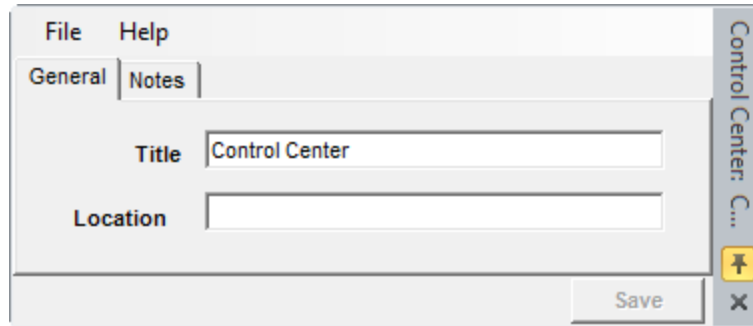
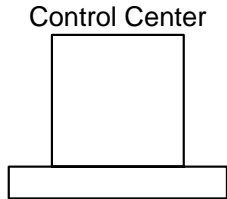
**Go See** – this shape is used to identify points in the value stream where outstanding questions exist and visual observation and/or additional investigation will be required to finalize the value stream; a production point can be identified in the general tab of the go see properties dialog.



## Section V: LeanView Shapes and Properties

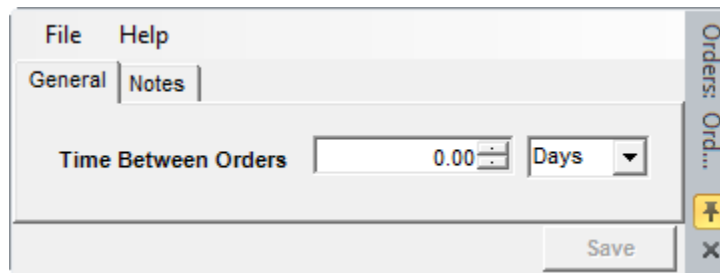
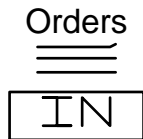
### Information Stencil Shapes

**Control Center** – this shape is a symbol to represent a command or control center; in a manufacturing process, this may be Production Planning.



File Help  
General Notes  
Title Control Center  
Location  
Save

**Orders** – this shape is used to represent work orders or purchase orders; the time between orders can be defined in the general tab of the order properties dialog.

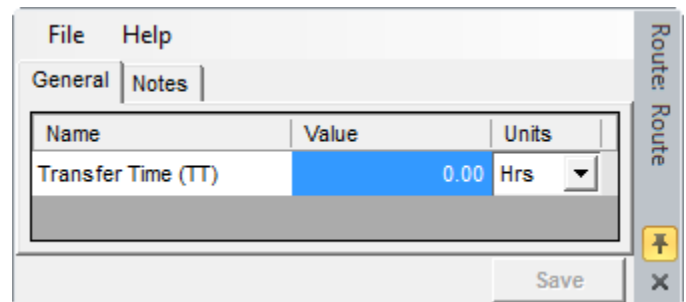
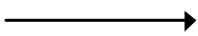


File Help  
General Notes  
Time Between Orders 0.00 Days  
Save

**Phone** – this shape is used to indicate information exchange/signal via the telephone.

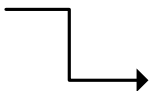


**Route** – the route is a mechanism to demonstrate the transfer of materials or finished goods through a VSM; this is a straight-line connector (no bend). Transfer time can be defined in the general tab of the properties dialog.



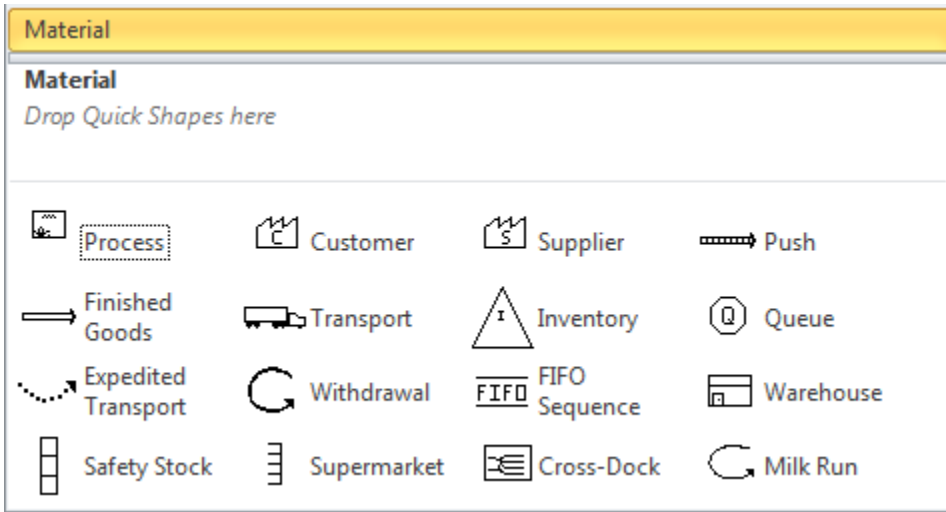
File Help  
General Notes  
Name Value Units  
Transfer Time (TT) 0.00 Hrs  
Save

**Dynamic Route** – the dynamic route is like the route shape, except it can be used to demonstrate multi-line flow because it can be 'bent'. Transfer time can be defined in the general tab of the properties dialog.

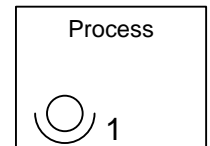


**Material Stencil Shapes**

The Materials stencil contains shapes to track the movement of materials throughout the process.



**Process** – this shape is used to denote an activity in the value stream. This shape contains the lean symbol for operators and denotes the number of operators as indicated in the LeanView process properties dialog. The process shape can also be used to represent a sub-process or sub-value stream.



In the General tab of the Process properties dialog, a number of lean data items may be defined. As the input items are entered, the calculated statistics at the base of the dialog will be determined.

Process Properties – General Tab – Inputs

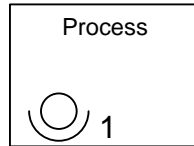
- Stations - used to indicate the number of identical work stations performing this process step
- People Total (FTE) / People-Per-Station (FTE) – defines the number of operators required to run the station or process
- Starts With, Ends With – used to describe the scope of the process activity, start and end milestones
- Flow Time (FT) – describes the elapsed time between the ‘starts with’ and ‘ends with’ milestones; this includes the manual time, auto time and any delays
- Manual Time (MT) – describes the people work time or touch time required to complete the process; this is also known as manual cycle time
- Auto Time (AT) – used to describe the amount of unattended, automated time required to process an item

Name	Value	Units
Stations	1	
People-Total (FTE)	4.00	
<b>Stations Definition</b>		
Starts With	Receipt of Weekly...	
Ends With	Production of Ord...	
Flow Time-Input (FT)	15.00	Hrs
Manual Time (MT)	3.00	Hrs
Auto Time (AT)	11.00	Hrs
Change Over Time (CO)	0.00	Hrs
Normal Production Run	1.00	
Normal Process Quantity...	15,000.00	
% Yield (YLD)	86.00%	
% VA Processing Time	15.00%	

## Section V: LeanView Shapes and Properties

### Material Stencil Shapes

#### Process



#### Process Properties – General Tab – Inputs

- Change-Over (C/O) Time – also called setup time, this represents the amount of time required to setup or changeover a process in between process ‘runs’
- Normal Production Run – the number of items processed before a setup or changeover occurs
- Normal Process Quantity – the number of items grouped or batched together for processing in the manual time and auto time; batch size
- % Yield – indicates the proportion of items that meet requirements after the first pass; first pass yield
- % VA – indicates the proportion of processing time that is value added (process time = MT + AT)

General   Pieces   Waste   Station   Notes		
Name	Value	Units
Stations		1
People-Total (FTE)		4.00
Stations Definition		
Starts With	Receipt of Weekly...	
Ends With	Production of Ord...	
Flow Time-Input (FT)	15.00	Hrs
Manual Time (MT)	3.00	Hrs
Auto Time (AT)	11.00	Hrs
Change Over Time (CO)	0.00	Hrs
Normal Production Run	1.00	
Normal Process Quantity...	15,000.00	
% Yield (YLD)	86.00%	
% VA Processing Time	15.00%	

#### Process Properties – General Tab – Calculated Statistics

- Flow Time – the average time required for an item of work to proceed from arrival to completion of the process step (Starts with → Ends with) or value stream path; in addition to normal processing time, rework time and wait time for change over, unavailability, downtime, shipping intervals, and other delays will add to flow time
- VA Time – the part of flow time that is value-added from the customer perspective; computed by multiplying the processing time (Manual Time + Auto Time) by the %VA
- NVA Time – this represents the portion of the flow time that is NOT value added; computed by subtracting VA Time from Flow Time
- Time per unit – this is the “per unit” exit interval computed by dividing the Flow Time by the quantity of output (Normal Process Quantity x Stations)
- Takt Time – time between requests or demands for an item
- Takt ratio – this is the flow time divided by the takt time. This serves as an Indicator of how closely the process throughput rate is matched to the demand rate; an ideal ratio, including recovery time, would approach 1.0
- Concurrent Units – this is the number of units “in-process” at an activity; computed by multiplying the Normal Process Quantity by the number of Stations
- Work Time – this is the amount of work to process a normal process quantity of items; computed as number of People multiplied by Manual Time
- Station Work Time – this is the manual time required per station; computed as work time divided by stations

General   Pieces   Waste   Station   Notes		
Name	Value	Units
Calculated Statistics		
Flow Time	14.00	Hrs
VA Time	2.10	Hrs
NVA Time	12.90	Hrs
Time Per Unit	0.00	Hrs
TAKT	0.05	Hrs
TAKT Ratio	307.71	
Concurrent Units	15,000.00	
Work Time	12.00	Hrs
Station Work Time	12.00	Hrs

Section V: LeanView Shapes and Properties

Material Stencil Shapes

Process

Process Properties – General Tab – Delays

Delay name, frequency and duration are described in the delays section of the general tab in the process properties dialog. Any delays defined here will be incorporated into the flow time displayed in the calculated statistics. If the flow time field in the input section is set to 'calculated', the delay time will be incorporated. Data defined in the delays section of the process properties dialog will be included in the Delays worksheet of the LeanView Map Analysis Report.

Name	Value	Units
Flow Time-Input (FT)	15.00	Hrs
Manual Time (MT)	3.00	Hrs
Auto Time (AT)	11.00	Hrs
Change Over Time (CO)	2.00	Hrs
Normal Production Run	15,000.00	
Normal Process Quantity (Bat	15,000.00	

Delay* = 0.12 hrs			
Delay	Frequency (%)	Avg Duration	Units
Rework	5.00%	1.00 Hrs	
Scrap	1.00%	1.00 Hrs	
Resource Delay	3.00%	2.00 Hrs	

Frequency	*	Duration	=	Amortized Delay
5%	*	1 Hrs	=	0.05 Hrs
1%	*	1 Hrs	=	0.01 Hrs
3%	*	2 Hrs	=	0.06 Hrs
				0.12 Hrs

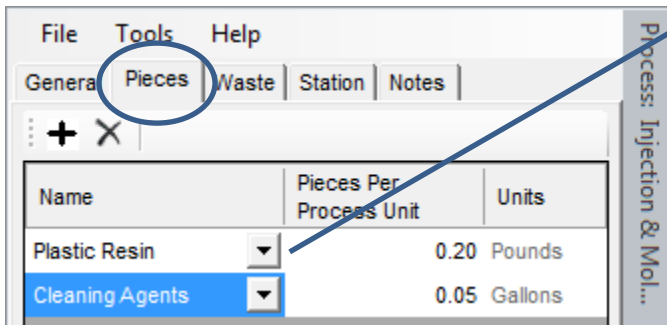
Calculated Flow Time =  
 Manual Time + Auto Time + Delays  
 14 Hrs processing time + 2.12 Hrs delay

Change Over Time	*	Normal Process Quantity	/	Normal Production Run	=	Amortized Change Over Delay
2 Hrs	*	15,000	/	15,000	=	2 Hrs

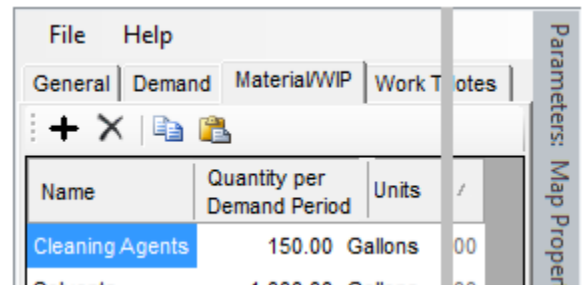
Calculated Statistics	Value	Units
Flow Time	16.12	Hrs

Process Properties – Pieces Tab

The pieces tab is used to define the representative items or materials for a unit that are "in process". The pieces will be multiplied by the Concurrent Units and included in a tally of the total quantity and cost of inventory items in the value stream.



Demand and Material/WIP items defined in the map properties shape are available in the drop-down list of the Name field on the process properties pieces tab.



## Section V: LeanView Shapes and Properties

### Material Stencil Shapes

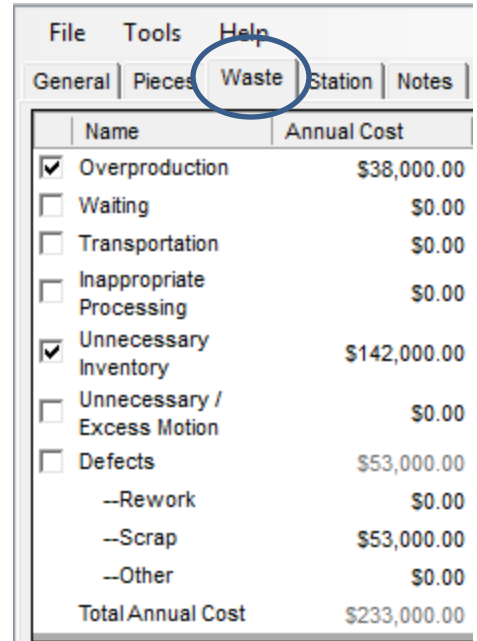
#### Process

##### Process Properties – Waste Tab

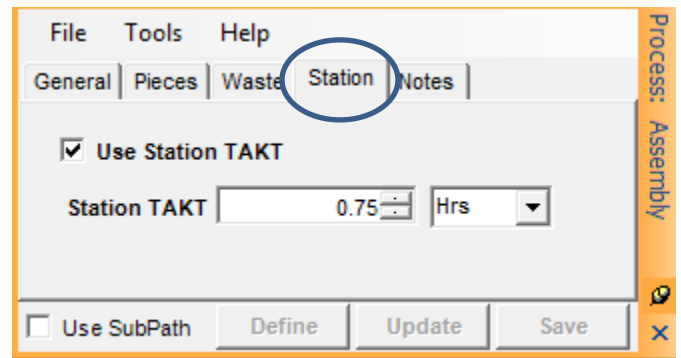
The waste tab of the process properties dialog provides a mechanism to incorporate information about the cost associated with the primary sources of waste and delay. Information captured here, will be incorporated in the LeanView Map Analysis Report and PowerPoint Outbrief.

##### Process Properties – Station Tab

The station tab of the process properties dialog provides a mechanism to define a takt time for a process station. The takt time for a process is automatically calculated based on the entries on the demand tab of the map properties; this value is reflected in the calculated statistics shown on the general tab of the process properties. If a process is used for multiple product families or operates with more or less available work time than is described for the value stream, the takt time may need to be revised. Simply define the appropriate takt time, click the 'use station takt' option, and click save. This will update the takt time shown in the calculated statistics on the general tab of the process properties dialog. Additionally, this revised takt time will be reflected in the worksheets of the LeanView Map Analysis Report.



Name	Annual Cost
<input checked="" type="checkbox"/> Overproduction	\$38,000.00
<input type="checkbox"/> Waiting	\$0.00
<input type="checkbox"/> Transportation	\$0.00
<input type="checkbox"/> Inappropriate Processing	\$0.00
<input checked="" type="checkbox"/> Unnecessary Inventory	\$142,000.00
<input type="checkbox"/> Unnecessary / Excess Motion	\$0.00
<input type="checkbox"/> Defects	\$53,000.00
--Rework	\$0.00
--Scrap	\$53,000.00
--Other	\$0.00
<b>Total Annual Cost</b>	<b>\$233,000.00</b>



File Tools Help  
General Pieces Waste **Station** Notes

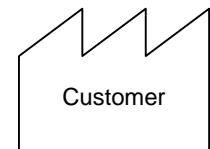
Use Station TAKT

Station TAKT: 0.75 Hrs

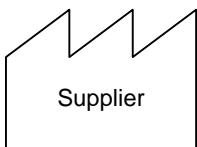
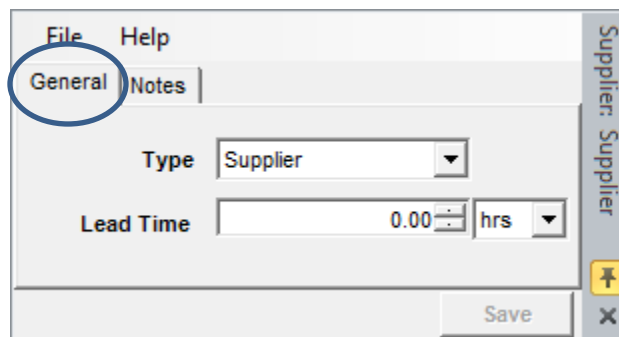
Use SubPath    Define    Update    Save

Process: Assembly

**Customer** – this shape is used to represent the end customer for the value stream, the entity requesting the finished goods or services provided by the value stream.



**Supplier** – this shape is used to represent the value stream inputs, providers of the material/WIP items consumed or transferred by the value stream. The supplier lead time can be defined in the general tab of the supplier properties dialog.

File Help  
**General** Notes

Type: Supplier

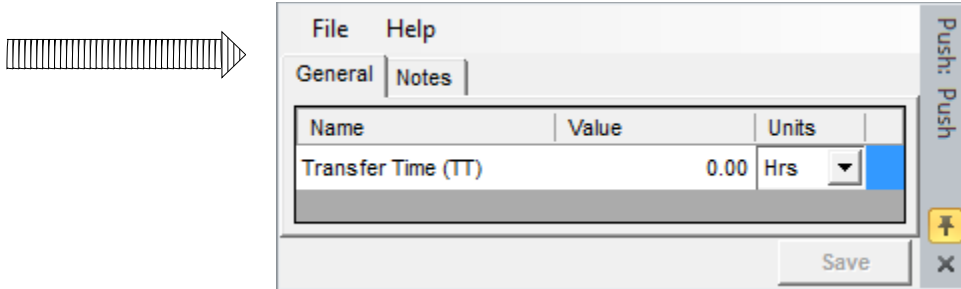
Lead Time: 0.00 hrs

Save

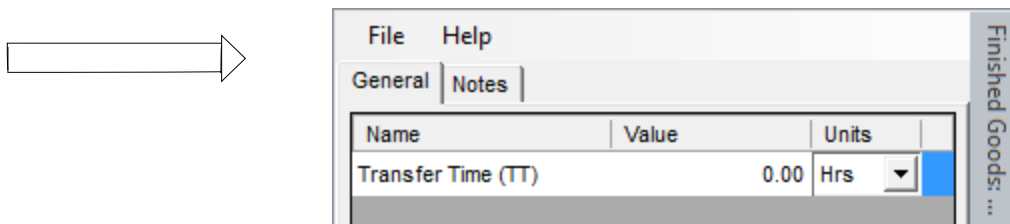
Supplier: Supplier

**Material Stencil Shapes**

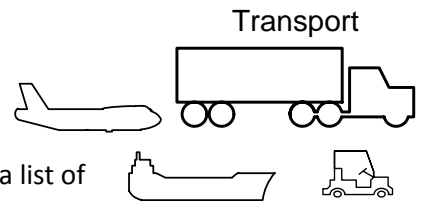
**Push** – this shape depicts the movement or ‘push’ of material/WIP items to a process or inventory location; this movement is not dictated by the need of the destination process or inventory. The average time required to complete the transfer or ‘push’ of material can be defined in the general tab of the push properties dialog.



**Finished Goods** – this shape represents the movement of finished goods to the customer or materials from a supplier; usually overlaid by a transport shape or shipping symbol such as a truck, plane or rail. The average time required to complete the movement of finished goods can be defined in the general tab of the finished goods properties dialog.



**Transport** – this shape is used to represent the shipment of materials or products from suppliers to plant, plant to customer, or between processes, via internal or external carrier. Reviewing the *Transport Type* list in the properties dialog reveals a list of options: large truck, small truck, ship, plane, cart, forklift, and more.



Transport Properties – General Tab – Inputs

- Capacity – the maximum number of items that can be transported at a time
- Ship Set – the average size of a standard shipment
- Loss Rate – the proportion of units damaged or otherwise lost in transport
- Shipping Interval – the average time between shipments Note, there is a delay associated with waiting for shipment; on average, a unit waits half of the shipping interval, adding to flow time.
- Transport Time – the actual transit or transport time

Name	Value	Units
Transport Type	Large Truck	
Capacity	500.00	
Ship Set	300.00	
Loss Rate	1.00%	
Shipping Interval (SI)	40.00	Hrs
Transport Time (TT)	4.00	Hrs

Section V: LeanView Shapes and Properties

Material Stencil Shapes

Transport

Transport Properties – General Tab – Calculated Statistics

- Flow Time – this represents the average elapsed time associated with the transport of materials; flow time is determined by adding the transport time to the delay time
- Yield – this represents the number of units successfully transported first pass; computed as 1 – Loss Rate
- Average Delay – this represents the average wait or delay associated with the transport activity

Name	Value	Units
Transport Type	Large Truck	
Capacity	500.00	
Ship Set	300.00	
Loss Rate	1.00%	
Shipping Interval (SI)	40.00	Hrs
Transport Time (TT)	4.00	Hrs
<b>Calculated Statis...</b>		
Flow Time	24.16	Hrs
Yield	99.00%	
Average Delay	0.16	Hrs

Calculated Flow Time =  
 Transport Time + (Shipping Interval / 2) + Delays =  
 2 Hrs + (40 Hrs / 2) + 0.12 Hrs = 22.12 Hrs

Transport Properties – General Tab - Delays

Delay name, frequency and duration are described in the delays section of the general tab in the transport properties dialog. The flow time field in the calculated statistics section incorporates any delays defined. This delay data is also included in the Delays worksheet of the LeanView Map Analysis Report.

Delay	Frequency (%)	Avg Duration	Units
Weather Delay	2.00%	6.00 Hrs	

Delay\* = 0.12 hrs

Frequency	*	Duration	=	Average Delay
2%	*	6 Hrs	=	0.12 Hrs

Transport Properties – Pieces Tab

The pieces tab is used to define representative items in a unit being transported. The pieces will be multiplied by the Ship Set quantity and included in a tally of the total quantity and cost of inventory items in the value stream.

Demand and Material/WIP items defined in the map properties shape are available in the drop-down list of the Name field on the transport properties pieces tab.

Name	Pieces Per Ship Set	Units
Frames	1.00	Units

Name	Quantity per Demand Period	Units	Price per Unit
Frames	300.00	Units	\$38
Parts Kit	300.00	Units	\$44

## Section V: LeanView Shapes and Properties

### Material Stencil Shapes

**Inventory** – this shape represents an inventory location where Material/WIP items wait to be consumed by a process; the average flow time at an inventory is based on the quantity and mix of materials stored. Inventory quantities can be described in the inventory properties dialog. Note, before inventory shape properties are defined, the value stream Map Properties Demand and Material/WIP tabs must be completed.

The image shows two screenshots of the LeanView software interface. The left screenshot shows the 'Map Properties' dialog box with the 'Material/WIP' tab selected. A table lists items: 'Frames' (300.00 Units, \$38.00, \$11,400.00), 'Parts Kit' (300.00 Units, \$44.99, \$13,497.00), and 'Tires' (600.00 Units, \$14.50, \$8,700.00). The right screenshot shows the 'Inventory Properties' dialog box with the 'General' tab selected. It shows a list of items: '500 Series' (0.00 Units), 'Frames', 'Parts Kit', and 'Tires'. A red box labeled 'Map Properties' is shown below the first screenshot.

Inventory Flow Time is determined based on the quantity and mix of items in an inventory location. This flow time can be automatically calculated by LeanView.

$$\text{Avg Flow Time: } (4 + 6.67 + 4.67) \text{ Hrs} / 3 = 5.11 \text{ Hrs}$$

The screenshot shows the 'Inventory Properties' dialog box with the 'General' tab selected. The 'Flow Time-Calculated (FT)' is set to 5.11 Hrs. Below the dialog, a table lists items with their quantities and time units:

Name	Quantity	Units	Supply	Time Units
Frames	30.00	Units	4.00	Hrs
Parts Kit	50.00	Units	6.67	Hrs
Tires	70.00	Units	4.67	Hrs

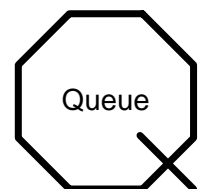
The information in the Map Properties Demand and Material/WIP tabs is used to determine consumption rates. LeanView uses these rates to determine the flow time associated with inventory quantities.

If 300 frames are consumed in a 40-hr demand period, the time required to consume 30 frames is 4 hours.

$$\frac{300 \text{ frames}}{40 \text{ hours}} = \frac{30 \text{ frames}}{x \text{ hours}}$$

$$x = \frac{30 \text{ frames} * 40 \text{ hours}}{300 \text{ frames}} = \frac{1200 \text{ hours}}{300} = 4 \text{ hours}$$

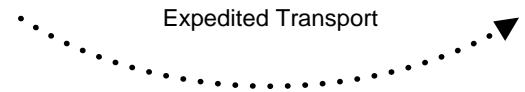
**Queue** – usually used in transactional value streams, the octagonal queue shape is used to an area where there is a backlog of items awaiting processing; the queue properties dialog is the same as the inventory properties dialog described above.



## Section V: LeanView Shapes and Properties

### Material Stencil Shapes

**Expedited Transport** – this shape is used to represent a shipment of materials or finished goods that is accomplished through express methods such as overnight, air, 2-day, etc.; the properties for the expedited transport are the same as those described for the transport shape on pages 29 and 30.



**Withdrawal** – this shape depicts the pull of materials, such as from a supermarket; the average quantity pulled and the time to transfer the materials may be defined in the withdrawal properties dialog

Withdrawal

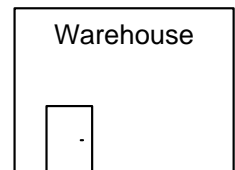


Name	Value	Units
Quantity	0.00	
Transfer Time (TT)	0.00	Hrs

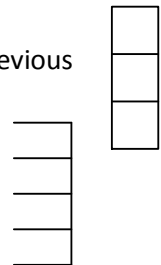
**FIFO Sequence** – this shape indicates flow of material between processes in a First-In-First-Out order; the FIFO properties are the same as those described for inventory shapes on the previous page.



**Warehouse** – this shape represents an inventory holding place, such as product waiting to ship to customer; the warehouse properties are the same as those described for inventory shapes on the previous page.



**Safety Stock** – this shape is used to depict inventory intended to buffer against variability in supply availability; the safety stock properties are the same as those described for inventory shapes on the previous page.

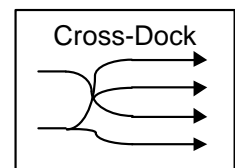


**Supermarket** – this shape denotes a managed inventory to facilitate a pull system; the supermarket properties are the same as those described for inventory shapes on the previous page.

**Cross-Dock** – this shape is used to represent a shipping hub operation

#### Cross-Dock – General Tab – Inputs

- Transfer Time – this is the total elapsed time required to pass through the cross-dock
- Dock Doors – this represents the number of dock door for receiving and distribution
- In-Bound Trailers – this is to define the number of in-bound trailers
- In-Bound Frequency – this is used to describe the time between in-bound trailer arrivals



Material Stencil Shapes

Cross-Dock

Cross-Dock – General Tab – Inputs

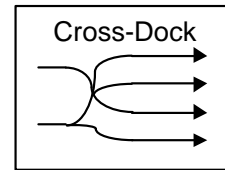
- Out-Bound Trailers – this is to define the number of out-bound trailers
- Out-Bound Frequency – this is used to describe the time between out-bound trailer arrivals

Name	Value	Units
Transfer Time (TT)	3.00	Hrs
Dock Doors	6	
In-Bound Trailers	2.00	
In-Bound Frequency	20.00	Hrs
Out-Bound Trailers	4.00	
Out-Bound Frequency	10.00	Hrs

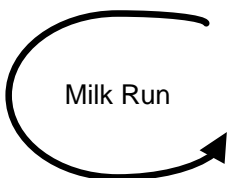
Cross-Dock – General Tab – Calculated Statistics

- Average In-Bound Interval – this represents the average wait time associated with the arrival of in-bound trailers; computed by dividing the in-bound frequency by the number of in-bound trailers and then by 2 [Average In-Bound Interval = (In-Bound Frequency / In-Bound Trailers) / 2]
- Average Out-Bound Interval – this represents the average wait time associated with the arrival of out-bound trailers; computed by dividing the out-bound frequency by the number of out-bound trailers and then by 2 [Average Out-Bound Interval = (Out-Bound Frequency / Out-Bound Trailers) / 2]

Calculated Statistics	Value	Units
Average In-Bound Interval	5.00	Hrs
Average Out-Bound Interval	1.25	Hrs



**Milk Run** – the milk run is typically used to indicate a programmed route for inventory replenishment; a milk run may be performed within a production cell, or by vendors (with a vendor-managed inventory program). Milk run properties are the same as those described for the transport shape on pages 29 and 30.



## Section V: LeanView Shapes and Properties

### LeanView Input Sheet

The input sheet for data entry provides a worksheet-like environment where data may be captured for nearly all of the LeanView shape types.

To open the input sheet, navigate to the LeanView Data section and choose Input sheet.

Each row on the Report View shows all of the shapes of a specified type. You can change the shape type by selecting a different type from the Shape Type dropdown box. Each row shows the properties for individual shapes. You can filter the shapes shown in the input list by page or value path by selecting a filter from the Filter pick list.

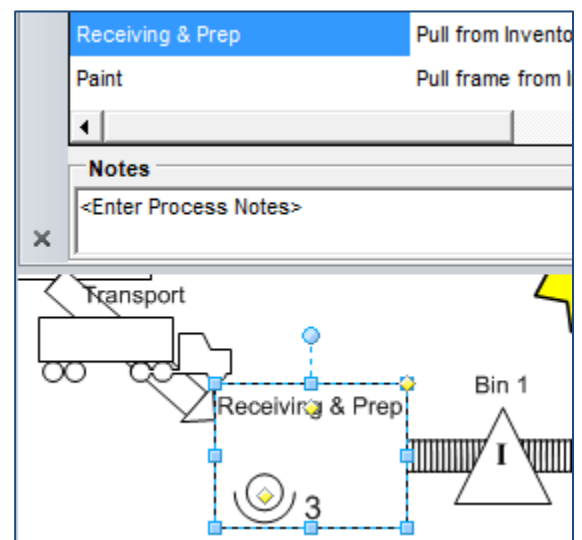
Filtering can be used to change or compare values between shapes of a similar type. If there are no shapes of the type selected in the Shape Type drop-down, the grid will be blank. The Notes field at the base of the window corresponds with the active or selected row.

The screenshot shows the 'Input Sheet' window with a table of process shapes. The 'Type' dropdown is set to 'Process' and the 'Filter' dropdown is set to 'Pg: Top Level CS VSM'. The table has columns for Title, Starts With, Ends With, Flow Time (FT), Units, and Manual Time (MT). The first row is selected and highlighted in blue.

Title	Starts With	Ends With	Flow Time (FT)	Units	Manual Time (MT)
Receiving & Prep	Pull from Inventory	Parts Kits assem...	18.00	Mins	9.00
Paint	Pull frame from In...	Frame painted an...			
Assembly	Pull painted fram...	Frame, tires and ...	43		

Input sheet contents can be filtered by shape type and by page or by value path using the drop-down menus at the top of the input sheet window.

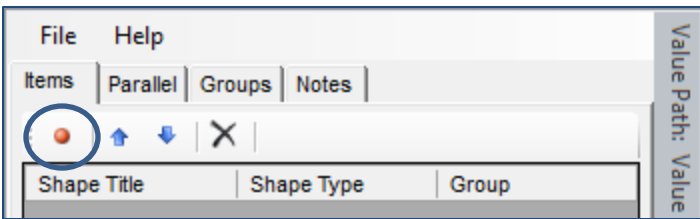
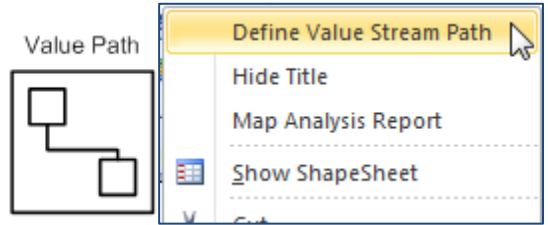
To select a row in the grid, simply click on the Title of the shape that you want to modify. Note, when a row is selected in the grid, the associated LeanView shape is highlighted.



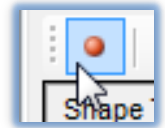
Section VI: Recording the Value Stream

Once a value stream path has been drawn and shape properties defined, before analysis can be performed, the value stream path or paths to be analyzed must be defined. The Value Path shape is used to define the logical sequence of steps that make up a value stream path.

To define the value stream path, drag and drop a Value Path shape from the General stencil onto the drawing canvas. Right mouse click the Value Path shape and select Define Value Stream Path from the context menu. This will open the Value Path properties dialog where the path can be recorded, parallel activities can be identified and groups can be defined.

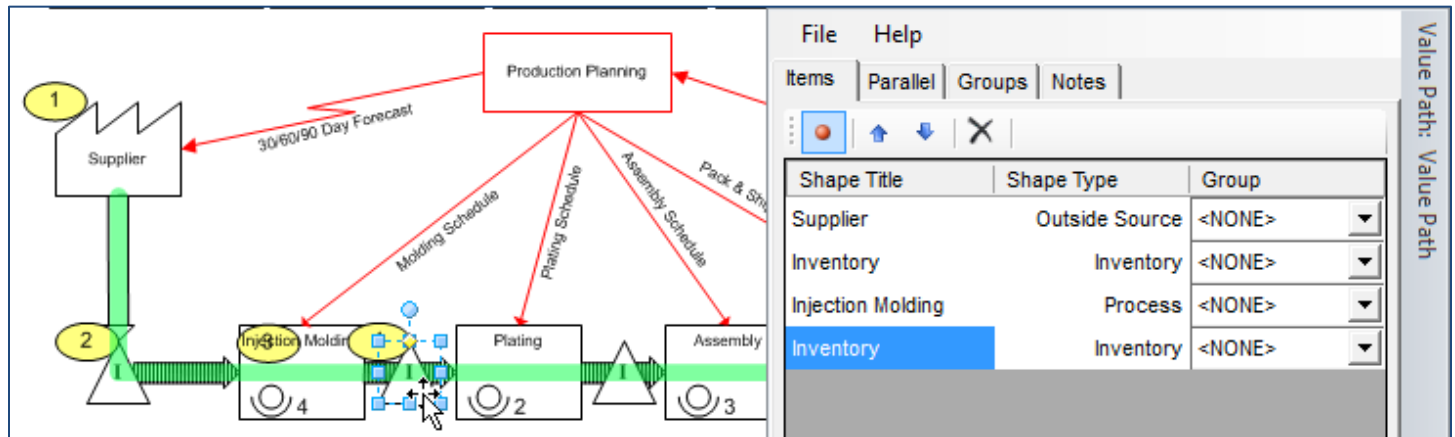


On the Item tab, click the red dot in the dialog tool bar to set "record mode".

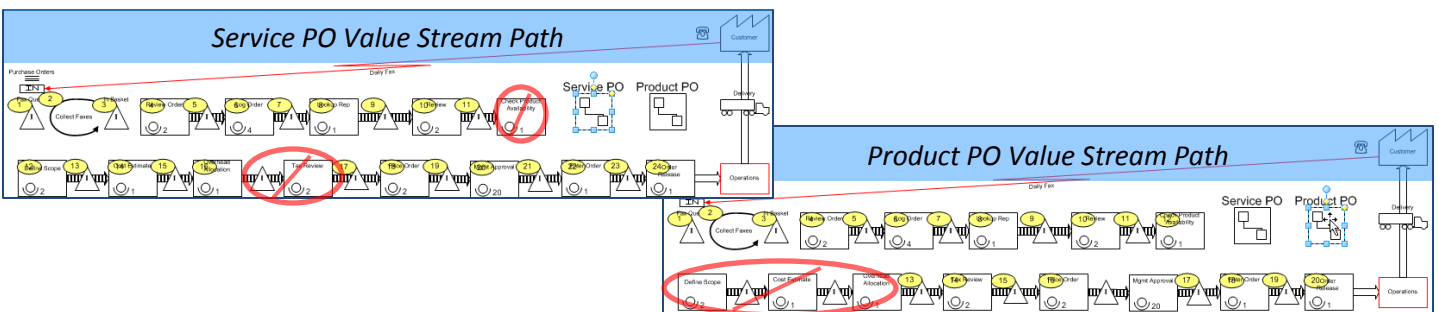


With record mode active, select the LeanView™ shapes to be included in the path.

When in record mode, as shapes are selected, their shape titles will appear in the Value Path dialog and a numbered bubble shape will be assigned to the recorded shapes in the drawing area.



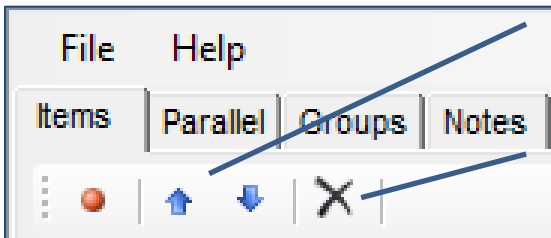
Note that you can define more than one value path in a LeanView™ diagram using multiple value path shapes. In the example below, Product PO's and Service PO's value streams have been captured in the same page.



## Section VI: Recording the Value Stream

### Editing a Value Stream Path

Once shapes have been recorded into a value stream path, the paths shapes list on the Items tab can be reordered, new shapes can be added or existing shapes may be deleted using the toolbar.



Arrow buttons can be used to reorder the shape list. These buttons will move the selected row/shape up or down.

The 'x' button will delete any unwanted shapes/rows from the path shape list.

### Parallel Activity Paths

The shapes recorded into the *Items* tab path list represent the primary value stream flow. If there are parallel activities that occur, these may also be recorded into the Value Path properties dialog on the *Parallel* tab. While shapes recorded on the parallel tab will not impact the path flow time calculations, the work and inventory associated with these parallel steps will be incorporated in the LeanView™ paths analysis output.

Activities performed in parallel with the primary value stream may be incorporated in analysis. Although parallel activities do not impact the flow time for the overall value stream path, the LeanView™ Map Analysis Report will account for the work involved and materials consumed in parallel shapes.

Shape Title	Shape Type	Group
Order Confirmation	Process	<NONE>
Invoicing / Accounting	Process	<NONE>

The parallel shapes list can be edited in the same manner as the path list on the items tab, using the toolbar presented.



## Section VI: Recording the Value Stream

### Creating Groups

The Groups tab in the LeanView Value Path shape properties dialog is used to identify sub-groups within a value stream path.

New Groups can be added to the list using the '+' button. Unwanted Groups (rows) may be deleted using the 'x' button.

Each Group added to the list can be uniquely identified by a color selected or created by the user. Clicking on a cell in the Color column of the Groups tab will open the Color dialog.

Once Groups have been defined, shapes recorded in the Items and Parallel tabs of the value path properties dialog can be assigned to a Group. Once a shape is assigned to a group, the color of the numbered bubble assigned to the shape will be updated accordingly to visually indicate membership to a group.

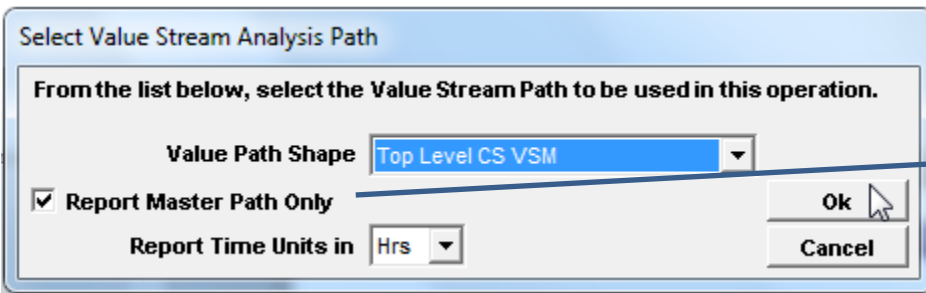
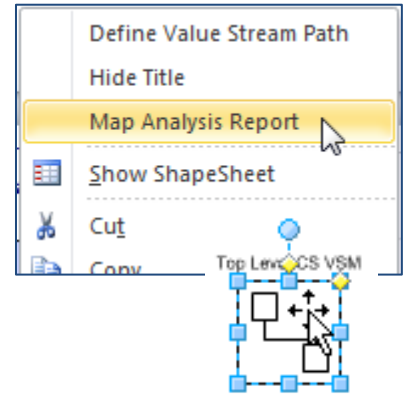
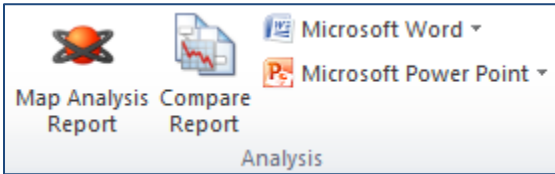
Shape Title	Shape Type	Group
Supplier	Outside Source	Supply Chain
Inventory	Inventory	Supply Chain
Injection Molding	Process	Manufacturing
Inventory	Inventory	<NONE>
Plating	Process	Manufacturing
Inventory	Inventory	Finishing
Assembly	Process	Delivery

Section VII: Analyzing the Value Stream

Once Value Stream Map Properties are defined and value stream shapes are recorded into a value path dialog, information about value stream performance can be obtained using the LeanView analysis engine.

Map Analysis Report (MAR)

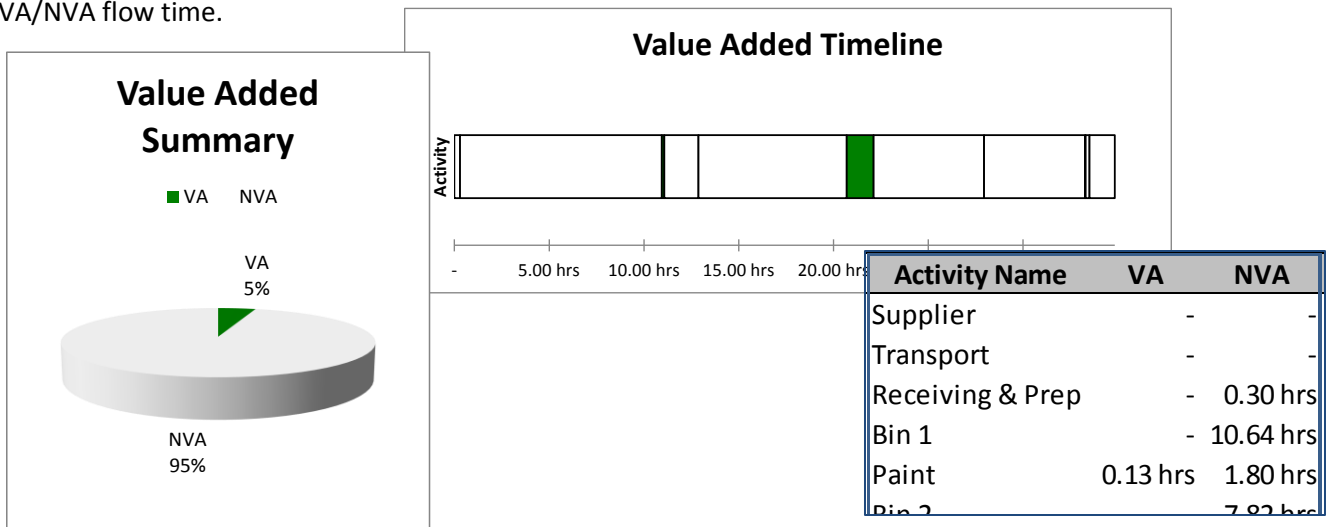
The LeanView Map Analysis Report (MAR) summarizes value path performance information in Microsoft Excel for review. To generate a MAR, select the MAR from the Analysis section of the LeanView ribbon. (If working in LeanView 4.0 or 5.0, go to LeanView → Reports → Map Analysis Report.) Identify the value path to be analyzed, select the desired report time units and click Ok. The MAR can also be generated by right-clicking on a value path shape and choosing 'Map Analysis Report' from the context menu.



Sub-path data may be incorporated, if desired. See Section XV: Sub Value Paths

The MAR workbook is composed of ten worksheets: Value Added Timeline, Value Stream, Takt Analysis, Sorted Metrics, Inventory, Delays, Process Waste, VSM Data, User Data and Path Notes.

- Value Added Timeline – this worksheet shows the total flow time and highlights when the value added time occurs using green on the horizontal bar. Additionally there is a pie graph showing the percent of value added versus non-value added time. The summary table shows each process/ inventory/ transfer and its individual VA/NVA flow time.



## Section VII: Analyzing the Value Stream

### Map Analysis Report (MAR)

- Value Stream – the value stream worksheet provides the overall performance for the value path as well as the performance metrics for shapes that make up the path.

Value Stream: Top Level CS VSM												
Activity Name	Type	Flow Time (FT)	Manual Time (MT)	People (FTE)	Total Work	Auto Time (AT)	Transfer Time	% Yield (YLD)	Value Added Time	NVA Time	Value Stream Yield	Cumulative Flow Time
Supplier	Supplier	-	-	-	-	-	-	-	-	-	100%	-
T		-	-	-	-	-	-	-	-	-	100%	-
R		0.30 hrs	0.15 hrs	3.00	0.45 hrs	-	-	-	-	0.30 hrs	-	0.30 hrs
B		10.64 hrs	-	-	-	-	-	-	-	10.64 hrs	-	10.64 hrs
P		1.93 hrs	0.50 hrs	5.00	0.00 hrs	-	-	-	-	1.80 hrs	-	1.80 hrs
B		7.82 hrs	-	-	-	-	-	-	-	7.82 hrs	-	7.82 hrs
A		-	-	-	385.00 hrs	-	-	-	-	5.83 hrs	-	5.83 hrs
B		-	-	-	-	-	-	-	-	5.33 hrs	-	5.33 hrs
Packing	Process	-	-	-	0.43 hrs	0.01 hrs	-	98.0%	0.02 hrs	0.21 hrs	-	0.21 hrs
Warehouse	Warehouse	-	-	-	-	-	-	-	-	1.33 hrs	-	1.33 hrs
Transport	Transport	-	-	-	-	-	-	-	-	-	-	-
Customer	Customer	-	-	-	-	-	-	-	-	-	-	-
Order Confirmation	Process	-	-	-	0.05 hrs	-	-	-	-	-	-	-
Invoicing / Accounting	Process	-	0.10 hrs	1.00	0.10 hrs	-	-	100%	-	-	-	-
Path Total		34.84 hrs	8.02 hrs	67.00	386.03 hrs	0.19 hrs	-	-	1.58 hrs	33.26 hrs	85.8%	34.84 hrs
Takt Time	8.00 mins								Percent Value Added Time	4.53%		

- Takt Analysis – this sheet is used to compare process flow times to takt time

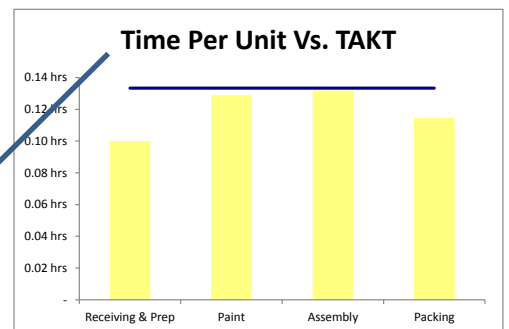
TAKT Analysis: Top Level CS VSM						
Step	Flow Time	Takt Time	Takt Ratio	Concurrent Units	Time Per Unit	
Receiving & Prep	0.30 hrs	0.13 hrs	2.25	3.00	0.10 hrs	
Paint						
Assembl						
Packing				2.00	0.11 hrs	
Total	9.71 hrs	0.53 hrs	18.21	20.43	0.48 hrs	

Takt Ratio = Flow Time / Takt Time

Concurrent Units are determined by multiplying the Normal Production Quantity and Stations.

Time Per Unit = Flow Time / Concurrent Units

If the Time Per Unit is greater than the Takt Time, this indicates the process is incapable of meeting the pace of demand. Either the takt time must be increased (less demand and/or more available work time), the flow time must be decreased (reduce processing time and/or eliminate delays), or the concurrent units must be increased (add stations and/or increase the normal production quantity).



Section VII: Analyzing the Value Stream

Map Analysis Report (MAR)

- Sorted Metrics – this sheet may be used to establish a priority sequence for process improvements; activities are listed in order of contribution to each of six performance metrics: NVA Time, Flow Time, Manual Time, Auto Time, Change Over Time, and Yield.

Process Sorted Metrics: Top Level CS VSM				NVA Time	Flow Time (FT)	Manual Time (MT)	Auto Time (AT)	Change Over Time (CO)	% Yield (YLD)		
Process	NVA Time	Process	Flow Time (FT)	Process	(MT)	Process	(AT)	Process	(CO)	Process	(YLD)
Assembly	5.83 hrs	Assembly	7.25 hrs	Assembly	7.00 hrs	Assembly	0.11 hrs	Paint	0.25 hrs	Receiving & Prep	95.00%
Paint	1.80 hrs	Paint	1.93 hrs	Paint	0.50 hrs	Receiving & Prep	0.07 hrs	Receiving & Prep	-	Paint	95.00%
Invoicing / Accounti	0.50 hrs	Order Confirmation	0.50 hrs	Packing	0.22 hrs	Packing	0.01 hrs	Assembly	-	Assembly	97.00%
Order Confirmation	0.45 hrs	Invoicing / Accounti	0.50 hrs	Receiving & Prep	0.15 hrs	Paint	-	Packing	-	Packing	98.00%
Receiving & Prep	0.30 hrs	Receiving & Prep	0.30 hrs	Invoicing / Accounti	0.10 hrs	Order Confirmation	-	Order Confirmation	-	Order Confirmation	100%
Packing	0.21 hrs	Packing	0.23 hrs	Order Confirmation	0.05 hrs	Invoicing / Accounti	-	Invoicing / Accounti	-	Invoicing / Accounti	100%

- Inventory – this sheet is used to assess the total amount of inventory tied up in the value stream and the opportunity to reduce this investment. The total quantity in inventory is summed for each item type and the associated cost is reported. Note the unit cost and consumption rates for inventory items are defined in the value stream map properties. Unit cost and consumption rates from sub-paths may differ from the high-level summary (parent) value stream; consumption rates and unit costs within sub-paths are adjusted for any differences in the value stream map properties. The inventory turns in the customer demand period are then calculated based on these consumption rates and inventory quantities.

Value = Inventory Quantity \* Average Unit Cost

1	2	A					G	
	1	<b>Inventory: Top Level CS VSM</b>						
	2	Item	Unit of Measure	Total Inventory Quantity	Average Unit Cost	Value	Consumption in Period	Turns in Period
	3	500 Series	Units	50	\$224.00	\$11,200	300	6.00
	4	Product	Items	50		\$11,200	300	6.00
	5	Frames	Units	186	\$38.00	\$7,068	300	1.61
	6	Parts Kit	Units	155	\$44.99	\$6,973	300	1.94
	7	Tires	Units	172	\$14.50	\$2,494	600	3.49
	8	Material/WIP	Items	513		\$16,535	1,200	2.35
	9	<b>Total</b>	<b>Items</b>	<b>563</b>		<b>\$27,735</b>	<b>1,500</b>	<b>4.17</b>

Inventory Quantities come from inventory shapes recorded into the value stream path.

Average Unit Cost and Consumption in Period are defined in the Value Stream Map Properties

Turns in Period = Consumption in Period / Total Inventory Quantity. This is a typical measure of inventory performance. If inventory on hand is reduced, inventory turns will increase.

Section VII: Analyzing the Value Stream

Map Analysis Report (MAR)

- Delays – this worksheet is used to assess the total delay time documented in the Value Stream. Each delay type is summarized for the value stream and total delay time by activity is also shown. The contribution of each type of delay to the total delay time is reported and a comparison between the delay time and flow time is calculated.

Delays: Top Level CS VSM				
Activity Name	Activity Type	Rework	Scrap	Total
Transport	Transport			-
Receiving & Prep	Process	-	0.01 hrs	0.01 hrs
Paint	Process	-	-	-
Assembly	Process	0.15 hrs	-	0.15 hrs
Packing	Process	0.00 hrs	0.08 hrs	0.09 hrs
Transport	Transport			-
<b>Total Delay Time</b>		0.15 hrs	0.09 hrs	0.24 hrs
<b>Percent (%) of Delay</b>		62%	38%	100%
<b>Total Flow Time</b>		34.84 hrs	34.84 hrs	34.84 hrs
<b>Percent (%) of Flow Time</b>		0%	0%	1%

Delays are defined in the properties dialog of LeanView process and transport shapes.

- Process Waste – this worksheet summarizes the annual cost associated with the 7 major lean wastes

Process Waste: Top Level CS VSM				Overproduction	Waiting	Transportation	Inappropriate Processing	Unnecessary Inventory	Unnecessary/Excess Motion	Defects	Rework Defects	Scrap Defects	Other Defects	Annual Total
Activity Name	Type	On Value Path												
Receiving & Prep	Process	TRUE								X				\$20,000.00
Paint	Process	TRUE				X								\$45,000.00
Assembly	Process	TRUE								X				\$37,000.00
Packing	Process	TRUE												\$0.00
Order Confirmation	Process	FALSE												\$0.00
Invoicing / Accounting	Process	FALSE												\$0.00
<b>Total</b>				0	0	0	1	0	0	2	1	1	0	\$102,000.00

Waste is defined in the properties dialog of LeanView process shapes.

## Section VII: Analyzing the Value Stream

### Map Analysis Report (MAR)

- VSM Data – this sheet lists the key data values entered for the shapes in the value path and is intended as a quick reference for input data values as an alternative to checking the data in the shapes of the VSM. Where appropriate, the values are totaled. Information is summarized for the value stream map properties, process shapes, inventory shapes, transfer shapes, transportation shapes and queue shapes.

Summary Data: Top Level CS VSM										
Demand Period	40.00 hrs									
Takt Time	8.00 mins									
<b>Work Time</b>										
Hours Per Day	8.00 hrs									
Days Per Week	5.00 days									
Days Per Year	250.00 days									
<b>General Properties</b>										
Map Type	Manufacturing									
Map State	Current									
Customer Name	We R Bikes									
Product Family	Performance Series Bicycles									
Author	Erica Wittenmyer									
Produced For	Training & Demonstration									
<b>Master Item List</b>										
Top-Level Map (Bike Manufacturing VSM.vsd)										
<b>Product</b>	<b>Base Demand</b>	<b>Units</b>	<b>Price</b>	<b>Demand Factor</b>	<b>Projected Demand</b>					
500 Series	300	Units	\$224.00	1	300					
<b>Raw Material/WIP</b>	<b>Base Demand</b>	<b>Units</b>	<b>Price</b>	<b>Demand Factor</b>	<b>Projected Demand</b>					
Frames	300	Units	\$38.00	1	300					
Parts Kit	300	Units	\$44.99	1	300					
Tires	600	Units	\$14.50	1	600					
<b>Process Step</b>	<b>Flow Time (FT)</b>	<b>Manual Time (MT)</b>	<b>Auto Time (AT)</b>	<b>People (FTE)</b>	<b>Normal Process Quantity</b>	<b>Change Over Time (CO)</b>	<b>% Yield (YLD)</b>	<b>Percent Value Added</b>	<b>Stations</b>	<b>Normal Production Run</b>
Receiving & Prep	18.00 mins	9.00 mins	4.00 mins	3	1	-	95.0%	0.00%	3	1
Paint	1.93 hrs	0.50 hrs	-	5	1	0.25 hrs	95.0%	26.67%	6	1
Assembly	435.00 mins	7.00 hrs	6.50 mins	55	1	-	97.0%	20.00%		
Packing	13.75 mins	13.00 mins	45.00 secs	2	1	-	98.0%	10.00%		
Order Confirmation	30.00 mins	3.00 mins	-	1	1	-	100%	100.00%		
Invoicing / Accounting	30.00 mins	6.00 mins	-	1	1	-	100%	100.00%		
Process Total	10.71 hrs	8.02 hrs	0.19 hrs	67.00		0.25 hrs				
<b>Inventory</b>	<b>Qty</b>	<b>Units</b>	<b>Supply</b>							
<b>Bin 1</b>										
Frames	80	Units	1.3333 days							
<b>Bin 2</b>										
Parts Kit	100	Units	13.3333 hrs							
Frames	45	Units	6 hrs							
Tires	62	Units	4.1333 hrs							
<b>Bin 3</b>										
500 Series	40	Units	5.3333 hrs							
<b>Warehouse</b>	<b>Qty</b>	<b>Units</b>	<b>Supply</b>							
500 Series	10	Units	1.3333 hrs							
Total:500 Series	50	Units	1 Days							
Total:Frames	125	Units	2 Days							
Total:Parts Kit	100	Units	2 Days							
Total:Tires	62	Units	1 Days							
<b>Transfers</b>	<b>Transfer Time</b>									
Push	0.2 hrs									
Transfers Total	0.20 Hrs									
<b>Transportation</b>	<b>Transport Time</b>	<b>Shipping Interval</b>								
Transport	4 hrs	40 hrs								
Transport	-	-								
Transportation Total/AvgWt	4.00 Hrs	20.00 Hrs								

Value Stream Map Properties Summary

Finished Goods and Material/WIP Summary

Process Properties Summary

Inventory and Warehouse Properties Summary

Transport and Transfer Properties Summary

## Section VII: Analyzing the Value Stream

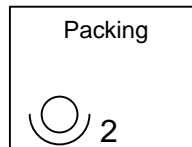
### Map Analysis Report (MAR)

- User Data – if custom user properties have been defined in the Visio shape data window for LeanView shapes recorded into the value path, these properties will be reported in the user data worksheet of the MAR. Both textual and numeric shape data can be defined and incorporated in the MAR. Numeric properties are summed and averaged and the minimum and maximum values are identified.

User Defined Data: Top Level CS VSM	
Top Level CS VSM	
Activity Name	Distance Traveled
Supplier	
Transport	
Receiving & Prep	75
Bin 1	
Paint	125
Bin 2	
Assembly	35
Bin 3	
Packing	65
Push	
Warehouse	
Transport	
Customer	
Order Confirmation	
Invoicing / Accounting	
<b>Total</b>	300
<b>Average</b>	75
<b>Minimum</b>	35
<b>Maximum</b>	125

<b>Total</b>	300
<b>Average</b>	75
<b>Minimum</b>	35
<b>Maximum</b>	125

Custom properties captured in the Visio shape data window are reported in the User Data worksheet of the MAR.

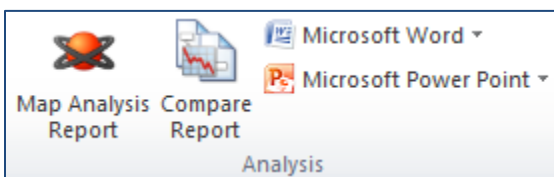


Shape Data - Process.498	
Distance Traveled	65

- Path Notes – all data captured in the notes tab of the properties dialog for LeanView shapes recorded into the value path will be reported in the path notes worksheet of the MAR.

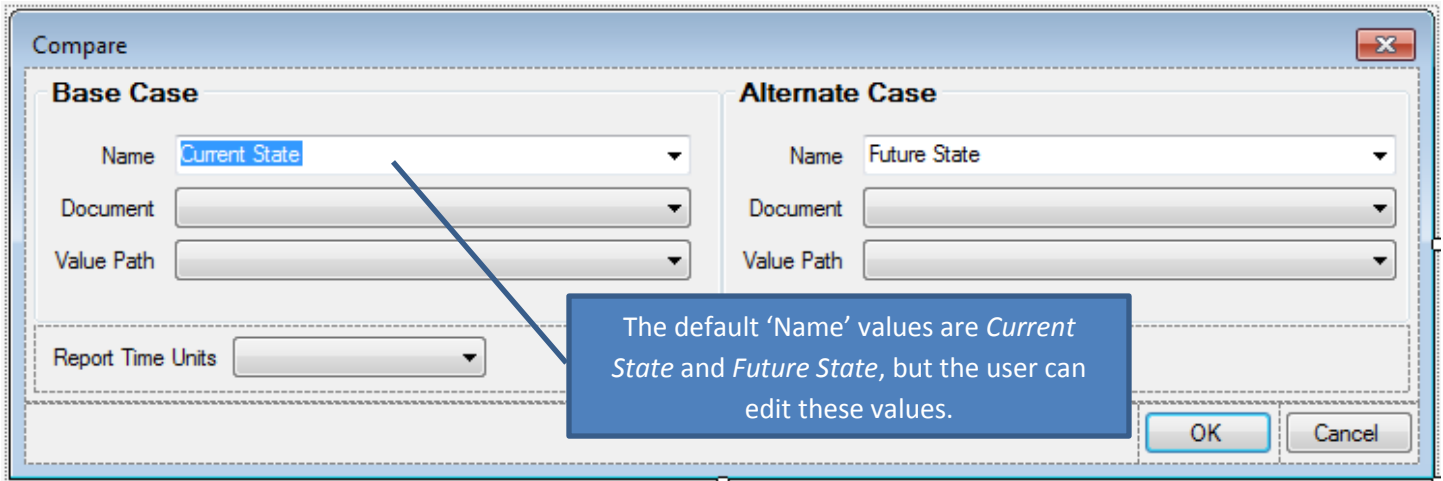
### Compare Report

The performance metrics for any two value paths may be compared using LeanView's Compare Report to Microsoft Excel. Simply navigate to the Analysis Section of the LeanView ribbon and choose the Compare Report.



LeanView will present a window in which you will identify the Visio files containing the paths to be compared as well as the names of the value paths to be compared. The desired report time units may also be selected.

Compare Report



Once the value paths are identified and report time units selected in the Compare window, LeanView will open a new workbook in Microsoft Excel and create a side-by-side comparison of the performance metrics.

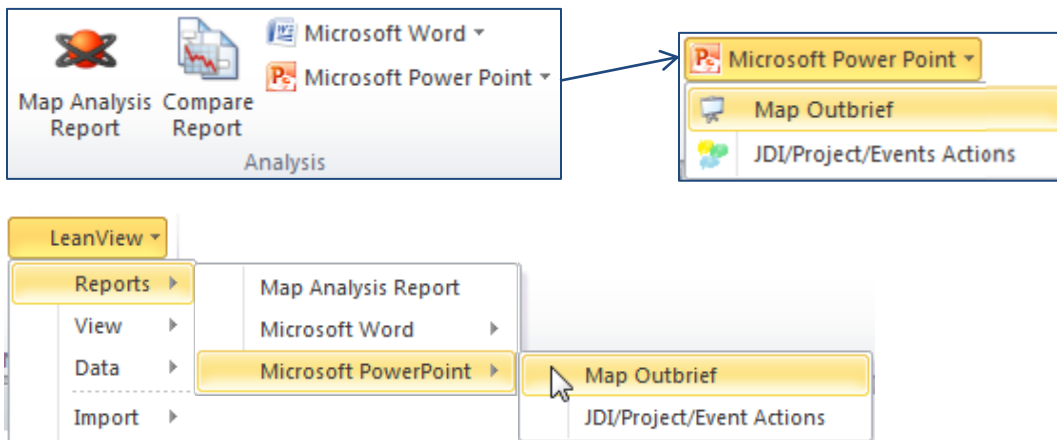
<b>LeanView Compare Report</b>					
<b>Profile</b>	<b>Current State</b>	<b>Future State</b>			
Map Title	Bike Manufacturing VSM	Bike Manufacturing VSM			
VSM Type	Manufacturing	Manufacturing			
VSM State	Current	Future			
Demand	300/40hrs	300/40hrs			
Hours Per Day		8		8	
Days Per Week		5		5	
Days Per Year		250		250	
<b>Performance</b>	<b>Current State</b>	<b>Future State</b>	<b>Difference</b>	<b>% Difference</b>	
Flow Time	99.02 hrs	91.73 hrs	(7.29)	-7%	
Takt Time	0.13 hrs	0.13 hrs	-	0%	
Manual Time	7.87 hrs	6.67 hrs	(1.20)	-15%	
Auto Time	0.19 hrs	0.19 hrs	-	0%	
Transfer Time	4.20 hrs	4.20 hrs	-	0%	
Value Added Time	1.58 hrs	1.32 hrs	(0.25)	-16%	
Non-Value Added Time	97.44 hrs	90.40 hrs	(7.04)	-7%	
Rolled Yield	84.9%	84.9%	0%	0%	

## Section VII: Analyzing the Value Stream

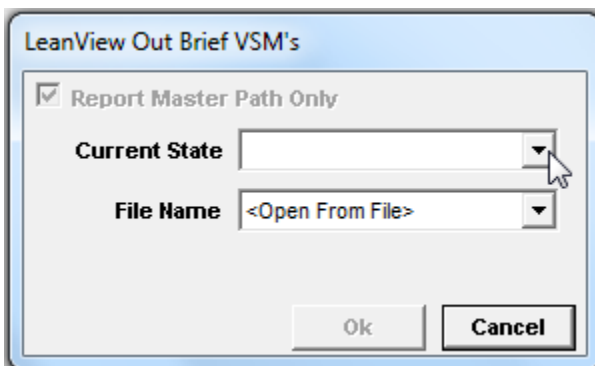
### Map Outbrief to PowerPoint

Value Stream performance information written in the Map Analysis Report (MAR) may also be summarized in Microsoft PowerPoint using templates provided with the LeanView installation. Note that before the Map Outbrief to PowerPoint is written, a MAR should be produced.

To create a PowerPoint slide deck summarizing value stream performance information, navigate to the Analysis section of the LeanView ribbon, select Microsoft PowerPoint, and choose 'Map Outbrief' from the list.



A prompt to select the value path will be presented. Use the 'Current State' field to identify the value path for which performance information is to be summarized. The 'File Name' field provides a list of the active PowerPoint slide decks and templates, if any. To use the LeanView Map Outbrief report template, File Name value should be <Open From File>.

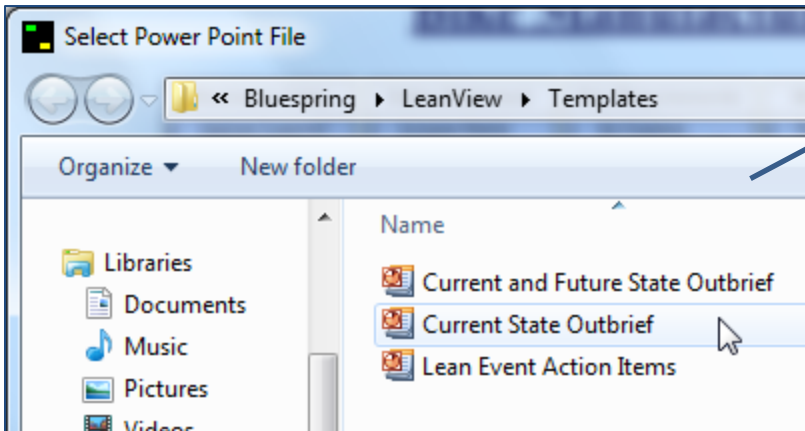


In the 'Current State' field, choose the value path for analysis.  
Leave the 'File Name' as <Open From File> to navigate to the LeanView PowerPoint report templates.

## Section VII: Analyzing the Value Stream

### Map Outbrief to PowerPoint

The location of the PowerPoint template to be used for report construction must be identified. The location of the LeanView Map Outbrief template is C:\Program Files\Bluespring\LeanView\Templates. Note that LeanView also provides templates to report on Lean Event Action Items (improvement opportunity shape properties) and to summarize the performance information for any two value paths (current and future state).



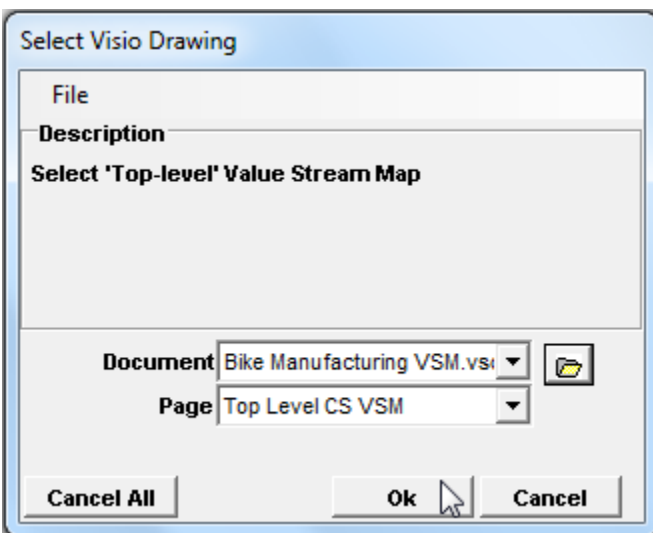
The LeanView 'Current State (Map) Outbrief' template is located at:

C:\Program Files\  
Bluespring\LeanView\Templates

Note: If you have developed a custom report template and do not see it in the list of available templates when you browse to the storage location, change the file type to 'All Files'.

When using the 'Current State Outbrief' or 'Current and Future State Outbrief' templates for reporting, several prompts will be presented to direct LeanView to the location of the value stream path drawing and to identify the Map Analysis Report data to be incorporated in the slide deck.

The first prompt presented asks the user to identify the location of the value path drawing.

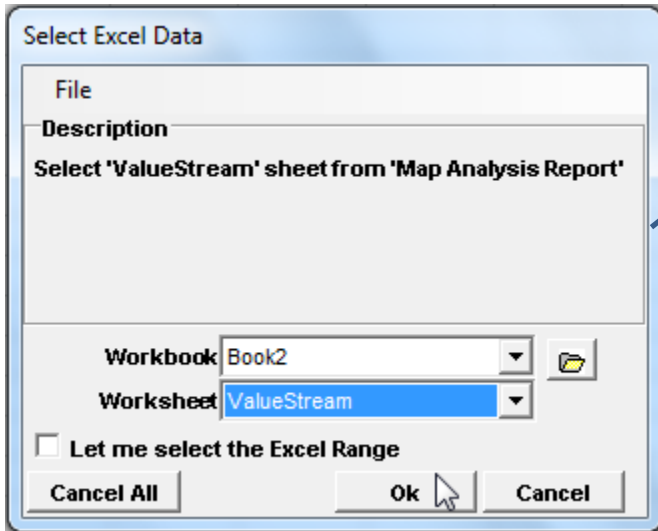


Once the location of the value path is identified, LeanView will copy and paste a picture of the value stream path into the PowerPoint Map Outbrief report.

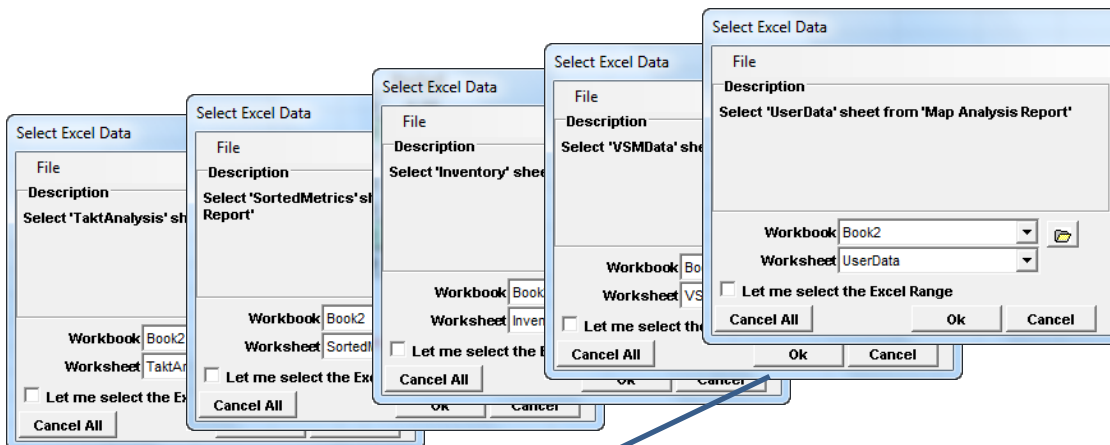
## Section VII: Analyzing the Value Stream

### Map Outbrief to PowerPoint

The subsequent prompts direct the user to identify which data elements from the MAR worksheets should be included in the report.



The LeanView Map Outbrief allows the user to incorporate part or all of the performance information written to the Map Analysis Report. Using the 'Let me select the Excel Range' option, the user can customize the report content. If the 'Let me select...' option is not checked, LeanView will select all of the data in the MAR worksheets.

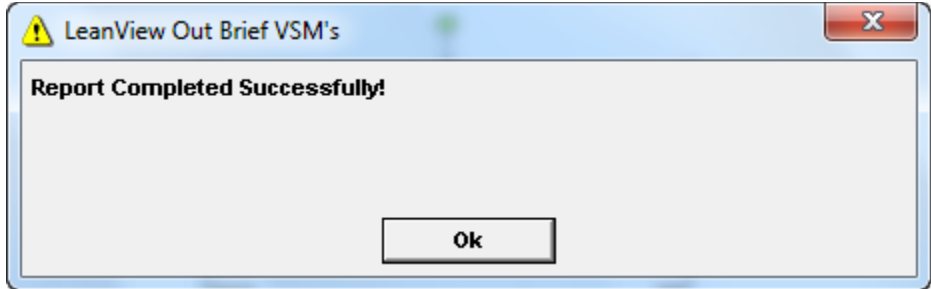


The LeanView Map Outbrief dialogs step through each worksheet of the Map Analysis Report providing the opportunity to select performance information to be incorporated.

Section VII: Analyzing the Value Stream

Map Outbrief to PowerPoint

Once the desired performance information from the Map Analysis Report worksheets is selected, a prompt to save the resultant PowerPoint slide deck is provided. Once the report is saved, a 'report completed' message is presented and the PowerPoint slide deck can be reviewed and shared.



The first four slides in the Map Outbrief Report reflect information defined in the Value Stream Map Properties and Business Case Analysis Work Area.

**Map Properties General Tab Data**

**Lean Event Highlights**

**Key Business Drivers**

**Key Production Data**

**Map Properties Event Tab Data**

**Business Case Analysis Work Area (blue boxes)**

**Map Properties Demand & Work Time Data**

**Bike Manufacturing CS VSM**

**Value Stream Analysis**

**Takt Analysis**

**Sorted Process Metrics**

**Value Stream Inventory Analysis**

**VSM Custom User Data**

**VSM Data Sheet**

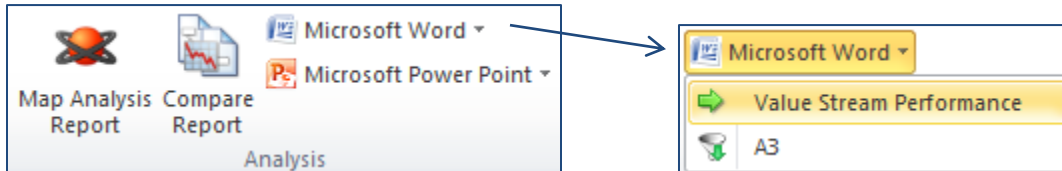
The remaining slides in the Map Outbrief Report are used to provide a picture of the value stream and Map Analysis Report performance information.

## Section VII: Analyzing the Value Stream

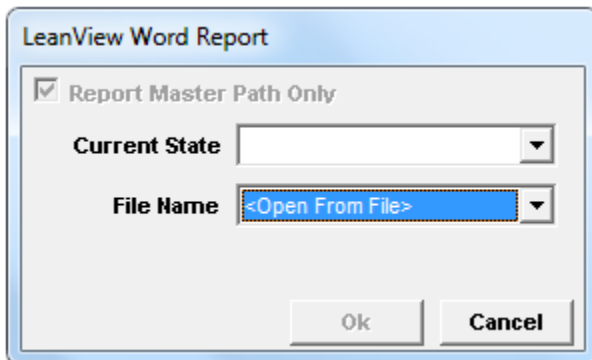
### Map Outbrief to Word

Value Stream performance information written in the Map Analysis Report (MAR) may also be summarized in Microsoft Word using a template provided with the LeanView installation. Note that before the Value Stream Performance Report to word is written, a MAR should be produced.

To create a Word document to summarize value stream performance information, navigate to the Analysis section of the LeanView ribbon, select Microsoft Word, and choose 'Value Stream Performance' from the list. (In LeanView versions 4 and 5, go to LeanView → Reports → Word → Value Stream Performance.)

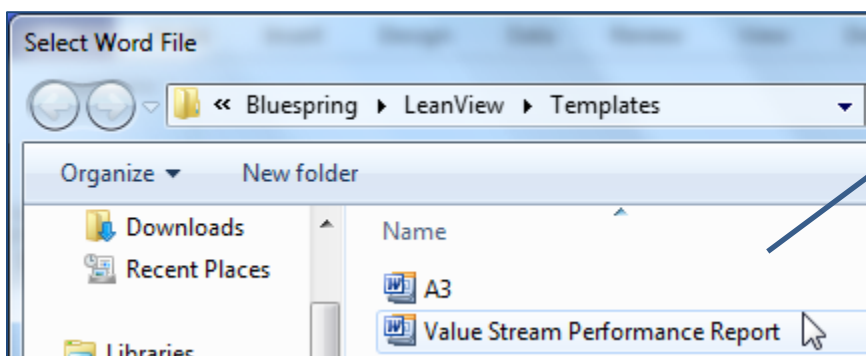


A prompt to select the value path will be presented. Use the 'Current State' field to identify the value path for which performance information is to be summarized. The 'File Name' field provides a list of the active Word files, if any. To use the LeanView Value Stream Performance Report template, File Name value should be <Open From File>.



In the 'Current State' field, choose the value path for analysis.  
Leave the 'File Name' as <Open From File> to navigate to the LeanView Word report templates.

The location of the Word template to be used for report construction must be identified. The location of the LeanView Value Stream Performance Report template is C:\Program Files\Bluespring\LeanView\Templates.



The LeanView 'Value Stream Performance Report' template is located at:

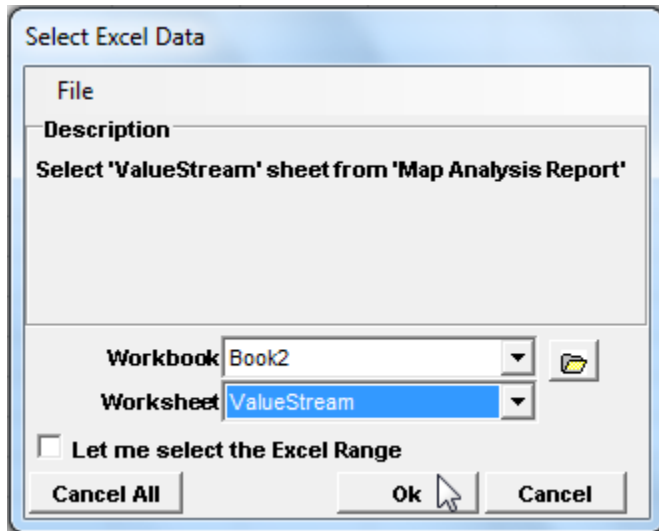
C:\Program Files\  
Bluespring\LeanView\Templates

Note: If you have developed a custom report template and do not see it in the list of available templates when you browse to the storage location, change the file type to 'All Files'.

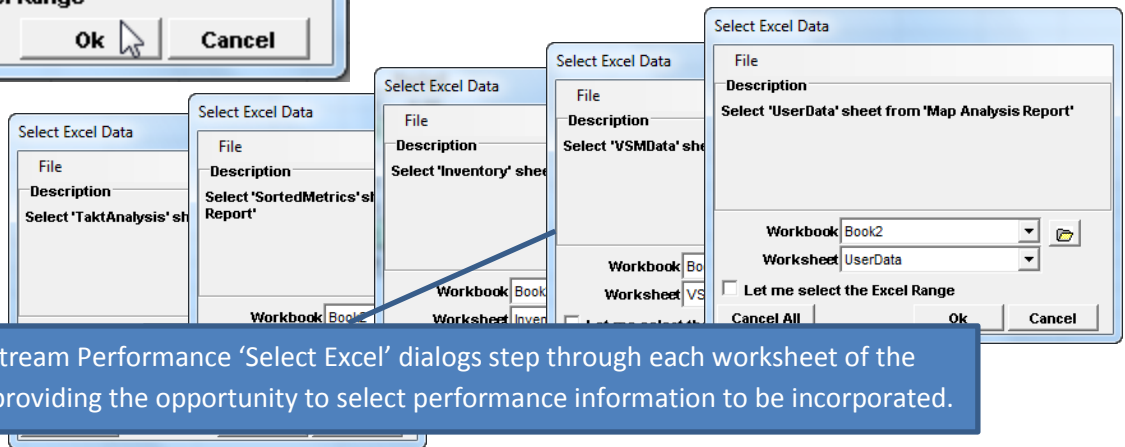
## Section VII: Analyzing the Value Stream

### Map Outbrief to Word

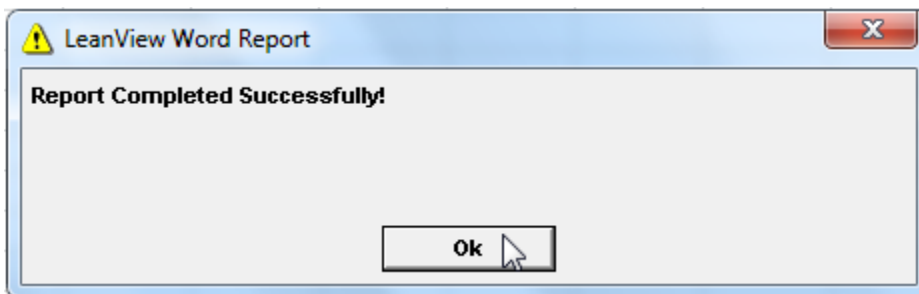
The 'Select Excel Data' prompts that are presented direct the user to identify which data elements from the MAR worksheets should be included in the report.



The LeanView Value Stream Performance Report allows the user to incorporate part or all of the performance information written to the Map Analysis Report. Using the 'Let me select the Excel Range' option, the user can customize the report content. If the 'Let me select...' option is not checked, LeanView will select all of the data in the MAR worksheets.



Once the desired performance information from the Map Analysis Report worksheets is selected, a 'report completed' message is presented and the Word document can be reviewed and shared.



## Section VII: Analyzing the Value Stream

### Map Outbrief to Word

The first three pages in the Value Stream Performance Report reflect information defined in the Value Stream Map Properties and Business Case Analysis Work Area. Subsequent pages in the report highlight the selected Map Analysis Report performance information.

## Section VIII: Capturing Improvement Opportunities

Once a value stream map is defined and analysis information is reviewed, there is often a need to document proposed improvement actions within the context of the value stream map. LeanView provides several shapes on the General stencil to store improvement action event information.



## Section VIII: Capturing Improvement Opportunities

These ‘burst’ shapes are preconfigured to capture a description of the proposed event or action, the reason for the action, as well as information about the owner, team members, and tasks to complete the proposed event.

### Team Tab

These input fields are used to identify the project owner and team members.

### Event Tab

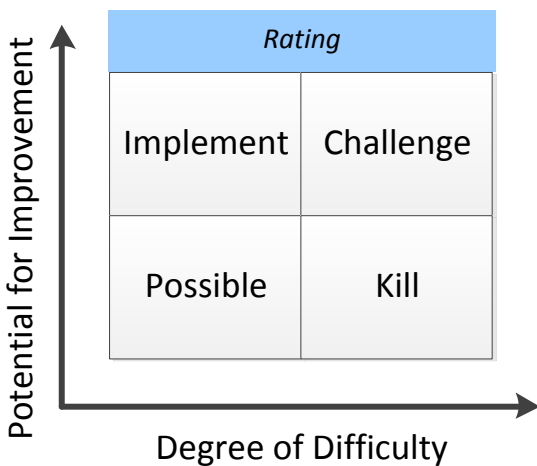
These fields are used to capture the purpose of the proposed actions and a brief description of the improvement tasks to be performed.

### Goals Tab

These fields store information about tasks to be completed to improve value stream performance.

### Rating Tab

This tab allows you to rate an Event/Project according to its Potential for Improvement and Degree of Difficulty.



The screenshots show the following fields:

- Team Tab:** Event Type (dropdown), Owner (text field), Team Members (list).
- Event Tab:** Event Description (text area), Event Reason (text area).
- Goals Tab:** Table with columns: Goal, Start, End, Resources, Fixed C.

Goal	Start	End	Resources	Fixed C
<Goal.0>	7/7/2011	7/7/2011		\$0.00

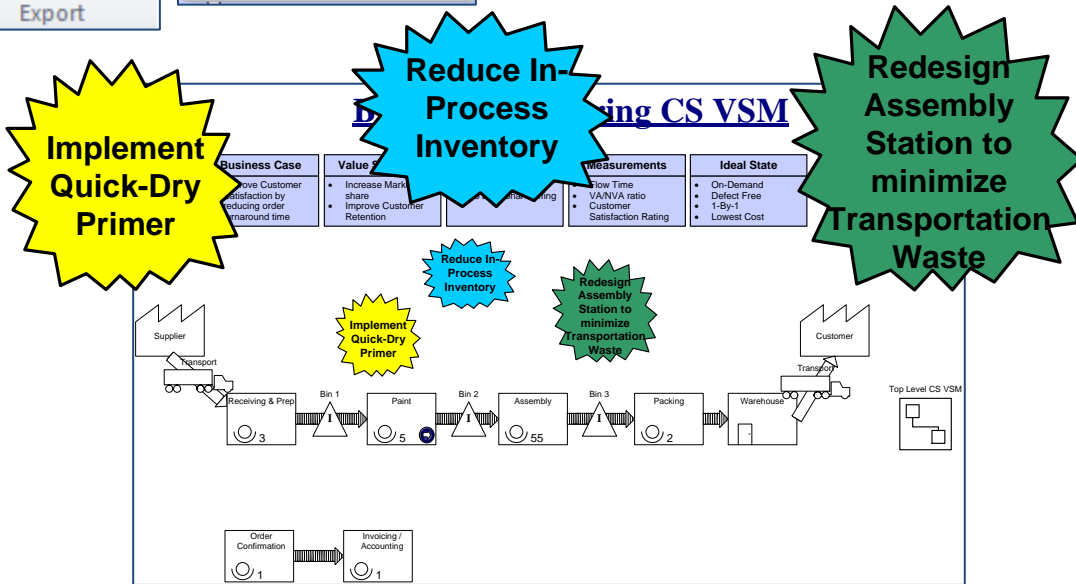
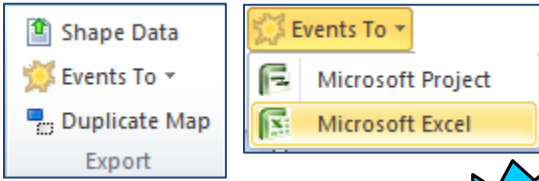
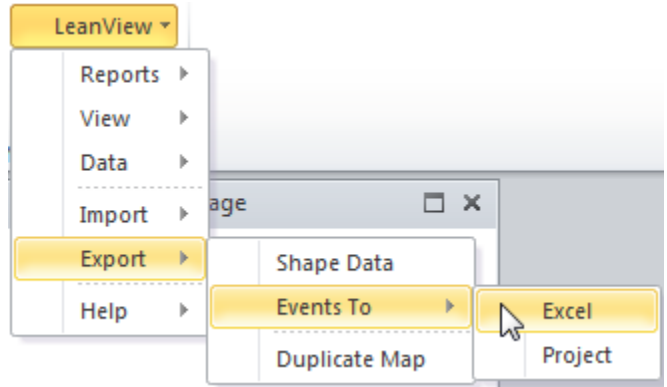
A ‘Do It’ or ‘JDI’ (Just Do It) shape denotes obvious process improvement actions that should be implemented without additional approval or decision making. An ‘Event’ identifies additional kaizen events or process improvement events that must be scheduled. A ‘Project’ shape is used to capture information about improvement projects and a list of the essential tasks associated with each.

Section IX: Reporting Improvement Opportunities

Once information about proposed improvement actions is defined in one or more of the LeanView ‘burst’ shapes, this data can be exported to Microsoft Excel, Project, Word, and PowerPoint for presentation and summary.

Export to Excel

To summarize improvement action information in Microsoft Excel, navigate to the Export section of the LeanView ribbon, choose ‘Events To’, and click Excel.

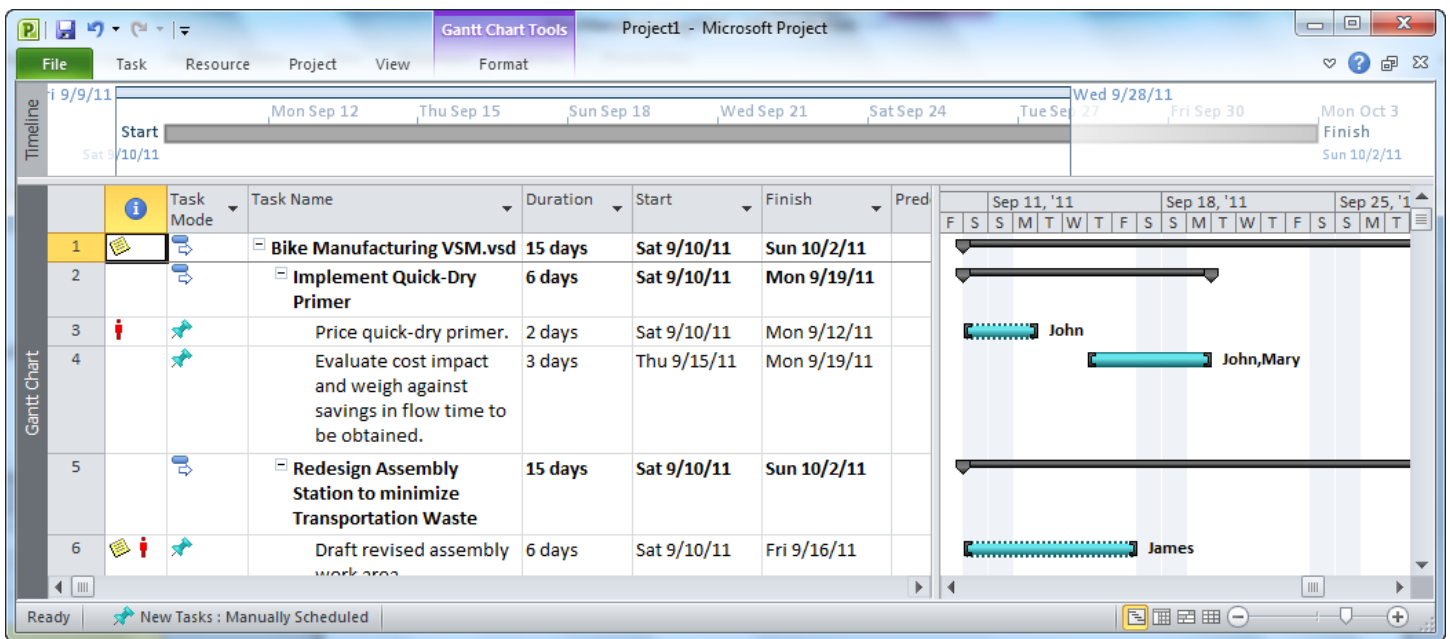
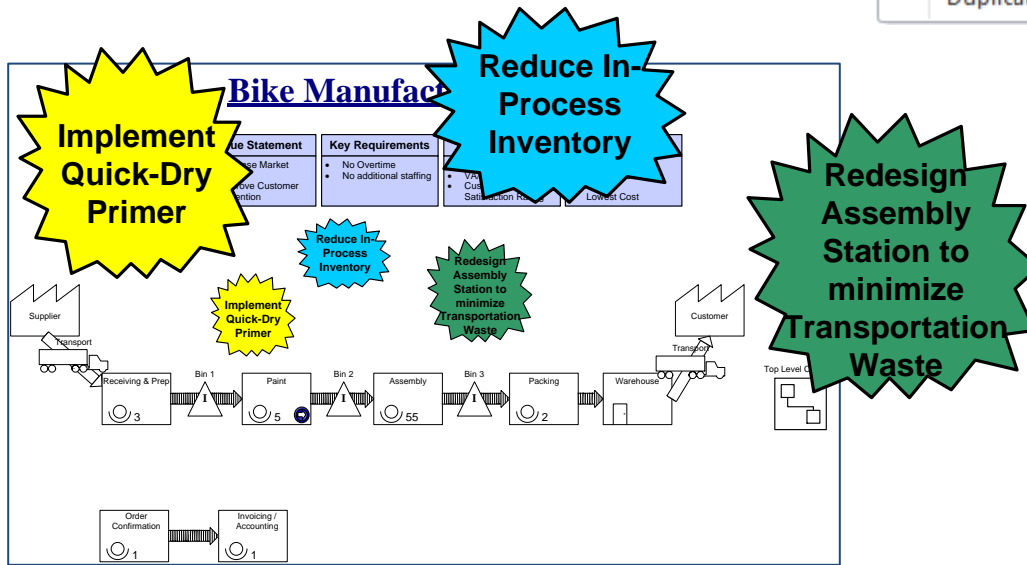
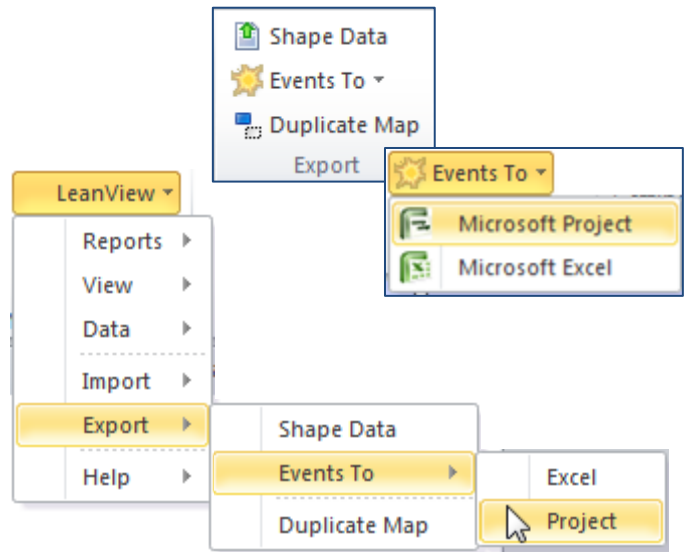


	A	B	C	D	E	F	G
1	Event	Goal	Start Date	End Date	Resources	Fixed Cost	Direct Saving
2	<b>Implement Quick-Dry Primer</b>						
3		Price quick-dry primer.	9/10/2011	9/12/2011	John	\$0	\$
4		Evaluate cost impact and weigh against savings in flo	9/15/2011	9/19/2011	John, Mary	\$0	\$
5	<b>Redesign Assembly Station to mini</b>						
6		Draft revised assembly work area.	9/10/2011	9/16/2011	James	\$0	\$
7		Build prototype of new work station.	9/17/2011	9/30/2011	James, Marie	\$0	\$
8		Implement prototype for 2 day trial period and perf	10/1/2011	10/2/2011	Marie, Sr. Assen	\$0	\$
9	<b>Reduce In-Process Inventory</b>						
10		Evaluate in-process inventory levels.	9/15/2011	9/19/2011		\$0	\$
11		Determine appropriate safety stock.	9/22/2011	9/24/2011		\$0	\$
12		Construct plan to work through excess inventory.	9/25/2011	9/26/2011		\$0	\$
13							

## Section IX: Reporting Improvement Opportunities

### Export to Project

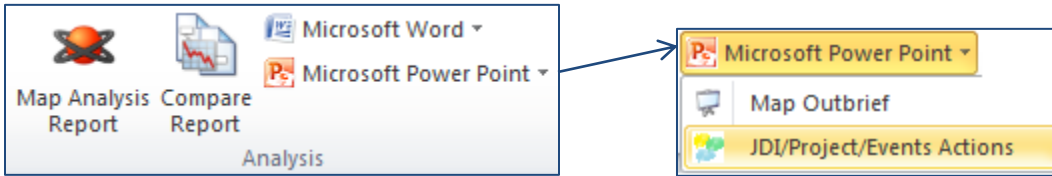
To summarize improvement action information in Microsoft Project, navigate to the Export section of the LeanView ribbon, choose 'Events To', and click Project. If no improvement action shapes are selected when choosing the export to Project option, all improvement shapes in the file will be incorporated. To select specific shapes for export, hold down the CTRL key and left click to select the shapes of interest before choosing the LeanView export option.



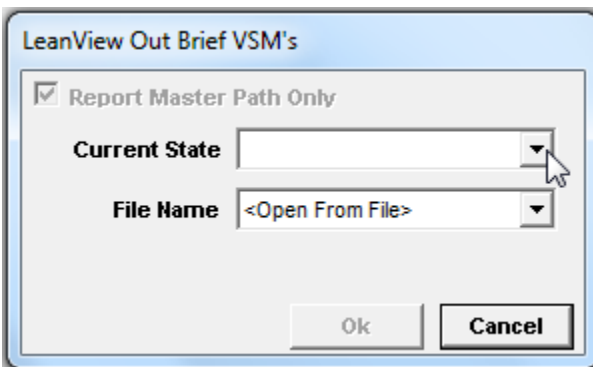
## Section IX: Reporting Improvement Opportunities

### Report to PowerPoint

To create a PowerPoint slide deck summarizing value stream improvement events and proposed actions, navigate to the Analysis section of the LeanView ribbon, select Microsoft PowerPoint, and choose 'JDI/Project/Event Actions' from the list. (If using LeanView versions 4 or 5, go to LeanView → Reports → PowerPoint → JDI/Projects/Events Actions.)

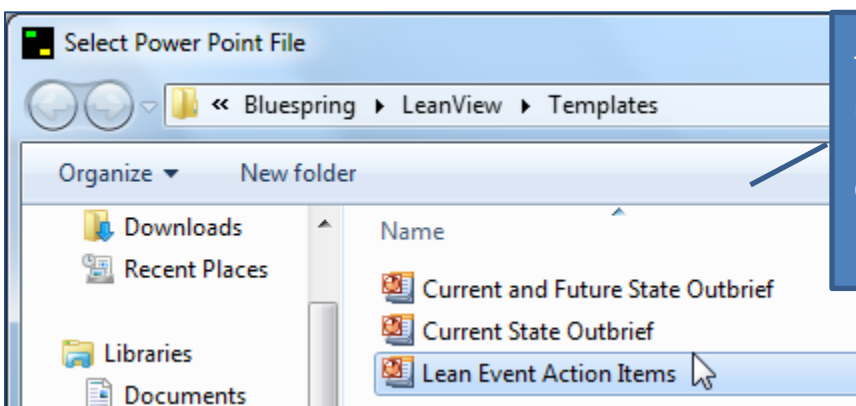


A prompt to select the value path will be presented. Use the 'Current State' field to identify the value path for which improvement action information is to be summarized. The 'File Name' field provides a list of the active PowerPoint slide decks and templates, if any. To use the LeanView Map Outbrief report template, File Name value should be <Open From File>.



In the 'Current State' field, choose the value path for analysis.  
Leave the 'File Name' as <Open From File> to navigate to the LeanView PowerPoint report templates.

The location of the PowerPoint template to be used for report construction must be identified. The location of the LeanView Lean Event Action Items template is C:\Program Files\Bluespring\LeanView\Templates.



The LeanView 'Lean Event Action Items' report template is located at:

C:\Program Files\  
Bluespring\LeanView\Templates

Note: If you have developed a custom report template and do not see it in the list of available templates when you browse to the storage location, change the file type to 'All Files'.

## Section IX: Reporting Improvement Opportunities

### Report to PowerPoint

The slide deck created with the Lean Event Action Items template contains a slide for each improvement action ('burst' shape found in active LeanView file.

Reduce In-Process Inventory		Implement Quick-Dry Primer		Redesign Assembly Station to minimize Transportation Waste	
<input checked="" type="checkbox"/> JDI <input type="checkbox"/> Project <input type="checkbox"/> Event		<input type="checkbox"/> JDI <input type="checkbox"/> Project <input checked="" type="checkbox"/> Event		<input type="checkbox"/> JDI <input type="checkbox"/> Project <input checked="" type="checkbox"/> Event	
<b>Estimated Event Dates:</b> 9/15/2008      5/12/2011		<b>Estimated Event Dates:</b> 9/10/2008      5/12/2011		<b>Estimated Event Dates:</b> 9/10/2008      5/12/2011	
<b>Process:</b> Manufactur		<b>Process Owner:</b> Purchasing		<b>Process Owner:</b> Engineering	
<b>Event Description:</b> Evaluate in-process inventory levels to determine appropriate safety stock.		<b>Event Description:</b> Determine cost impact of changing to a quick-dry primer.		<b>Event Description:</b> unnecessary s to utilize tools of station d down and lift L.	
<b>Reason for Event:</b> In-process inventory adds over 23 hours to our value stream flow time.		<b>Reason for Event:</b> Primer requires 35 minutes to dry. This adds to VSM flow time.		<b>Reason for Event:</b> TBD	
<b>Potential:</b> •Stan •Tim		<b>Potential Team Leaders &amp; Members:</b> •John •Mary		<b>Potential Team Leaders &amp; Members:</b> •James •Marie	
<b>Implementation Cost:</b> TBD		<b>Implementation Cost:</b> TBD		<b>Implementation Cost:</b> TBD	
<b>Resultant Cost Savings/Avoidance:</b> TBD		<b>Resultant Cost Savings/Avoidance:</b> TBD		<b>Resultant Cost Savings/Avoidance:</b> TBD	

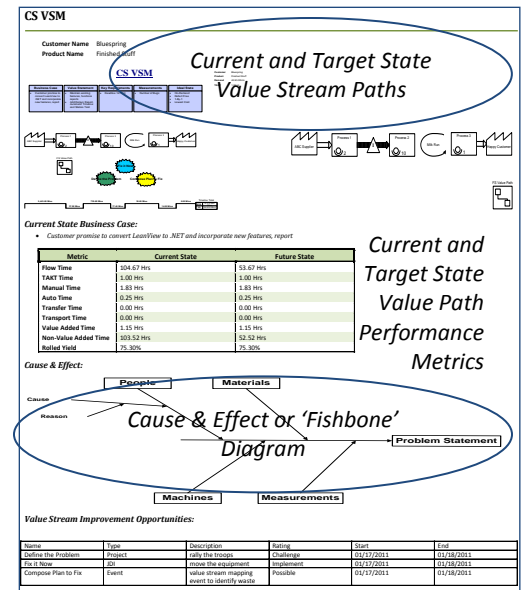
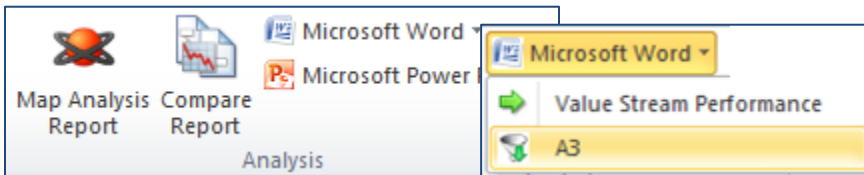
### Report to Word

Information about improvement events and proposed actions captured in LeanView 'burst' shapes is incorporated at the base of the LeanView A3 Report. Review Section X for information about generating the LeanView A3 Report.

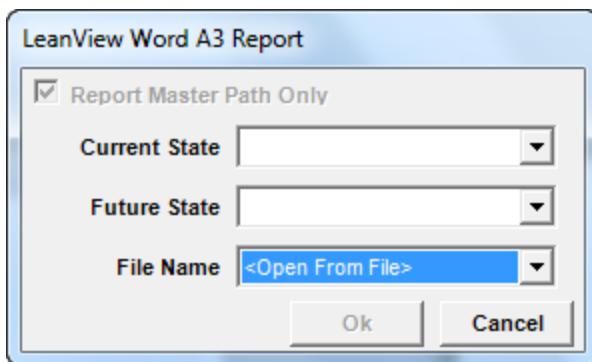
## Section X: Generating an A3 Report

LeanView provides a preconfigured report template that provides a visual and quantitative comparison between a baseline and alternate value stream path state in a single Visio file; optionally, a cause and effect diagram and improvement action information may also be incorporated.

To create the LeanView A3 Report, navigate to the Analysis section of the LeanView ribbon, select Microsoft Word, and choose 'A3' from the list. (If working in versions 4 or 5 of LeanView, go to the LeanView menu, select Reports, select Word, and select A3.)

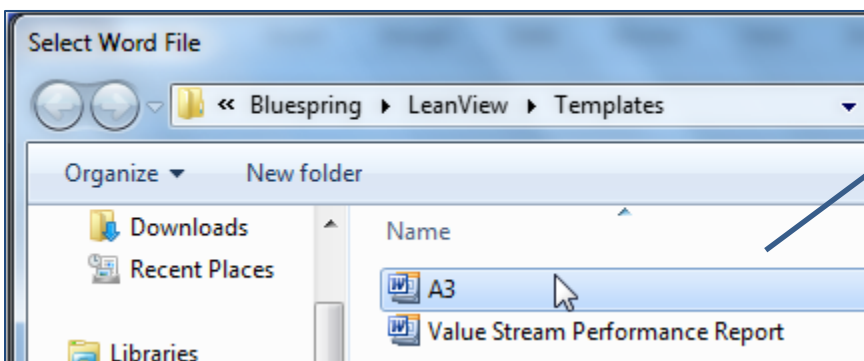


A prompt to select the value path will be presented. Use the 'Current State' field to identify the value path for which performance information is to be summarized. The 'File Name' field provides a list of the active Word files, if any. To use the LeanView A3 Report template, File Name value should be <Open From File>.



In the 'Current State' field, choose the current state or baseline value path for analysis.  
 In the 'Future State' field, choose the future state or alternate value path for analysis.  
 Leave the 'File Name' as <Open From File> to navigate to the LeanView Word A3 report template.

The location of the Word template to be used for report construction must be identified. The location of the LeanView A3 Report template is C:\Program Files\Bluespring\LeanView\Templates.

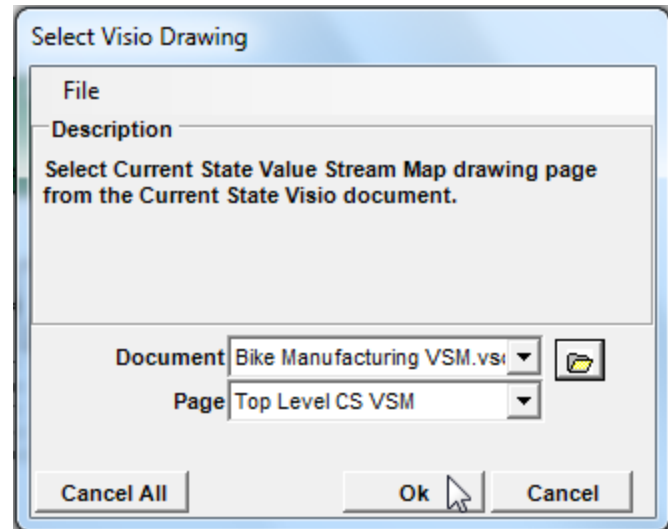


The LeanView 'A3' Report template is located at:  
 C:\Program Files\Bluespring\LeanView\Templates

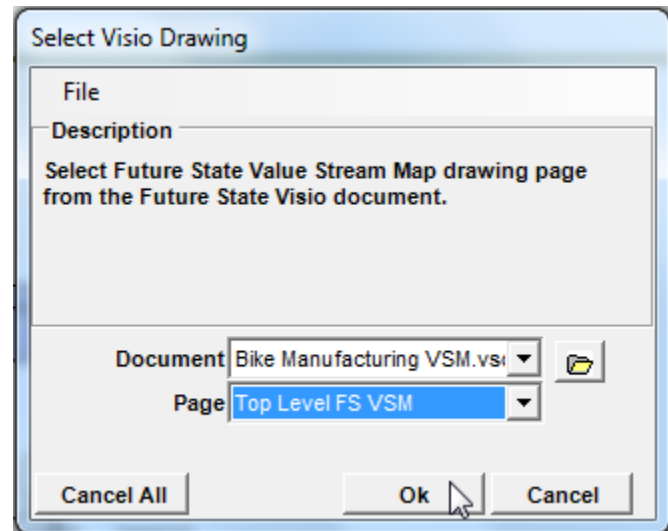
Note: If you have developed a custom report template and do not see it in the list of available templates when you browse to the storage location, change the file type to 'All Files'.

## Section X: Generating an A3 Report

Identify the location of the Current State or baseline value path.

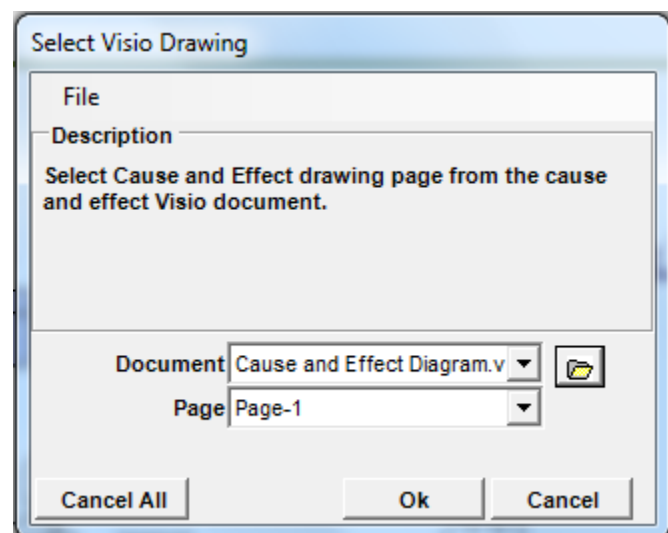


Identify the location of the Future State or alternate value path.



If a cause and effect or 'fishbone' diagram has been constructed in Visio, it may be incorporated in the A3 report created. Simply browse to the location of the file.

If a cause and effect diagram has not been constructed, simply click cancel when the prompt is presented to continue with reporting.



## Section X: Generating an A3 Report

In addition to performance metrics and cause and effect documentation, if improvement opportunities and actions have been captured in the context of the value stream, this data will be incorporated into the LeanView A3 Report written to Microsoft Word.

The screenshot shows the 'LeanView A3 Report' interface. Callouts point to various elements:

- Map Title, Product Name and Customer Name:** These are pulled from the Map Properties for the Current State (baseline) value path.
- Current State Value Stream Path:** The main process flow diagram.
- Future State Value Stream Path:** The target process flow diagram.
- Current State Value Stream Path Performance Metrics:** A table comparing current and future state metrics.
- Future State Value Stream Path Performance Metrics:** A table comparing current and future state metrics.
- Cause and Effect Diagram:** A diagram showing the relationship between machines, measurements, and a problem statement.
- Proposed Improvement Actions:** A table listing specific improvement actions with their ratings and dates.

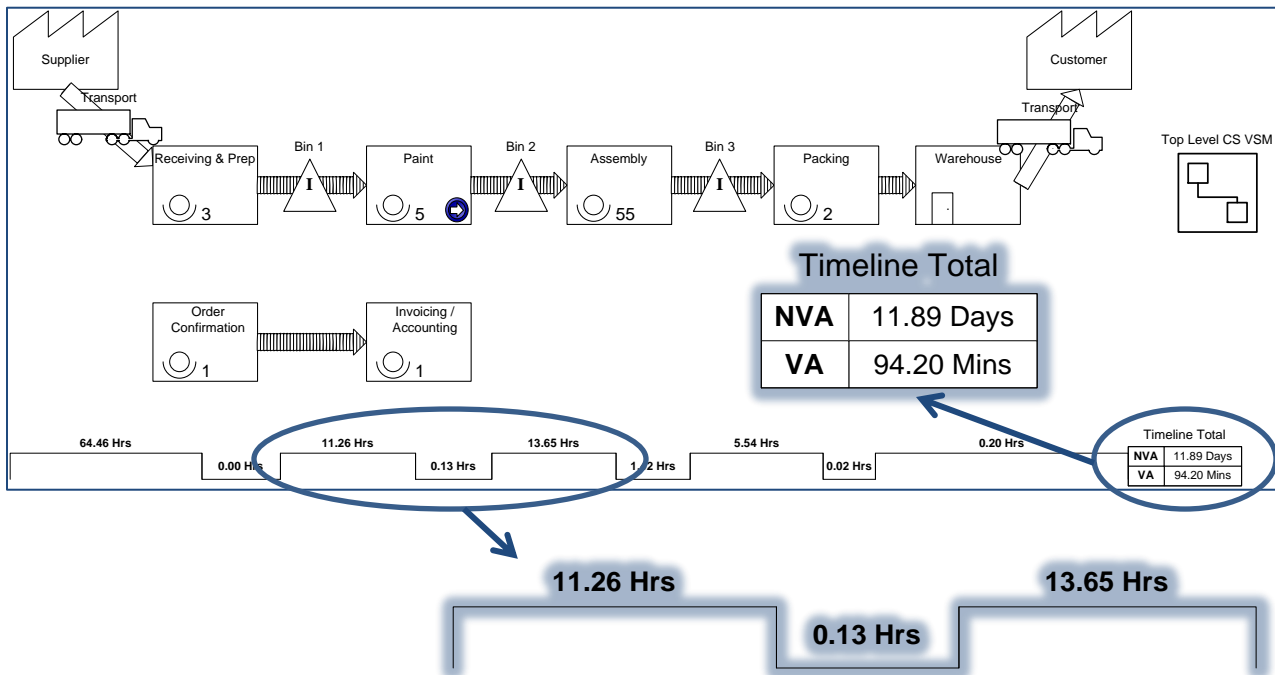
Metric	Current State	Future State
Flow Time	99.04 Hrs	22.54 Hrs
TAKT Time	0.13 Hrs	0.13 Hrs
Manual Time	7.87 Hrs	7.53 Hrs
Auto Time	0.19 Hrs	0.19 Hrs
Transfer Time	0.20 Hrs	0.00 Hrs
Transport Time	0.20 Hrs	0.00 Hrs
Value Added Time	1.58 Hrs	1.89 Hrs
Non-Value Added Time	97.46 Hrs	20.65 Hrs
Rolled Yield	84.93%	85.79%

Name	Type	Description	Rating	Start	End
Implement Quick-Dry Primer	Event	Determine cost impact of changing to a quick-dry primer.	Possible	07/26/2011	07/27/2011
Redesign Assembly Station to minimize Transportation Waste	Project	Redesign Assembly work stations to minimize transportation waste and excess motion.	Challenge	07/26/2011	07/27/2011
Reduce In-Process Inventory	JDI	Evaluate in-process inventory levels to determine appropriate safety stock.	Implement	07/26/2011	07/27/2011

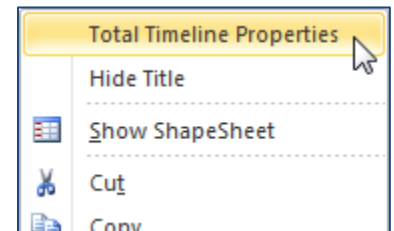
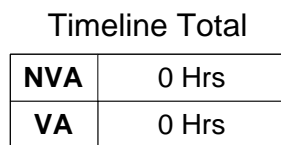
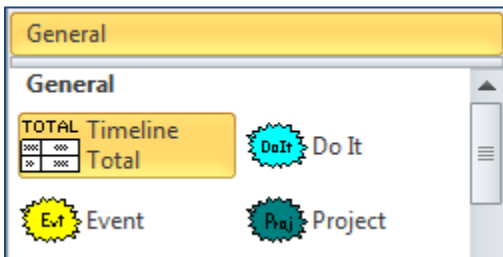
Name	Type	Description	Rating	Start	End
Implement Quick-Dry Primer	Event	Determine cost impact of changing to a quick-dry primer.	Possible	07/26/2011	07/27/2011
Redesign Assembly Station to minimize Transportation Waste	Project	Redesign Assembly work stations to minimize transportation waste and excess motion.	Challenge	07/26/2011	07/27/2011
Reduce In-Process Inventory	JDI	Evaluate in-process inventory levels to determine appropriate safety stock.	Implement	07/26/2011	07/27/2011

## Section XI: Creating a Value-Added / Non-Value Added Timeline

LeanView value stream maps provide data graphics to highlight valuable performance data, like flow time and first pass yield. LeanView can also be used to automatically construct a timeline to visually indicate Value Added (VA) and Non-Value Added (NVA) time in the value stream.

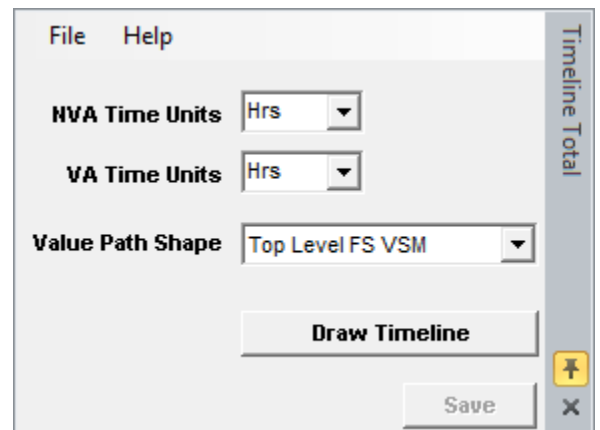


To construct a VA/NVA Timeline, use the Timeline Total shape on the LeanView General Stencil; right-click on the shape and select 'Total Timeline Properties'.



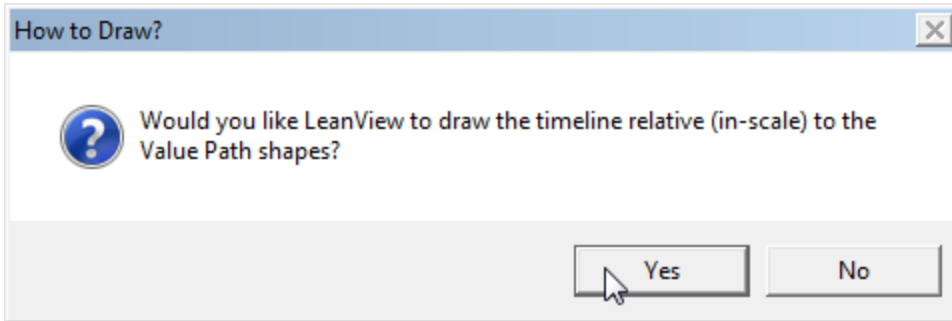
Select the Value Path for which the timeline is to be constructed; choose the time units that should be used to display the Total NVA and Total VA time values.

(NOTE: Time units used in the VA bar and NVA bar shapes that compose the timeline will be chosen based on the default units defined in the VSM Map Properties dialog.)

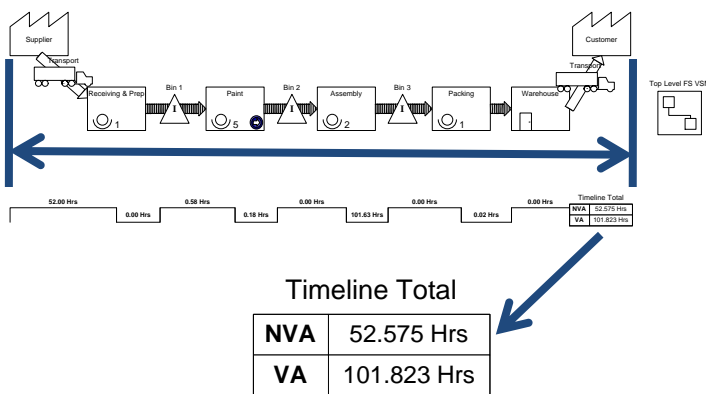


Section XI: Creating a Value-Added / Non-Value Added Timeline

The option to have the timeline drawn in a relative scale to the Value Path shapes is presented. If 'Yes' is selected, the end-to-end width of the timeline will coincide with the width of the chosen Value Path.

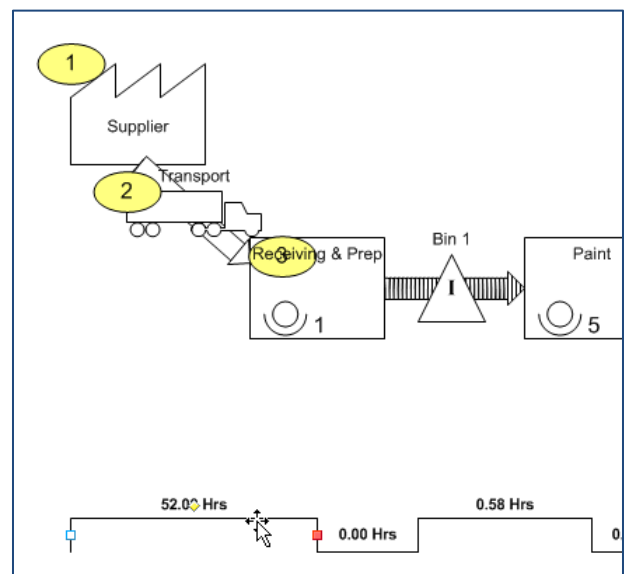


The timeline is constructed in a single row beneath the Value Path shapes.



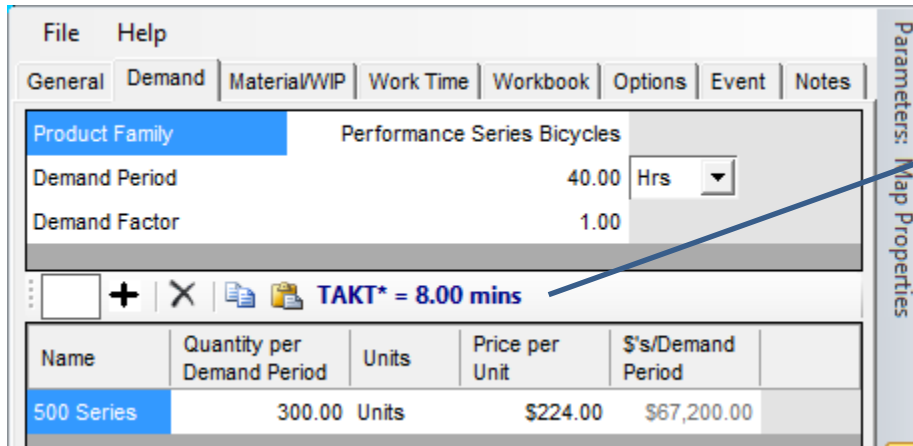
Once a timeline has been constructed, selection of timeline components highlights the shape(s) to which the VA and NVA time bar values are linked.

If changes are made to the shape properties that impact the VA or NVA time, Timeline values are updated automatically.



## Section XII: Defining Station Takt Time

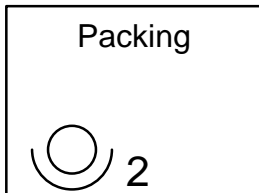
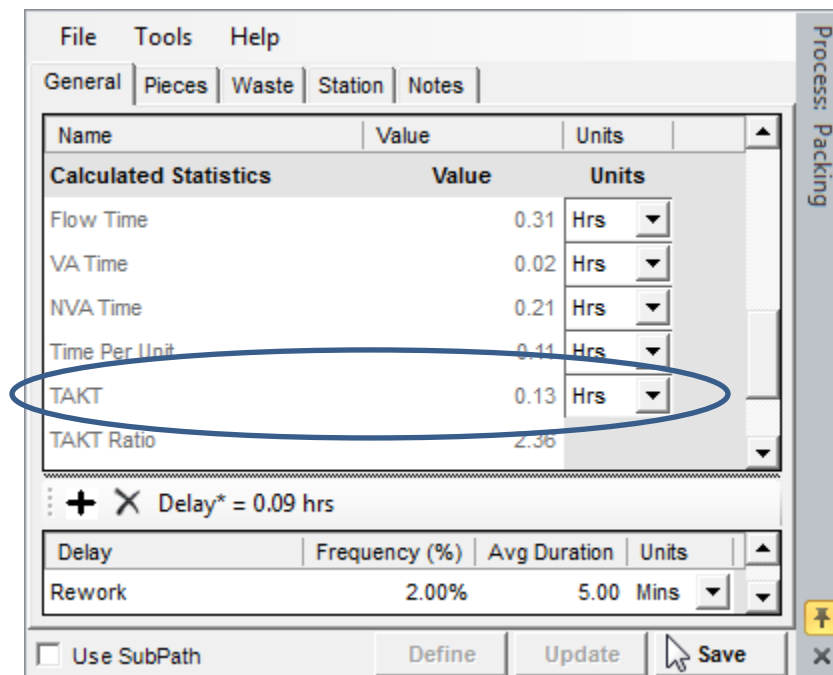
Recall that the demand tab in the value stream map properties shape is where information about the length of the demand period and the quantity of finished goods or services being delivered can be defined. Once this demand period and the quantity of finished goods or services demanded in the period are defined, the takt time is automatically calculated.



Once the Demand Period and Quantity of finished goods/services demanded is defined, LeanView automatically calculates the Takt time.

This calculated takt time is carried into the shape data for LeanView process shapes and is used as the default value.

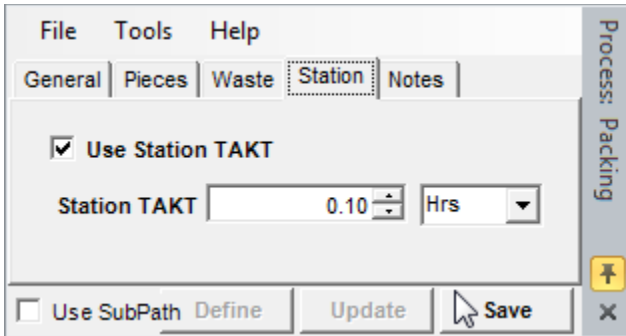
Takt time is used as a tool to analyze flow and to measure the ability of the value stream processes to meet the pace of demand placed upon them. To support continuous, single piece flow, one unit must be produced at each takt time or demand interval to meet the defined level of customer demand in the period.



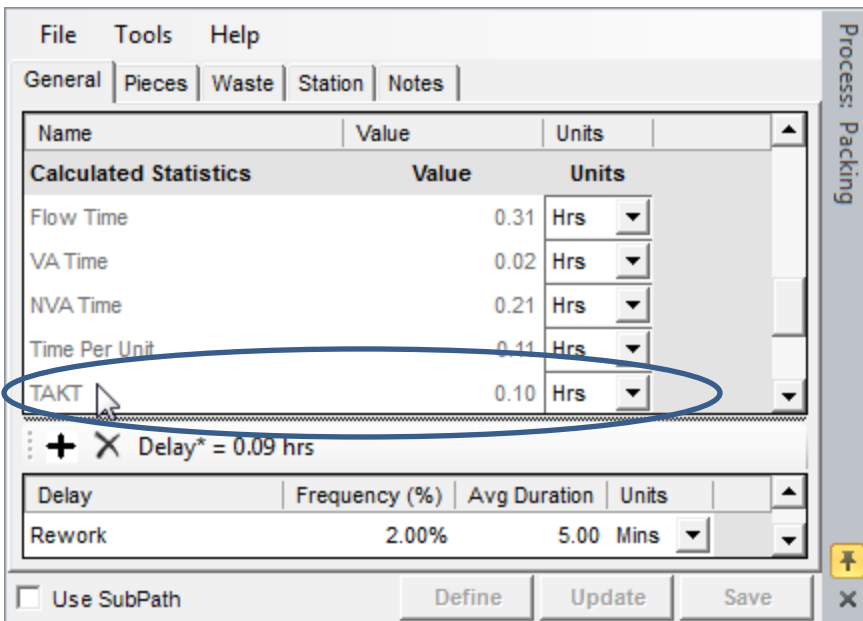
## Section XII: Defining Station Takt Time

If a process in the value stream serves other product families or works a different work schedule than described in the 'Work Time' tab of the value stream map properties, the takt time may be different than calculated.

To overwrite the default takt time calculated by LeanView, access the process properties dialog and navigate to the 'Stations' tab. Check the 'Use Station TAKT' option and define the appropriate takt time for the selected process shape.



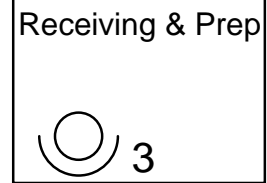
Once the changes to the Station tab data are saved, the calculated statistics section of the general tab in the process properties can be reviewed to confirm the change. This new takt time will then be reflected in the Takt Analysis worksheet of the LeanView Map Analysis Report.



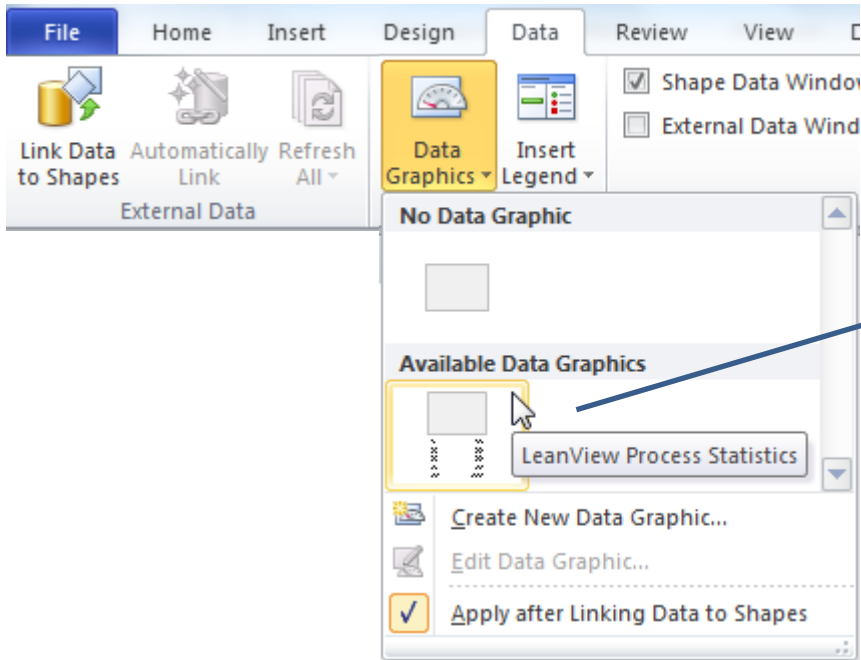
## Section XIII: Data Displays

LeanView process shapes are preconfigured with a Visio data graphic to display lean metrics and data.

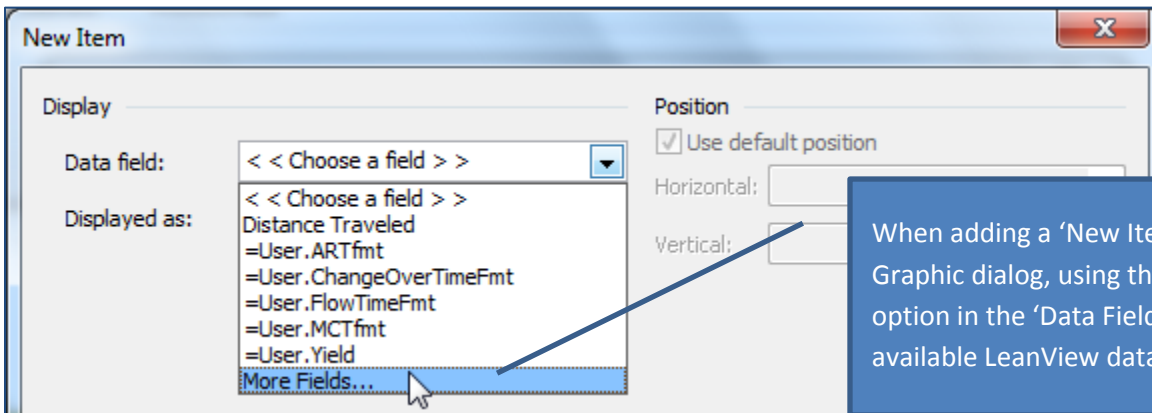
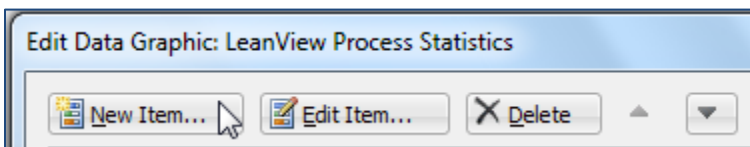
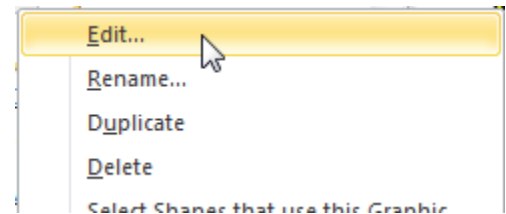
This data graphic can be easily edited using the Visio data graphic features and functions.



FT	18.00 Mins
MT	9.00 Mins
AT	4.00 Mins
CO	0.00 Hrs
YLD	95.00%



Simply right-click on the LeanView Process Statistics Data Graphic to reveal a context menu. The data graphic can be duplicated and manipulated to add or remove lean process shape data.

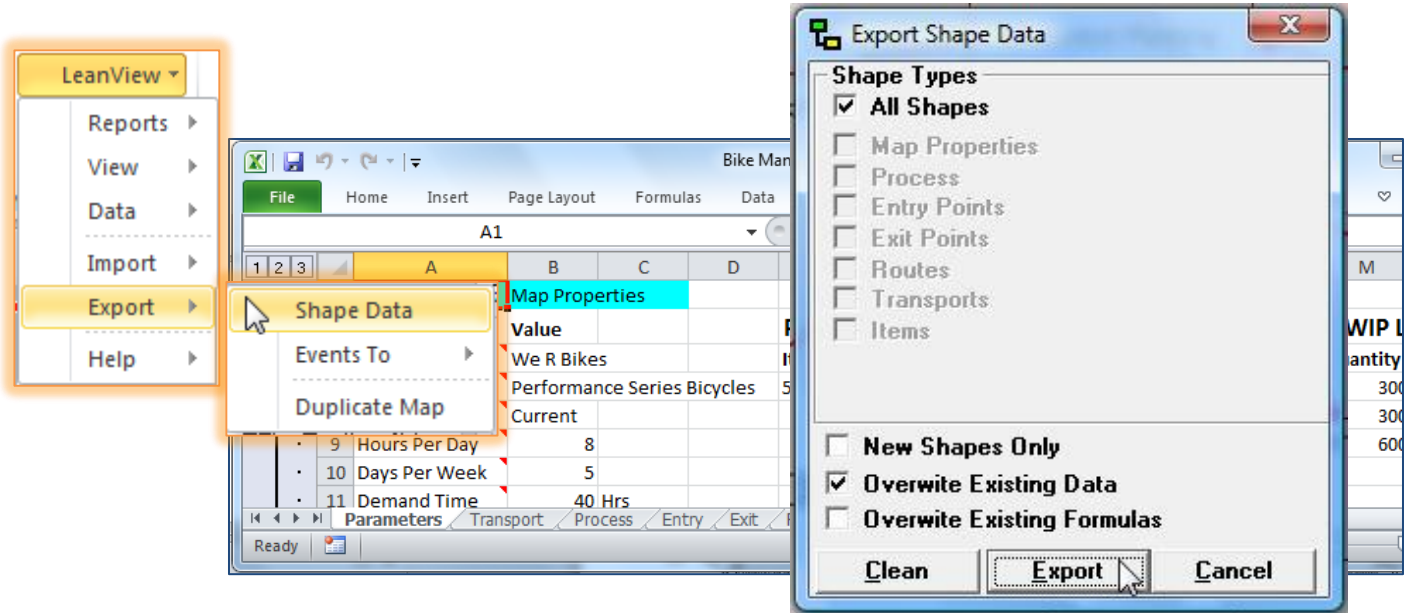


When adding a 'New Item' in the Edit Data Graphic dialog, using the 'More Fields...' option in the 'Data Field' reveals the list of available LeanView data for display.

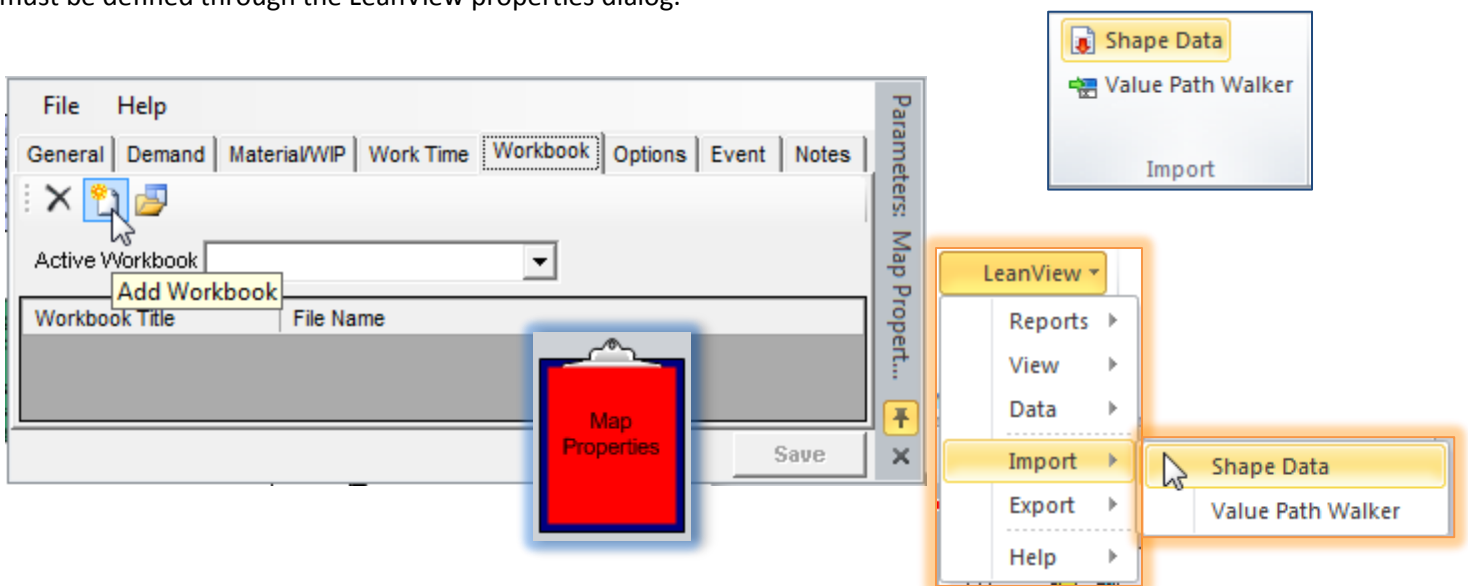
## Section XIV: Excel Import/Export of Shape Properties

LeanView provides the ability to push value stream shape data to an Excel workbook as well as to import shape data from an Excel workbook.

To take advantage of this capability, simply navigate to the Export section of the LeanView ribbon and choose Shape Data. Select the shape types to be included in the workbook created.



Once a shape data workbook has been created using the LeanView engine, simply load the workbook into the value stream map properties. Once the workbook has been loaded, data can be imported from the workbook through the LeanView menu. Note that Product List (Finished Goods) values on the VSM Properties Demand Tab and Material/WIP List values may be exported to an Excel spreadsheet for validation, but may not be imported to the Map Properties Demand and Material/WIP tabs using this functionality. Similarly, Inventory Properties values may not be imported and must be defined through the LeanView properties dialog.

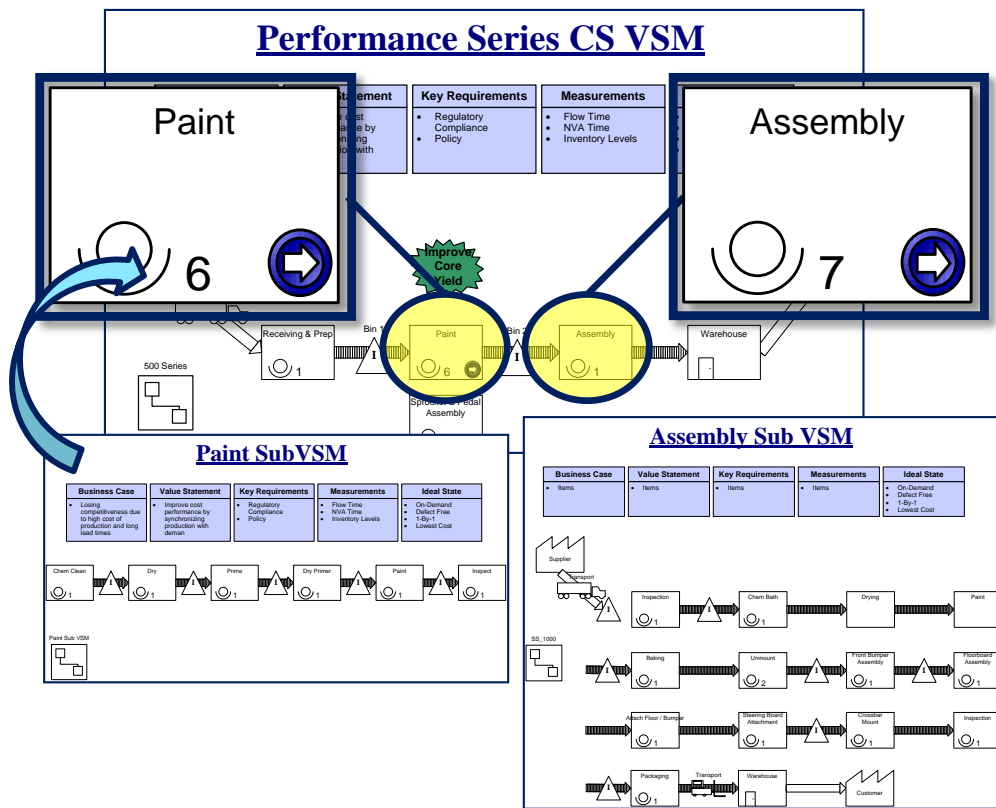


Section XV: Sub-Value Paths

Oftentimes, analysis of a value stream will identify one or more processes within the ‘parent’ value stream that possess opportunity for waste reduction and improvement. To provide more detail about the processes that present the greatest opportunity, it may be desirable to create a value stream map of the ‘sub-process’ or ‘sub-processes’.

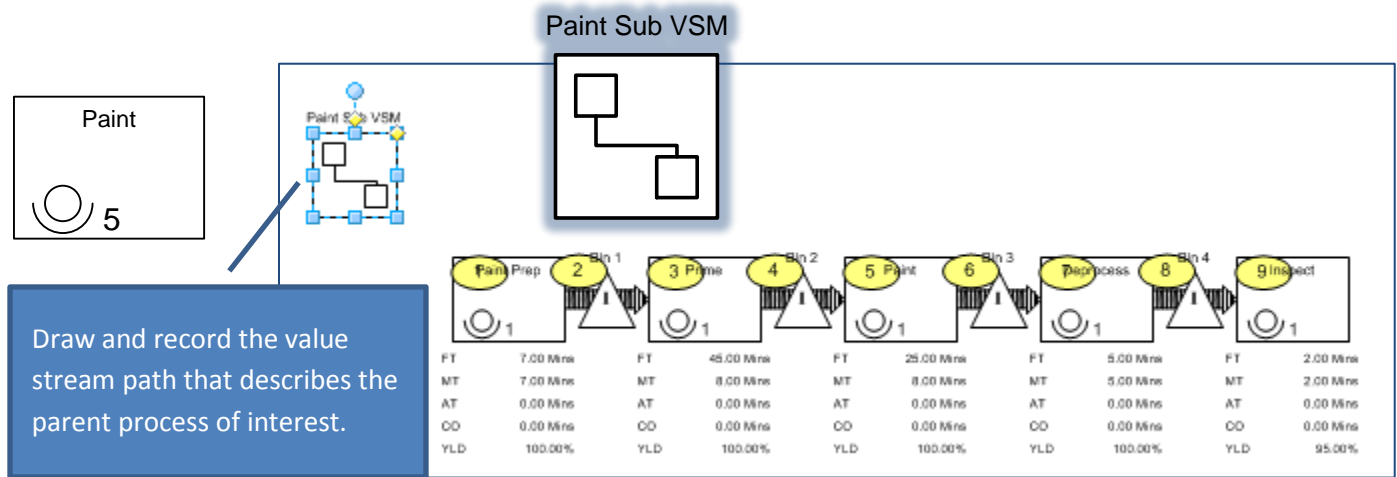
LeanView provides the ability to link a process shape to a value stream path and to pull performance data from the linked value stream path to the process shape. Using this functionality, a LeanView user can analyze a value stream at multiple levels of detail.

Consider the example shown below where the parent value stream, ‘Performance Series CS VSM’, contains two process shapes, ‘Paint’ and ‘Assembly’, that are linked to ‘Paint Sub VSM’ and ‘Assembly Sub VSM’ paths. The Paint and Assembly processes have been documented in separate LeanView diagrams and the data from each is being pulled into the process shapes in the parent value stream.

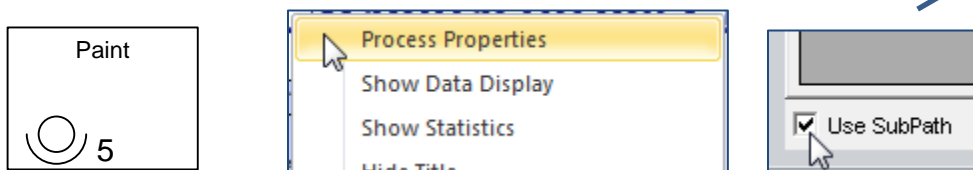


## Section XV: Sub-Value Paths

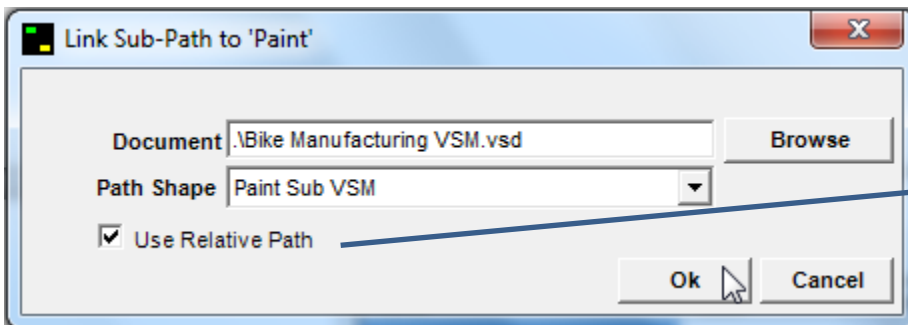
To begin, ensure the sub-value stream path has been drawn and recorded. See Section VI: Recording the Value Stream Path. (It is good practice to rename the value path shape to indicate it is a 'sub' path. To edit the shape text on a value path shape, simply click on the shape and begin typing.)



Once a sub-path has been drawn and recorded, simply right-click on the process shape to open the properties dialog, and select the 'Use SubPath' option.

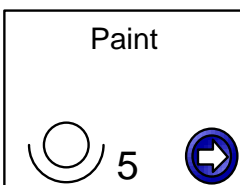


Open the process properties for the process shape of interest in the parent value stream and choose to 'Use SubPath'.



The sub-value stream path can be created in the same file as the parent path or in a separate LeanView diagram.

Identify the location of the sub-path to be linked. Note that the sub-path can be in the same file or in a separate LeanView diagram. Once the link is established, a hyperlink icon (blue arrow) will appear on the process shape.



## Section XV: Sub-Value Paths

Once a process shape is linked to a sub-value stream path, performance information from the sub-path can be incorporated in the LeanView Map Analysis Report, Map Outbrief to PowerPoint, and the Value Stream Performance Report to Word.

To incorporate sub-value stream path data into the LeanView reports, ensure the 'Report Master Path Only' option is unchecked when selecting the value path for analysis.

Select Value Stream Analysis Path

From the list below, select the Value Stream Path to be used in this operation.

Value Path Shape: Top Level CS VSM

Report Master Path Only

Report Time Units in: Hrs

Ok

Cancel

To include sub-path data in the Map Analysis Report, uncheck the 'Report Master Path Only' option in the Select Value Stream Analysis Path dialog.

Sub-path data is available for review in the Value Stream, Delays, and User Properties worksheets of the Map Analysis Report (MAR); note, sub-path inventory data is also accounted for in the total quantities and costs presented in the Inventory worksheet of the MAR.

1	2	A	B	C	D	E	F	G
1	<b>Value Stream: Top Level CS VSM</b>							
2	<b>Activity Name</b>	<b>Type</b>	<b>Flow Time (FT)</b>					
3	Supplier	Supplier	40.00 hrs					
4	Transport	Transport						
5	Receiving & Prep	Process						
6	Bin 1	Inventory						
7	Paint	Summary						
8	Paint Prep	Process						
9	Bin 1	Inventory						
10	Prime	Process						
11	Bin 2	Inventory						
12	Paint	Process						
13	Bin 3	Inventory						
14	Deprocess	Process						
15	Bin 4	Inventory						
16	Inspect	Process						
17	Bin 2	Inventory						
18	Assembly	Process	7.25 hrs	7.00 hrs	55.00	385.00 hrs	0.11	

1	2	A	B	C
1	<b>User Defined Data: Top Level CS VSM</b>			
2	Top Level CS VSM			
3	<b>Activity Name</b>	<b>Distance Traveled</b>		
4	Receiving & Prep			

1	2	A	B	C	D
1	<b>Delays: Top Level CS VSM</b>				
2					
3	<b>Activity Name</b>	<b>Activity Type</b>	<b>Weather</b>	<b>Rework</b>	
4	Transport	Transport	0.16 hrs		
5	Receiving & Prep	Process			
6	Paint	Summary			
7	Paint Prep	Process			
8	Prime	Process			
9	Paint	Process			
10	Deprocess	Process			
11	Inspect	Process			0.01 hrs
12	Assembly	Process			0.15 hrs
13	Packing	Process			0.00 hrs

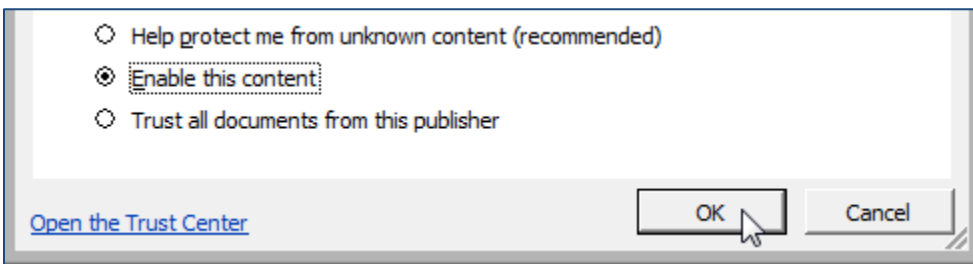
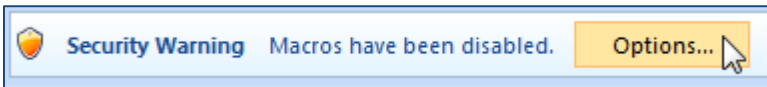
Use the +/- to expand and collapse sub-path data.

Section XVI: Value Path Walker

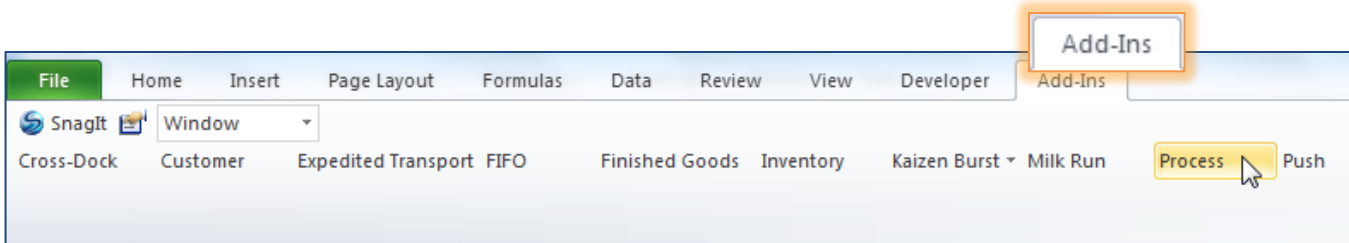
With LeanView, value stream path data can be captured using an Excel template and imported to automatically draw a value stream path and populate value path shapes with the appropriate data, all in just a few clicks. LeanView's *Value Path Walker* provides an Excel-based template and specialized toolbar intended for use with a Tablet PC or Notebook computer. This tool is designed to make it easier to "walk the value stream" or "walk the wall" containing a value stream map on paper and capture the sequence of steps and the associated data in spreadsheet form.

The Value Path Walker can be created by accessing the *Value Path Walker.xlt* file in the Templates folder of the Bluespring LeanView folder in the Program Files. (C:\Program Files (x86)\Bluespring LeanView\Templates)

Enable Macros, if prompted to do so.



Use the Value Path Walker shapes list on the Excel Add-Ins tab to select the shapes needed to compose the value stream path. Simply replace the cell labels with the appropriate lean data.



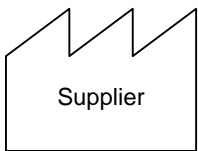
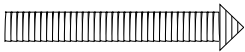
Value Map Path									
Shape Type	Title	Begin Attributes							
Supplier	Supplier	40 Hrs	Weekly Deliveries						
Transport	Transport	Large Truck	1500	1200	0.00%	40 Hrs	2 Hrs	<Note	
Finished Goods	<Finished Goods5>	<Transport Time>	<Time Units (Secs, Mins, Hrs, Days, Wks)> <Notes>						
Process	Receiving & Prep	Pull Frame from Supplier Delivery	Frames Ready for Paint	13 Mins	9 Mins	4 Mins			
Inventory	Bin 1	<Flow Time>	<Time Units (Secs, Mins, Hrs, Days, Wks)> see Bin 1 Inventory Worksheet						
Push	<Push8>	<Transport Time>	<Time Units (Secs, Mins, Hrs, Days, Wks)> <Notes>						
Process	Paint	Pull from Bin 1	Frame Painted	0.75 Hrs	0.5 Hrs	0 Hrs			
Inventory	Bin 2	<Flow Time>	<Time Units (Secs, Mins, Hrs, Days, Wks)> see Bin 2 Inventory Worksheet						
Push	<Push11>	<Transport Time>	<Time Units (Secs, Mins, Hrs, Days, Wks)> <Notes>						
Process	Assembly	Pull Dry Frame	Parts Kit, Tires assembled on Frame	7.1 Hrs	6 Mins	0 Mins			
Inventory	Bin 3	<Flow Time>	<Time Units (Secs, Mins, Hrs, Days, Wks)> <Notes>						
Push	<Push14>	<Transport Time>	<Time Units (Secs, Mins, Hrs, Days, Wks)> <Notes>						
Process	Packing	Pull from Bin 3	Ready for Transport to Customer	13.75 Mins	13 Mins	45 Secs			
Finished Goods	<Finished Goods16>	<Transport Time>	<Time Units (Secs, Mins, Hrs, Days, Wks)> <Notes>						
Warehouse	Finished Goods Warehouse	<Flow Time>	<Time Units (Secs, Mins, Hrs, Days, Wks)> <Notes>						

## Section XVI: Value Path Walker

For each shape selected from the Value Path Walker shapes list, a new row will be created in the value path walker worksheet.

The cell labels in the new row will vary based on the shape type selected. If a supplier is selected, for instance, the cell labels will prompt to define a lead time. If a push arrow is selected, the cell labels in the row created will prompt for a transport time.

Supplier	<Supplier20>	<Lead Time>	<Time Units (Secs, Mins, Hrs, Days, Wks)>	<Notes>
Push	<Push21>	<Transport Time>	<Time Units (Secs, Mins, Hrs, Days, Wks)>	<Notes>

If an inventory row is added to the dictation list and 'create inventory' is selected from the Excel Add-In tab toolbar, a new worksheet is created in the value path walker workbook to store information about the contents of the selected inventory shape. Note that LeanView does NOT automatically add items and quantities from these inventory sheets into the value stream map and that this data is captured for reference purposes.

Inventory	<Inventory22>	<Flow Time>	<Time Units (Secs, Mins, Hrs, Days, Wks)>	<Notes>
-----------	---------------	-------------	---	---------

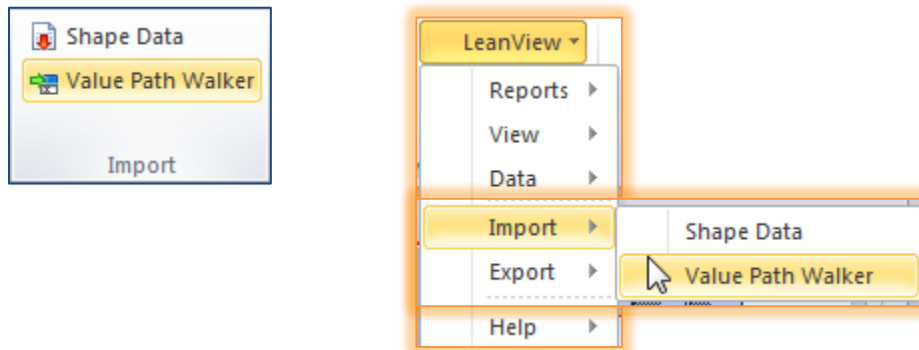
Create Inventory

	A	B	C	D	E
1	<b>&lt;Inventory22&gt;</b>				
2	Item Name	Quantity	Units	Unit Cost	Additional Notes
3					
4					
5					
6					

## Section XVI: Value Path Walker

Once a Value Path Walker workbook has been created, the value stream can be automatically drawn and the associated shape data imported using the LeanView import options.

Simply open a LeanView drawing, click in the area where you would like the drawing to begin, navigate to the Import section of the LeanView ribbon and select Value Path Walker.



Identify the location of the value path walker dictation workbook and click Ok to begin the import process.

**Select Excel Data**

File

Description

Select/Open the Workbook and select the Worksheet that contains the path definition. Make sure to select the top most Shape Type cell in the Value Path Walker list. The path will be imported top-down for each Shape Type.

Workbook: Bike Manufacturing VSM Va

Worksheet: Dictation-Map Path 1

Let me select the Excel Range

Ok Cancel

When importing data from a value path walker workbook, the cursor should be placed in the first shape type cell of the dictation worksheet; this is typically cell A3.

	A	B	
1			
2	Shape Type	Title	A
3	Supplier	Supplier	
4	Transport	Transport	Large
5	Finished Goods	Finished Goods	5 <Tran

All shapes described in the rows of the value path walker workbook are drawn on the canvas according to the order established in the workbook and any import errors will be presented for review.

Simply complete the business case analysis work area (page 13), define the map properties (page 17), define inventory data (page 34), record the value stream shapes (page 37), and begin generating performance reports.

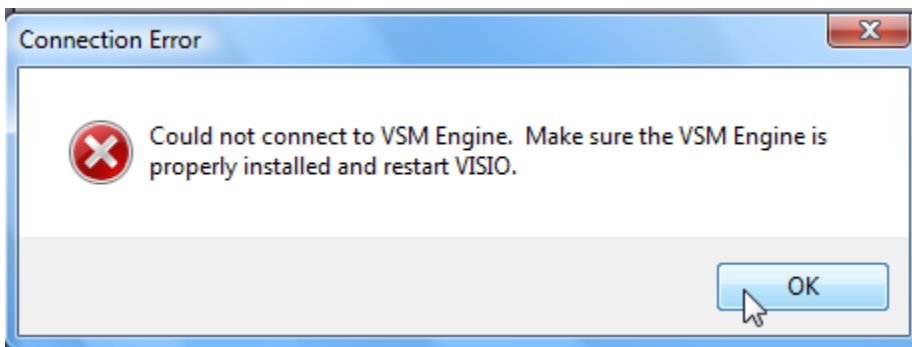
## Section XVII: Updating Value Streams Created with LeanView 5.0 Predecessors

The LeanView product is integrated with Microsoft Visio to support Value Stream mapping and analysis. One of several advancements to LeanView is that LeanView no longer relies on Visual Basic for Visio macros. Microsoft has chosen to move away from macros for several reasons. The security issues inherent with macros are of particular interest to us for our LeanView users. We have not had a single breach of our Microsoft issued certificate to date, never the less, the threat still exists. Another issue is with difficulties in upgrading versions of both Visio and LeanView. Because of these issues, and to maintain compliance with the latest software standards, LeanView has been ported from Visual Basic to Visual Basic.NET. The current LeanView support framework is .NET 2.0 or later. All of LeanView and its supporting tools, standard reports, custom reports, etc are .NET ready. Because LeanView is .NET ready, it is no longer a requirement to have macros attached to the Value Stream Map drawings. This article explains the procedures required to upgrade existing (prior to LeanView 5.0) value stream drawings up to LeanView current standards. This process will remove the need for the macros, and upgrade the drawing to conform to the new LeanView requirements.

**Please note that this process removes the macro from the value stream drawing. If there are LeanView users that will need these drawings, please make sure they are up-to-date with LeanView /have LeanView 5.0 or later installed. Once the drawing is upgraded, it is no longer usable with previous versions of LeanView.**

How do you know if you are working with a macro driven value stream drawing?

In LeanView 5.0, when launching a document created with older versions of the LeanView value stream mapping template, a message will be generated by Visio indicating that it is unable to connect to the LeanView VSM Engine.



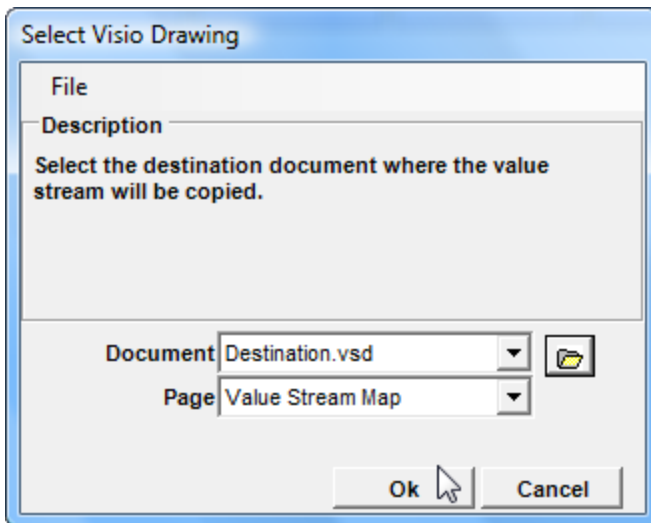
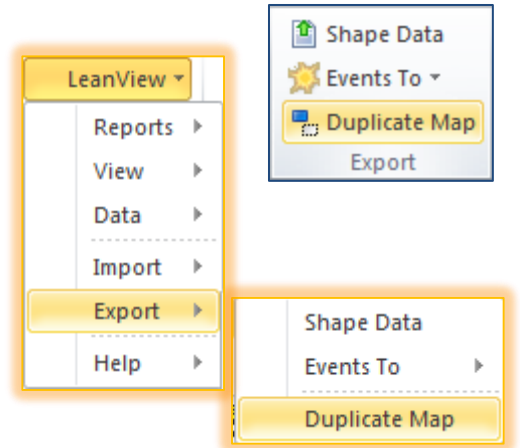
Although the prompt indicates that Visio should be restarted, there is no need to do so.

To update an old LeanView value stream, LeanView 5.0 and 6.0 provide the option to duplicate an existing macro-driven LeanView diagram using the new LeanView template.

## Section XVII: Updating Value Streams Created with LeanView 5.0 Predecessors

To duplicate an existing LeanView VSM:

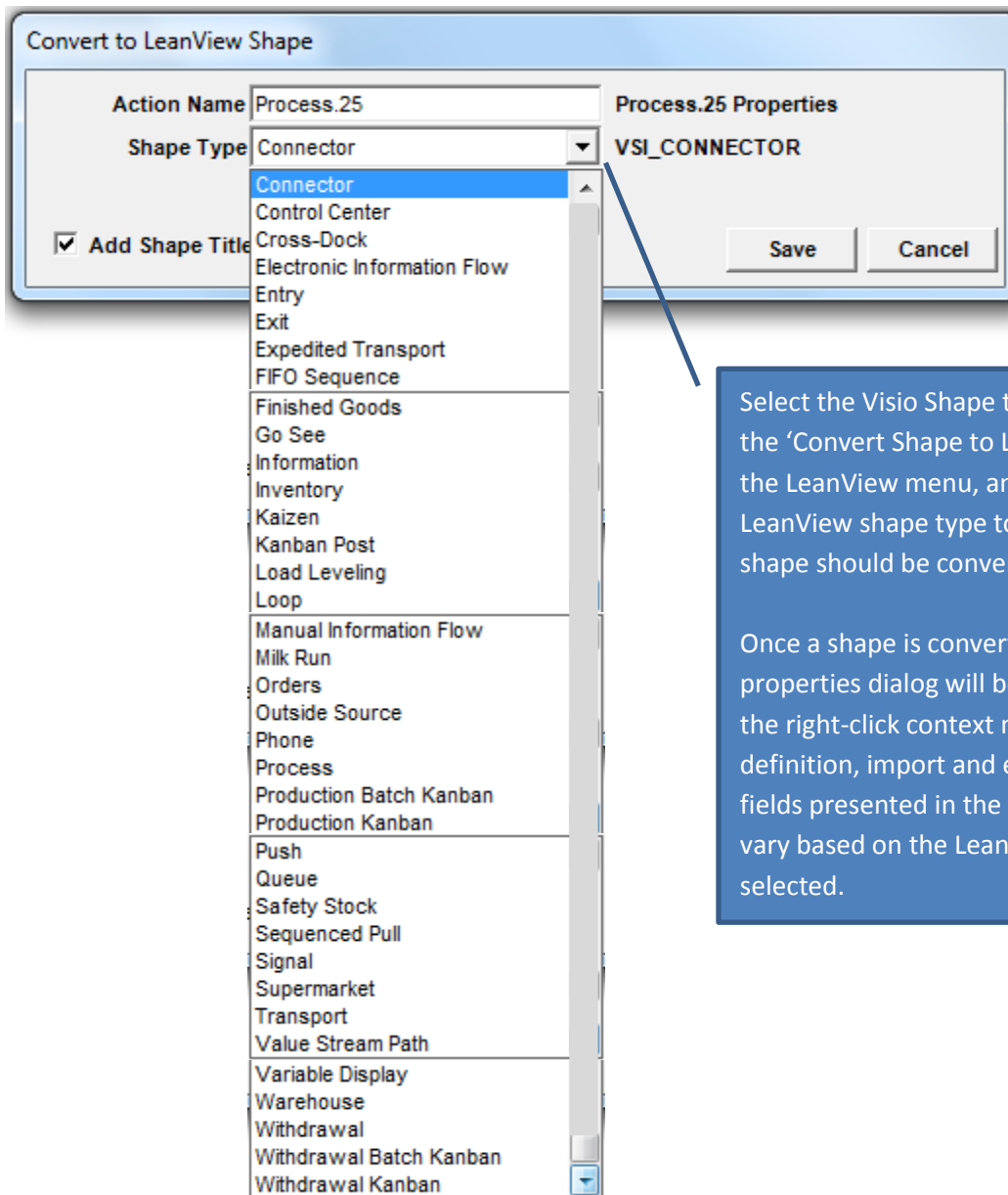
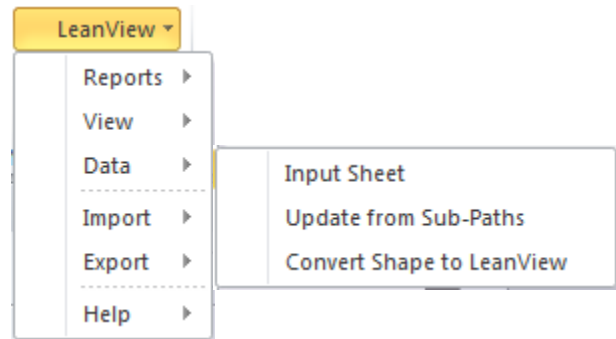
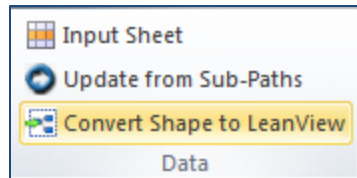
1. Access the LeanView ribbon and select **Duplicate Map**. LeanView will duplicate the active LeanView diagram inside a new LeanView drawing file. Simply save the new file with the desired name.
2. If LeanView is unable to locate the LeanView template, a prompt to identify the 'destination' file will be presented. Hit cancel and follow the instructions below.
3. Go to the Visio File menu, select **New → LeanView → LeanView Diagram**. Save this new Visio document using the desired filename (i.e. Destination.vsd).
4. **Open** the **source** document / existing LeanView diagram to be updated. (i.e. Source.vsd)
5. Access the LeanView menu and select **Export → Duplicate Map**.
6. **Define the destination** document name and page name where the updated LeanView file should be created. (i.e. Destination.vsd, Page-1).



## Section XVIII: Converting Visio Shapes to LeanView Shapes

Any two-dimensional Visio shape can be converted to a LeanView shape to store lean process data.

To create a LeanView shape, simply select the Visio shape to be converted, navigate to the Data section of the LeanView ribbon and choose 'Convert Shape to LeanView'.



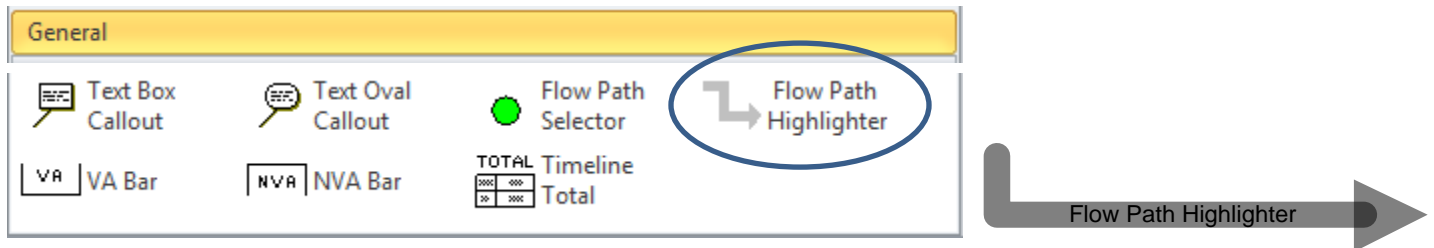
Select the Visio Shape to be converted, use the 'Convert Shape to LeanView' option from the LeanView menu, and choose the LeanView shape type to which the Visio shape should be converted.

Once a shape is converted, the LeanView properties dialog will be available through the right-click context menu for data definition, import and export. The input fields presented in the properties dialog will vary based on the LeanView shape type selected.

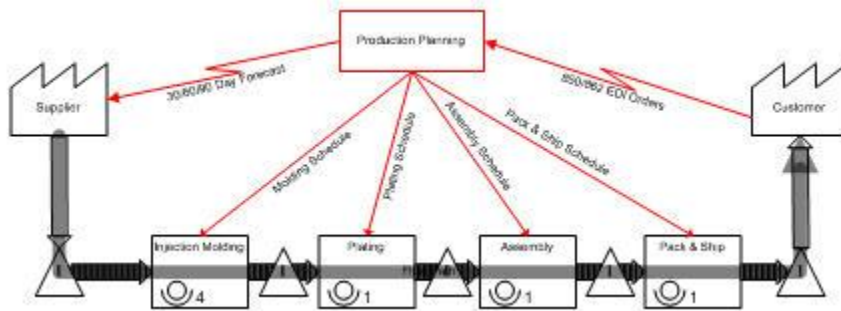
## Section XIX: Flow Path Highlighters

Flow path highlighters allow you to easily view paths in your Value Stream Maps, and can provide a quick method for documentation or presentation of flow paths.

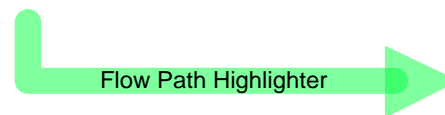
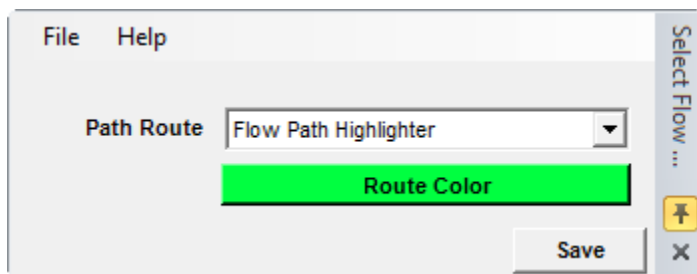
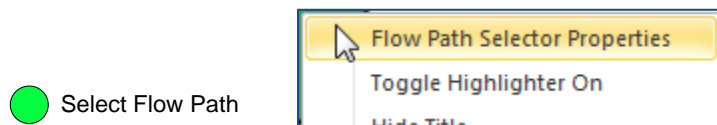
To create a flow path highlighter drag a flow path arrow from the general shapes stencil onto the Value Stream Map. You will find it advantageous to rename each Flow Path Highlighter to an identifiable, unique name. Select the Flow Path arrow and type in a recognizable name.



The flow path highlighter will appear as a grey arrow on your Value Stream Map. The ends of the flow path highlighter can be stretched align with the flow path being highlighted. The flow path highlighter shape will have the same behavior as a Visio dynamic connector for resizing; use the blue dots on the connector for repositioning.



To color the flow path highlighter shape, it must be associated with a flow path selector shape. Drag and drop a flow path selector shape onto the canvas and right-click to access the flow path selector properties dialog. Once a flow path highlighter is associated with a selector, the selector can be used to toggle the highlighter on and off.



## Section XX: Glossary of Terms

- **Active Workbook** – The selected Microsoft Excel workbook that will be used for input/output of VSM data.
- **Auto Time (AT)** – The amount of unattended, automated time required to process an item.
- **Average Shipping Interval (ASI)** – The average time between shipments for a transport step. On average, a unit waits half of the shipping interval, adding to flow time.
- **Changeover Time (CO)** - The time required to prepare to process the next normal production run of items. Also called Setup time, this represents a delay.
- **Cumulative Flow Time** - The average total time for an item to "flow" from the start of the value stream through any given step in the path.
- **Days Per Week** – Number of working days in an average work week.
- **Days Per Year** – Number of working days in an average work year.
- **Delays** - Any item that causes additional delays in transport or processing. Examples might be missing or incorrect paperwork, late equipment delivery, rework, etc.
- **Done** – The event or document that marks a process step complete.
- **Flow Time** – The elapsed time that occurs between the 'Starts with' and 'Ends with' process steps; also, the average overall time for an item to flow through the entire value stream. In addition to normal processing time, rework time and wait time for change over, unavailability, downtime, shipping intervals, and other delays all add to flow time.
- **Groups (of Process Steps)** - Using the Path shape, a number of process steps with flow times less than Takt Time may be logically "grouped" together to view as a single step for achieving better process flow.
- **Hours Per Day** - Number of working hours in an average work day.
- **Items (Inventory)** - The average number of items in backlog, queued or waiting at a specific location or before the next processing step.
- **Lead Time** – The average total time to obtain an item or service from a supplier
- **Little's Law** -  $WIP = TH \times CT$  where TH is throughput and CT is cycle time. For minimum WIP calculation,  $TH = (1/Takt \text{ Time})$  and  $CT = \text{Flow Time}$ .
- **Loss Rate** – The percentage of items that are damaged or lost during transport

## Section XX: Glossary of Terms

- **Manual Time (MT)** - The average amount of time required by operators/people to process an item - often referred to as "touch time"
- **Normal Process Quantity (NPQ)** - The number of items typically processed together as a batch (i.e. batch size).
- **People** - Refers to the full time equivalent number of operators or people performing the work.
- **Processing Time** – Sum of AT + MT
- **Product Family** - A grouping of products or services that can be processed through the same sequence of process steps
- **Shifts** - The number of work shifts for a process step. Used when the schedule for an individual process step differs from the work time defined for the overall value stream.
- **Ship Set** - The average number of items that are shipped together (usually to a customer).
- **Sub-Path** - A process step may reference a path shape on another page or diagram. The process step then represents a summarization the sequence of sub-process steps defined by this sub-path.
- **Supply (Inventory)** -The period of time that a given quantity of items in inventory will last based on the rate of demand/use.  $\text{Supply} = \text{Quantity in Inventory} / \text{Item Demand Rate}$ . Supply is stated in time units, typically "days of supply".
- **Takt Ratio** - Flow time divided by Takt time. For continuous, single-piece flow, Takt Ratio must be  $\leq 1$ .
- **Takt Time** - The time interval between unit outputs required to meet a defined level of demand. The term "Takt" refers to an orchestra leader's baton, used to set the pace. Takt time is the pace for each step in a process associated with continuous single piece flow that is synchronized with demand. Takt time is computed as the customer demand period (time) divided by the demand quantity.
- **Total Work** - Calculated as the product of Manual Cycle Time (MT) and the number of People performing the work.
- **Transfer Time** - The time to move an item from one location/process step to another.
- **Transport Time** - The average time an item spends being transported as a process step.
- **Trigger** - The event or document that authorizes or causes a process step to begin.
- **Value Added (%)** - The fraction of processing time that adds or creates value from the perspective of the customer

## Section XX: Glossary of Terms

- **Value Stream** - A linear sequence of steps that add value to incoming items and result in a unit of product or service that delivers value to a customer.
- **Value Stream Yield** - The cumulative yield from the start of the value stream path up to and including any given process step. Calculated by multiplying together, the yields of all steps along the path from the start up to and including any given process step
- **Workbook** - Refers to a Microsoft Excel workbook used for input/output of data from VSM shapes.
- **Yield** - The fraction of items processed that meet requirements on the first pass. For example, if on average two items per hundred processed fail to conform to requirements, the yield is 98%.