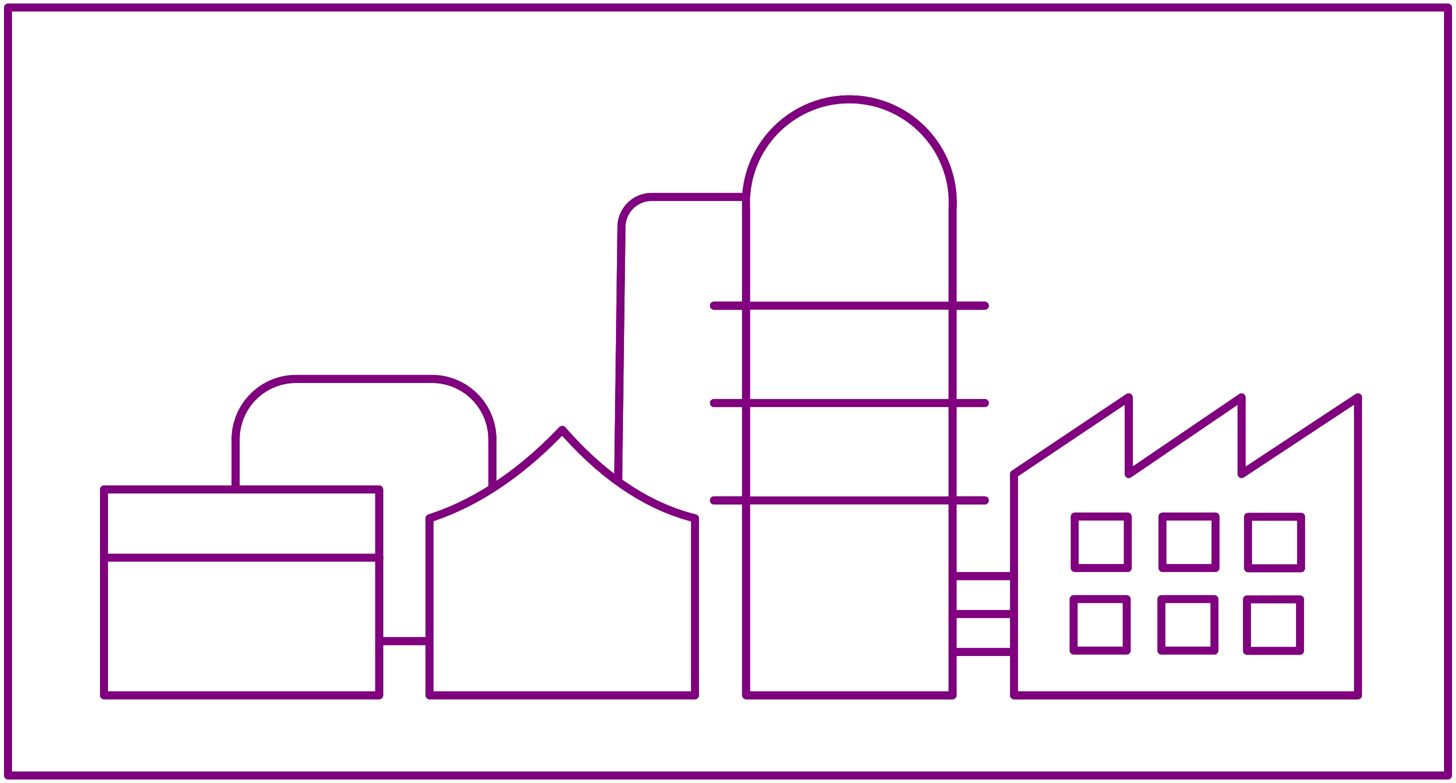
Mix Processing Maps

Introduction to eVSM Mix Processing concepts and how to use guide.



Course version: 012

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How to Use this File

This file contains the reading materials and the exercise pages from the course (title on previous page). While the course can only be taken on a computer, this booklet can be useful for note taking and later for refresher training.

This booklet is designed for on screen and print use. For on screen use, we recommend Acrobat Reader with the page display set to "Single Page View". If you are using this booklet on-screen while going through the exercises in eVSM, a second monitor is very helpful.

For hardcopy use, print the file on 8.5x11 or A4, and bind along the long edge.

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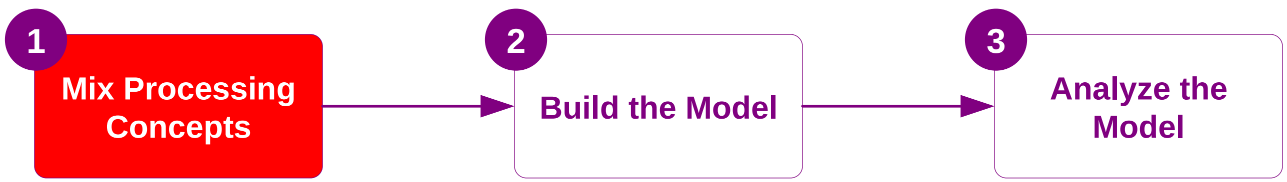
Mix Processing VSM Concepts

The eVSM Mix Processing application is for plant level value stream mapping of chemicals, pharma, and food processes. The application includes visuals to represent the flow of materials and information in multi-product value streams and has built in lean analytics for capacity, lead time, human resource, and cost. The maps can leverage eVSM's improvement management framework. In this lesson, we will take a look at the concepts supported by eVSM's Mix Processing stencil.

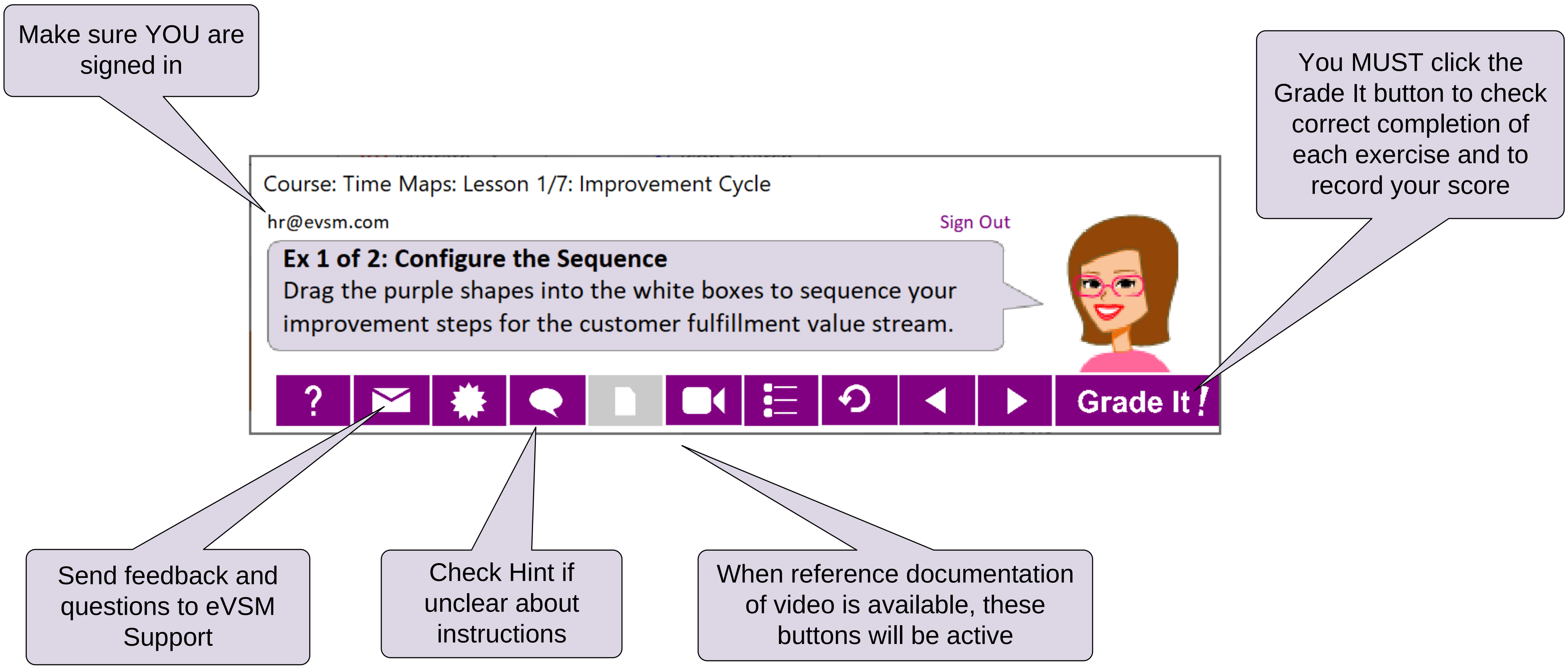
Before starting this course, you must complete the Fast Draw and the Quick Mix Time courses.

Mix Processing VSM – Learning Road Map



Working with eLeanor

The eLeanor learning system includes a range of useful functions:



Important Notes

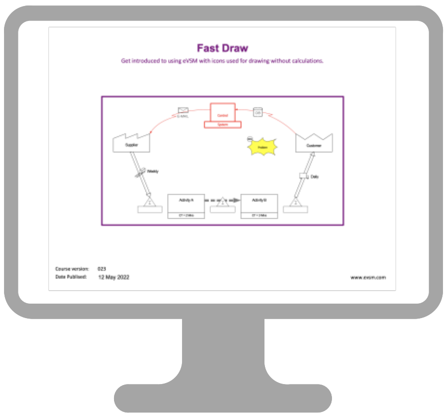
1. When you complete an exercise, you **MUST** click the “Grade It” button.
2. Points are deducted for incorrect attempts.
3. If you are stuck on an exercise, check the Hint. If that does not help, go back and review the preceding Readme pages. If you are still unsure, click the Feedback button and ask your question.

Ideal Setup to work with eLeanor

To run eLeanor, you must have Visio, Excel, eVSM, and an internet connection. See full checklist at https://evsm.com/eLeanorSetup

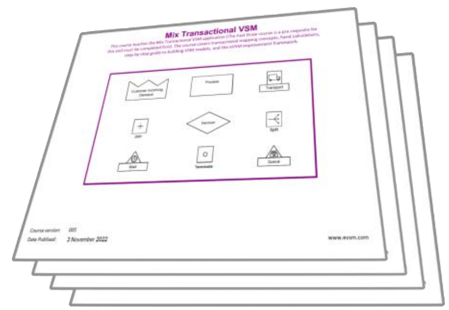
Your PC screen must have a minimum of 1280x720 pixel resolution.

Additionally, you must have a second monitor or a printed copy of the course notes.



Second Monitor to view
the course notes

OR



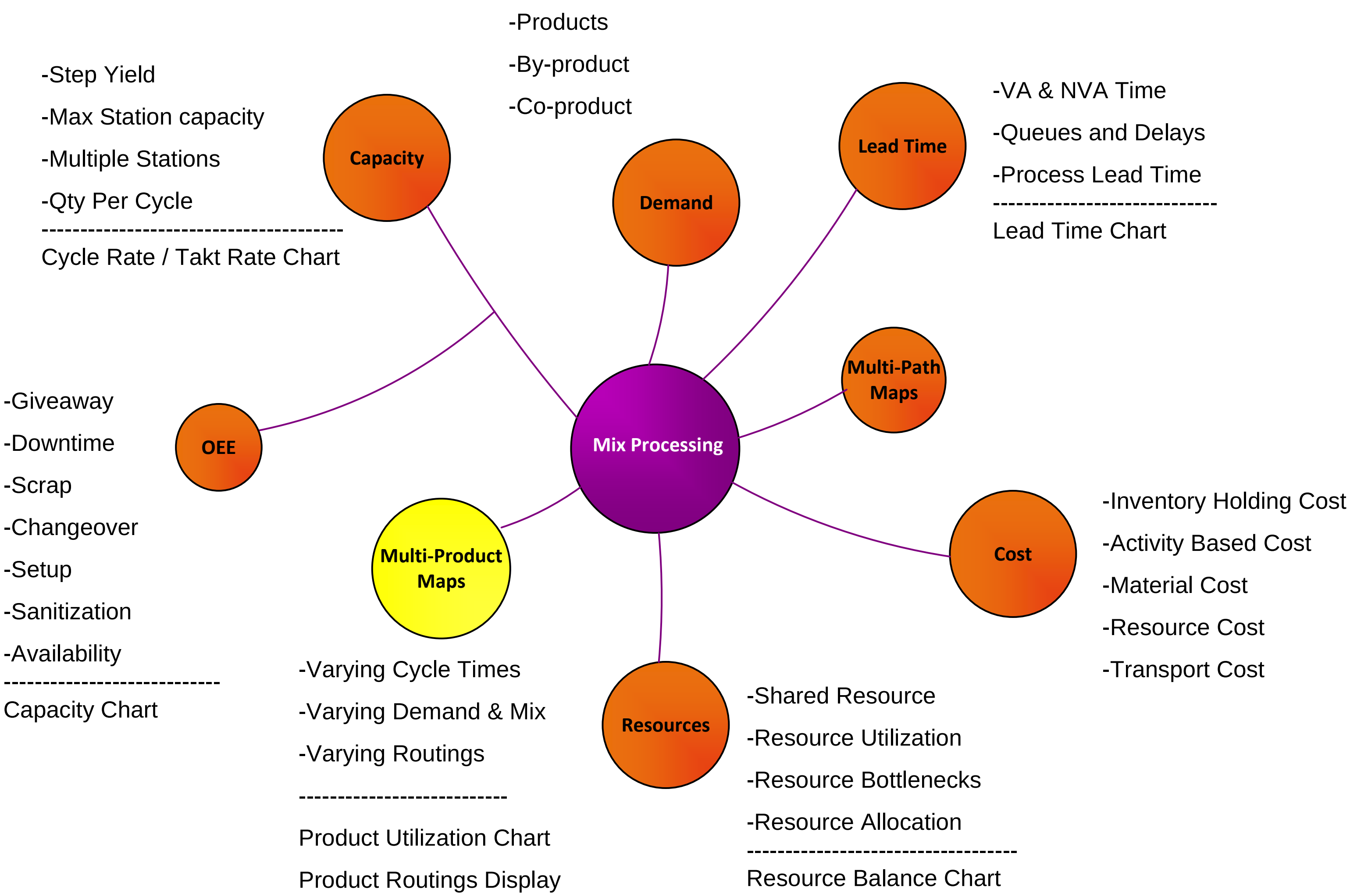
Printed hardcopy of
course notes

Note

The course notes are included in the downloaded course ZIP file. You can also download a fresh copy by clicking the “See Reference Materials” button in the eLeanor control panel.

Mix Processing VSM Concepts

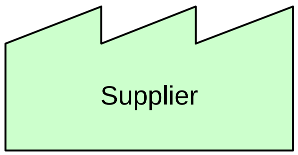
eVSM's Mix Processing application allows capture of food and chemical manufacturing maps with analysis and visualization of capacity, lead time, and cost and to include all the concepts shown below.



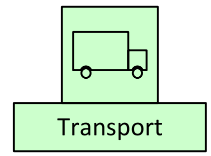
Note that eVSM has a separate application (Mix Manufacturing) and course to support capture of plant level maps for discrete parts and assemblies.

Mix Processing VSM Primary Mapping Icons

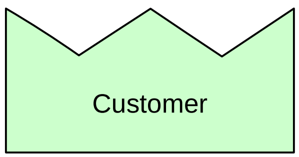
As you learned in the Fast Draw course, many of these icons represent families of shapes. For example, the transport icon can be plane, train, forklift, etc.



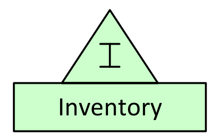
Supplier Center



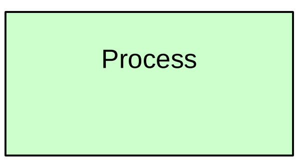
Transport Center



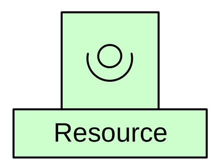
Customer Center



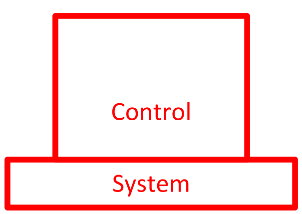
Inventory Center



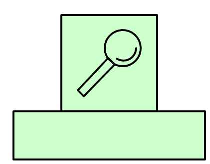
Activity Center



Resource Center



Control Center



QC Center

Q. Which ONE of the following visuals does Mix Processing NOT provide for the value stream?

◎ A capacity chart that can show bottlenecks and capacity losses

◎ A lead time chart

◎ A resource balance chart to compare staff allocation to availability

◎ A standard work diagram to show the detailed steps at each station

Demand & Net Weight

Processed products have packaging (bottle, case etc..) and ingredients. eVSM's Mix Processing stencil allows depiction of value streams with production of both ingredients and packaging but with an overall demand specified as the weight of the ingredients only. This is called the Net Weight.

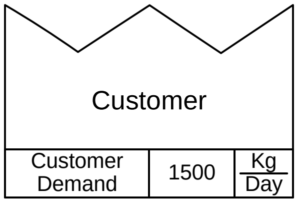
The example below illustrates the customer in the value stream and specifies the customer demand as a Net weight per day

Empty Bottle Weight = 0.5 Kg/Bottle

Contents Weight = 1.5 Kg/Bottle

25 Bottles per Case

Case cardboard Weight = 1Kg



The demand is specified as a NET demand weight over a period. Its important to understand that this is the weight of JUST the contents (the 1.5Kg per bottle) and does NOT include any packaging weight (does not include the empty bottle weight or the case cardboard weight)

In the example above,

Full bottle weight = 0.5 + 1.5 = 2Kg/Bottle

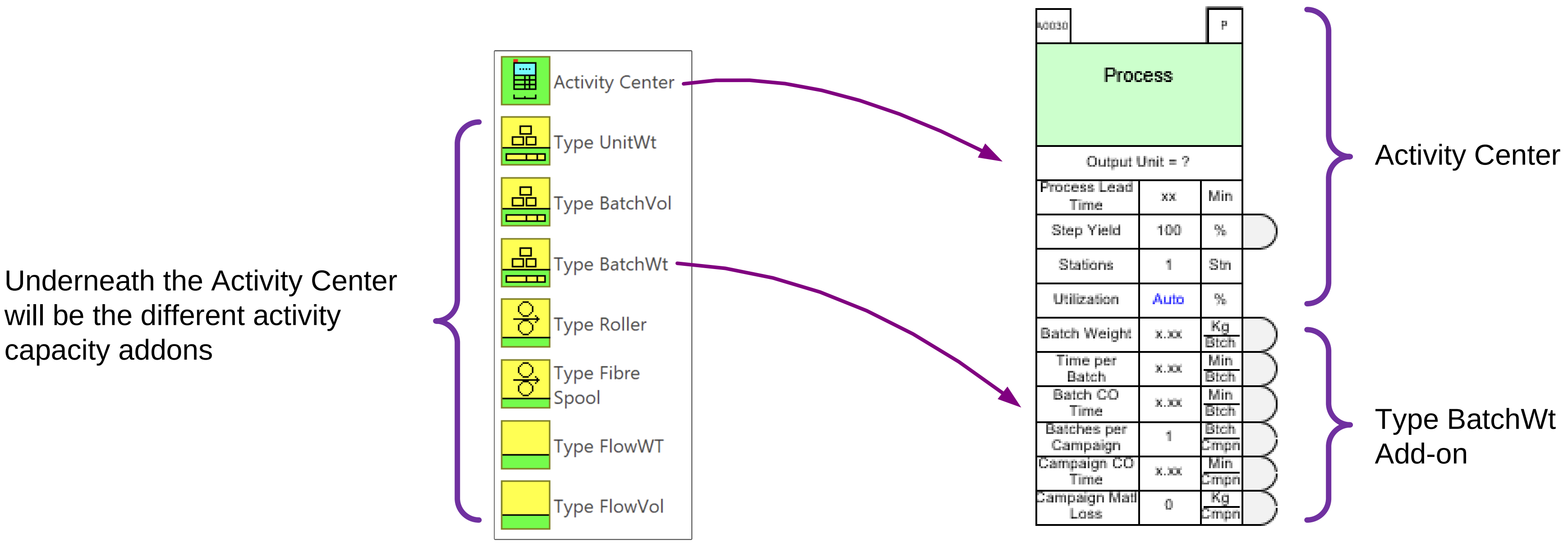
Full Case Weight = 2*25 + 1 =51Kg/Case

Number of bottles required per day = 1500 / 1.5 = 1000 bottles per day

Activity Capacity Types

The Mix Processing application allows modeling of many different types of value streams for food and chemical processing. The product may be fluid or solid. The flow may be continuous or discrete. The data may be weight or volume based. It may even be in sheet roller or fiber spool form.

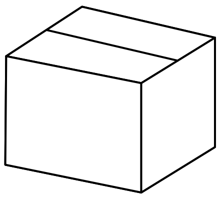
To support this, Mix Processing is equipped with multiple Activity Capacity addons for the Activity Center. The user chooses the type that best characterizes the station operation (Batch, Roll, Weight etc..).



Notes:

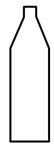
- An Activity Capacity addon is required for each activity center used
- Only one Activity Capacity addon type on each activity may be used at a time
- Activity Capacity addon may be used on different parts of the map
- Time Units may be changed to match the data the user has

The net product customer demand is 1500 Kg / Day. The product is packed in cases that each weigh 100Kg. There are 24 filled bottles in each case and each filled bottle weighs 4Kg. An empty bottle weighs 1 Kg. An empty case weighs 4 Kg



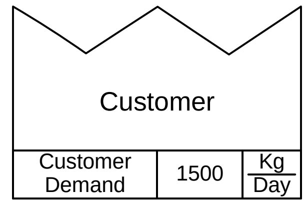
100 Kg/Case

24 Bottles/Case



4Kg / Bottle

1Kg / Empty Bottle



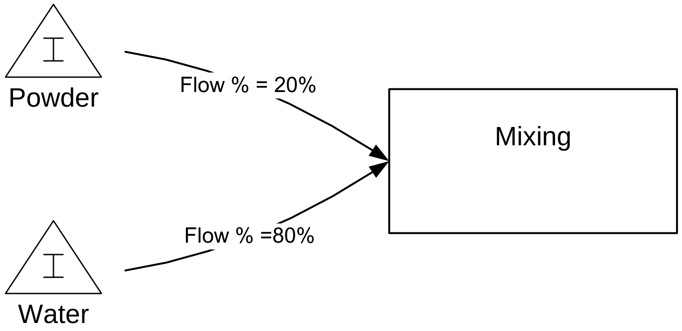
Q. Approximately how many cases are needed each day ?

- 21 cases
- 15 cases
- 16 cases

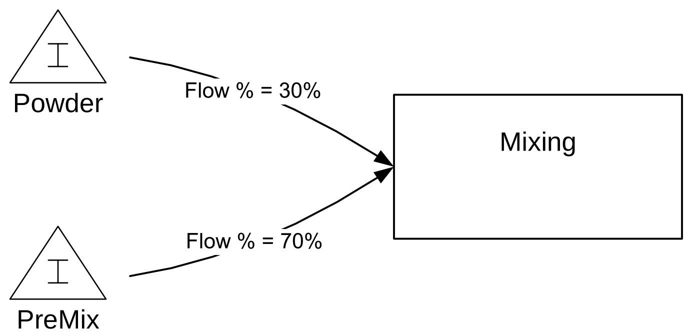
Multiple Ingredients & Flow %

When several ingredients are needed for a process step, you must specify what percent of the incoming weight is represented by each ingredient; this is called the Flow %.

The example below, for every 100Kg of ingredients coming into the process, you need 20Kg of powder and 80 Kg of water. The Flow % values for ingredients must add up to 100. Note that ingredients can be incoming from an upstream process or from inventory.



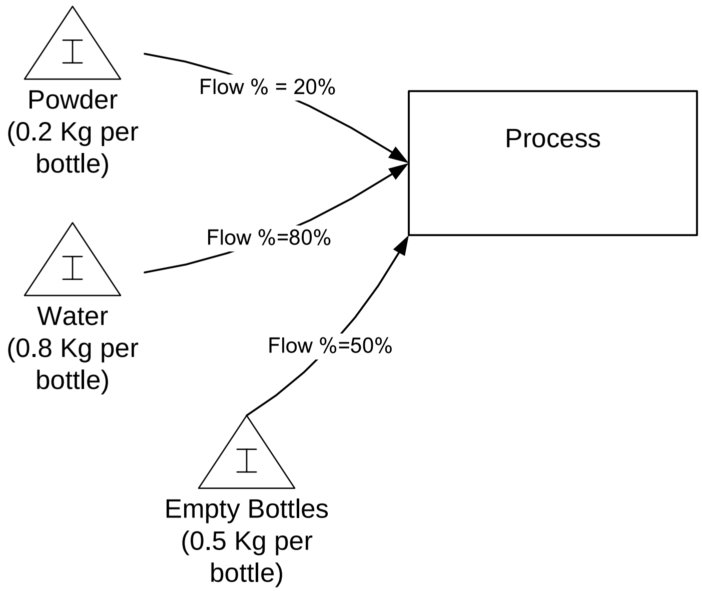
In this example, if we know how much product needs to come out of the mixer to satisfy the demand from the downstream process, we can calculate how much of each ingredient is needed to go into the mixer based on the Flow % values. eVSM calculates the demand at each step in the value stream by starting with a known customer demand and then working back through each upstream activity and using the Flow % values at each step. The demand calculation takes into account related variables like yield and scrap also.



Q. If 700 Kg of PreMix are needed per day, how much powder is needed?

- ◎ 700 Kg/Day
- ◎ 210 Kg/Day
- ◎ 300 Kg/Day

Ingredients and Packaging



In some processes that include packaging, there are both incoming ingredients and packaging materials. In this specific situation

The Flow % numbers for JUST the ingredients need to add up to 100%

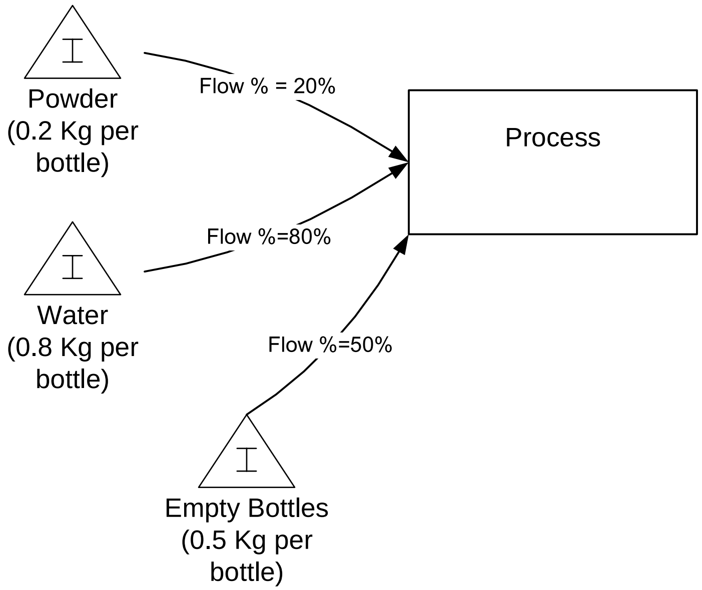
The Flow % number for any packaging is calculated as

$$\frac{100^{*}\ \text{Weight of Packaging}}{\text{Total Weight of Ingredients}}$$

For the empty bottles on the left, the Flow % calculation is

$$\frac{100^{*}\ 0.5}{(0.2+0.8)} = 50\%$$

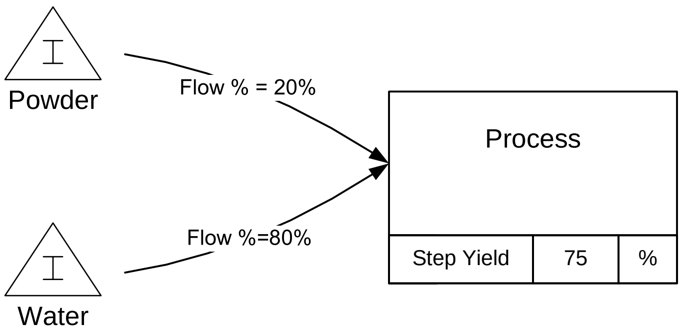
Mix Processing calculates the demand for ingredients at the process and uses the Flow % value to understand the demand for bottles coming into the process.



Q. How many bottles are needed at the process for each 100 Kg of ingredients (powder + water)?

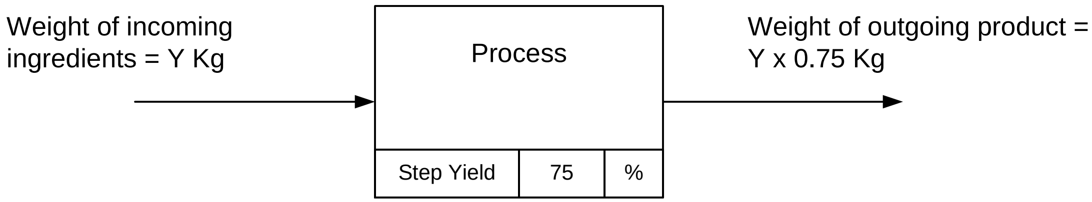
- 50
- 100
- 200
- Other

Step Yield



Production processes sometimes involve steps where the incoming weight is changed through the activity. Could be, for example, because of an evaporation aspect to the activity.

In this example, lets say for every 200 Kg of incoming ingredients weight (40 Kg powder, 160 Kg water) the process only yields 150 Kg of product coming out. The step yield at that process would then be 100*(150/200) = 75%

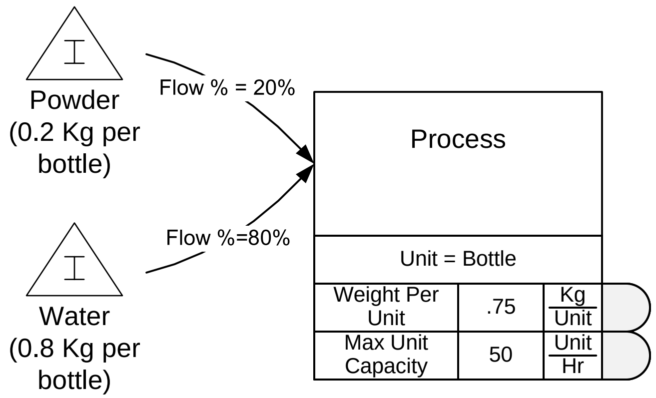


Mixing		
Step Yield	80	%

Q. If the input net weight is 80Kg/Hr into 'mixing', what is output net weight ?

- 64 Kg/Hr
- 100 Kg/Hr
- 80 Kg/Hr
- 120 Kg/Hr

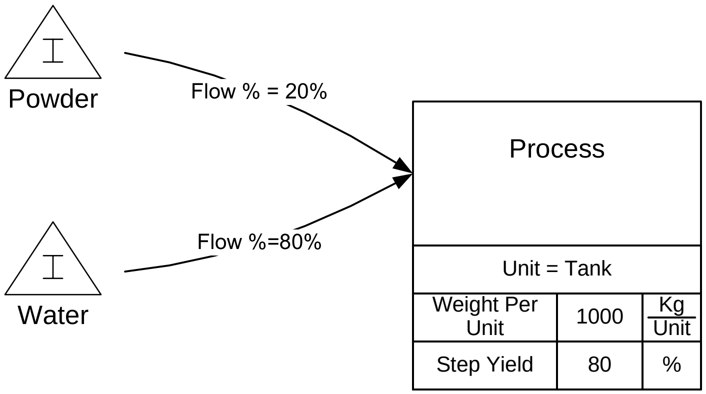
Local "Unit" to measure Output Quantity



Depending on the process it is sometimes convenient to measure in units other than weight. For this we use the 'Type UnitWt' addon for the activity

In this example, it is convenient to measure output in "Bottles". The Unit (local output quantity) is therefore noted as a "Bottle".

The "Weight Per Unit" is the weight of the ingredient per Unit (Bottle) coming OUT of the process step. The capacity is then specified in the new output unit (Bottle/Hr)



Q. What's the total weight of input ingredients for every tank processed ?

- 1000 Kg
- 800 Kg
- 1250 Kg
- 1200 Kg

Max Station capacity

Process		
Unit = Bottle		
Max Station Capacity	200	Unit / Hr

The Max Station capacity represents the exit rate of the output from the process.

In this example the local output quantity (Unit) is bottles and the process can produce 200 bottles per Hr.

Note that the Max Station capacity value should be the maximum the station is capable off and not the rate that it is currently running.

Activity Time

Process		
Activity Time	10	Hr / Day

The activity time represents the planned production time for a station after lunch, breaks and planned maintenance times are deducted.

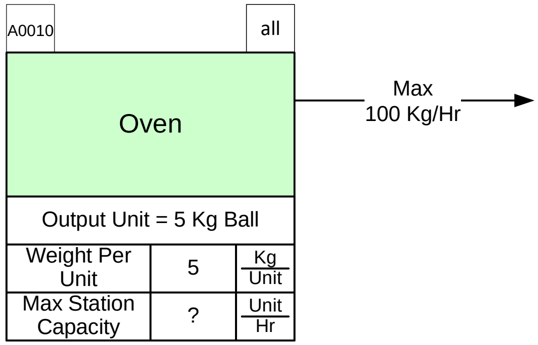
The planned production time DOES include changeovers and setups

OEE

Process		
Activity Time	10	Hr / Day
OEE	90	%

The OEE value represents that percent of planned production time that produces good product after all the station losses due to availability, quality and performance.

So in the example, “good” products are effectively being made for 9 hours per day at the station (10*0.9)



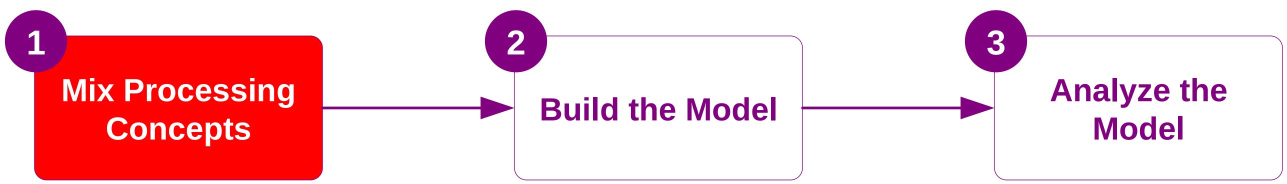
Q. What is the Max Station Capacity Value ?

- ◎ 200 Unit/Hr
- ◎ 100 Unit/Hr
- ◎ 20 Unit/Hr
- ◎ 40 Unit/Hr

You learned:

- That Mix Processing VSM supports mapping of plant level production value streams for food and chemicals
- Some of the key concepts and data on the map that are used to provide value stream analytics

Mix Processing VSM – Learning Road Map



What's next:

In the next lesson, how to build a value stream model from with the Mix Processing application.

Building a Value Stream Model

This lesson teaches how to build an eVSM Mix model with the Mix Processing application from scratch. A brief overview is followed by descriptions and hands-on exercises to declare a mix of products, draw the flow, specify routings, enter data, check, and solve the model.

Mix Processing VSM – Learning Road Map

Modeling Process

You learned how to build an eVSM Mix value stream model in the Mix Time course. If unsure of the process, you should review the notes for lessons 3, 4, and 5. In summary, the process is as follows:

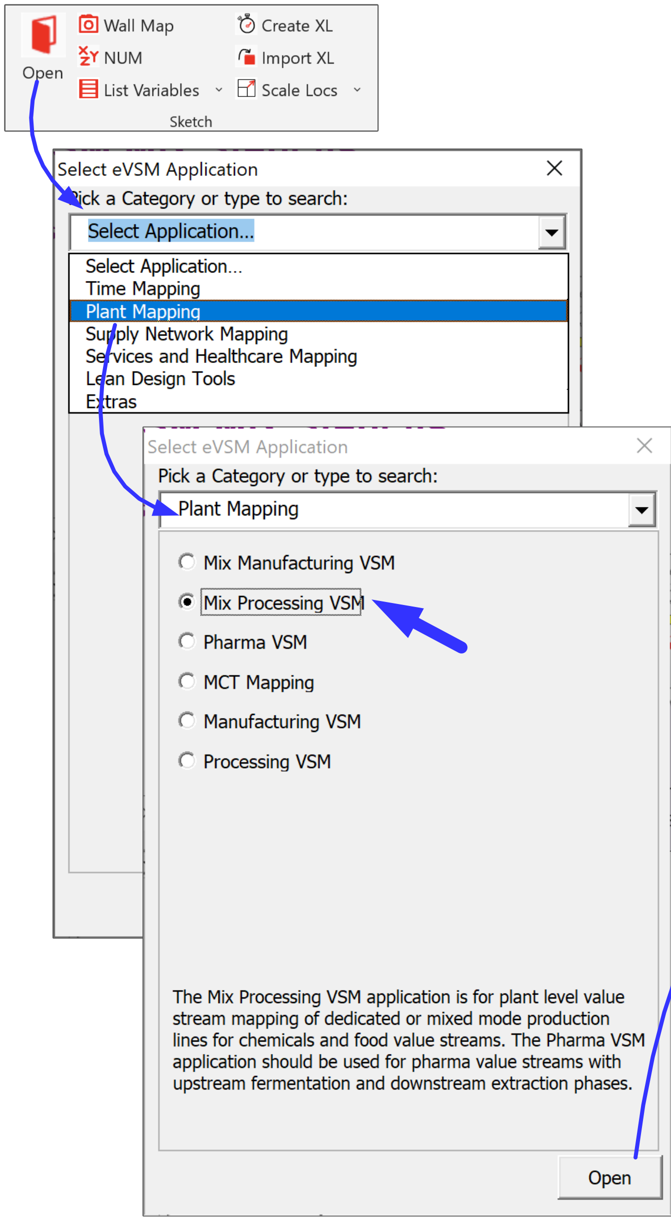
- Declare Products
- Group products into Sets

- Sketch the Flow
- Sequence the Flow
- Specify Routings

- Add data shapes
- Select Capacity scheme
- Enter data
- Solve

In this lesson, you will practice the above steps to build Mix Processing models.

Mix Processing Stencils



This is the main stencil and contains all icons for Mix Processing

This is a subset of the main stencil. Useful for new users and for quicker access to the icons used most frequently

The sketch stencils contains only the shapes required to create a flowchart of the value stream. Very useful for capturing wall maps. The sketch shapes have a right-mouse click command to add data shapes if/when data needs to be added to the map

Start a Mix Processing Map

Initiate this page for a Mix Processing map

Declare Products and Sets with the Mix Manager

1. Initiate this page for a Mix Processing map.
2. Use the Mix Manager dialog (not Excel) to enter the following products and sets.
3. Exit the Mix Manager dialog and click Draw Sets in the toolbar.
4. Click Grade It.

Set Names	Product Names
Nitrogen fertilizers	Urea Ammonia
Phosphorus fertilizers	Diammonium phosphate

Edit Products and Sets

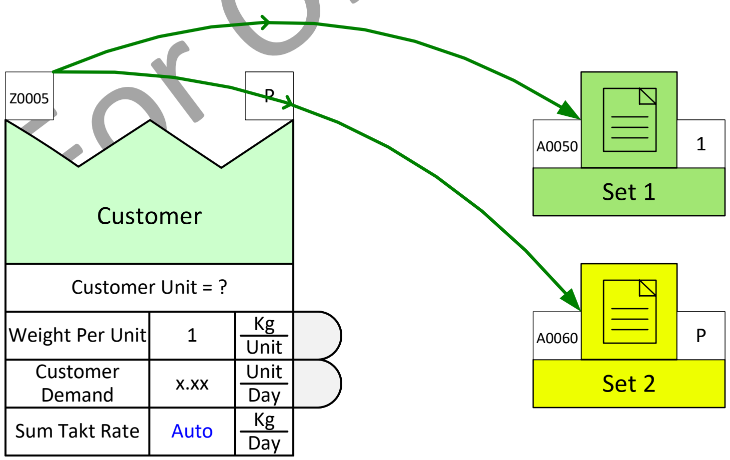
In the Mix Manager dialog, make the following changes. After Editing, click Draw Sets in the toolbar, and then click Grade It in the eLeanor control panel.

Current:

Set Names	Product Names
Set 1	Product 1 Product 2
Set 2	Product 3 Product 4

Change to:

Set Names	Product Names
Set 1	Product 1
Set 2	Product 5 Product 4
Set 3	Product 2 Product 3



s1 - Set 1

p1 - Product 1 (Qty 0) Demand %: 0%

p2 - Product 2 (Qty 0) Demand %: 0%

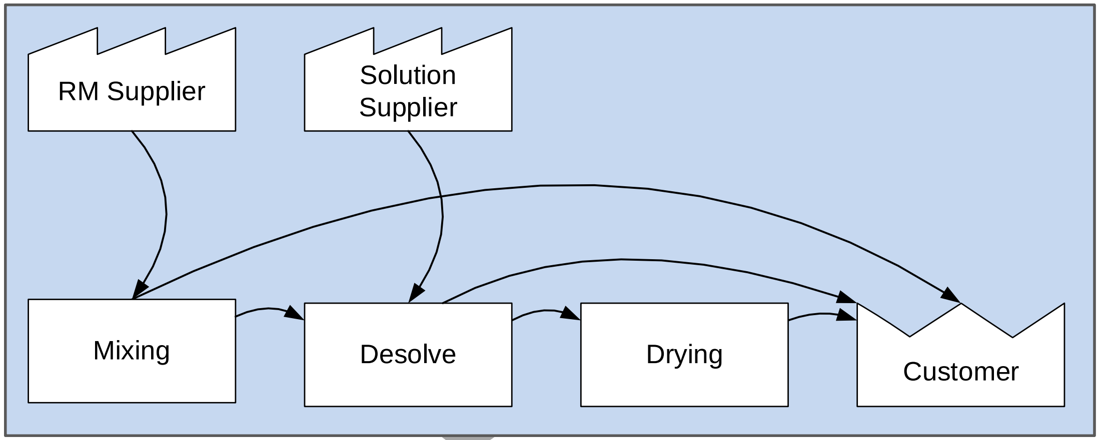
s2 - Set 2

p3 - Product 3 (Qty 0) Demand %: 0%

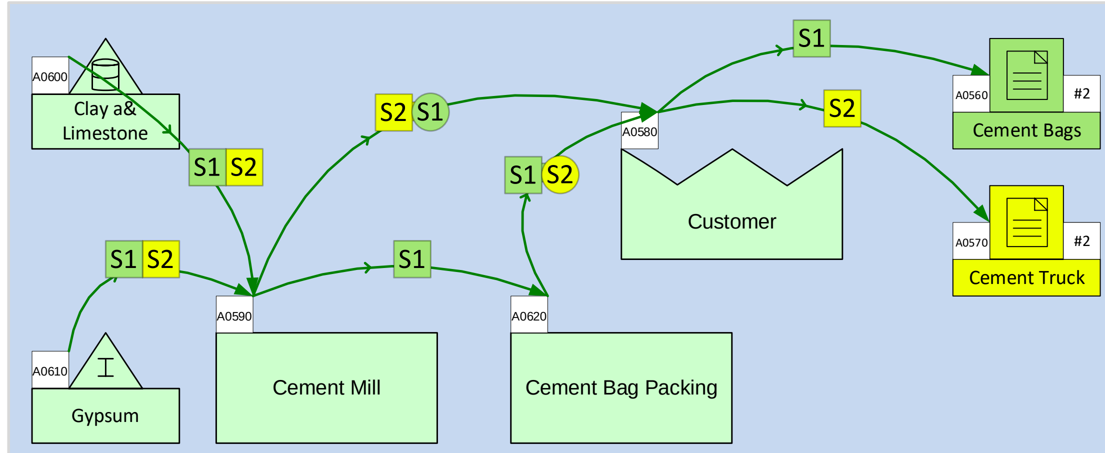
p4 - Product 4 (Qty 0) Demand %: 0%

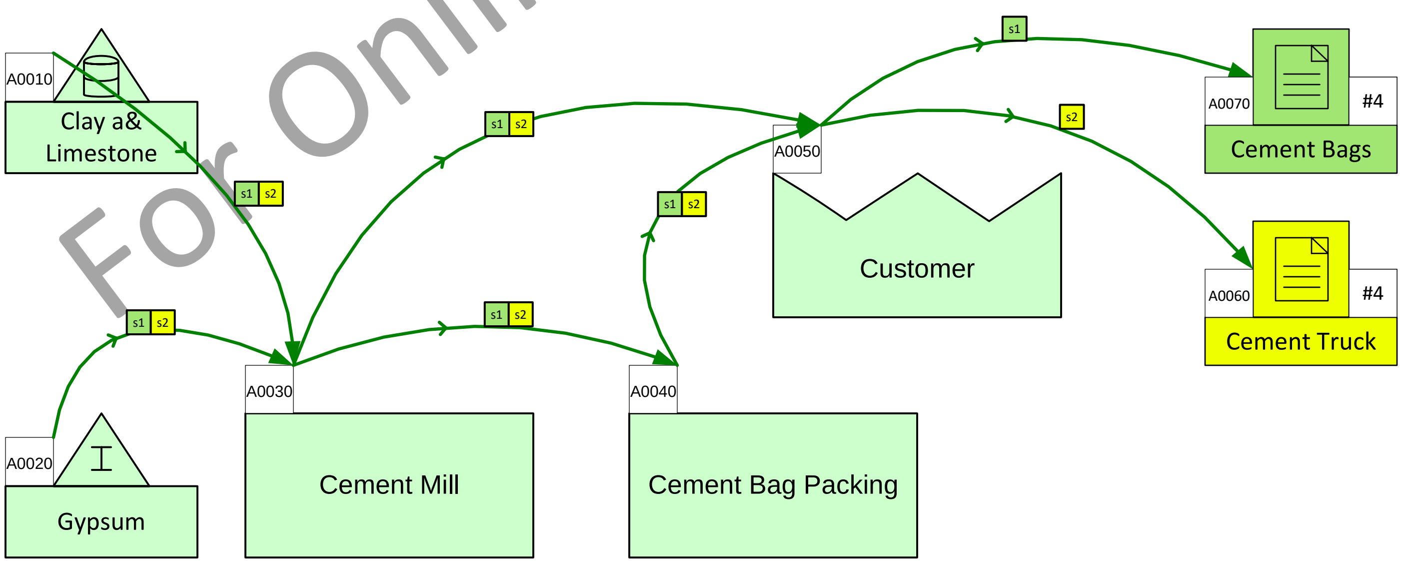
Draw and Sequence

1. Initiate the page for a Mix Processing Map
2. Draw this Flow with the Sketch Mix Processing stencil. No need to draw the Set centers.
3. Add Sequence arrows to show the flow of materials.
4. Grade It



Adjust the Set gates in the map below to match the image.

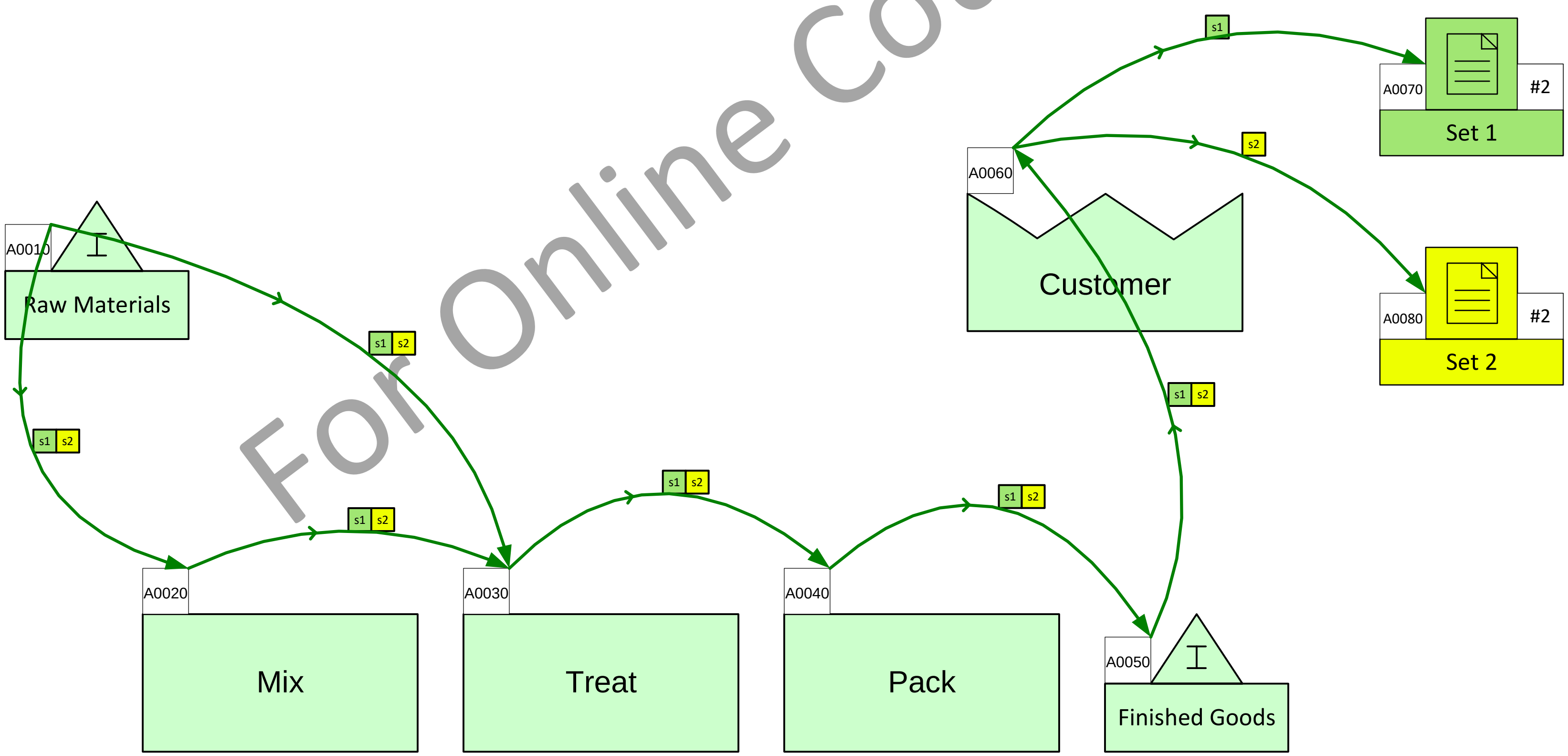




Specify Routings

Use Set Gates to configure the routings as shown in the product matrix.

Set ID	Set Name	Product ID	Product Name	Raw Materials	Mix	Treat	Pack	Finished Goods
S1	Set 1	P1	Product 1	X	X	X	X	X
S1	Set 1	P2	Product 2	X	X	X	X	X
S2	Set 2	P3	Product 3	X		X	X	X



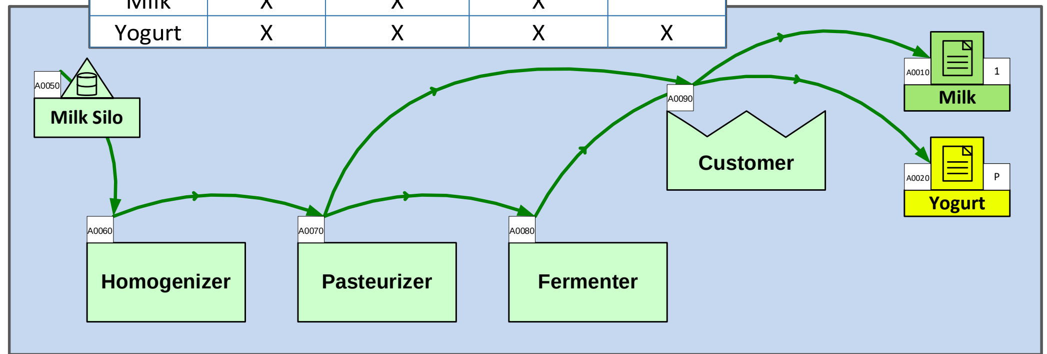
Routings Exercise

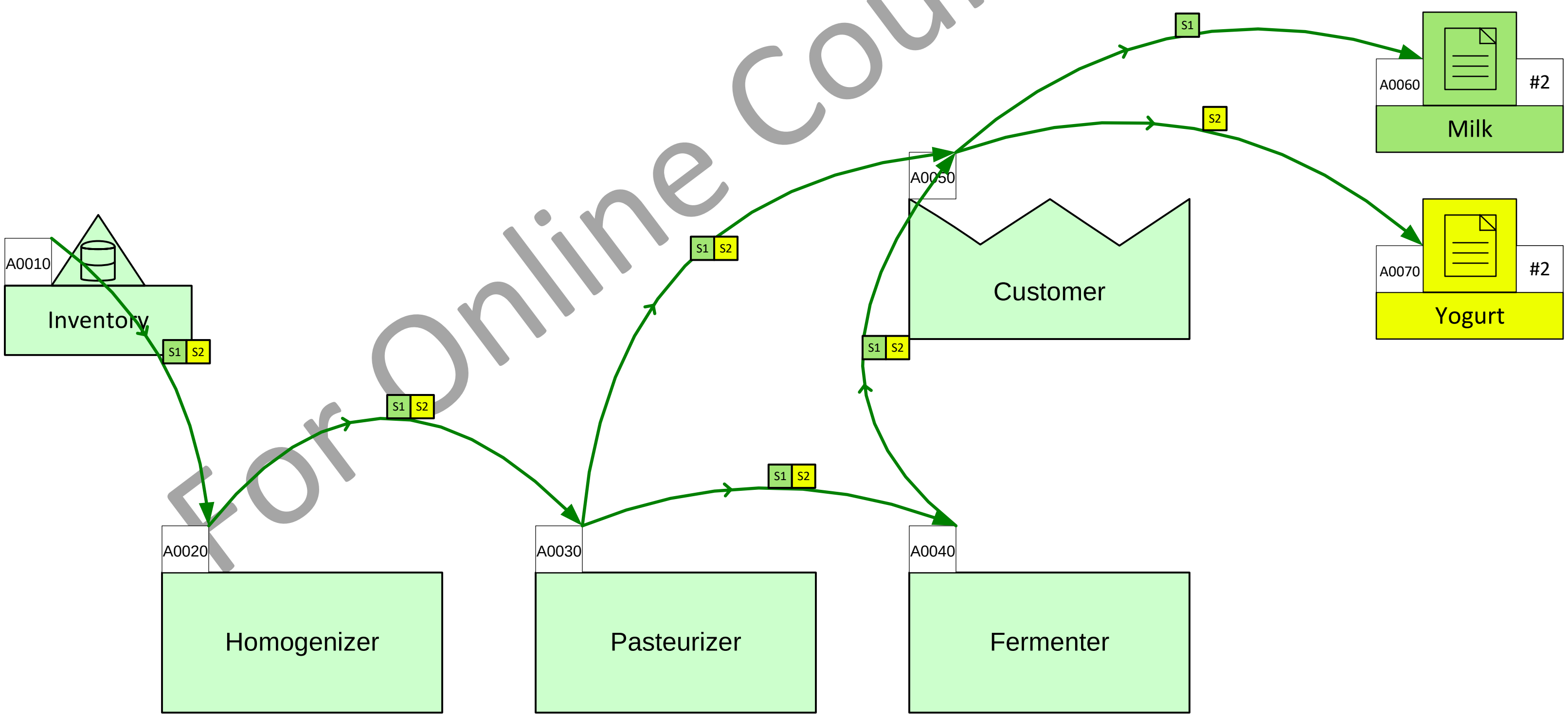
The Milk and Yogurt sets have already been created in the Mix Manager and are represented by the Set centers on the page.

You need to adjust the set gates to match the product matrix.

Then click Grade It!

Product	Silo	Homogenizer	Pasteurizer	Fermenter
Milk	X	X	X	
Yogurt	X	X	X	X

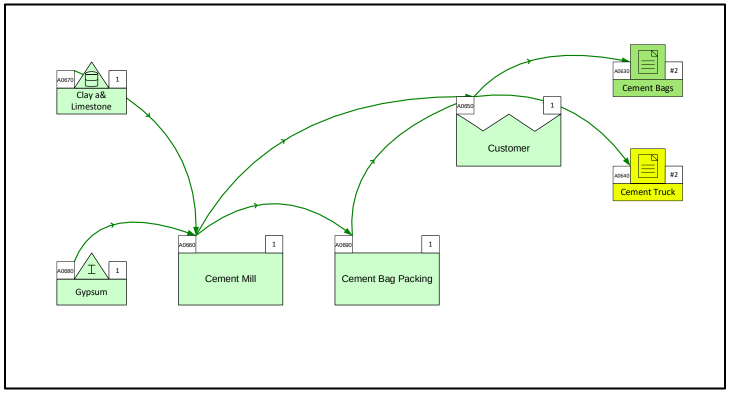




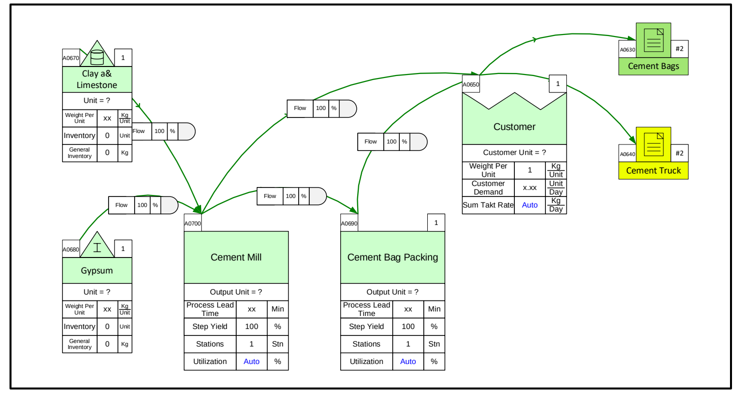
Data on Sketch Centers

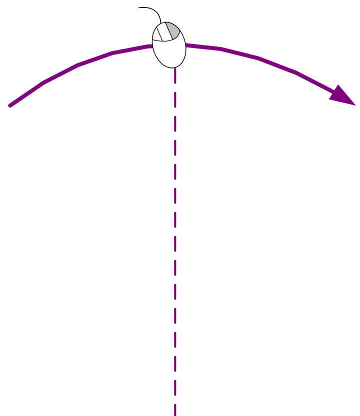
If the flow has been drawn with a Sketch stencil, then you can automatically turn the flowchart into a data based value stream model. Just right-mouse click on any Sketch Mix Processing shape on the page and use the "Add all data (page)" command.

Sketch Map



After "Add all data"





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.

Add all data (shape)
Add all data (page)

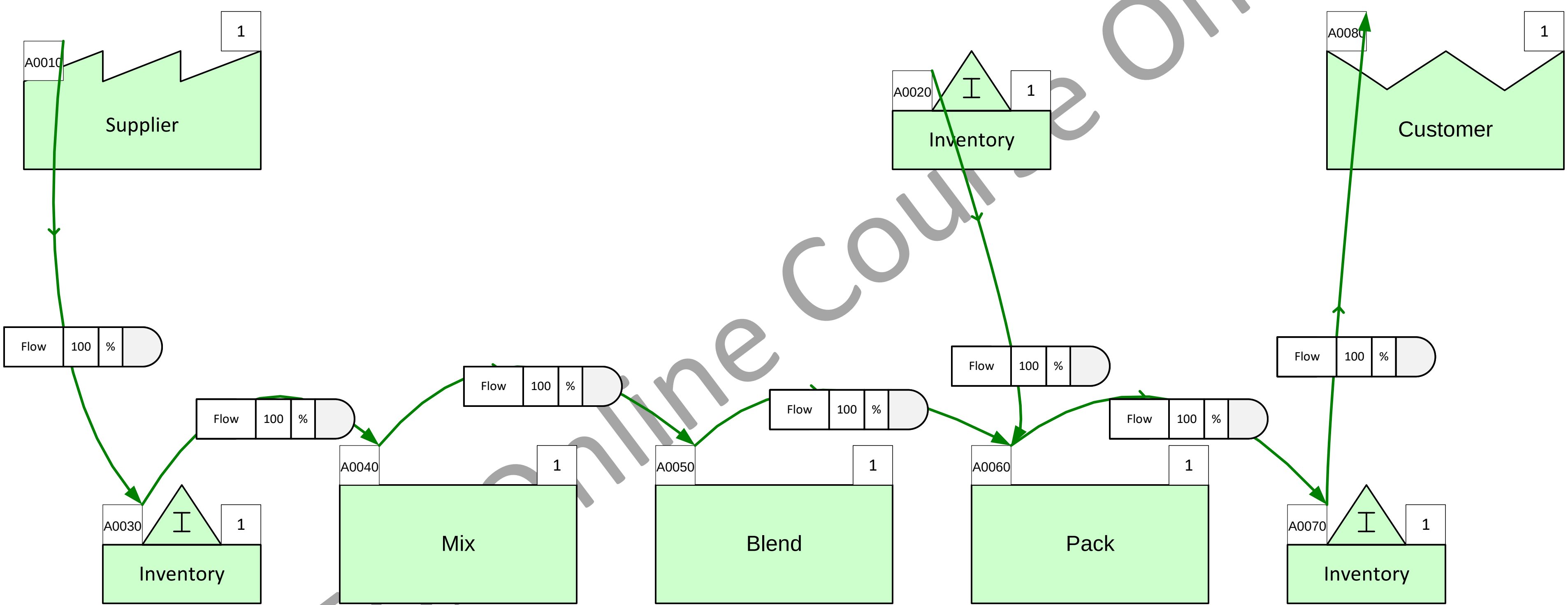
Remove all data (shape)
Remove all data (page)

Right-mouse menu, available on all the center's parent shapes (green shapes)

Click this command to automatically add data shapes to all centers on the page.

Data shapes can be removed too. Note that this will delete any entered and calculated values.

Add Data shapes to Sketch



Activity Capacity Types

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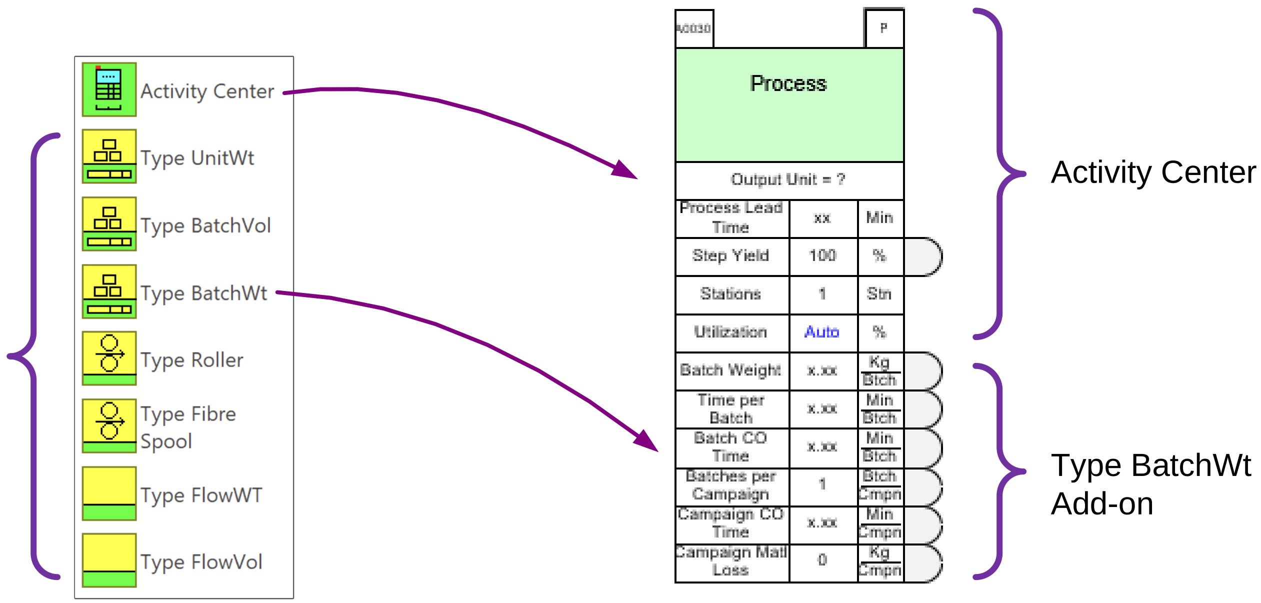
To support this, Mix Processing is equipped with multiple Activity Capacity add-ons for the Activity Center. The user chooses the type that best characterizes the station operation (Batch, Roll, Weight etc..).

Underneath the Activity Center will be the different activity capacity add-ons



Notes:

- An Activity Capacity add-on is required for each activity center used
- Only one Activity Capacity add-on type on each activity may be used at a time
- Different Activity Capacity add-ons may be used on different parts of the map
- Time Units may be changed to match the data the user has

Available ways to specify Activity Capacity

Type UnitWt

Input production rate per unit item.

Weight Per Unit	x.xx	Kg/Unit
Max Unit Capacity	x.xx	Unit/Hr

Type BatchVol

Input production rate per batch volume

Batch Volume	x.xx	m3/Btch
Density	997	Kg/m3
Time per Batch	x.xx	Min/Btch
Batch CO Time	x.xx	Min/Btch
Campaign CO Time	x.xx	Min/Cmpn
Batches per Campaign	1	Btch/Cmpn
Campaign Matl Loss	0	Kg/Cmpn

Type BatchWt

Input production rate per batch weight

Batch Weight	x.xx	Kg/Btch
Time per Batch	x.xx	Min/Btch
Batch CO Time	x.xx	Min/Btch
Batches per Campaign	1	Btch/Cmpn
Campaign CO Time	x.xx	Min/Cmpn
Campaign Matl Loss	0	Kg/Cmpn

Type Roller

Input production rate for roller based material flow data

Roll Width	x.xx	m
Roll Length	x.xx	m
Weight Per Unit Area	x.xx	Kg/sqm
Roll Feed Speed	x.xx	m/Sec
Roll CO Time	x.xx	Min/Roll
Rolls per Campaign	xx	Roll/Cmpn
Campaign CO Time	xx	Min/Cmpn
Campaign Matl Loss	0	Kg/Cmpn
Weight Per Roll	Auto	Kg/Roll

Type FlowWT

Input production rate for continuous flow in weight per unit time

Weight Flow Rate	x.xx	Kg/Hr
Flow Unit Weight	1	Kg/Unit

Type FlowVol

Input production rate for continuous flow in volume per unit time

Density	997	Kg/m3
Volume Flow Rate	x.xx	m3/Hr
Flow Unit Weight	1	Kg/Unit

Type Fiber Spool

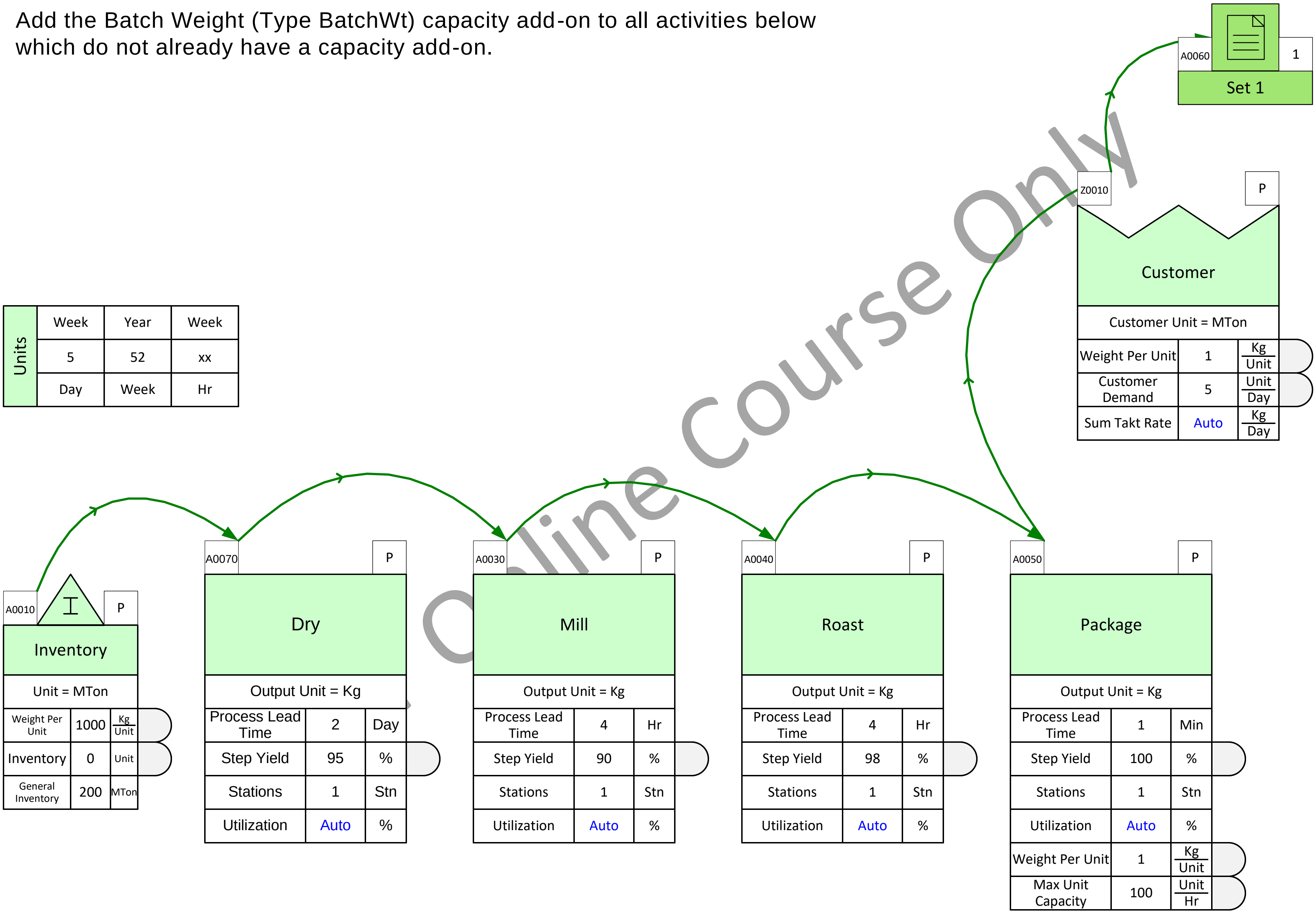
Input fiber roll activity to calculate maximum capacity

Fibre Cmpn Length	x.xx	km
Fibre Cmpn CO Time	x.xx	Sec/Cmpn
Fibre Roll Length	x.xx	m
Fibre Roll Feed Speed	x.xx	m/Sec
Fibre Roll CO Time	x.xx	Min/Roll
Fibre Roll CO Feed Speed	x.xx	m/Sec
Roll Speedup Time	x.xx	Sec
Fibre Cmpn Speedup Time	x.xx	Sec
Fibre Cmpn Startup Speed	x.xx	m/Sec
Weight Per Length	x.xx	Kg/km

* For descriptions of the variable names, use the “Name Help” command in the right-mouse menus.

Activity Capacity Add-ons

Add the Batch Weight (Type BatchWt) capacity add-on to all activities below which do not already have a capacity add-on.



Enter Customer Demand

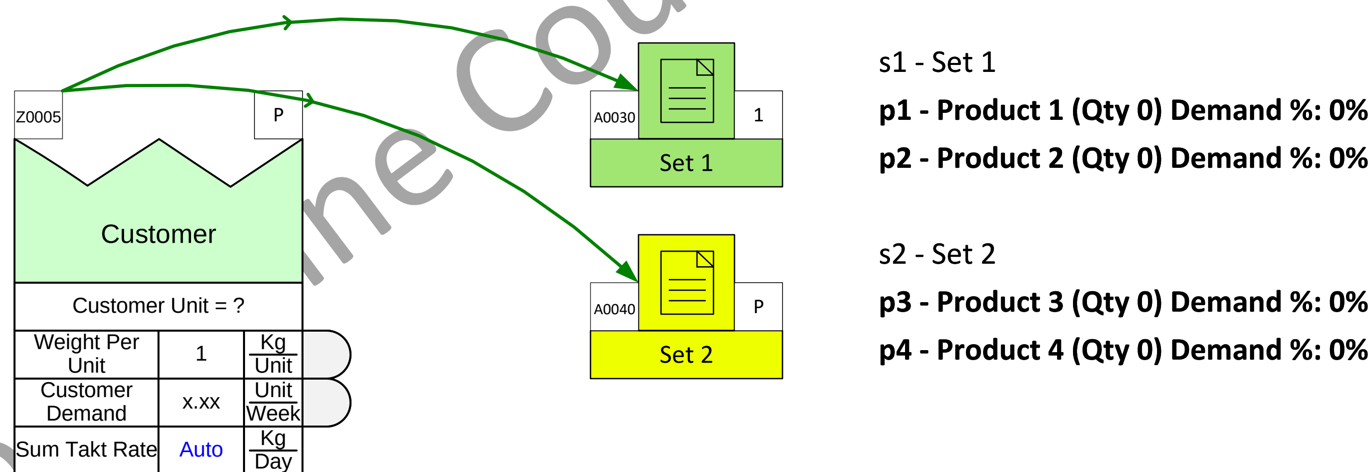
Enter these demand values as shown in the map below.

Product 1 = 1000 Kg/Week

Product 2 = 600 Kg/Week

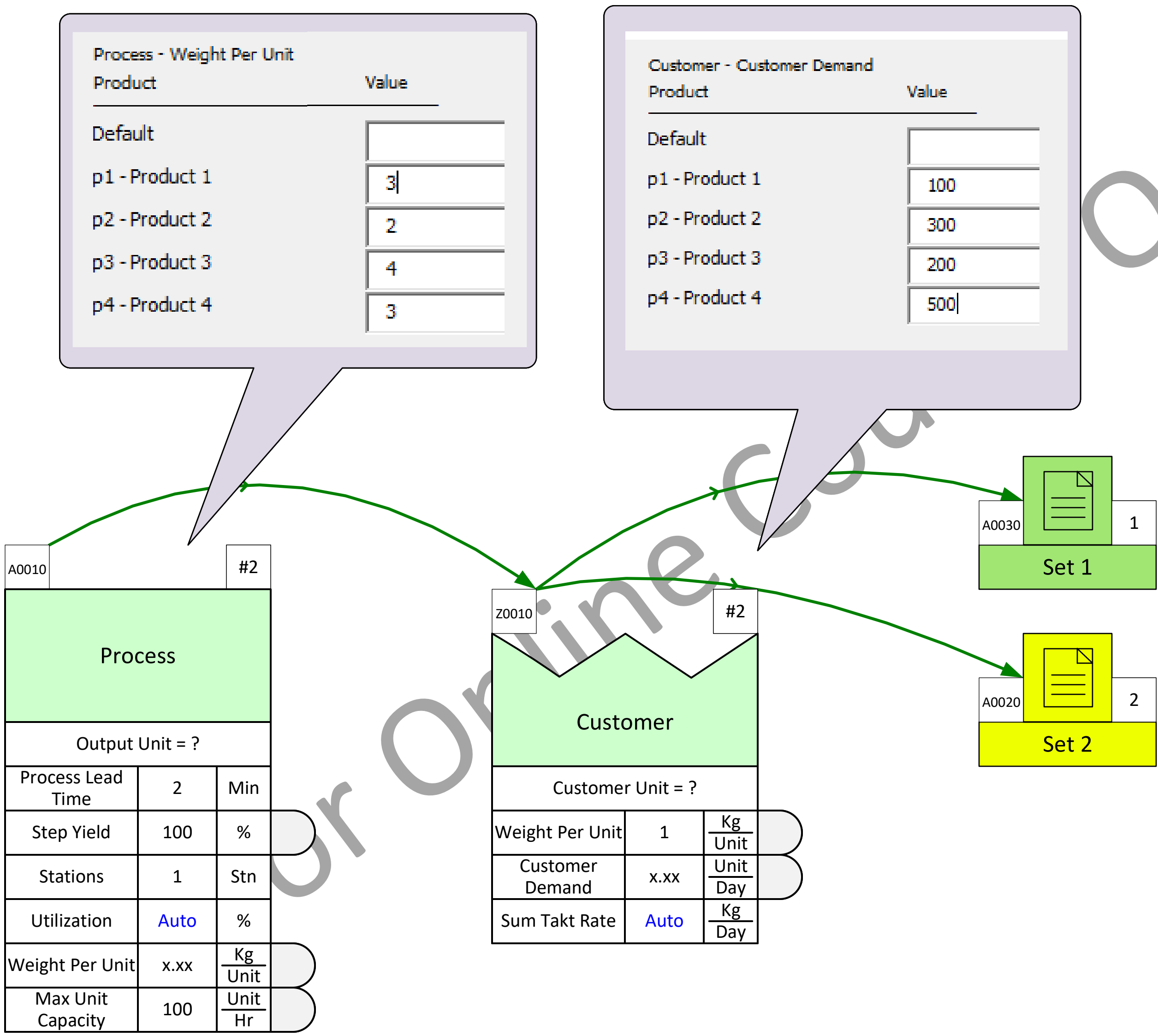
Product 3 = 1250 Kg/Week

Product 4 = 780 Kg/Week



Units			
	Week	Year	Week
	7	52	168
	Day	Week	Hr

Enter the Weight per unit and Customer Demand values



s1 - Set 1

p1 - Product 1 (Qty 0) Demand %: 0%

p2 - Product 2 (Qty 0) Demand %: 0%

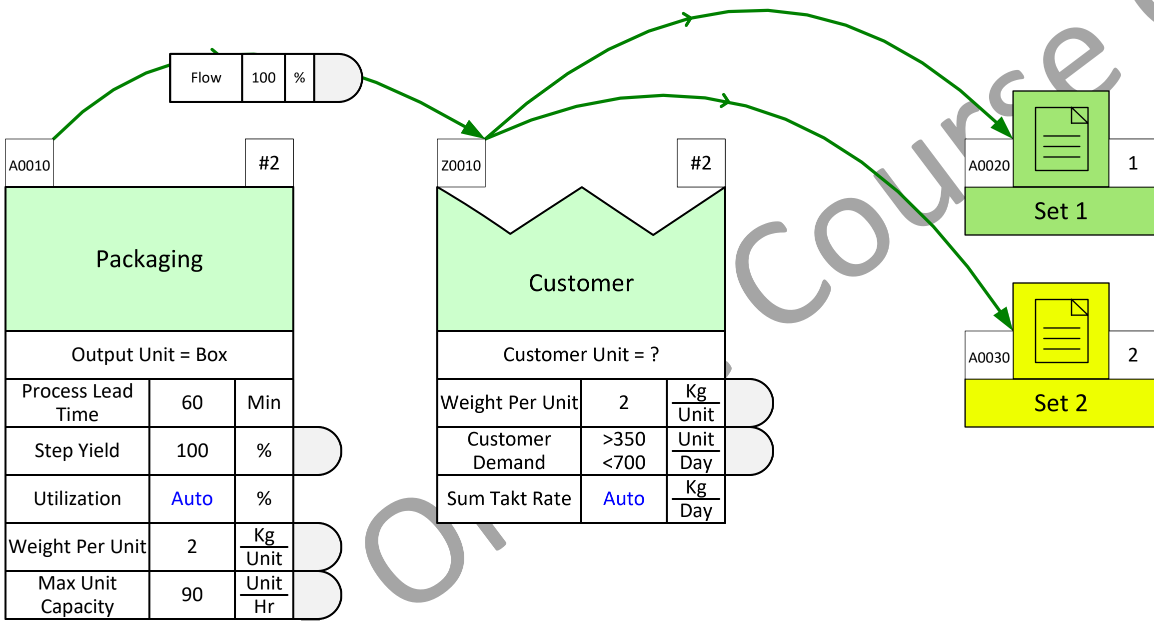
s2 - Set 2

p3 - Product 3 (Qty 0) Demand %: 0%

p4 - Product 4 (Qty 0) Demand %: 0%

Add Data Values with the List Variables dialog

Use the List Variables dialog to set the number of stations at the Packaging activity to 3.



s1 - Set 1

p1 - Product 1 (Qty 0) Demand %: 0%

p2 - Product 2 (Qty 0) Demand %: 0%

s2 - Set 2

p3 - Product 3 (Qty 0) Demand %: 0%

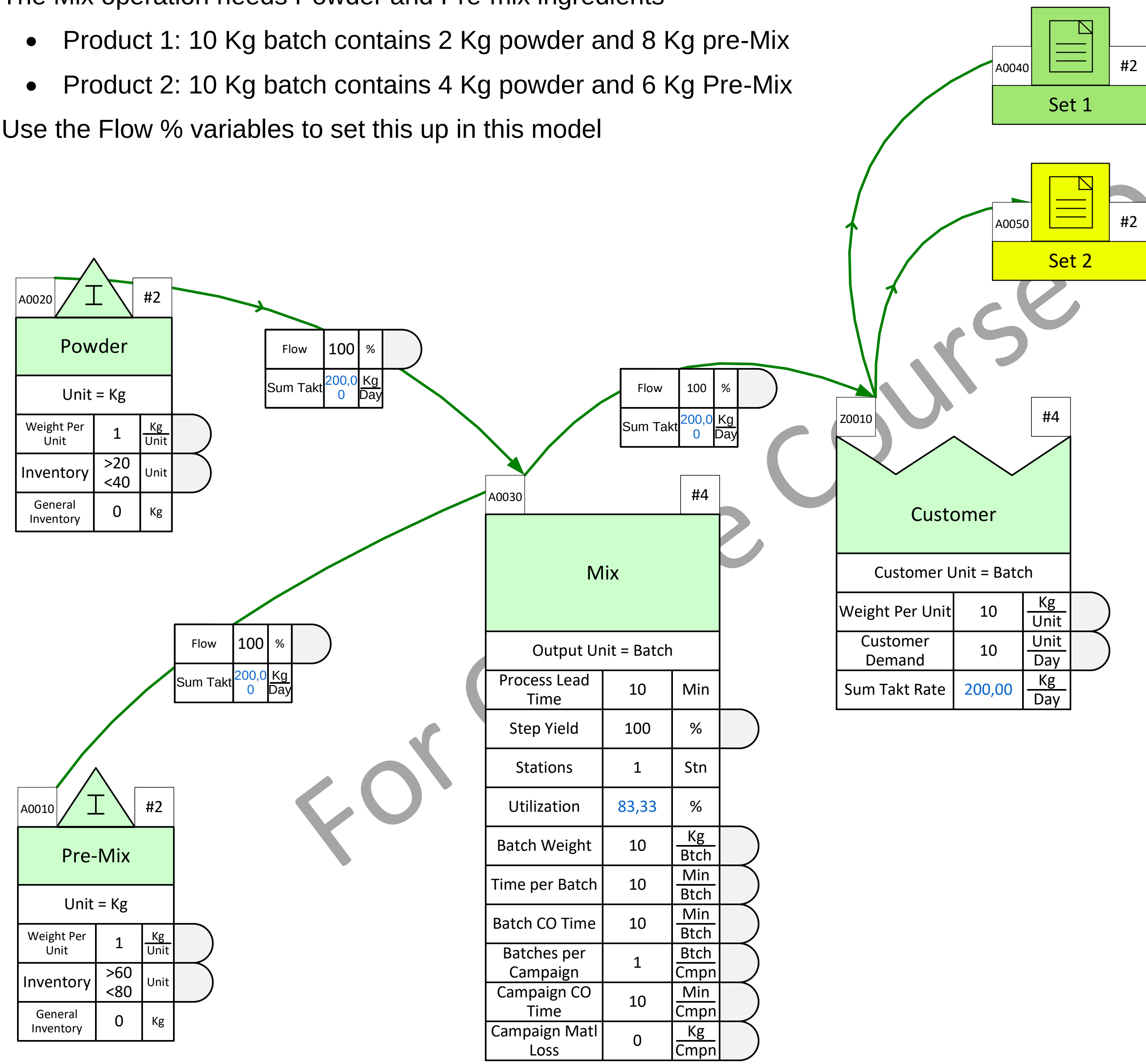
Units	Week	Year	Week
	7	52	168
	Day	Week	Hr

Use Flow % to Control ingredient volumes

The Mix operation needs Powder and Pre-mix ingredients

- Product 1: 10 Kg batch contains 2 Kg powder and 8 Kg pre-Mix
- Product 2: 10 Kg batch contains 4 Kg powder and 6 Kg Pre-Mix

Use the Flow % variables to set this up in this model



s1 - Set 1

p1 - Product 1 (Qty 10.00) Demand %: 5

s2 - Set 2

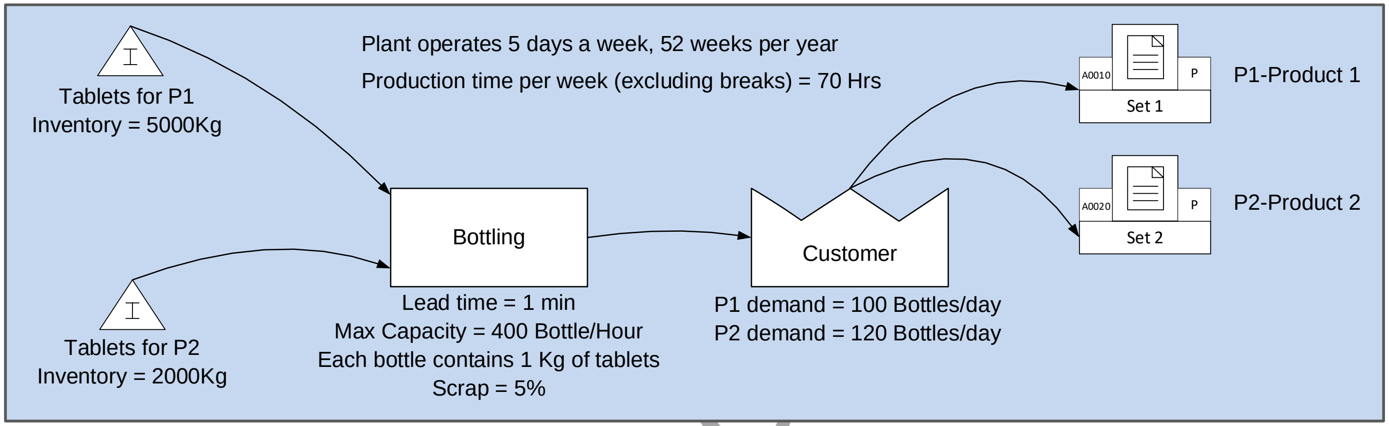
p2 - Product 2 (Qty 10.00) Demand %: 5

Units	Week	Year	Week
	5	52	40
	Day	Week	Hr

Example Map 1

This example represents the bottling value stream for two products (tablets P1 and P2).

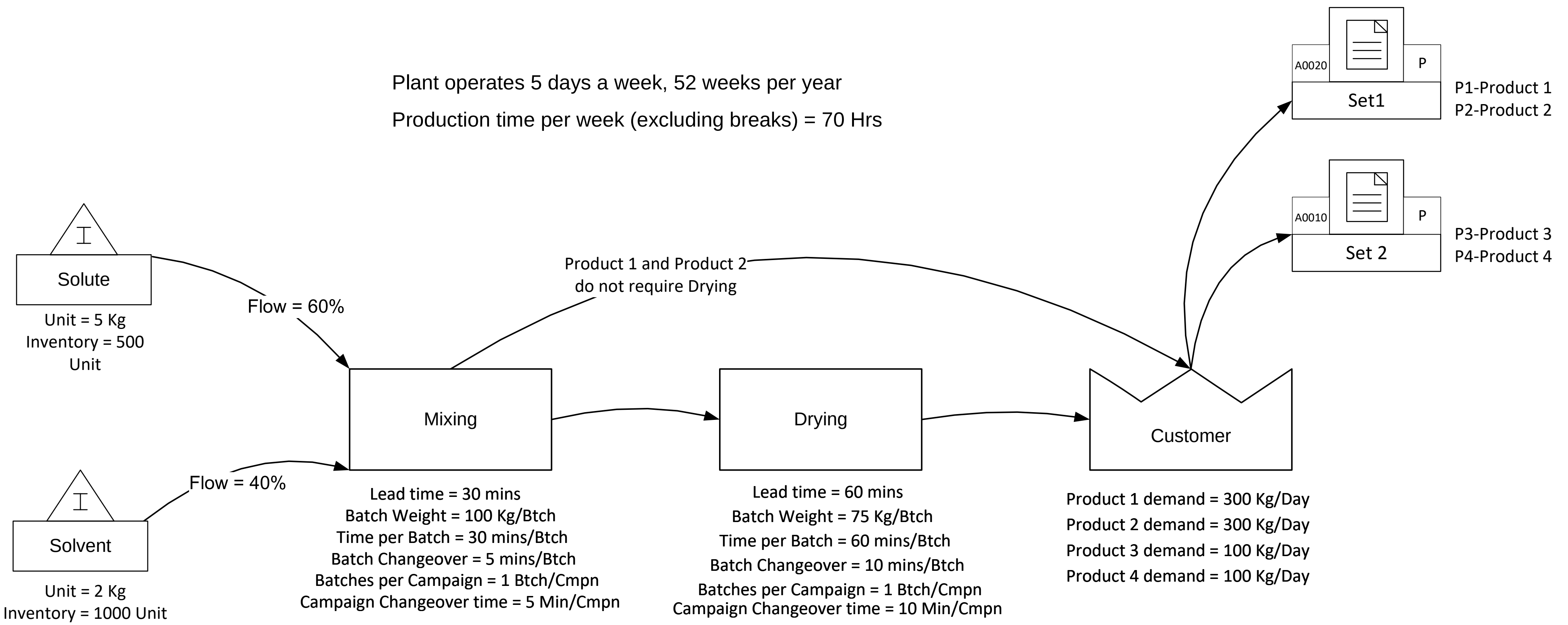
Draw the map shown here including sequence arrows, routings, and data values.



Example Map 2

This example represents the manufacture of 4 products. Product 3 and Product 4 need to go through the Drying process. The other two products do not.

In the exercise on the next page, you will draw the map below from scratch.



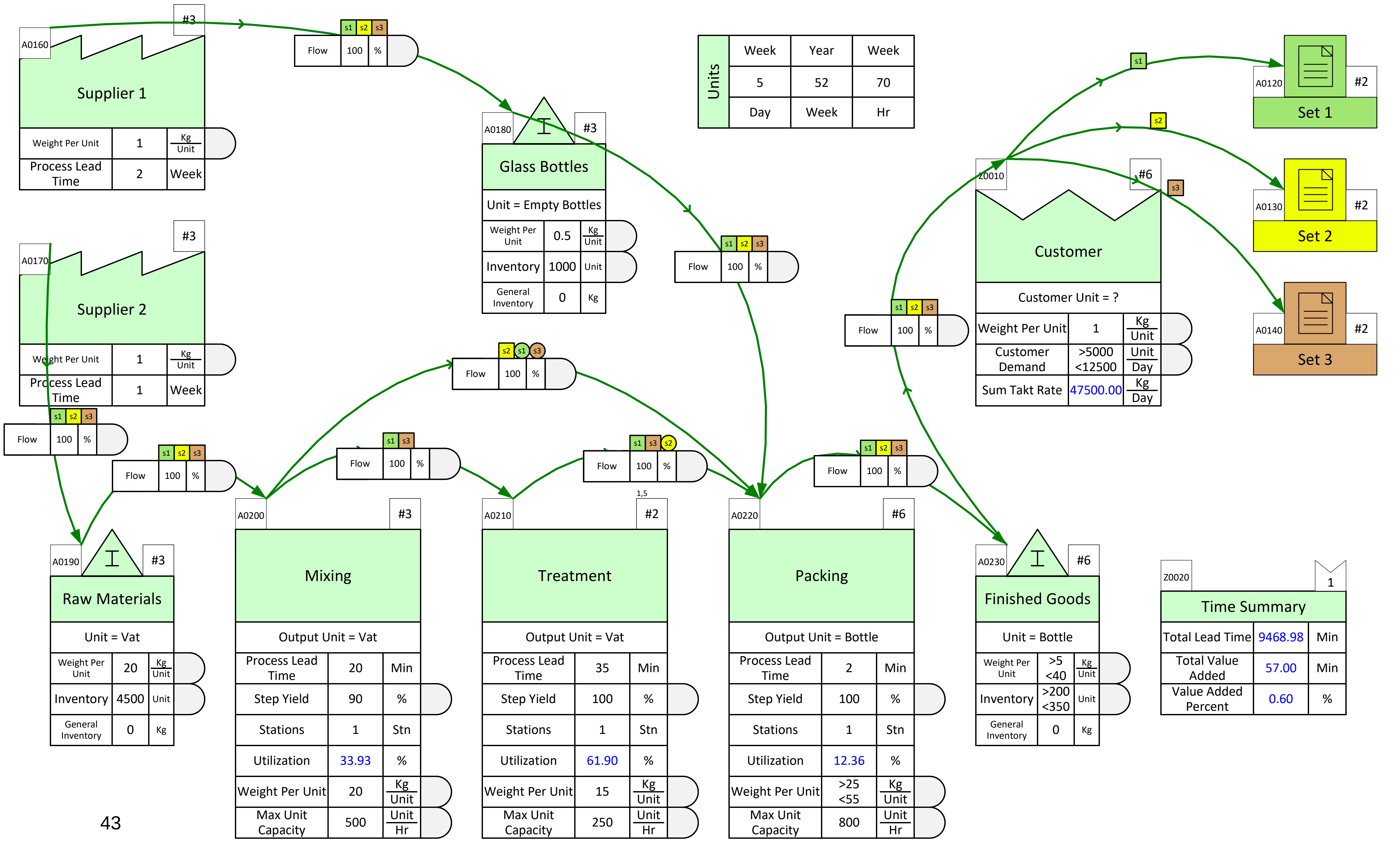
Draw the map shown on the previous page

Include sequence arrows, routings, and data values. No need to Solve.

For your convenience, an image of the previous page is included just above this page.

Example Map 3

This map will be used in the next exercise.



s1 - Set 1

p1 - Product 1 (Qty 5000.00)

p2 - Product 2 (Qty 6000.00)

s2 - Set 2

p3 - Product 3 (Qty 7000.00)

p4 - Product 4 (Qty 8000.00)

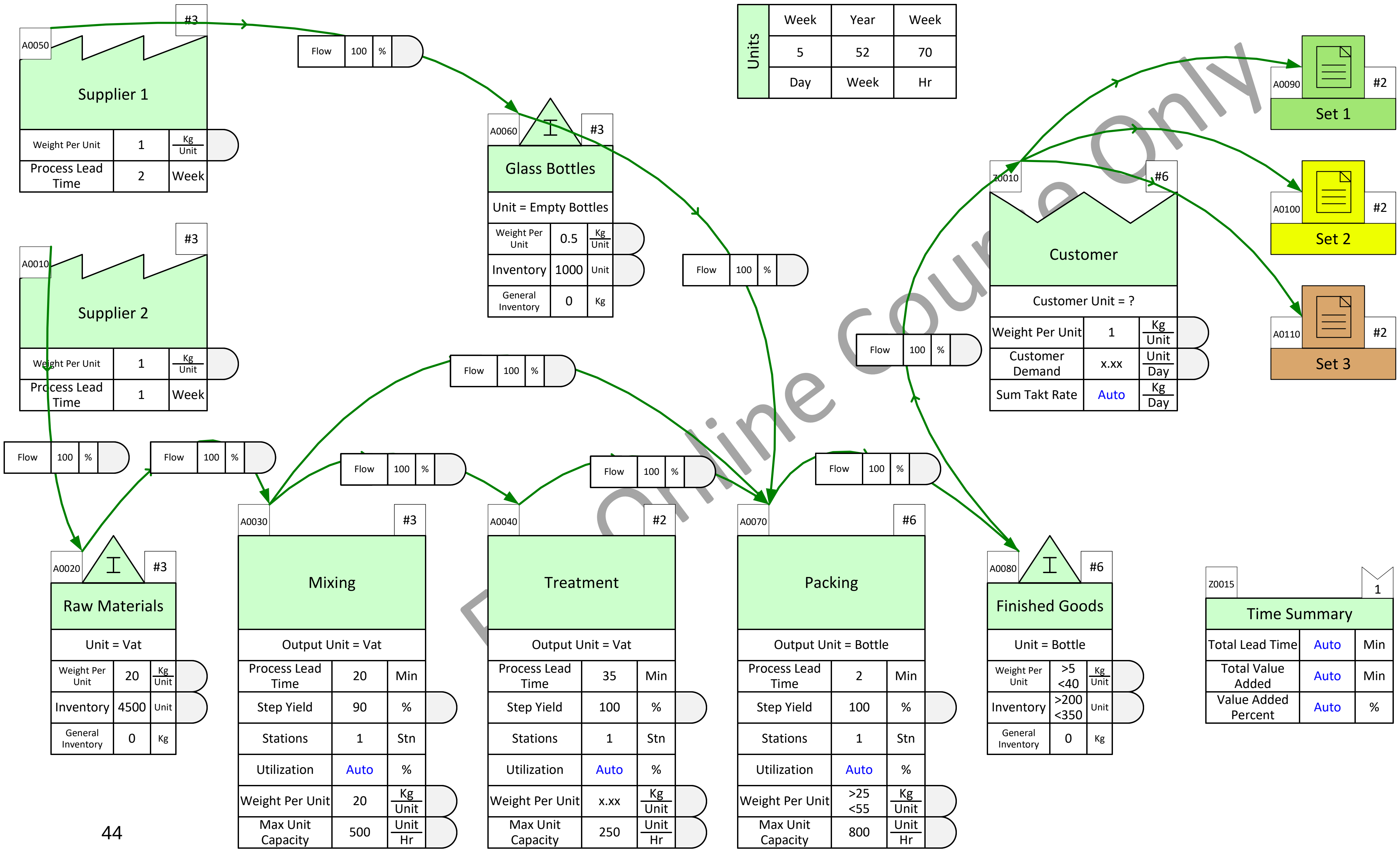
s3 - Set 3

p5 - Product 5 (Qty 9000.00)

p6 - Product 6 (Qty 12500.00)

Fix any problems reported by the Check function, then Solve this map

For any missing data, see the map on the previous page.



s1 - Set 1

p1 - Product 1 (Qty 0)

p2 - Product 2 (Qty 0)

s2 - Set 2

p3 - Product 3 (Qty 0)

p4 - Product 4 (Qty 0)

s3 - Set 3

p5 - Product 5 (Qty 0)

p6 - Product 6 (Qty 0)

Example Map 4

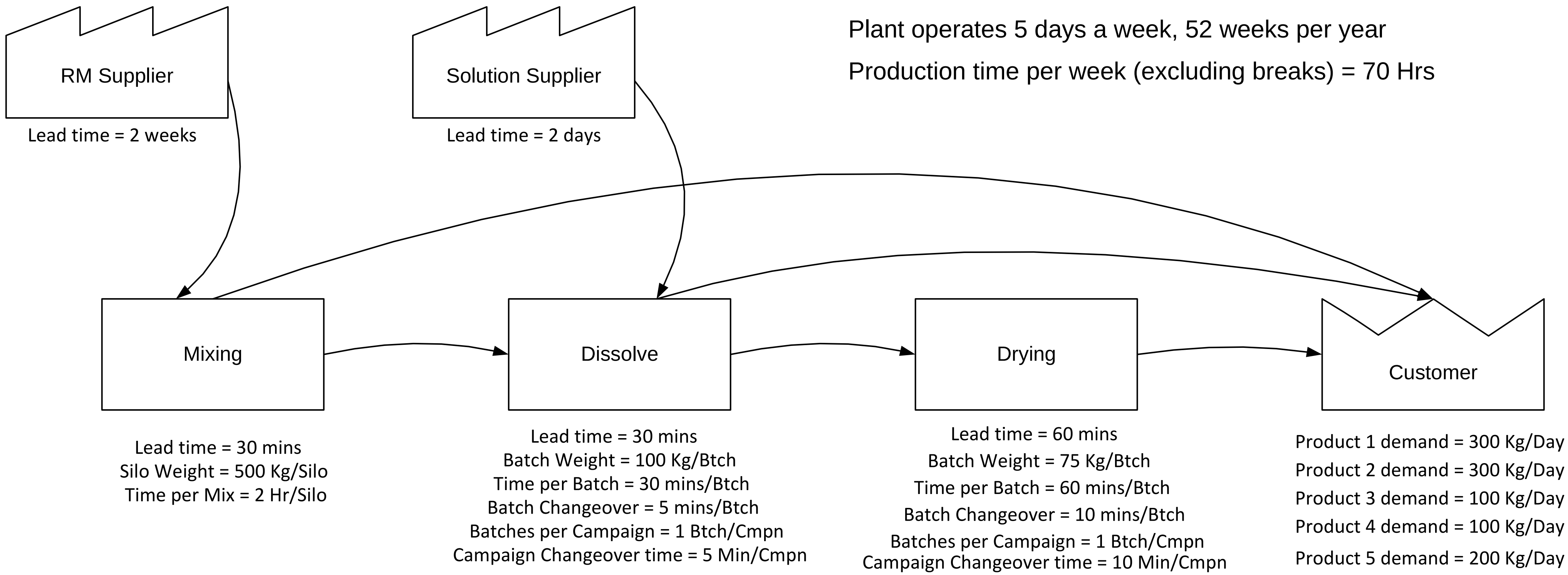
This example represents the manufacture of 5 products.

Product Matrix

OpID		Op01	Op02	Op03
Product ID	Product Name	Mixing	Desolve	Drying
P01	Product 1	x	x	x
P02	Product 2	x	x	x
P03	Product 3	x	x	
P04	Product 4	x	x	
P05	Product 5	x		

Plant operates 5 days a week, 52 weeks per year

Production time per week (excluding breaks) = 70 Hrs



Draw Example Map 4 from Scratch

1. Declare the products and sets in Mix manager
2. Draw the Flow
3. Add Data
4. Solve Map

For your convenience, an image of the previous page is included just above this page.

You learned:

- How to declare products and group them into sets.
- How to draw the material flow and specify routings.
- How to add data, check, and solve the map.

Mix Processing VSM – Learning Road Map

What's next:

In the next lesson, you will learn how to visualize the analyses results on the map, and how to extend the map to cover common what-if scenarios.

Analyze and Extend the Value Stream Model

In the last lesson you learnt how to how to build a working value stream model with the Quick Mix Processing application.

This lesson covers how to analyze the model for key metrics such us lead time, capacity, cost, etc. You will learn how to visualize the analyses results and how to extend the model for additional calculations.

Mix Manufacturing VSM

Analyze and Extend the Value Stream Model

Topics Covered in this Lesson

1. Mix Processing Standard Charts
2. General vs Product Specific Inventory
3. Mix Processing Add-on Calculations
4. What-If Scenario Examples

Additional Mix Processing Functions

There are a number of other functions available in Mix Processing which are not covered in this course. These are covered in the Quick Mix Time course. Download PDF copy at: https://evsm.com/MixTimeV12

- Category Function
- Gadgets
- Resource Analyses
- Input data through Excel
- Edit charts

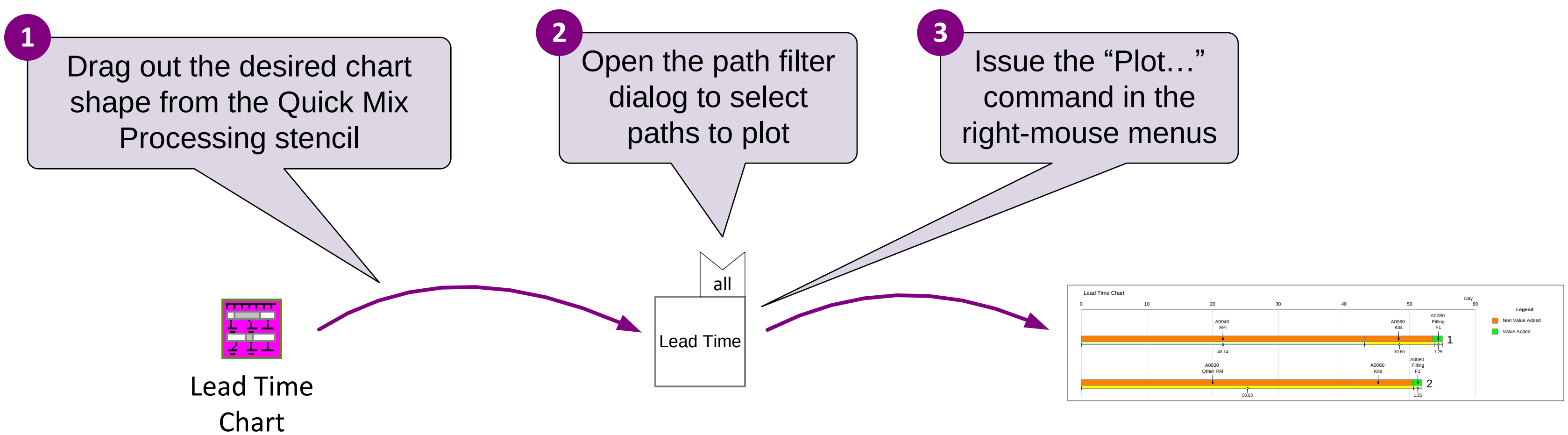
Mix Processing Charts

Mix Processing includes several built in charts.

Plotting Charts…

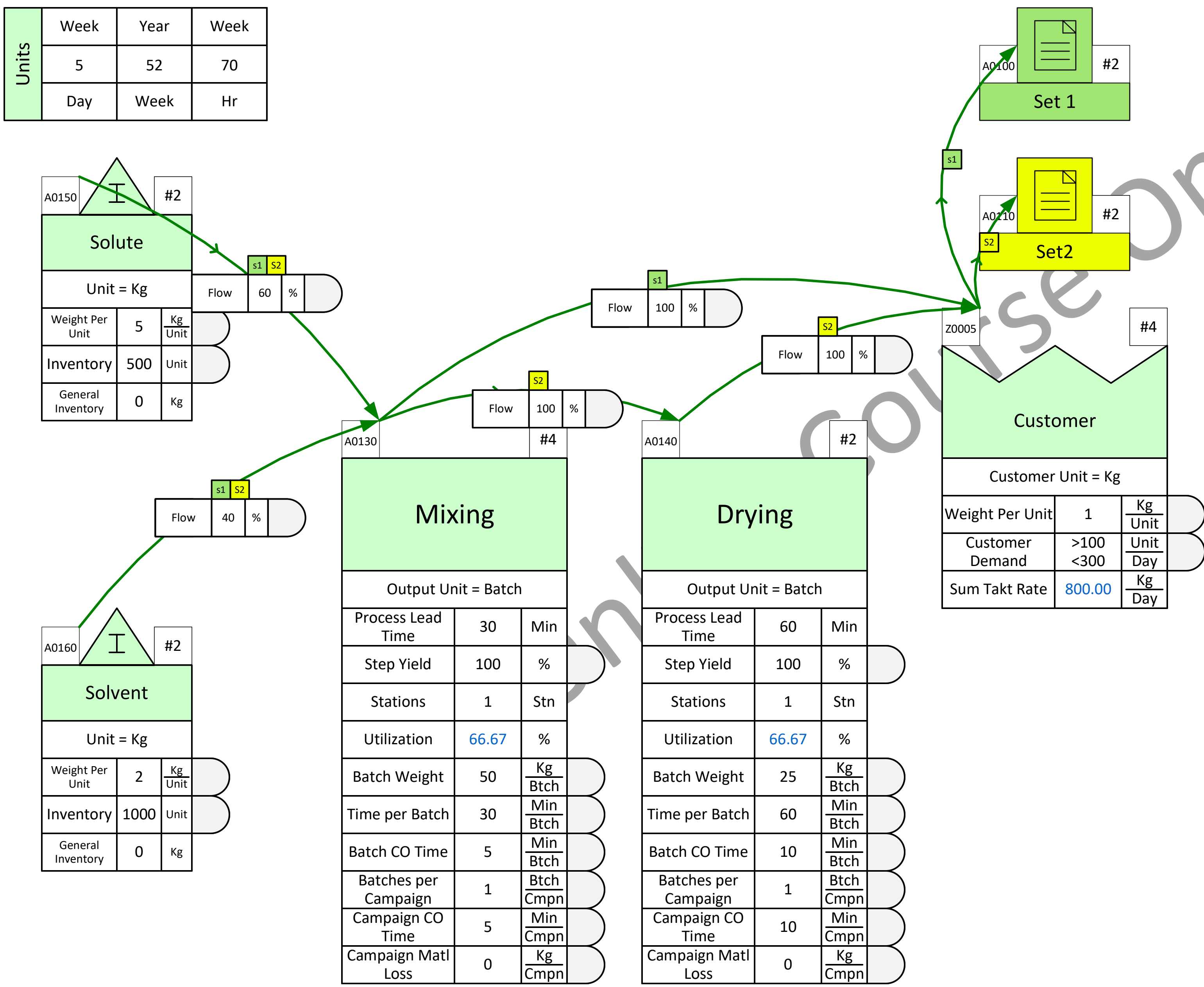
These charts can only be plotted if the required data is available on the map and after the model has solved successfully.

To plot a chart, simply drop the chart icon on the drawing page, and use the plot command in the right mouse menus of the chart shape. Some charts (e.g. Lead time chart) include a filter to remove unwanted paths from the chart.



For more information on creating new and customizing existing charts, see https://evsm.com/productivity.

Capacity Chart



s1 - Set 1

p1 - Product 1 (Qty 300.00) Demand %: 37.5%

p2 - Product 2 (Qty 300.00) Demand %: 37.5%

S2 - Set2

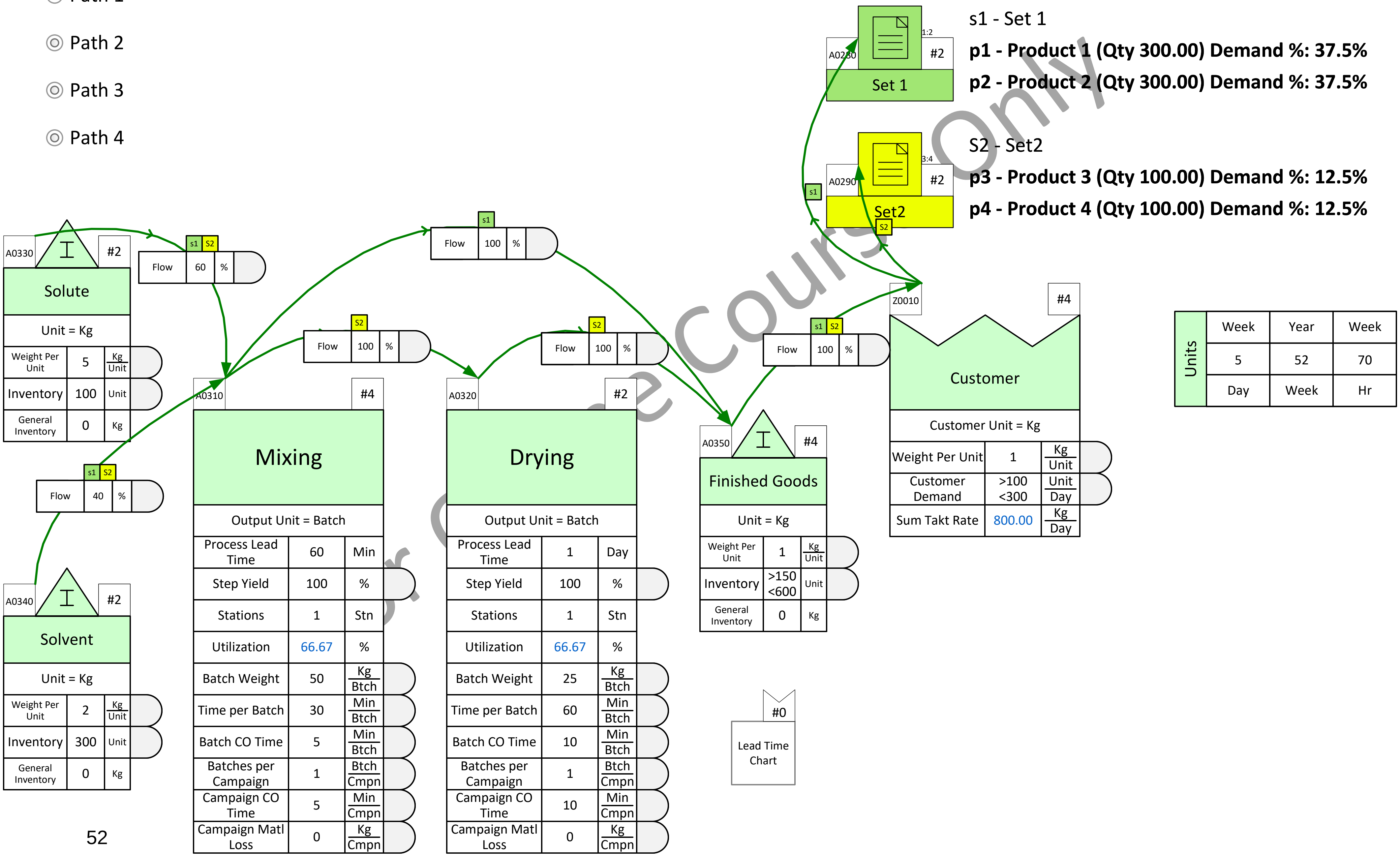
p3 - Product 3 (Qty 100.00) Demand %: 12.5%

p4 - Product 4 (Qty 100.00) Demand %: 12.5%

Critical Path

Which path is the critical path in this model? Plot the Lead Time chart to identify.

- ◎ Path 1
- ◎ Path 2
- ◎ Path 3
- ◎ Path 4



Capacity Utilization

Which product is utilizing the majority of the Packaging capacity?
Plot the Utilization chart to find out.

- ◎ Product 1
- ◎ Product 2
- ◎ Product 3
- ◎ Product 4

Units			
Units	Week	Year	Week
	5	52	70
	Day	Week	Hr

s1 - Set 1

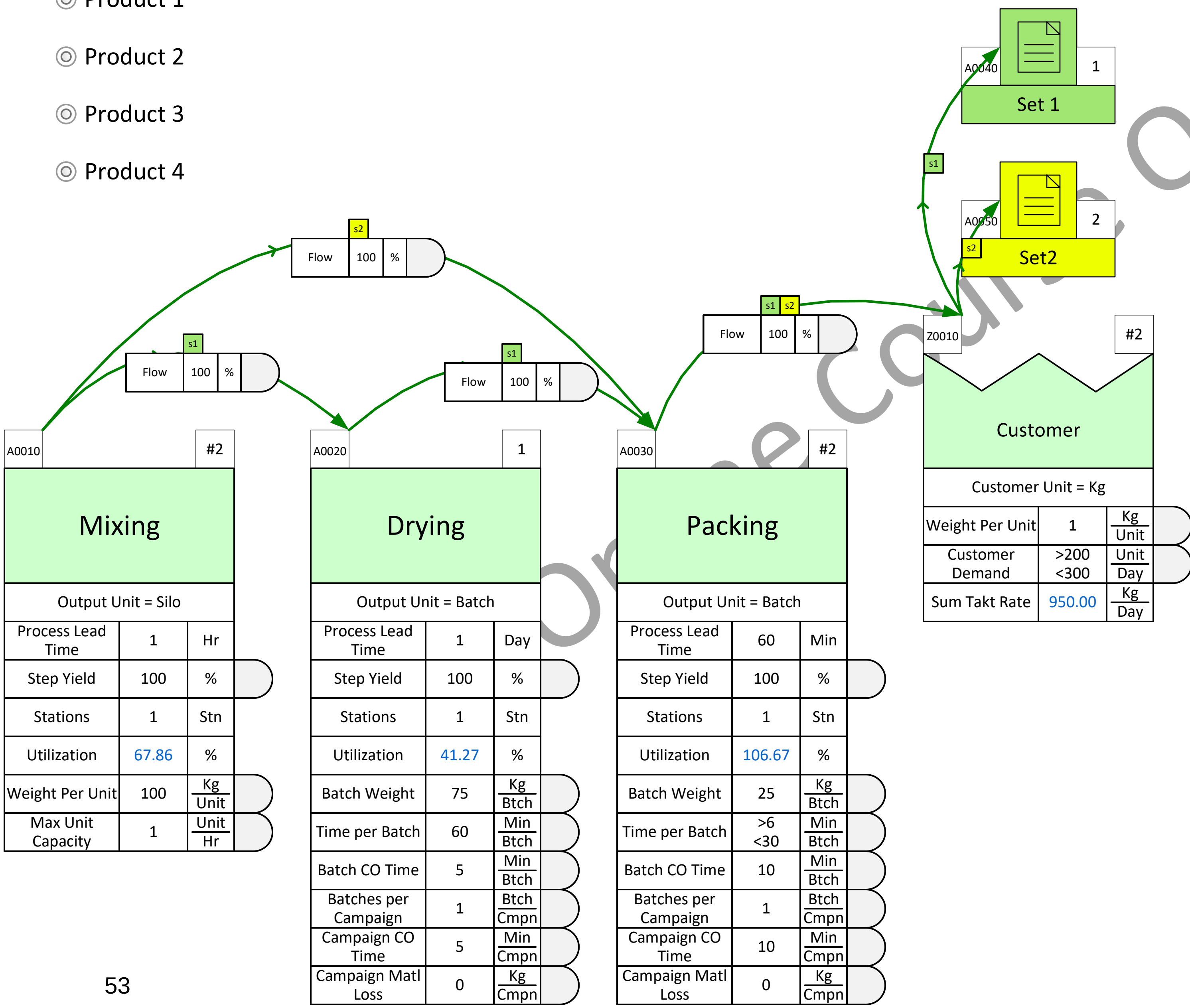
p1 - Product 1 (Qty 200.00) Demand %: 21.1%

p2 - Product 2 (Qty 200.00) Demand %: 21.1%

s2 - Set2

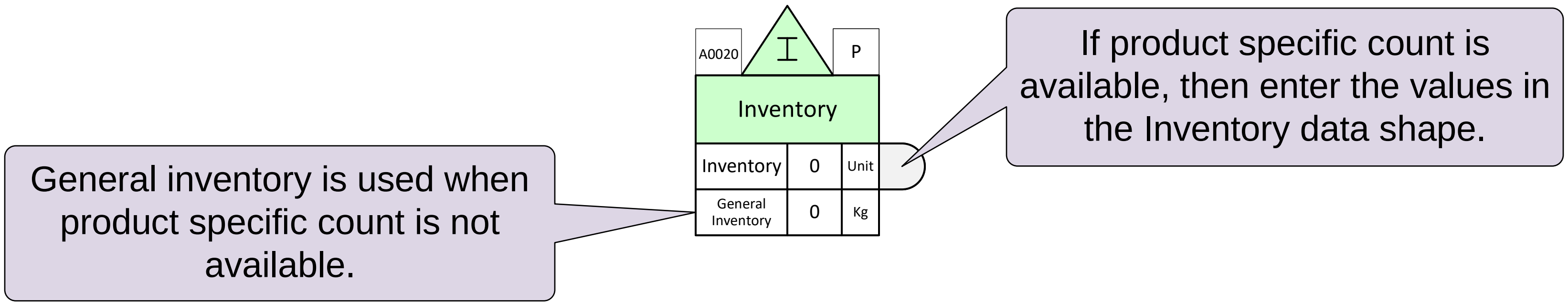
p3 - Product 3 (Qty 250.00) Demand %: 26.3%

p4 - Product 4 (Qty 300.00) Demand %: 31.6%



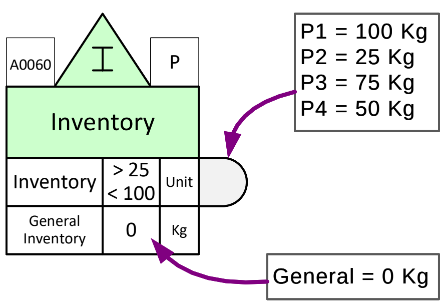
General vs Product Specific Inventory

The inventory center allows input of general (total) inventory and product specific inventory.

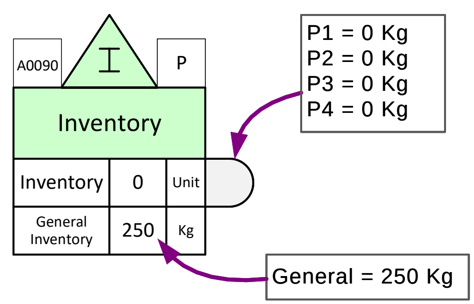


The two inventory types get added together. So at each inventory center, enter either the general or the product inventory, not both.

Examples



Total Inventory = 250 Kg



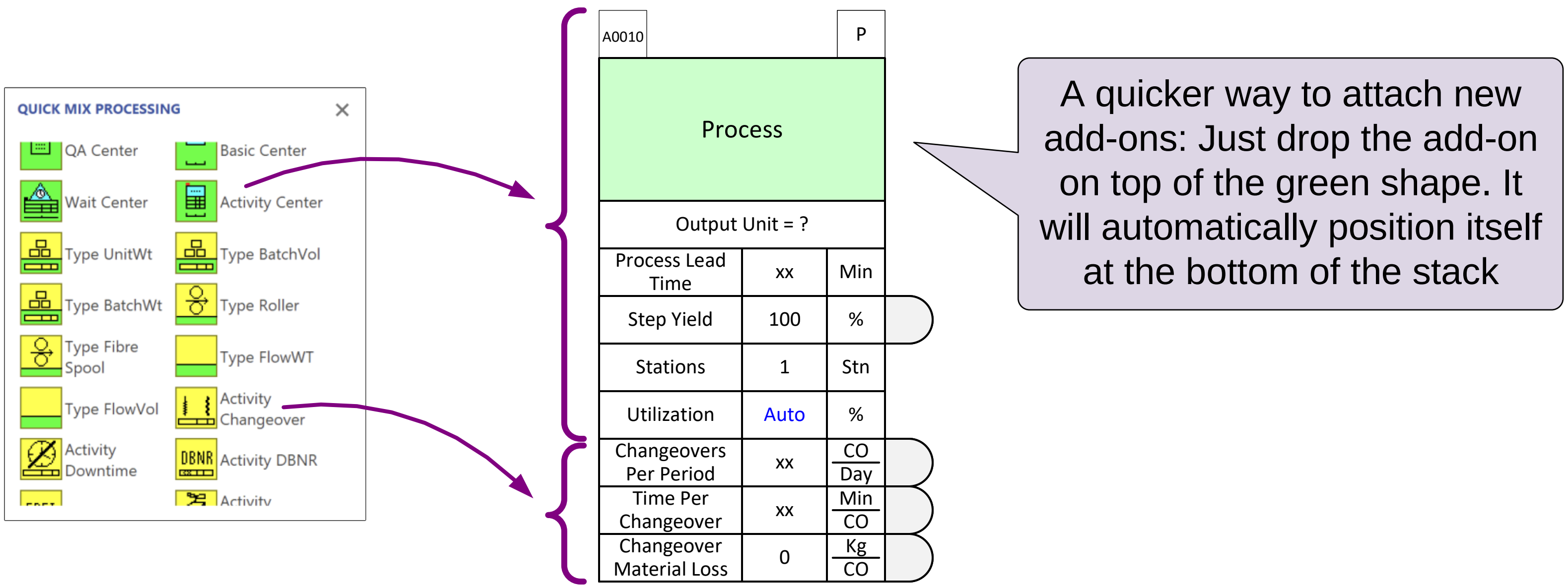
Total Inventory = 250 Kg

Add-ons

Add-ons (the yellow icons in the Quick Mix Processing stencils) facilitate extension of the value stream model to handle additional data and calculations.

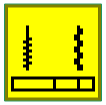
The Activity Capacity add-ons (introduced in the previous lesson) are mandatory and you must have one (and only one) of these at every activity center. All the other add-ons are optional. Example uses includes modeling a shared activity, scrap, multi-stations, changeovers, setup, OEE, etc.

Add-ons are attached (glued) to the bottom of the data shapes stack.

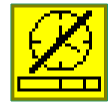


Add-ons for the Activity Center

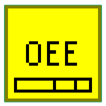
Here are the optional add-ons for the Activity center



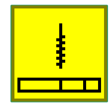
Activity Changeover
Activity change over is to show the change over loss used when the capacity type is unit weight



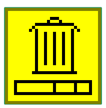
Activity Downtime
Downtime in percentage to show the activity is not available



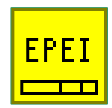
Activity OEE
Add-on to calculate the OEE losses



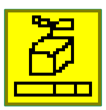
Activity Setup
Add-on to show the setup losses



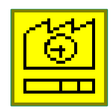
Activity Scrap
Add-on to show the scrap percentage



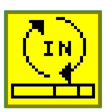
Activity EPEI
Add-on to show product intervals



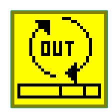
Activity Giveaway
Add-on to show percentage of units that need to be reworked



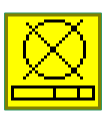
Activity Time
Add-on to use when the available activity time is different from the rest of the value stream time



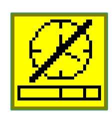
Activity Rwrk In
Add-on to show reworked material coming into activity



Activity Rwrk Out
Add-on to denote the material requiring rework at the end of activity



Activity NVA
Add-on to show non value added % of process lead time

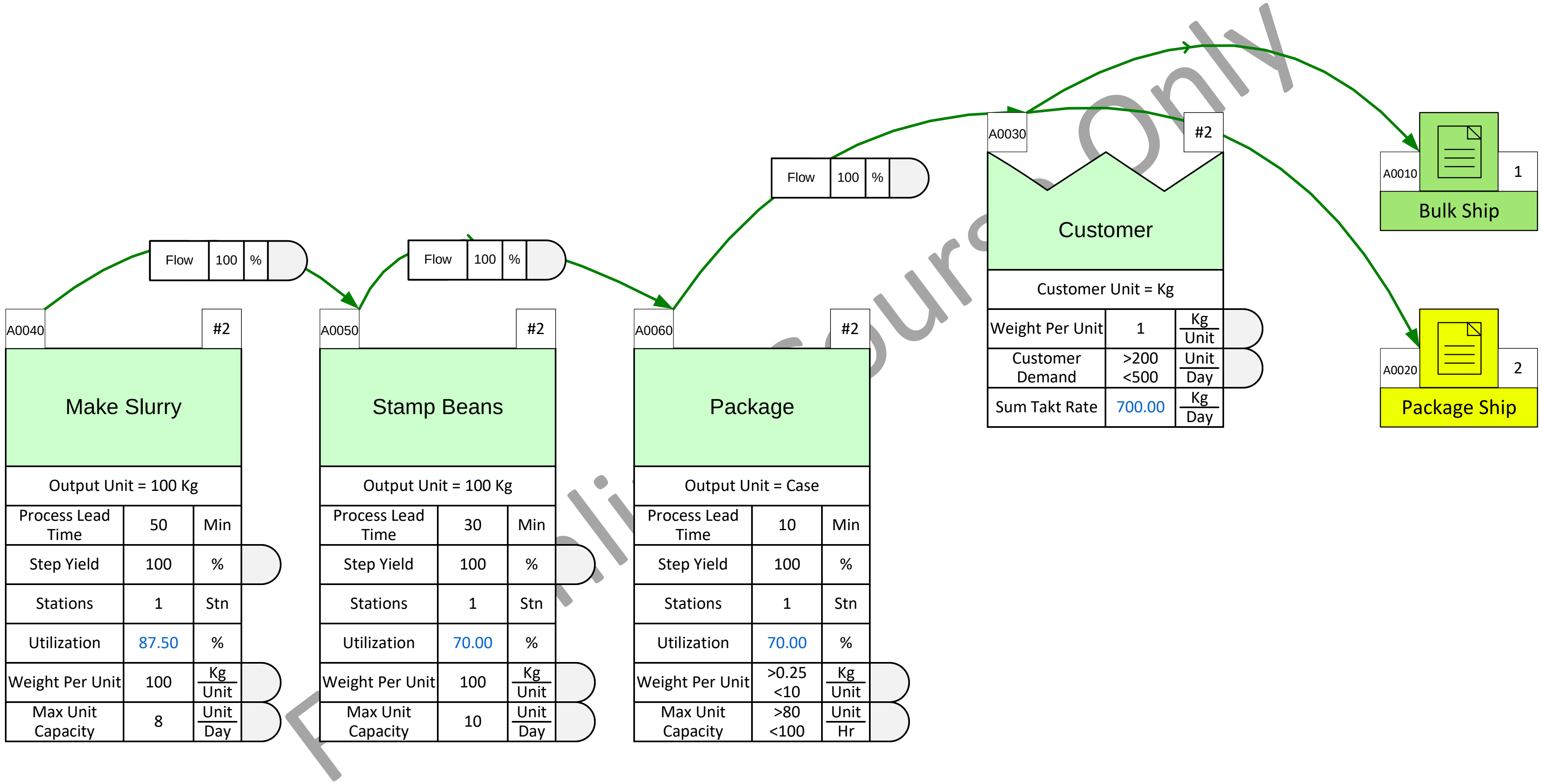


Activity Sanitize Time
Add-on to show sanitization time

Modeling Activity Setups

Each day, each process undergoes a certain amount of Setup Time (consisting of cleaning, sanitization, preventive maintenance, etc.). The setup times are shown on the right. Add these to the model and then solve the model.

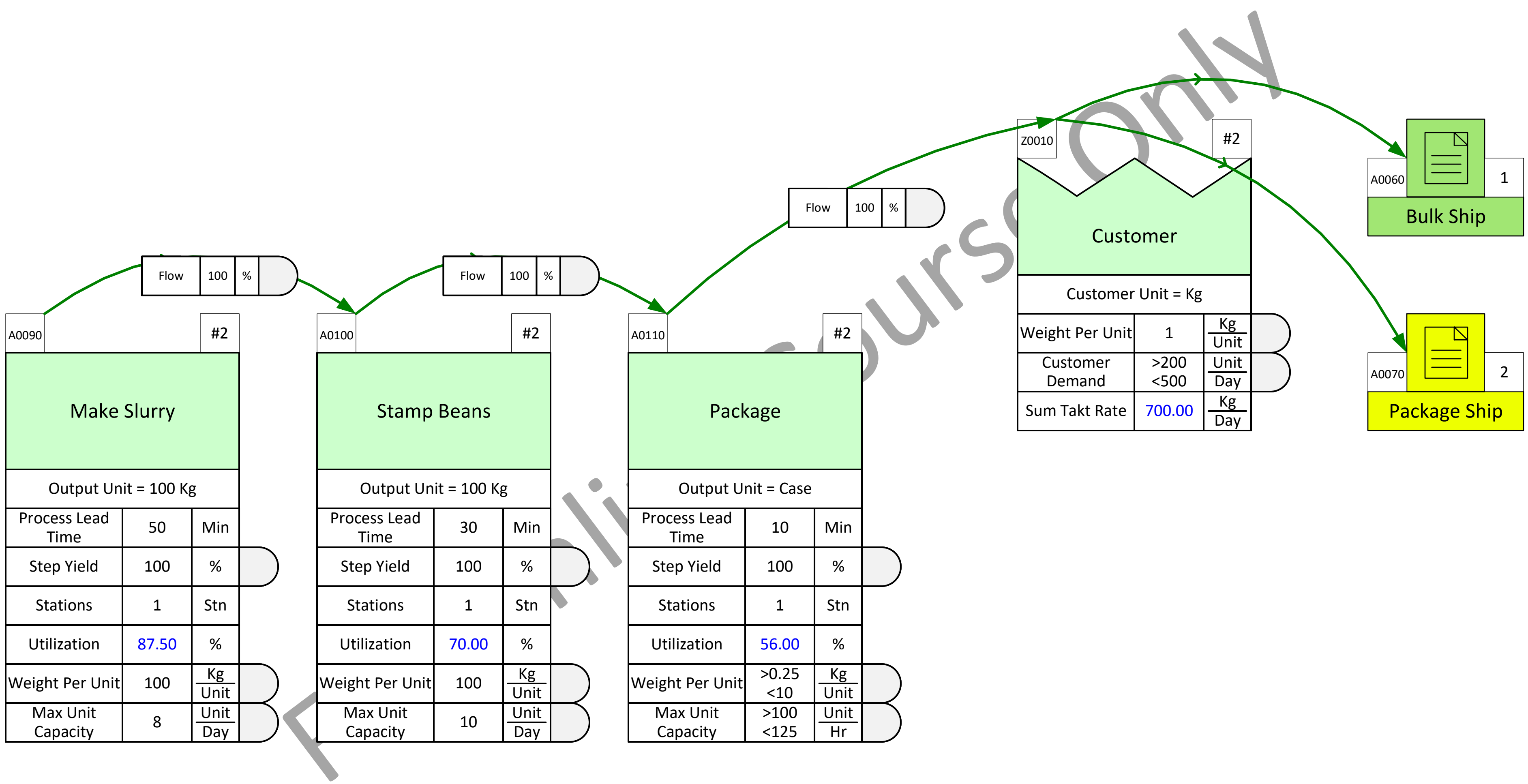
Activity	Setup Time
Make Slurry	60 Min
Stamp Beans	1.5 Hrs
Package	30 Min



Units	Week	Year	Week
	5	52	75
57	Day	Week	Hr

Modeling Shared Resources

The Packaging activity is shared with other value streams and is available for this value stream only 10 hours a day. Can it meet the current customer demand? Modify the model to check.



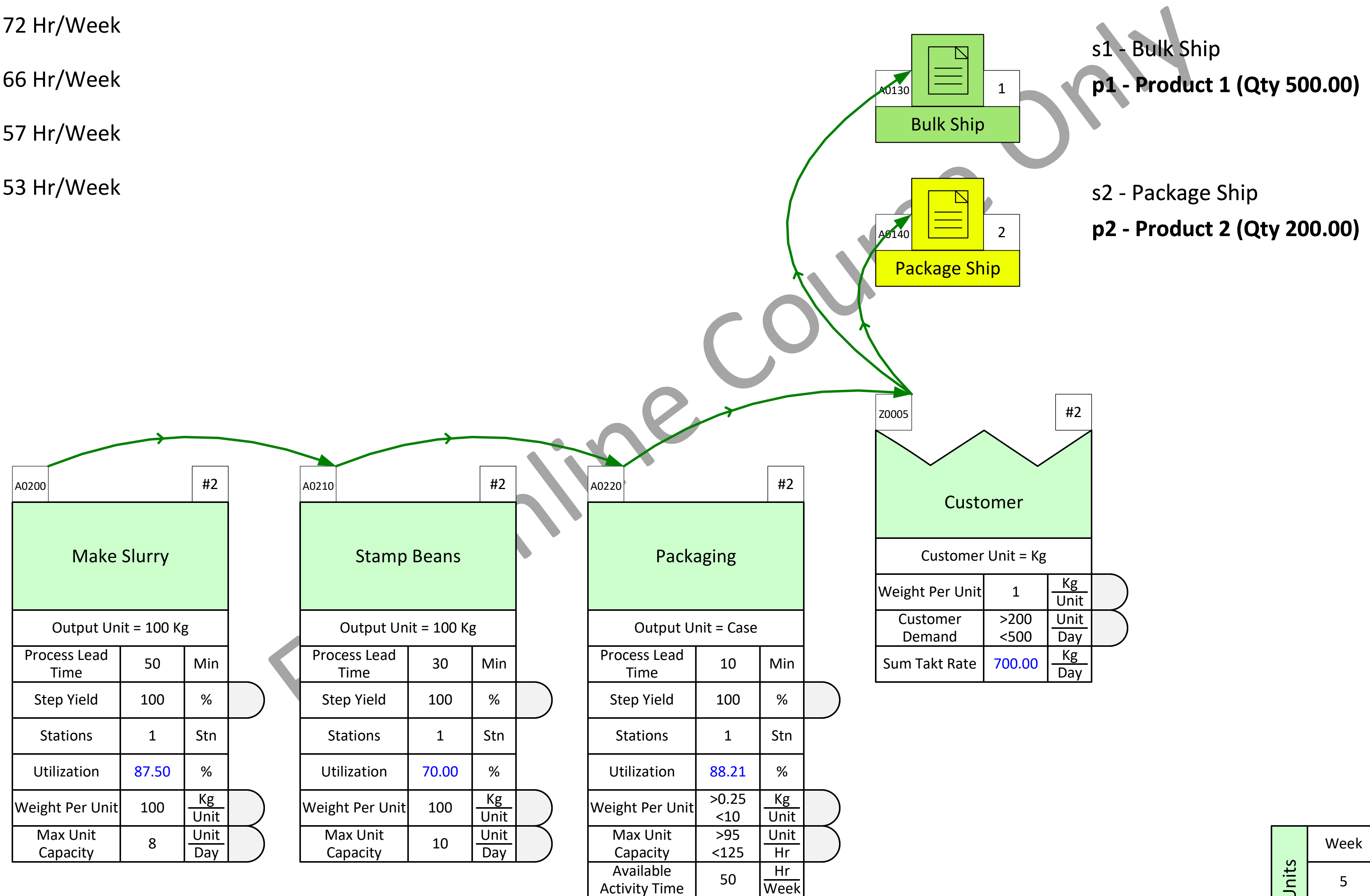
Units			
	Week	Year	Week
	5	52	75
	Day	Week	Hr

Increased Demand

If the customer demand for Product 2 increases to 300 Unit/Day, what is the minimum number of hours we need the Packaging activity for?

Change the customer demand and Solve. Try different Available Activity Time values to find the correct answer.

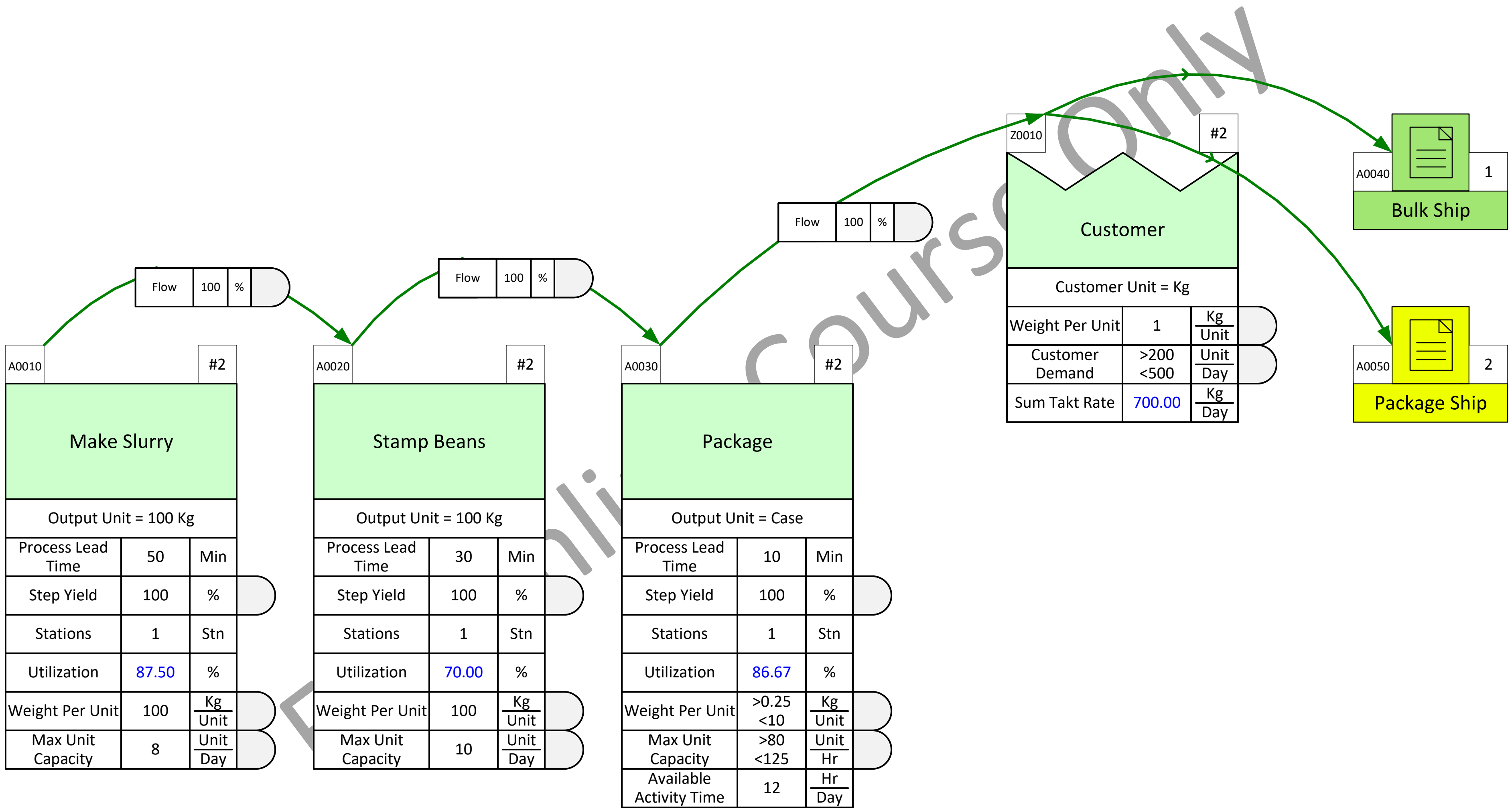
- ◎ 72 Hr/Week
- ◎ 66 Hr/Week
- ◎ 57 Hr/Week
- ◎ 53 Hr/Week



Units	Week	Year	Week
	5	52	75
	Day	Week	Hr

Modeling Scrap

Stamp Beans has a Scrap Rate of 10% and Box Packaging has a Giveaway Rate of 3%. Is the process still capable of meeting demand? How much additional Slurry will be needed per day? Modify the model to check.

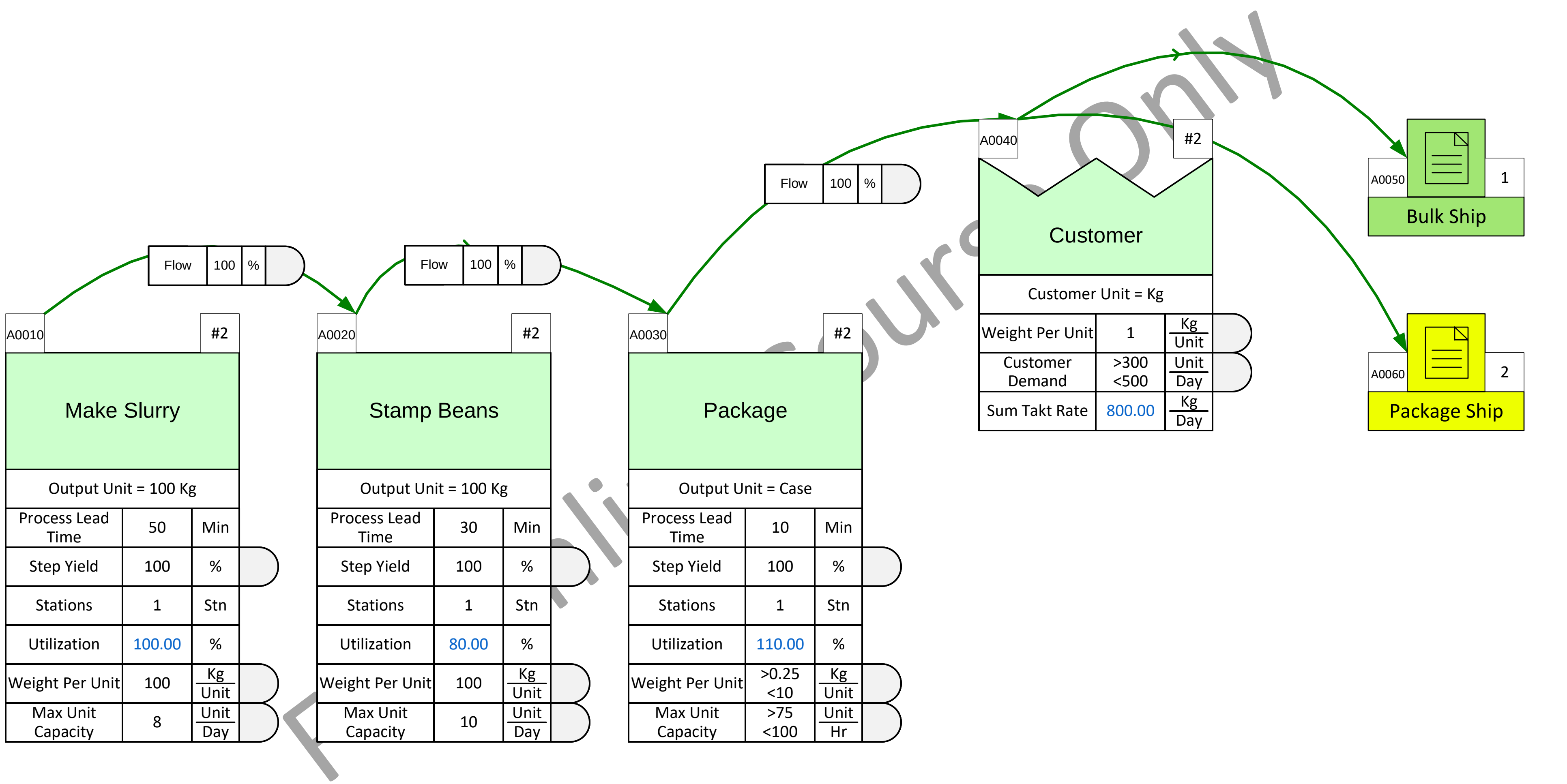


Units	Week	Year	Week
	5	52	75
	Day	Week	Hr

Adjusting Capacity

Is 2 hours overtime enough to relieve the bottle-neck at the Packaging operation?

Modify the model to check.



Units	Week	Year	Week
	5	52	75
	Day	Week	Hr

You learned:

- How to work with the Mix Processing standard charts
- How to specify general and product specific inventory
- The scope Mix Processing add-on calculations and how to use them
- Reviewed a number of What-If scenarios the value stream model can be used for

Recommended Next Steps:

1. Sketch your first value stream with the Sketch Mix Processing stencil
2. Create a value stream model
3. Email any questions to support@evsm.com
4. Go through the eVSM Improvement Framework course - accessed from: https://www.evsm.com/my-skills

Useful Links

eVSM Toolbar Guide	evsm.com/toolbarguide
eVSM Productivity Guide	evsm.com/productivity
eVSM Blogs	evsm.com/blog
eVSM Support FAQ	evsm.com/support
Download the Latest Version	evsm.com/install