Critical manufacturing
an ASM PT company

Mapping

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Mapping

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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.

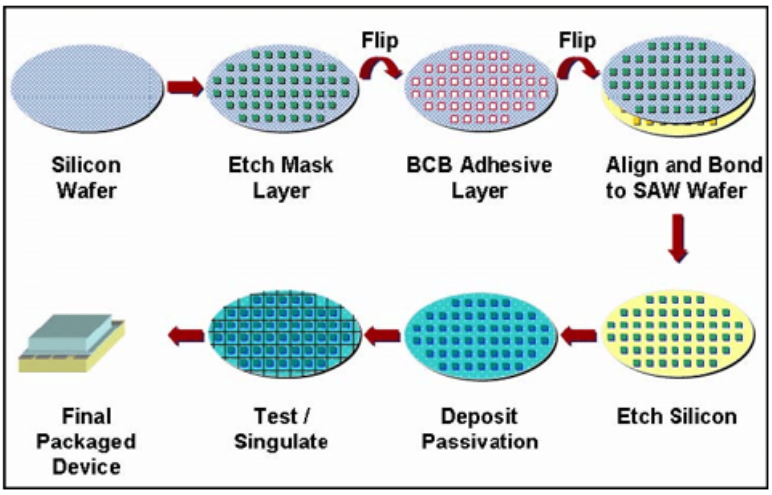
Setting up Mapping

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 **Map Definition** to use with your **Map**.
2	**Create a Map**	Create a **Map** based on your **Map Definition**.

Table: Steps to set up the Mapping Module

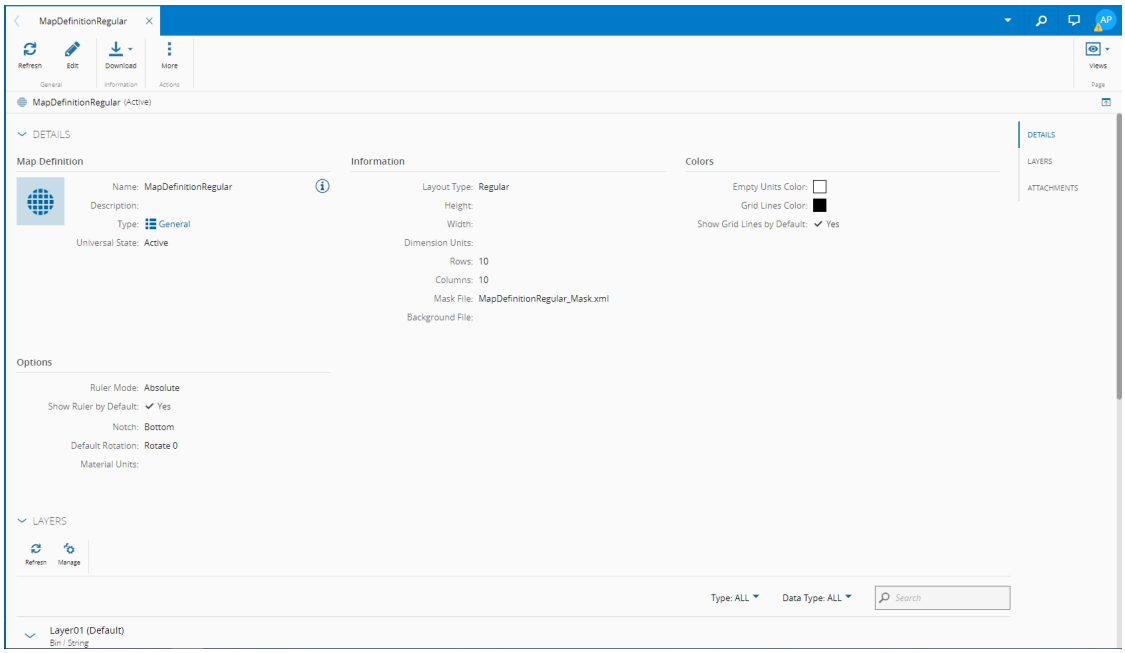
The image below is an example of how a wafer is produced with its layers and chip sections, all of which can be mapped:



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

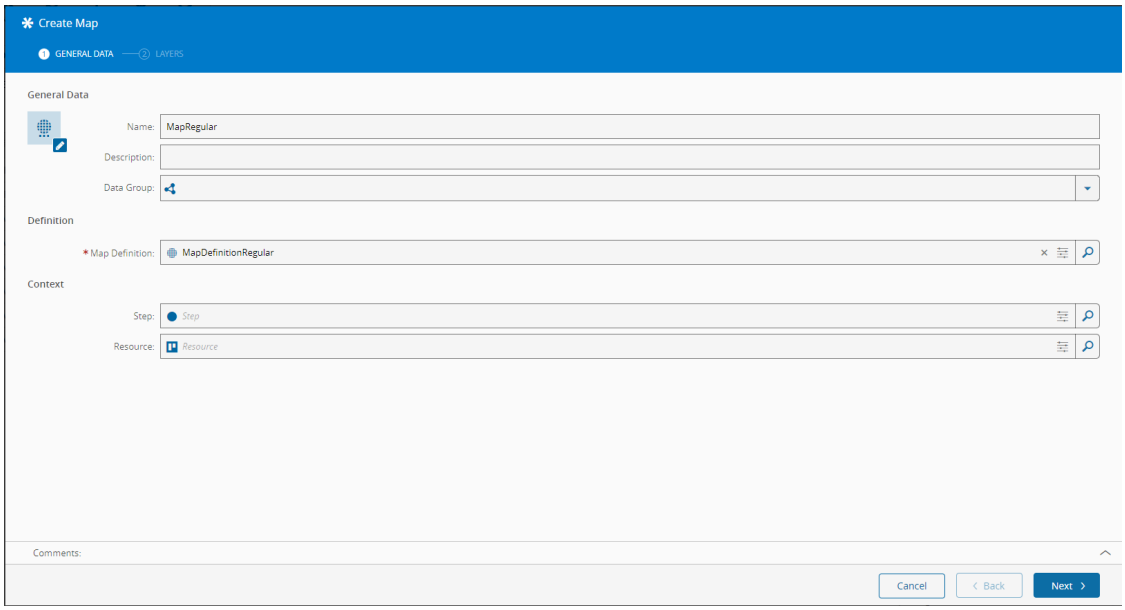
Step 1: Create a Map Definition

1. Create a Map Definition accordingly:



Step 2: Create a Map

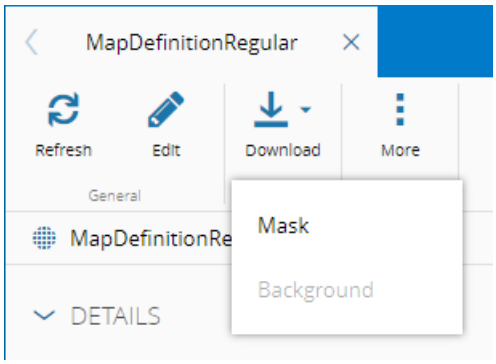
1. Create a Map accordingly and make sure that it is configured to use the **Map Definition** you created:



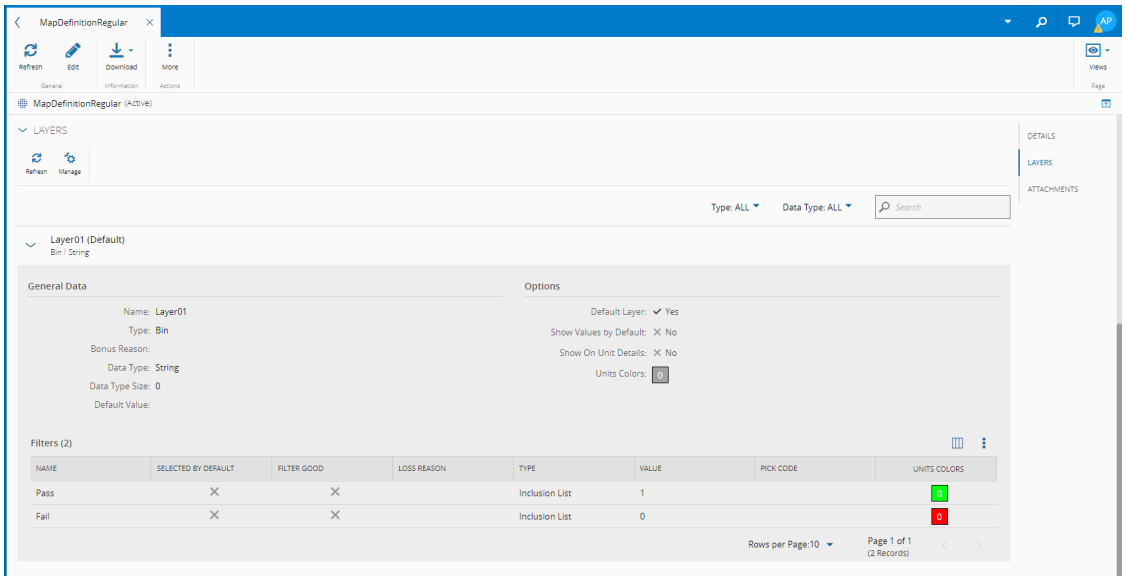
Using Map with Map Definition

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:



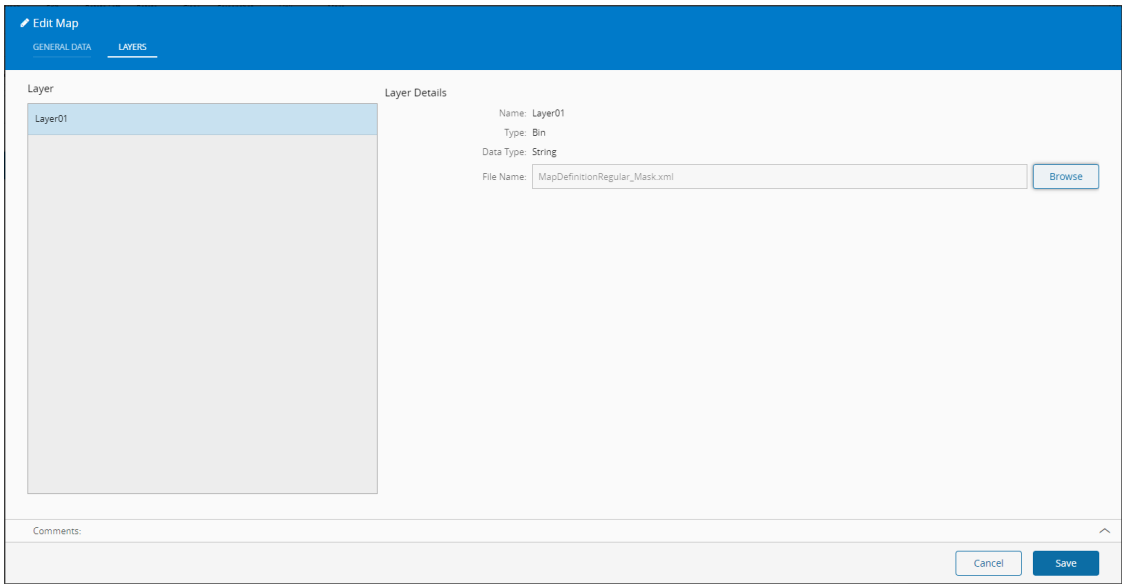
2. Keeping in mind the values configured in your filters:



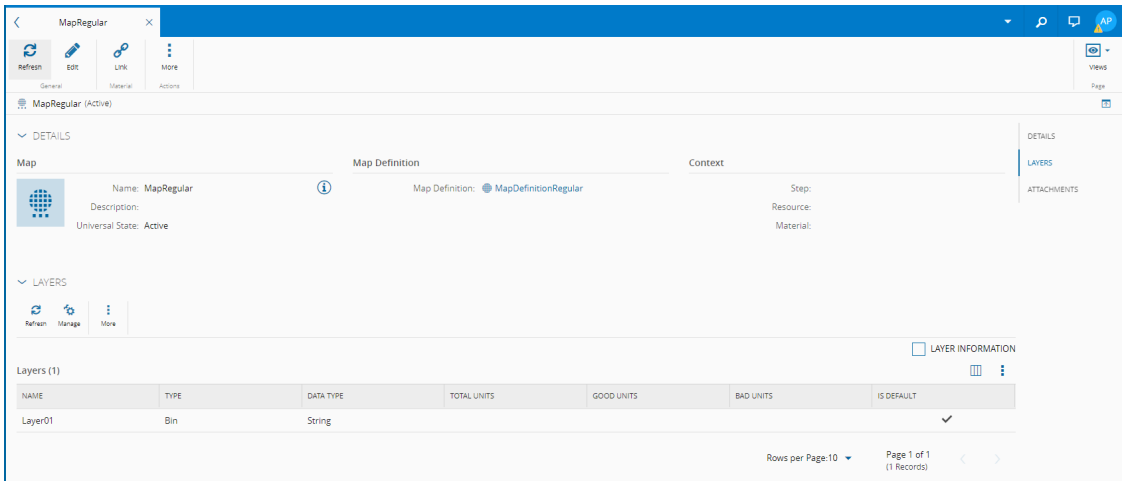
3. Adjust the values of the Mask so that they are generated according to the matrix:

```
<Maps>
  <Map xmlns:semi="http://www.semi.org" WaferId="" FormatRevision="">
    <Device WaferSize="" ProductId="" LotId="" SurfaceWaferId="" CreateDate="20220524084915824" SupplierName="" Rows="10" Columns="10"
    Orientation="" OriginLocation="" BinType="Decimal" NullBin="0" />
    <Bin BinCode="" BinCount="" BinQuality="" />
    <Bin BinCode="" BinCount="" BinQuality="" />
    <Data MapName="" MapVersion="1.00">
      <Row><![CDATA[1 0 1 1 0 1 1 0 1 1 ]]></Row>
      <Row><![CDATA[1 1 0 1 1 1 1 1 1 1 ]]></Row>
      <Row><![CDATA[0 1 1 1 1 0 1 1 1 0 ]]></Row>
      <Row><![CDATA[1 1 1 0 1 1 1 1 1 1 ]]></Row>
      <Row><![CDATA[1 1 1 1 0 1 1 1 0 1 ]]></Row>
      <Row><![CDATA[1 0 1 1 1 1 1 1 1 1 ]]></Row>
      <Row><![CDATA[1 1 1 1 1 0 1 1 1 1 ]]></Row>
      <Row><![CDATA[1 1 0 0 1 1 1 1 1 1 ]]></Row>
      <Row><![CDATA[1 1 1 1 1 0 1 1 1 1 ]]></Row>
      <Row><![CDATA[1 1 1 1 0 1 1 0 1 1 ]]></Row>
    </Data>
  </Map>
</Maps>
```

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

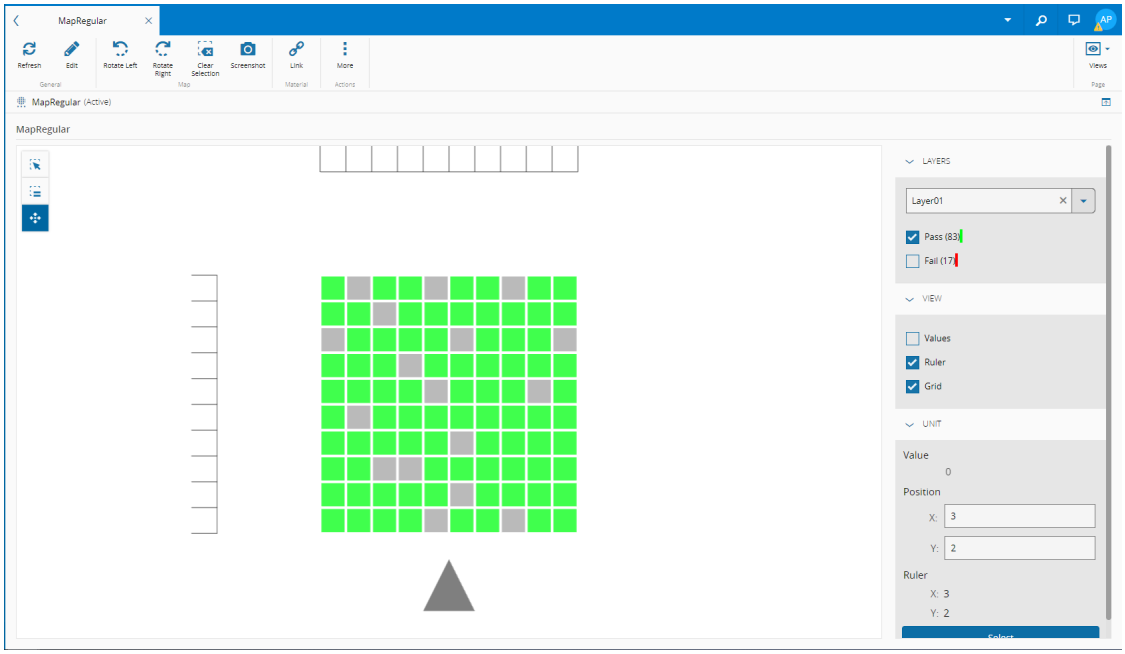


5. Your **Map** now has the attached information in the **Layers** section:

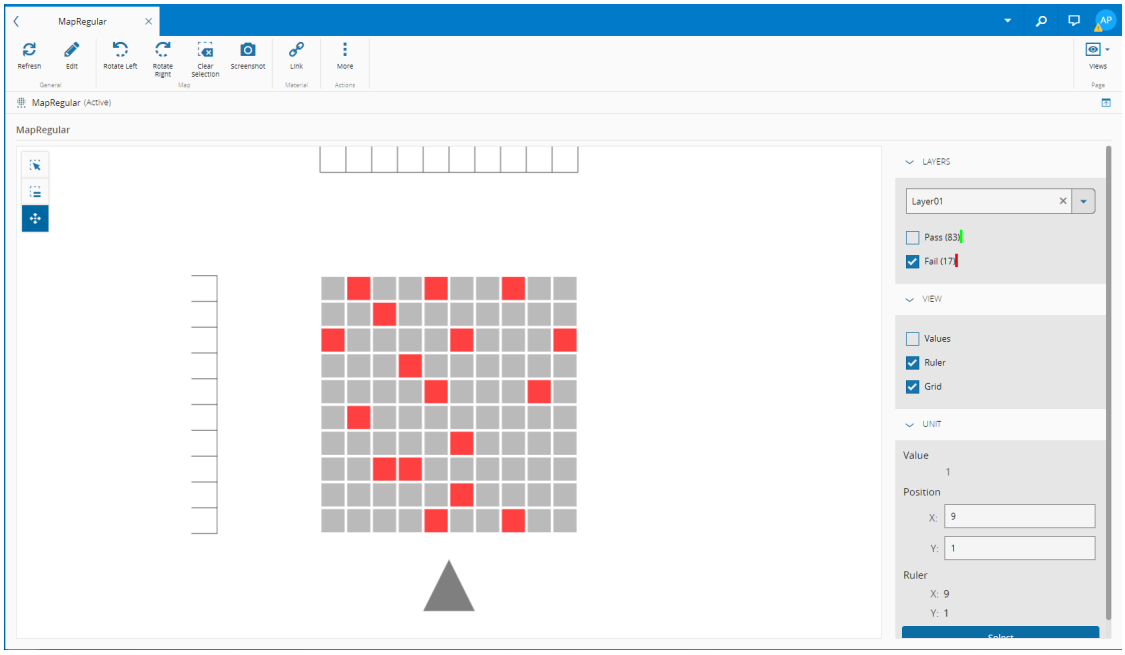


6. In **Views**, select **Content** to access the details of your filter(s) accordingly:

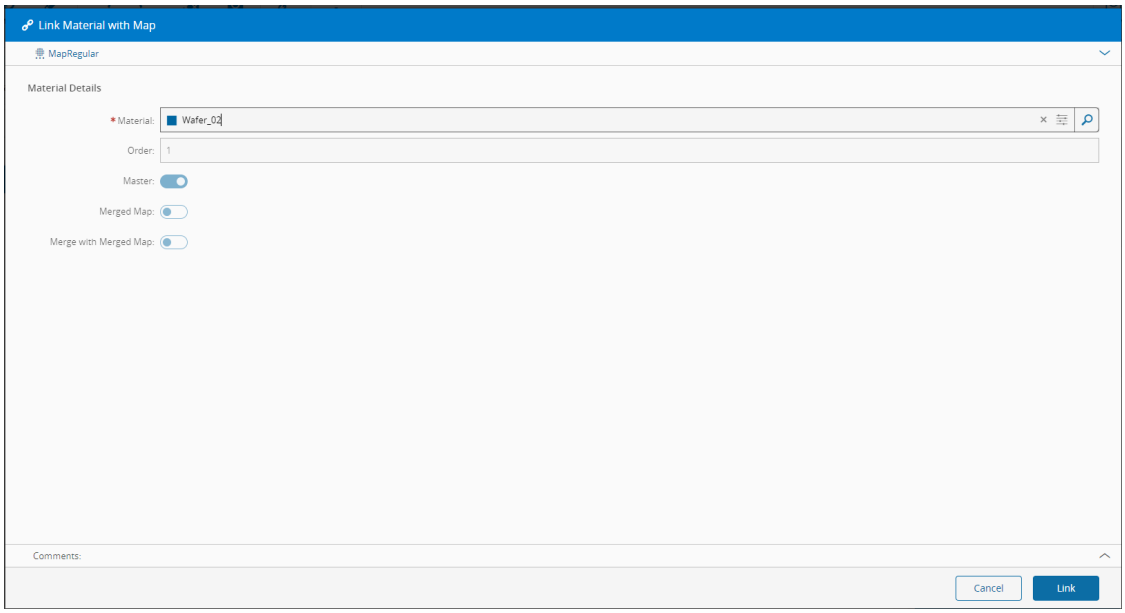
   Pass:



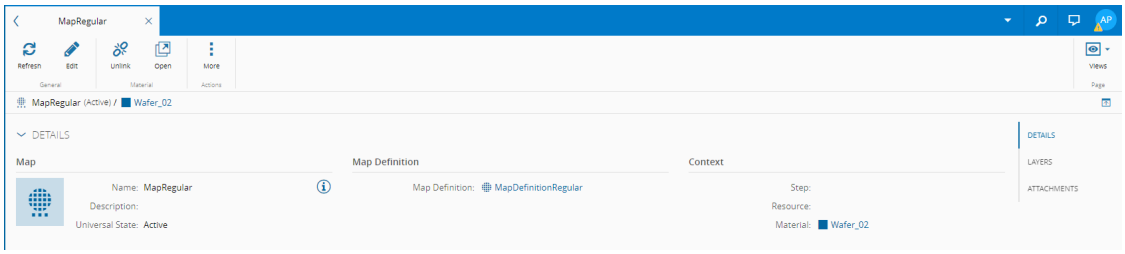
Fail:



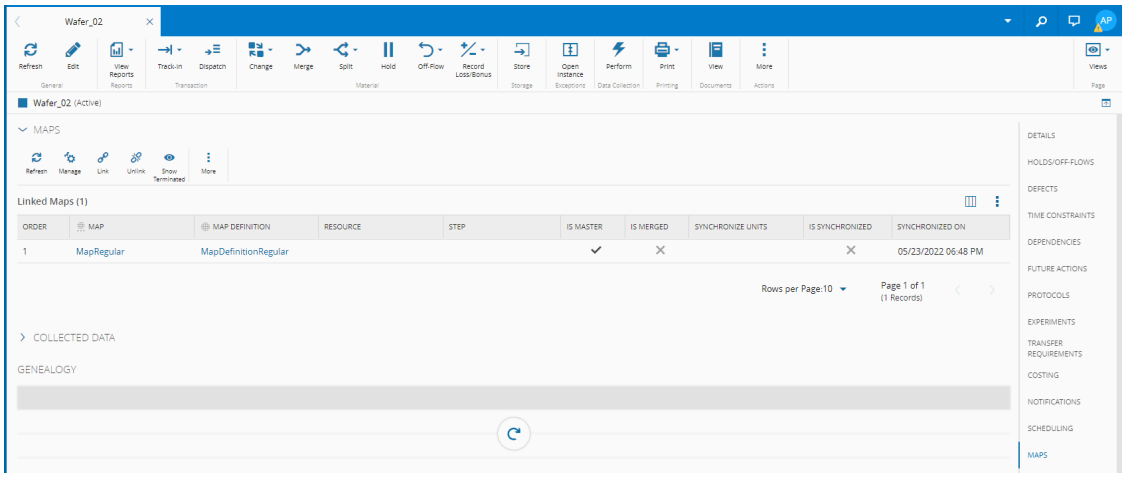
7. If needed, you can link your **Map** to a **Material**:



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

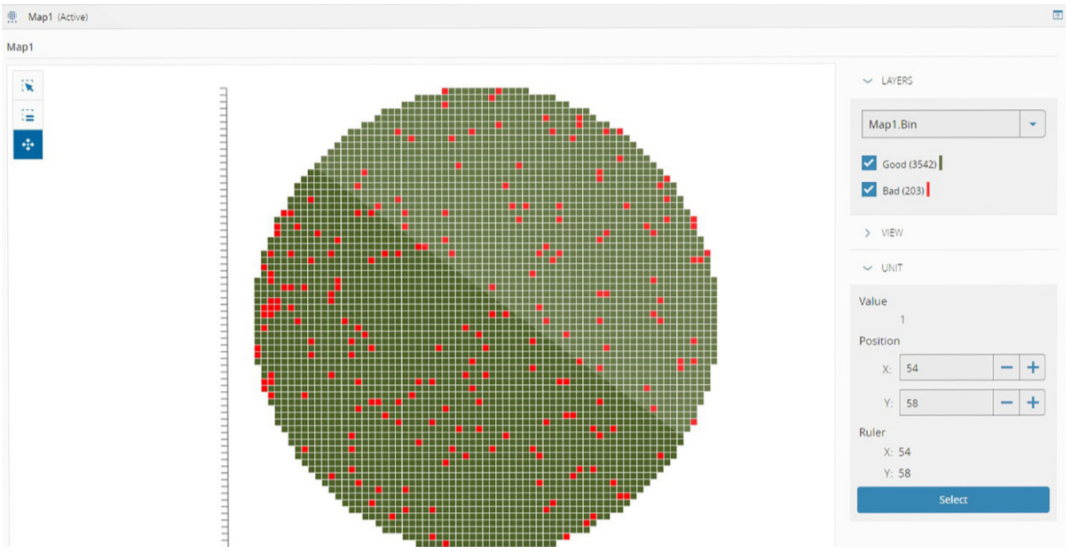


9. The **Material** page will now have a **Maps** section with Linked Maps information:



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:



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