

# Value Stream Map Process Flow

**Value Stream Mapping Has The Following Characteristics:**

- It Is A Comprehensive And Detailed Graphical Document That Lists Every Business Unit, Organization, Or Function That Is Involved In The Process.
- Who, What, Step, Sequence, And Details Of Everything That Is Done In The Course Of The Process Should Be Listed.
- All Items Should Be Included Regardless If They Are Correct, Needed, Or Otherwise. It Is Important That Everything Be Listed.
- The Purpose Of This Step Is To Document Everything That Is Done In The Process.
- This Document Provides The Foundation For Optimizing A Process And Managing A Project.

## Pre-Engineering

Locate Data

Load Data Into  
CAM

- |   |
|---|
| Drag & Drop Layers Into IGI <ul style="list-style-type: none"> <li>• Flash Pads</li> <li>• Align Pad Stack To Drill</li> <li>• Assign Label File Definition (If Required)</li> <li>• Assign Layer Name (If Required)</li> </ul> |
| Verify Artwork Registration   |
| Verify Drill Registration   |
| Set Board Origin  |
| Verify Flashed Pads   |
| Breakout NPT  |

Save Job

Run Minimum  
DRC

- |   |
|---|
| Review DRC Results <ul style="list-style-type: none"> <li>• Check Line Width</li> <li>• Check Spacing</li> <li>• Check Annular Ring</li> <li>• Check SMD Pitch</li> </ul> |
| Review Documentation <ul style="list-style-type: none"> <li>• Compare Revision On All Documents</li> <li>• Compare Revision On All Data</li> </ul>                        |

Output Data

- |   |
|---|
| Move PP Files To Working Directory  |
| Zip File <ul style="list-style-type: none"> <li>• Customer Original Data</li> <li>• PP Files</li> </ul> |
| Move File To Customer Archive Directory   |

Forward  
Results To  
Sales

- |                                      |
|--------------------------------------|
| Part Attributes For Quotation        |
| Notify If Design Is Unmanufacturable |

## Customer Service Receives Order

Receive  
Purchase  
Order

- |   |
|---|
| Get Copy Of Quote                       |
| Get Drawings (Attached To Quote)        |
| Verify Received Data Files (CAT Number) |

Start  
Engineering  
Packet

Enter Customer Name

Enter Customer Part Number

Enter Customer Revision

Enter Current Date

**Pre-Engineering**

Print  
Documentation

Fill Out Engineering Packet

Assign CAT Number And PCBI Pn

Complete Pre-Engineering Form

Complete Layup (Stackup)

**Customer Service**

Enter Order In  
Vantage

Confirm Order  
To Customer

Fax Or Email Based On Customer's Preference

**Production  
Control**

Enters Job Into  
Vantage

Job Completion Date

Quantity

Print  
Preliminary  
Traveler

Red Sheet  
QTAs

Document Provided By:

**PSI** Preproduction Solutions, Inc.

Telephone: 864-855-3373

[www.psipm.com](http://www.psipm.com)

**CAM**

Opens Job

Save Originals

Read Documents

Compare Revision On All Documents

Compare Revision On All Data

Complete Netlist Extract

Assign Non Electrical Attribute (Data Outside Board)

Convert Internal Planes To Positive

Compare Netlist To Customer Netlist (If Available)

Create Golden Netlist

Prepare Copper Layers For Classify

Convert Planes To Polygon

Remove Innerlayer NFP

Create Board Outline

Verify To Print

Delete Outside Board Edge

Add Teardrops To Innerlayers (? Outlayers)

Edit Drills

- Create Drill 1d
- Create Drill 2d
- Create Drill 3d
- Compare Tool Count To Print
- Compare Tool Data To Print

Run Annular Ring Optimization

Save Job

Run Classification Copper Layers

Open ICE

Review DRC Results

Edit Design For Yield

Save Job

Prepare Non-Copper Layers For Classify

Generate Soldermask

- Rename SM Layers

Run  
Classification  
Non-Copper  
Layers

Open ICE

Review DRC Results

Edit Design For Yield

Complete  
Netlist  
Compare

Save Job

Prepare  
Design For  
Output

Create Drill Guide (Mylar Spot Plot)

Bump Drill For Manufacturing

Bump Etch Compensation For Manufacturing

Place Date Code On Board

Place Logo On Board

Serialize Board

Build Array  
(Subpanel)

Add Tooling Holes

Add Fiducials

Add Array Thieving

Check Array Dimensions

- Edge To Edge
- Internal Board Cutouts Copper To Edge Clearance
- Board Spacing
- Tooling Hole Location
- Tab (Web) Dimensions
- Perforation Holes

Panelize  
Product

Make Board Outline

Restore Panel From Library

Place Parts

Place Coupons

- Drill Coupon
- PTX Coupon
- CI Coupon
- Military Coupon

Regenerate Borders

Gold Tab Product

- Add Gold Plating Bus Bar
- Add Solder Mask Clearance For Bus Bar

Save  
Panelized Job

Complete  
Pre-Release  
Functions

Calculate Copper Area

Label Drawings

Complete Engineering Release Form

Output Tools

Artwork To Plot

NC Files To NC (Drill And Border)

AOI Data

Extract And Send Gerber Data Test Files

**NC Prints**

Photocopy Prints

Put With Engineering Packet

Print Tool Card And Put With Engineering Packet

**Engineering**

Set Up Job In Vantage ERP System

Create Job BOM

- Copy Existing Part
- Modify Copied BOM To Meet New Job Requirements
- Verify To Engineering Packet
- Verify To Prints
- Verify To Other Documentation

Create Job Traveler

- Copy A Similar Existing Job
- Modify Copied Traveler To Meet New Job Requirements
- Verify To Engineering Packet
- Verify To Prints
- Verify To Other Documentation

Copy BOM Details To New Job

Print Job Traveler

- Review Traveler

**Production Control**

Receives Completed Traveler

Adds Job To Pick List

Sends Traveler To Manufacturing

# NC Rout Program And Score Print

Load Job  
(Tooling Menu)

Border

Drill

Transfer Drill  
To CAD Layer  
(NC CAM)

Check Measurements To Customer Print

Create Array

Make A Note Of Errors On NC Print For Use On Rout Program

Archive Drill File And Border File

- Also Any Special Files That May Have Been Created

Get XY For  
Pinning Holes

Determine  
Board  
Step & Repeat

Generate Rout  
File  
(Menu)

Save File In  
Rout Format  
(Menu)

Open Rout File  
In Text Format

Put In Safety Pin

Save Rout File

Open Rout File  
In NC CAM

Fix Border Errors

Create Rout Path

Export Rout To  
Text File

Cut And Paste NC CAM Rout Path Into Text File

- Note: NC CAM Has A Different Heading, Don't Know If This Is A Problem, Do This To Avoid Potential Problems

Add Step And Repeat

Add Stop Codes

Add M47 Note Command

- Add Name Of Programmer
- Add Date Program Created

Save Rout  
Text File  
Import To NC  
CAM

Check Step & Repeat

Print Check Plot (Paper)

- Check Drill
- Check Rout
- Check Step & Repeat

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Send Check Plot To Engineering

Complete Rout Tool Card (Menu)

Transfer Rout To Network

Complete Check Sheet

Score Print Load Job (Tool Menu)

Load Job (Tool Menu)

Export Job To DXF Format

Import Job Into Turbo CAD

Print Score Print (Drawing)

Note: Tooling Menu generates an error (Because T2 safety pin is blocked off, have to override error)

Verify Print To Border

Extend Score Line

Extend Break Lines

Transfer Drill To CAD Layer

Add Dimensions

Annotate Break Lines

Add Notes:

- Web Thickness
- Run Out
- Customer
- CAT Number
- Customer PN
- Special Instructions
- Date Print Created
- Name Of Person Creating Print

Check Print

Mark As Master

Save As TCW File

Open TCW File Folder

- Rename To TCW.DXF
- Note: In Turbo CAD If Save As A DXF It Changes Some Dimensions. First Must Save As TCW And Then Add DXF Extension To Maintain Drawing Dimension Integrity

Archive Job

Send Print To Scoring

Legend

Customer Service Action Major Step

CS Action Sub-Step

Production Control Action Major Step

PC Action Sub-Step

Engineering Action Major Step

Enginee Action Sub-Step

CAM Action Major Step

CAM Action Sub-Step

NC Action Major Step

NC Action Sub-Step