



**Critical**  
manufacturing  
an ASM PT company

# Mapping

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### DOCUMENT ACCESS

Public

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# Mapping

*Estimated time to read: 4 minutes*

Critical Manufacturing MES keeps track of units inside a two-dimensional surface (this is required by some manufacturing industries such as semiconductor, PCB, and SMT). The surface can be divided into uniform regular rectangles in the form of a matrix, or in other cases the shape, position, and orientation of each unit within the two-dimensional space can be defined using the **Map Definition** entity.

The **Mapping** module is made up of the **Map Definition** and **Map** entities.

## Note

To use a **Map** you must first create a **Map Definition**

## Note

A **Map** can be linked to a **Material**.

This document will guide you through the required configurations and set up for the **Mapping** module.

## Overview

The **Mapping** module provides support for two-dimensional structures that can be linked and integrated with **Material Tracking** for the purposes of tracking quantities, defects, or other sub-material level properties.

**Mapping** can also be used in the following contexts:

- Support for multiple **Map Definitions** that act as templates from which **Maps** can be created.
- Support for regular and irregular layout (with different shapes, sizes and orientations) map structures.
- Support for multiple layers per **Map** and multiple maps per **Material**.
- Support for map regions.
- Native support for SEMI G85 map structures.
- Interactive visualization of maps, including zoom, rotation, and filters.
- Support for automatic merge of multiple maps into a master map.
- Support for merged maps, in which a master map aggregates the results of multiple individual maps.
- Native integration with **Material Tracking** so that when recording losses in the **Map**, the **Material** quantity is automatically synchronized.

For more information, see [Map Definition](#) and [Map](#).

## Setting up Mapping

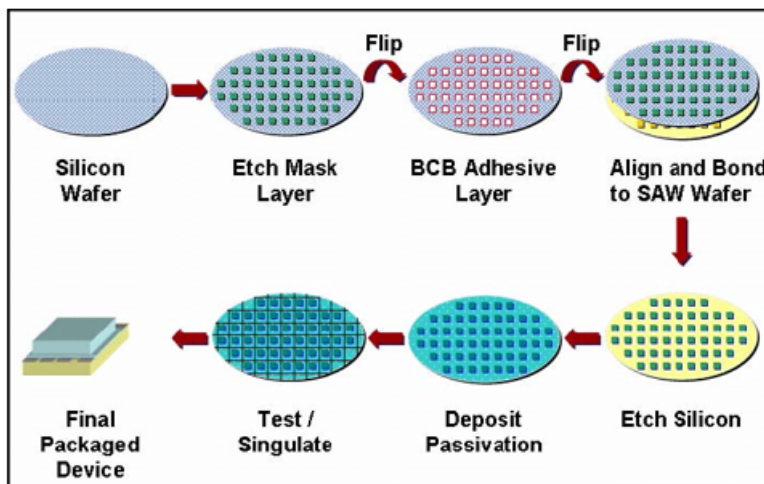
To have a functioning **Mapping** module, you have to set up Critical Manufacturing MES entities as shown in the following table:

--

Step Number	Step	Description
1	Create a Map Definition	Create a <b>Map Definition</b> to use with your <b>Map</b> .
2	Create a Map	Create a <b>Map</b> based on your <b>Map Definition</b> .

Table: Steps to set up the Mapping Module

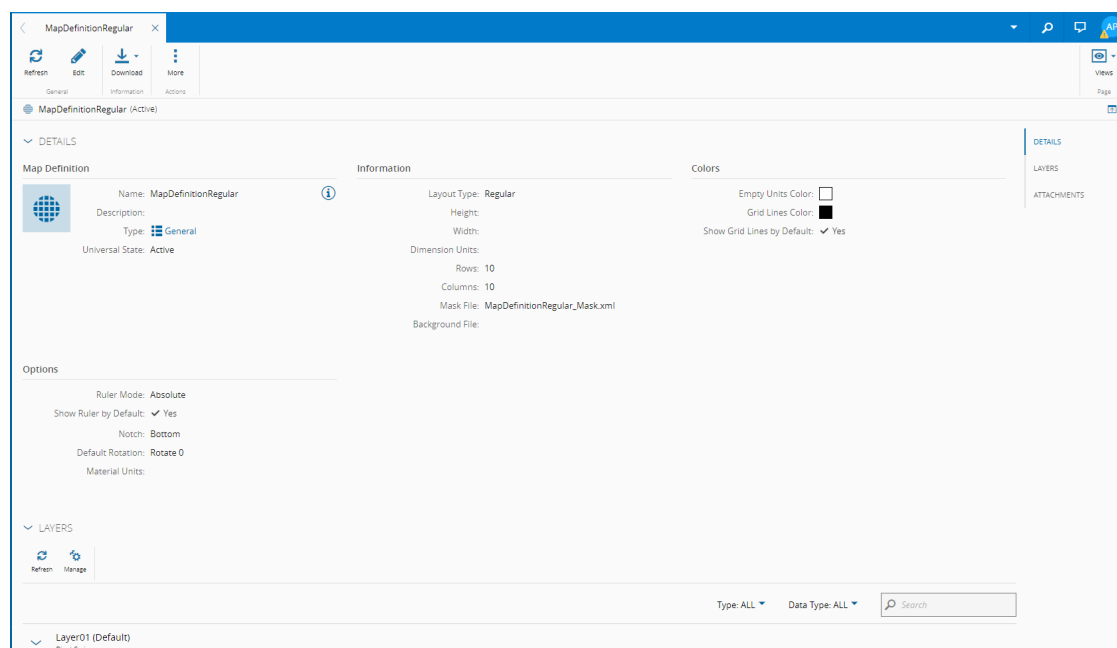
The image below is an example of how a wafer is produced with its layers and chip sections, all of which can be mapped:



The next sub-sections will cover the required configuration steps in more detail.

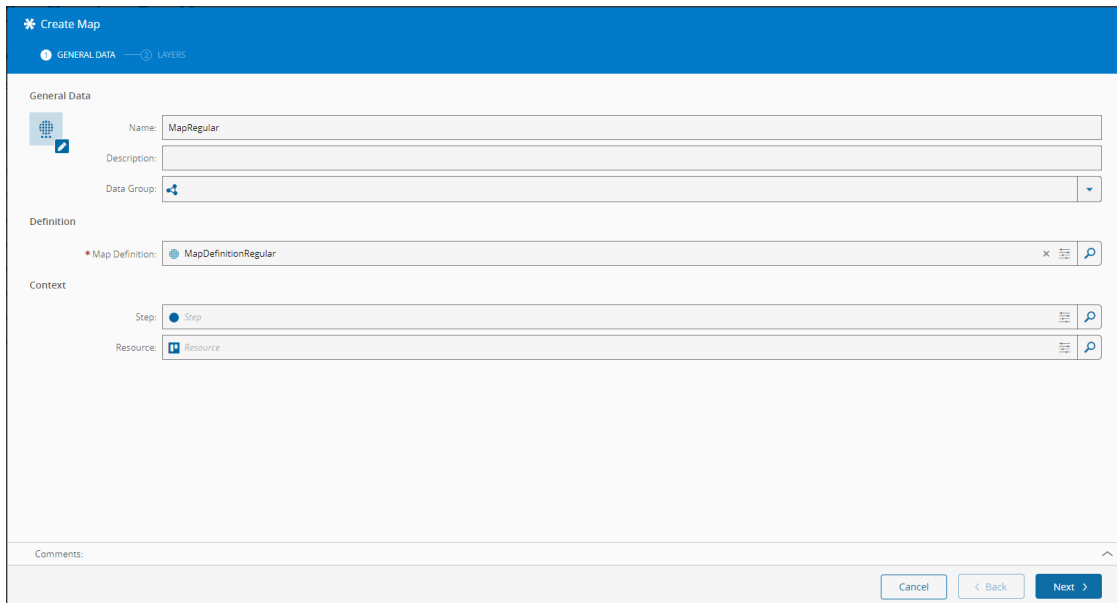
## Step 1: Create a Map Definition

1. Create a **Map Definition** accordingly:



## Step 2: Create a Map

1. Create a **Map** accordingly and make sure that it is configured to use the **Map Definition** you created:



The 'Create Map' form is divided into several sections:

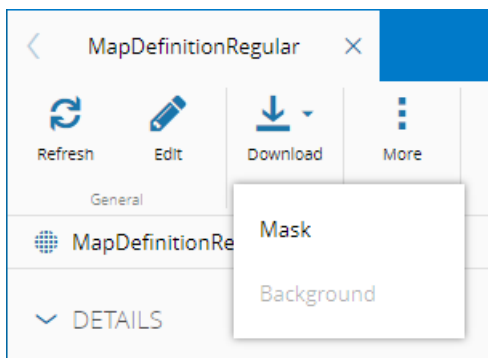
- General Data:** Includes fields for Name (MapRegular), Description, and Data Group.
- Definition:** Includes a field for Map Definition (MapDefinitionRegular).
- Context:** Includes fields for Step (Step) and Resource (Resource).
- Comments:** A text area at the bottom for additional notes.

Navigation buttons at the bottom include Cancel, < Back, and Next >.

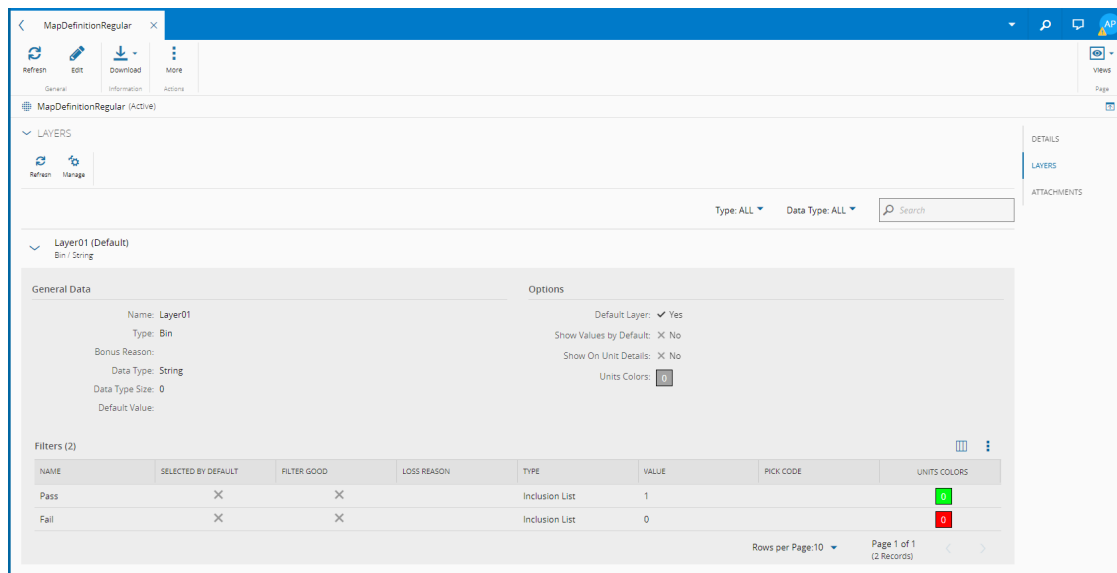
## Using Map with Map Definition

After setting up the required configurations mentioned above, you can use your **Map** with your **Map Definition**, as described in the next steps:

1. If you need to use a Mask of your own, to share with an external system or configure manually, you can Download, from your **Map Definition**, the automatically created `.xml` Mask file:



2. Keeping in mind the values configured in your filters:



MapDefinitionRegular (Active)

Refresh Edit Download More

General Information Actions

MapDefinitionRegular (Active)

Refresh Manage

Layer01 (Default)  
Bin / String

Type: ALL Data Type: ALL Search

DETAILS  
LAYERS  
ATTACHMENTS

General Data Options

Name: Layer01  
Type: Bin  
Bonus Reason: Data Type: String  
Data Type Size: 0  
Default Value: .

Default Layer: Yes  
Show Values by Default: No  
Show On Unit Details: No  
Units Colors: 0

Filters (2)

NAME	SELECTED BY DEFAULT	FILTER GOOD	LOSS REASON	TYPE	VALUE	PICK CODE	UNITS COLORS
Pass	X	X		Inclusion List	1		0
Fail	X	X		Inclusion List	0		0

Rows per Page: 10 Page 1 of 1 (2 Records)

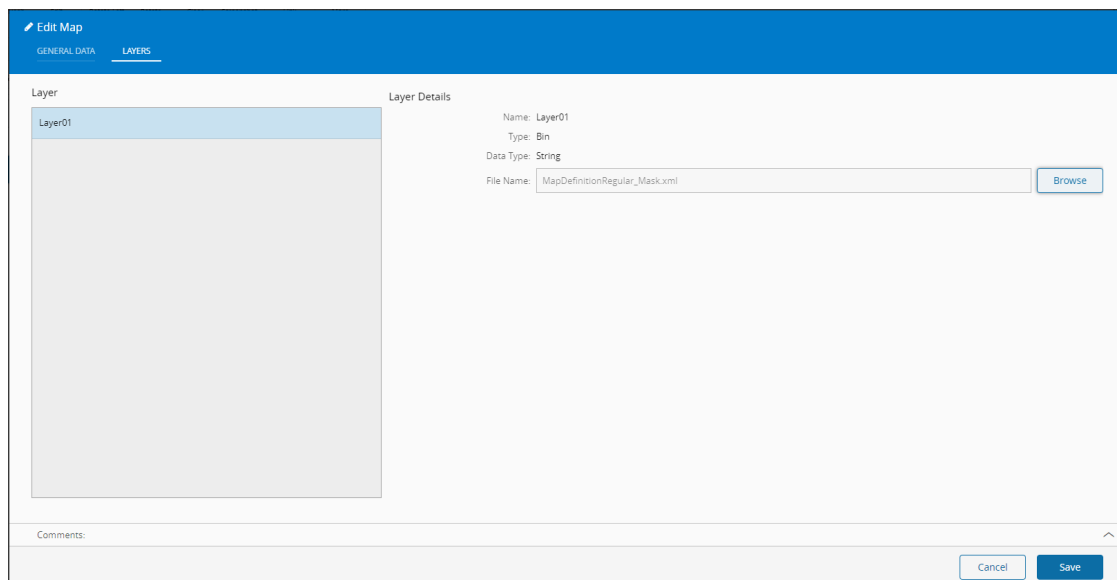
3. Adjust the values of the Mask so that they are generated according to the matrix:

```

1 <Maps>
2 <Map xmlns:semi="http://www.semi.org" WaferId="" FormatRevision="">
3 <Device WaferSize="" ProductId="" LotId="" SurfaceWaferId="" CreateDate="20220524084915824" SupplierName="" Rows="10" Columns="10"
4 Orientation="" OriginLocation="" BinType="Decimal" NullBin="0" />
5 <Bin BinCode="" BinCount="" BinQuality="" />
6 <Bin BinCode="" BinCount="" BinQuality="" />
7 <Data MapName="" MapVersion="1.00">
8 <Row><CDATA[1 0 1 1 0 1 1 0 1 1]></Row>
9 <Row><CDATA[1 0 1 1 1 1 1 1 1 1]></Row>
10 <Row><CDATA[0 1 1 1 1 0 1 1 1 0]></Row>
11 <Row><CDATA[1 1 1 0 1 1 1 1 1 1]></Row>
12 <Row><CDATA[1 1 1 0 1 1 1 0 1 1]></Row>
13 <Row><CDATA[1 0 1 1 1 1 1 1 1 1]></Row>
14 <Row><CDATA[1 1 1 1 0 1 1 1 1 1]></Row>
15 <Row><CDATA[1 1 1 1 0 1 1 1 1 1]></Row>
16 <Row><CDATA[1 1 1 1 0 1 1 1 1 1]></Row>
17 </Data>
18 </Map>
19 </Maps>

```

4. Enter the Mask in the Layers page of the **Edit Map** wizard:



Edit Map

GENERAL DATA LAYERS

Layer

Layer01

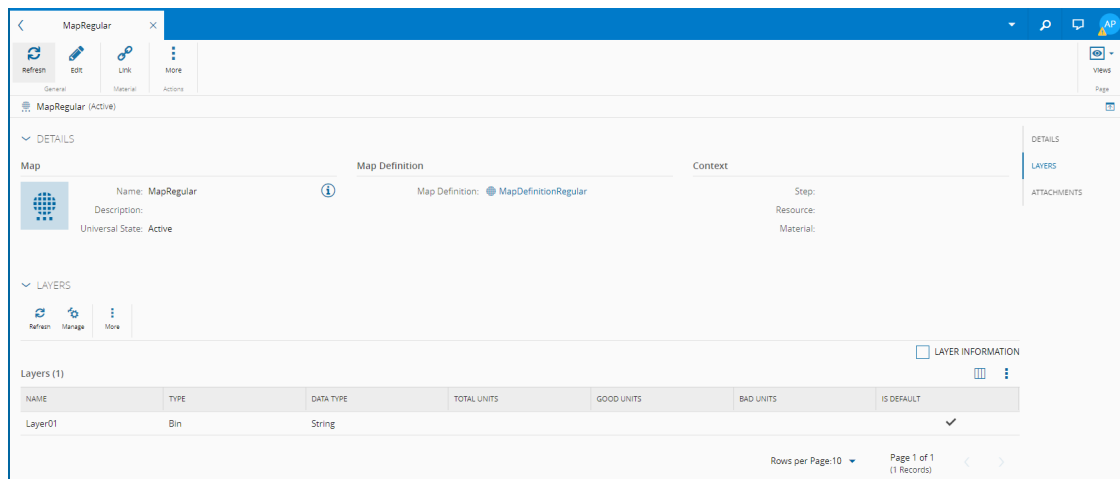
Layer Details

Name: Layer01  
Type: Bin  
Data Type: String  
File Name: MapDefinitionRegular\_Mask.xml Browse

Comments:

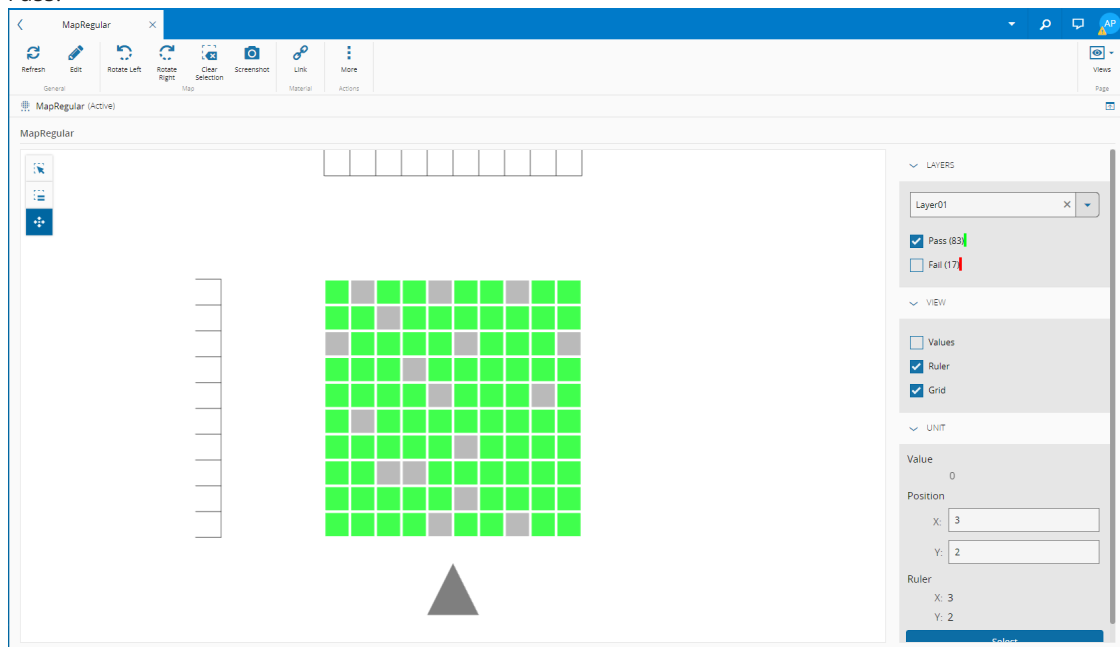
Cancel Save

5. Your **Map** now has the attached information in the **Layers** section:

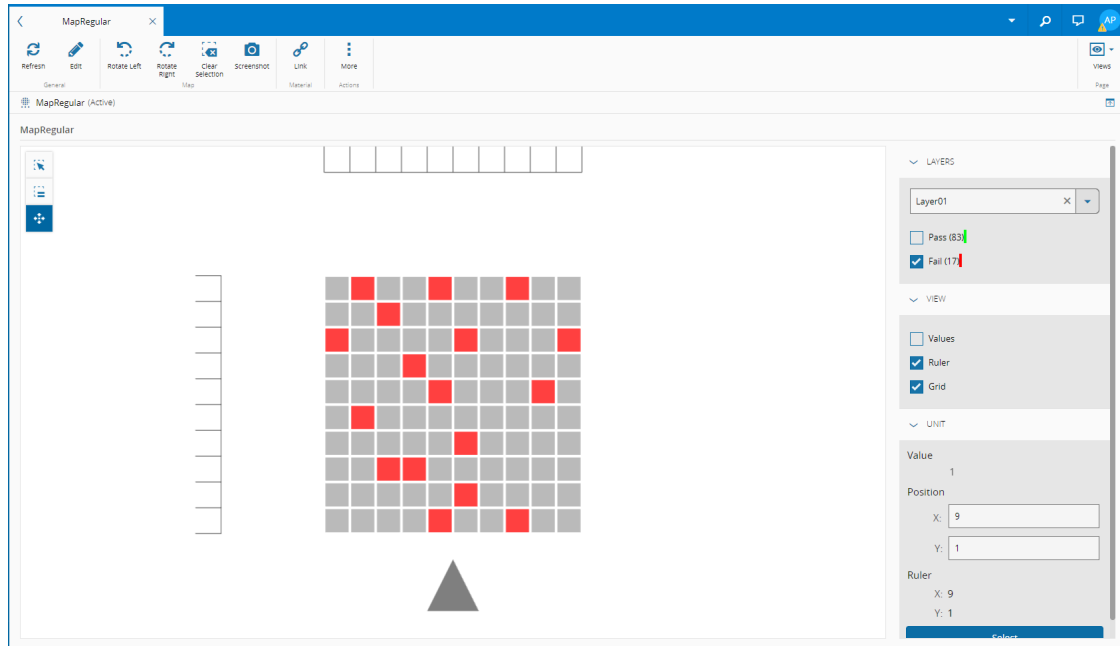


6. In **Views**, select **Content** to access the details of your filter(s) accordingly:

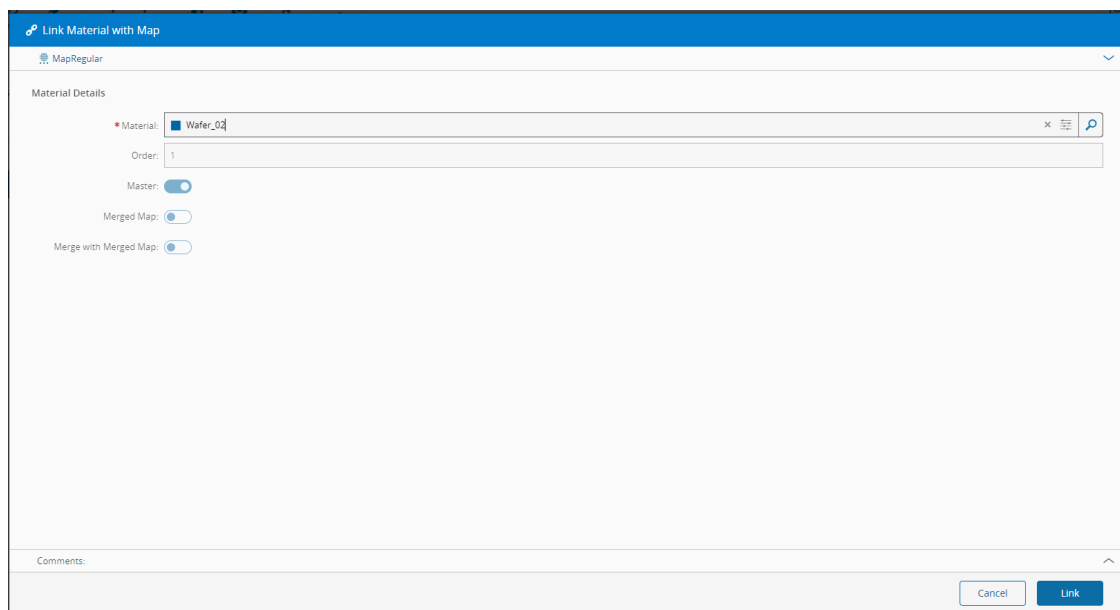
Pass:



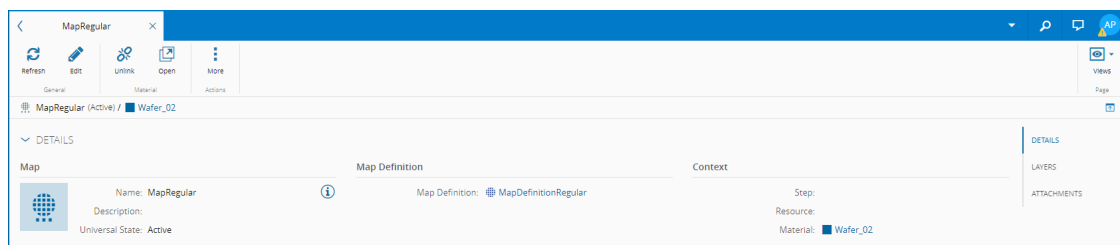
Fail:



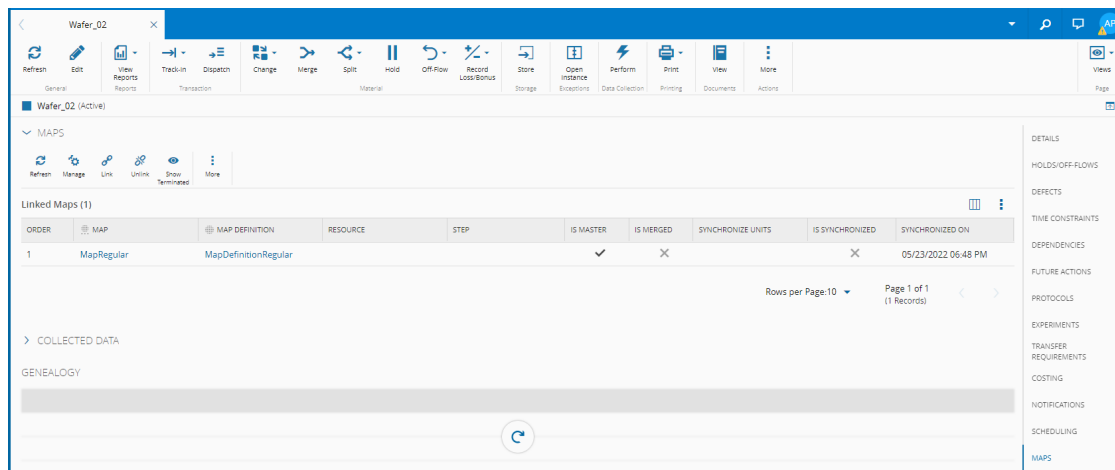
7. If needed, you can link your **Map** to a **Material**:



8. The linking information will be available in the **Details** section of your **Map**:



9. The **Material** page will now have a **Maps** section with Linked Maps information:



Wafer\_02 (Active)

Refresh Edit View Reports Reporting Transaction Change Merge Split Hold Off-Flow Record Loss/Bonus Store Open Instance Exceptions Data Collection Printing Documents Actions

MAPS

Refresh Manage Link Unlink Show Terminated More

Linked Maps (1)

ORDER	MAP	MAP DEFINITION	RESOURCE	STEP	IS MASTER	IS MERGED	SYNCHRONIZE UNITS	IS SYNCHRONIZED	SYNCHRONIZED ON
1	MapRegular	MapDefinitionRegular			✓	✗		✗	05/23/2022 06:48 PM

Rows per Page: 10 Page 1 of 1 (1 Records)

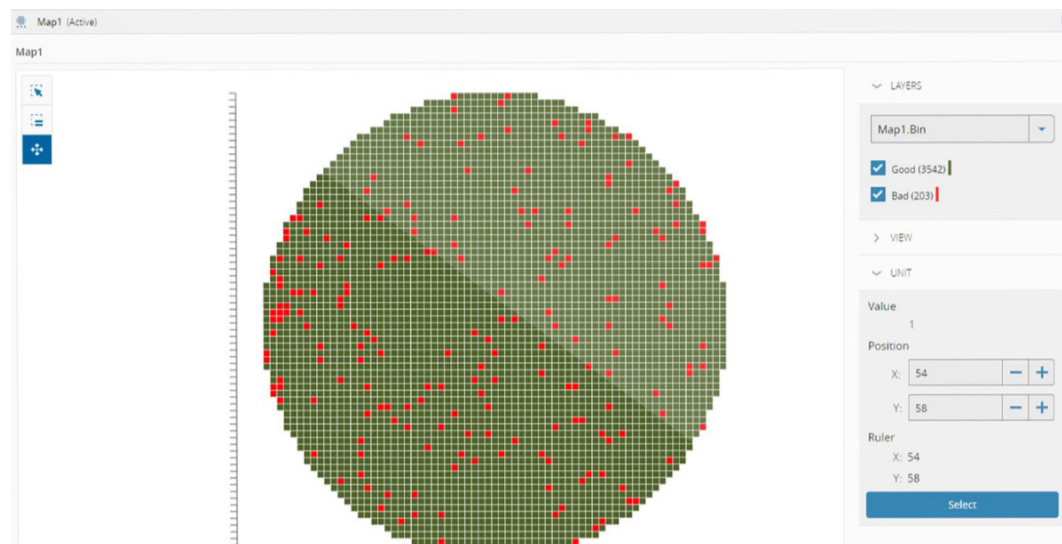
COLLECTED DATA

GENEALOGY

DETAILS  
HOLDS/OFF-FLOWS  
DEFECTS  
TIME CONSTRAINTS  
DEPENDENCIES  
FUTURE ACTIONS  
PROTOCOLS  
EXPERIMENTS  
TRANSFER REQUIREMENTS  
COSTING  
NOTIFICATIONS  
SCHEDULING  
MAPS

### Note

This use of **Map** with **Map Definition** can also be applied to irregular maps, which are uploaded using a `.json` file, as seen below:



Map1 (Active)

Map1

LAYERS

Map1.Bin

Good (3542)

Bad (203)

VIEW

UNIT

Value

1

Position

X: 54

Y: 58

Ruler

X: 54

Y: 58

Select





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