Value Stream Mapping in Plant Simulation

Presentation from the Online Session
Part 1 – January 29th, 2014
(Coming soon: Part 2 – February 12th, 2014)
Your host today

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“Value Stream Mapping” – What is it?

The Value stream defines the main flow of products through the factory
- The production flow starting with the raw material to the customer
- Comprehensive recording and illustration of all production processes
- Concentration on value adding processes

Supplier  Production  Customer
Why VSM in Plant Simulation?

- In simulation it is possible to examine dynamic effects that can not be seen in the static, paper based map of the value stream.

- Simulation extends the classical value stream. The time component is key to evaluate dynamic fluctuations in the production, caused by lot sizes, setup, variants, or failures.

- Dynamic simulation in Tecnomatix Plant Simulation allows for reduction of work in process (WIP) and therefore capital lockup, validation of the robustness of the production, and ensure that fluctuations in the production do not affect the ability to deliver
Introducing the Value Stream Mapping Library

Ease-of-use through reusing standardized symbols

Modeling with Drag&Drop and UI guided parameterization of process chains

Added Values
- Digital approach
- Dynamic evaluations based on real discrete event simulation
- Easy evaluation of optimized scenarios
Evaluation Results

- Resource usage
- Buffer usage
- Value added vs. non-value added operations
- Throughput times
- Analysis of different production scenarios
- What-if-scenarios
- Testing of strategies and Kanban settings
- Product tracing along the value stream
Live Session VSM

On the following pages you will find the layout and data of the Value Stream we modeled in the Plant Simulation VSM online session from January 29th, 2014. Please use this material to finalize your model. At the end there is a little exercise where you can try out some of the evaluations. You are welcome to find your own solutions for the task, and I would like to see them. Feel free to send your models and questions to: ralph.bauknecht@siemens.com

Please notice that the actual version of the VSM library in Plant Simulation 11.0.4 is 11.0.11 (included in the ServicePack). For users of Plant Simulation 11TR1 the actual (and necessary) version of VSM is 11.0.11.1. Using the version 11.0.11 will result in errors!

Keep your software and models/libraries up to date!
Modeling Prep

- Start Plant Simulation
- Create a new model
- In the Class Library Manager deselect all except:
  - Basic Objects - Models – Frame

This makes it more convenient to work with the VSM library, and it ensures that you do not mix up VSM and standard simulation objects.
Modeling Layout

Model the value stream according to this picture:
(the PPS object is inserted automatically with the first VSM object)
Mind the direction of the connectors!
These are the parameters for the value stream objects as they will appear in the setting tables:

**Customer**
Product table: DesignTable - 10 - 1:00:00:00 - 10

**TransportExternal**
Transportation time: 30:00

**Process Warehouse_Out**
Product table: DesignTable - DesignTable - 1 - 1 - 50:00 - 1

**Inventory Warehouse**
Product table: DesignTable - 20

**AssyProcess Table_Assembly**
Product table: DesignTable - 10 - 1:20:00 - 10
BOM table: Plate - 1
    Leg - 4

**Inventory Plate_Store**
Product table: Plate - 10

**Inventory Leg_Store**
Product table: Leg - 40

**Process Plate_Prod**
Product table: Plate - Raw_Plate - 1 - 5 - 1:10:00 - 5

**Process Leg_Prod**
Product table: Leg - Raw_Leg - 1 - 20 - 30:00 - 4

**Inventory Entry_Store**
Product table: Raw_Plate - 30
    Raw_Leg - 50

**Process Goods_In**
Product table: Raw_Plate - 1 - 10 - 5:00 – 10
    Raw_Leg - 1 - 40 - 3:00 - 40

**TransportExternal**
Transportation time: 30:00

**Supplier**
Product table: Raw_Plate - 10 - 5:00:00
    Raw_Leg - 40 - 5:00:00
Excercise

Set EventController to 30 days. Run the simulation.
Look into the Customer – Statistics. 7.3% of the orders have throughput times higher than 5 days. We want to optimize this!
Insert the UtilizationAndStock object to see if we have a capacity problem.
Open the Plotter of the Warehouse (statistics tab) to see if we have always finished goods available.
Insert the StockPlotter object. Drag&Drop Warehouse, Leg_Store and Plate_Store onto the inserted StockPlotter. Open it and activate the product curves by doubleclicking the entries in the right table. Reset and run the simulation.
Check for availability of material.

Solution proposal:

We are below 4:12! Change the lot size + transfer quantity in Table Assay to 5. Simulate again and check Customer statistic.
Get started now!

Start simulating your production today. Get your fully functional trial copy of Tecnomatix Plant Simulation HERE.

Get in touch with other Tecnomatix Plant Simulation users and benefit from their experience. Join the Public Community.

Find more information to Tecnomatix Plant Simulation on our Website.
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