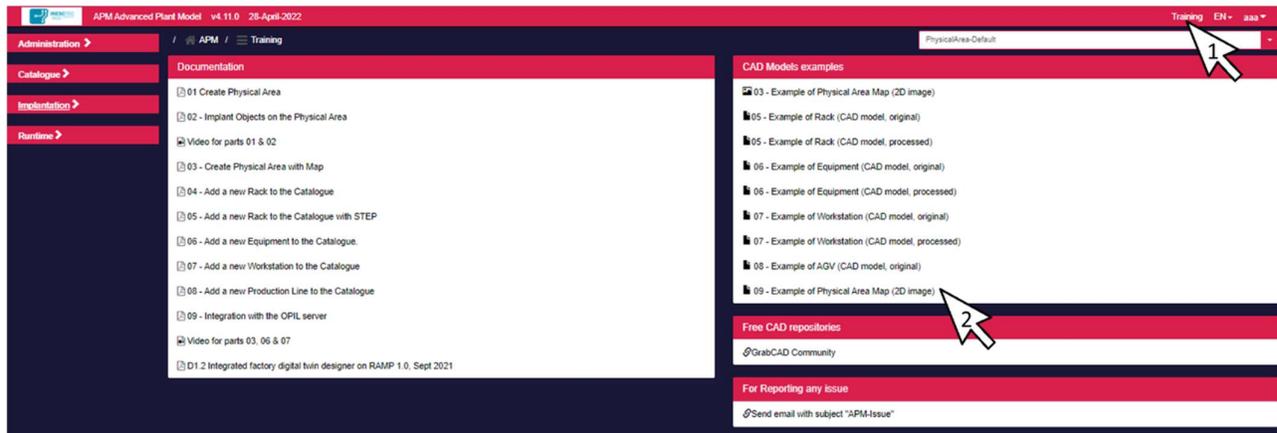


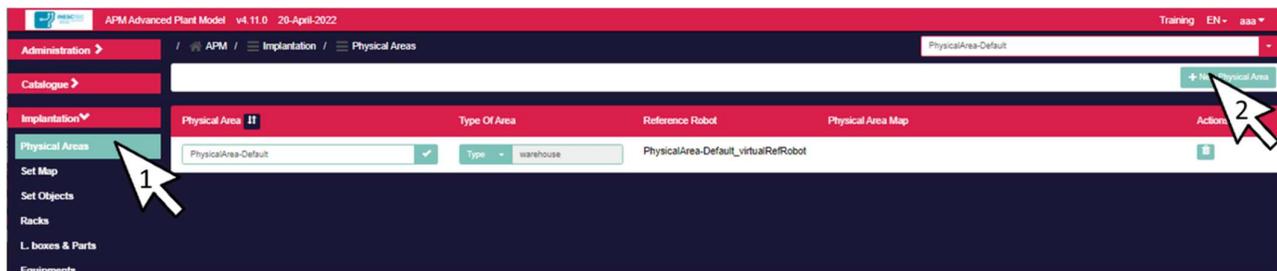
The APM lets you model a given manufacturing area and export the data in a format compatible with the OPIL server. This data comprises three files (*layout_map_annotations.ini*, *layout_map_image.png* and *layout_map.yaml*.) that the APM can generate after you have modeled the physical area where the OPIL robots will operate.

The first thing you should do is to create a “Physical Area” in the APM. You should supply a 2D image of the target area.

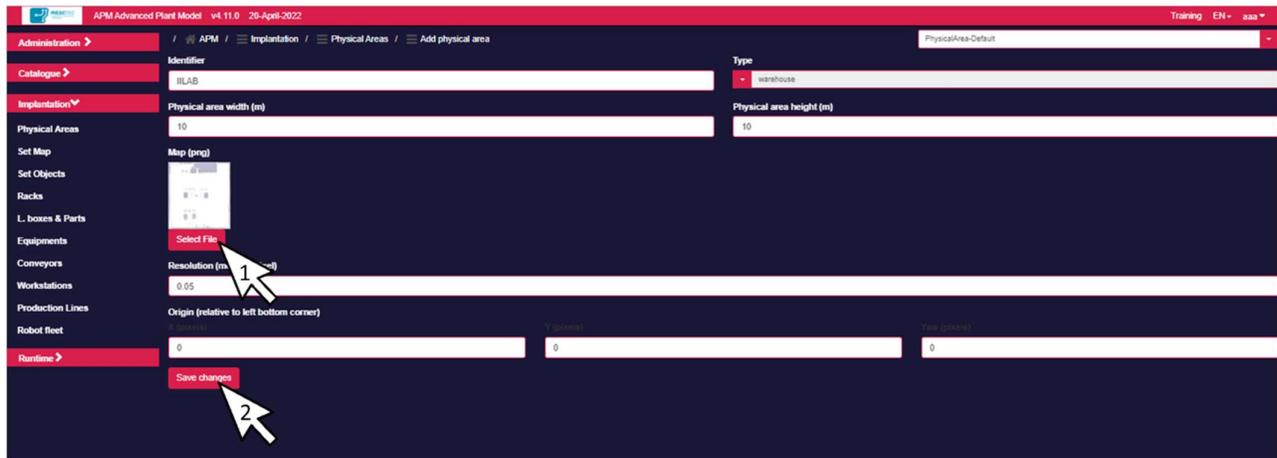
1. Go to “**Training**” section and download the image with the name *09 - Example of Physical Area Map (2D image)*.



2. Go to “**Implantation / Physical Areas**”. Press “**New Physical Area**” button (top right in the above screen)

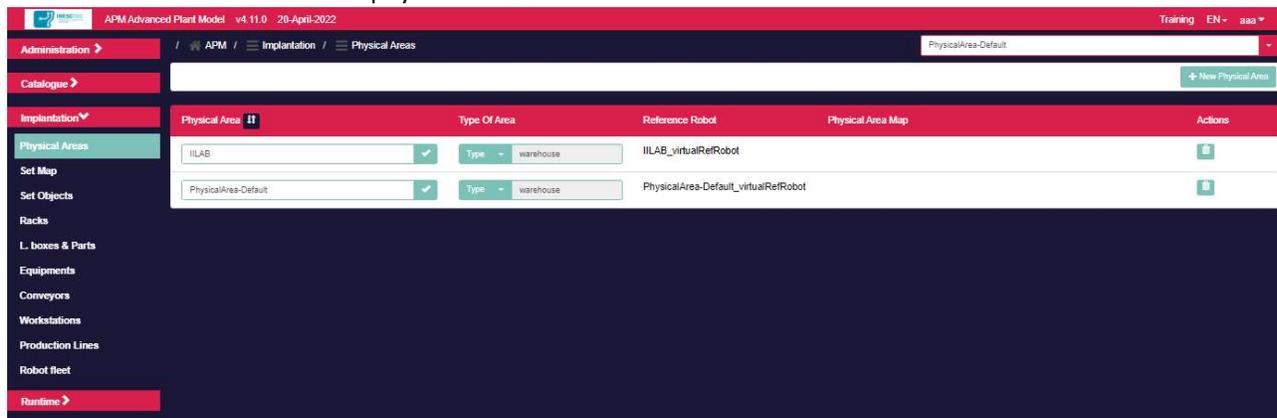


- Supply an **identifier** (e.g. IILAB)
NOTE: if you also want the APM to visualize the navigation of OPIL robots in the 3D visualization of the APM, you must use this specific name for the physical area: 'OpilArea'.
- Specify the **type** (warehouse or assembly line)
- Press “**Map / Select file**” button
- Supply a .png file containing the map for the physical area. For this example, the image downloaded in step 1 was used, which is available in the training section with the name *09 - Example of Physical Area Map (2D image)*.
- Identify the scale of the map, i.e. how many meters correspond to a pixel. The scale of the map in this example is 0.05, so that each pixel represents a 5cm x 5cm square.

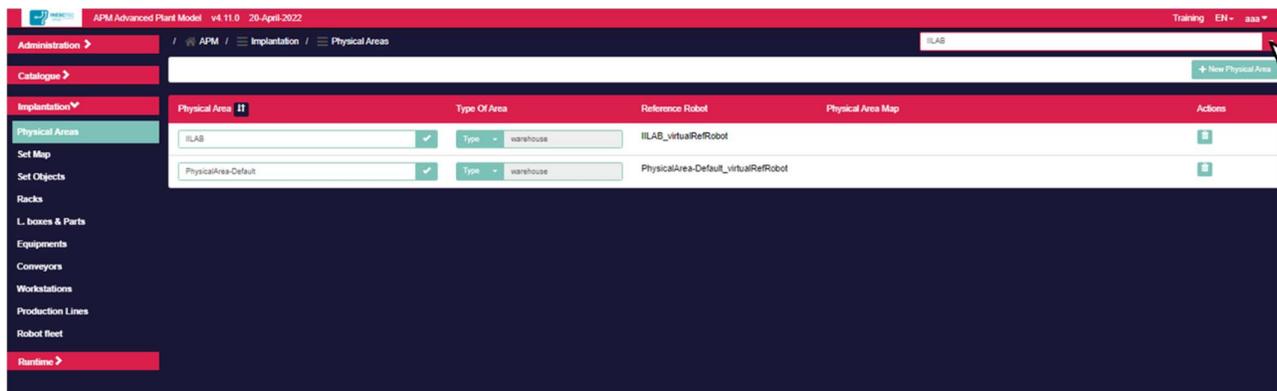


- Press “Save changes”

3. Confirm the creation of the physical area.



4. Select it so that you start modelling this new physical area (press the dropdown on the top right).



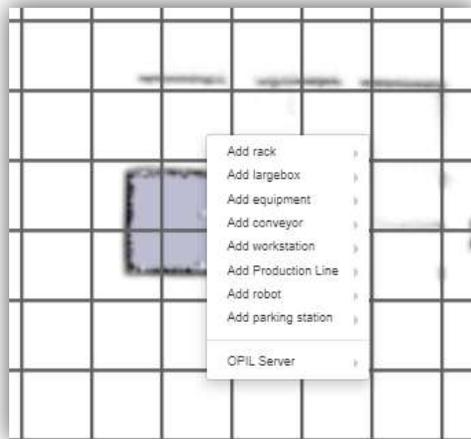
5. Go to **“Implantation / Set Objects”**. This is the place where you will implant objects on the Physical Area.



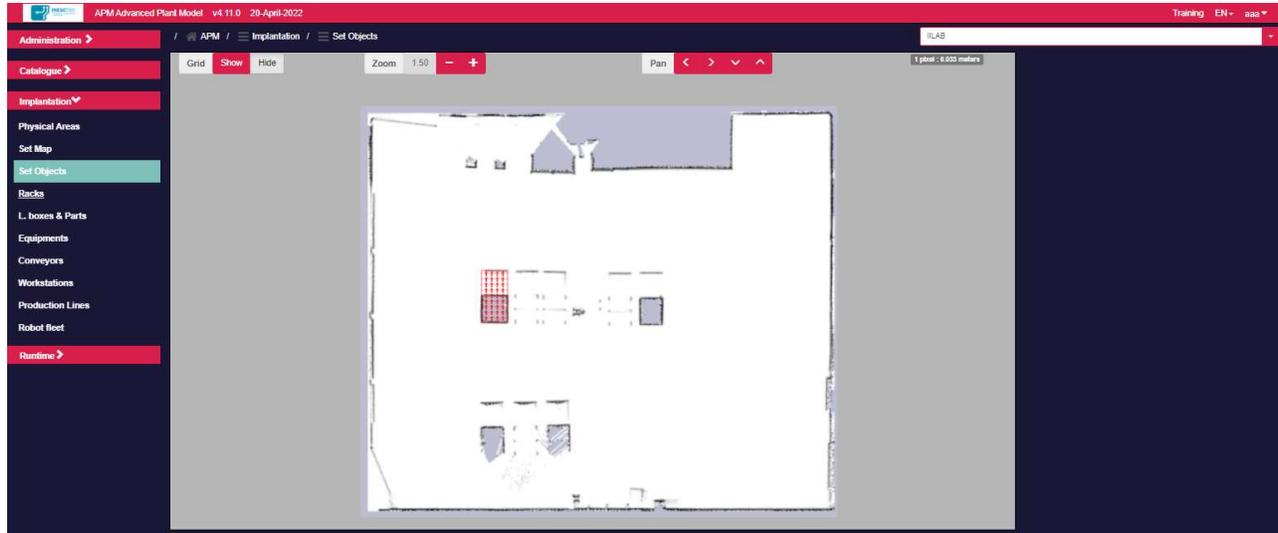
- The grid divides the area in squares of side length equal to one meter.
- You can zoom in or zoom out by pressing the Zoom button.
- You can move in the area by pressing the four Pan buttons.

The Model of a given Physical Area is built by selecting objects defined on the Catalogue and adding them to the Physical Area.

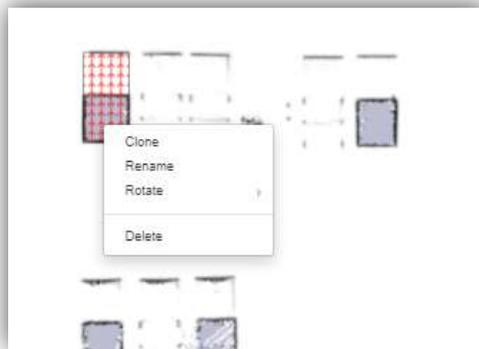
6. Pressing the right mouse button you'll get options that let you select an object from the Catalogue



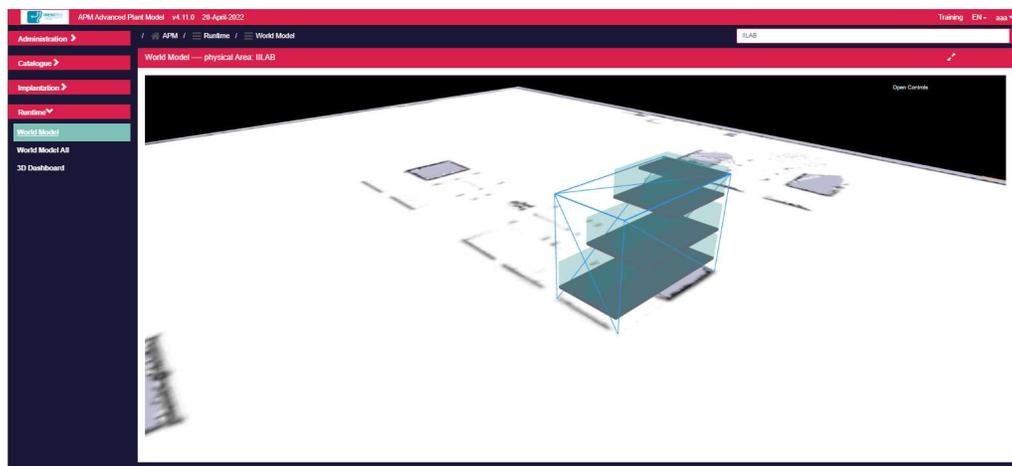
7. Select one of the objects (e.g. rack / TestSprint3 1410 x 2800), a red rectangle will appear in the working space



- You can now select the object and move it in the working area
8. 8. You can clone, rename, rotate, or delete the object by selecting it and pressing the right mouse button

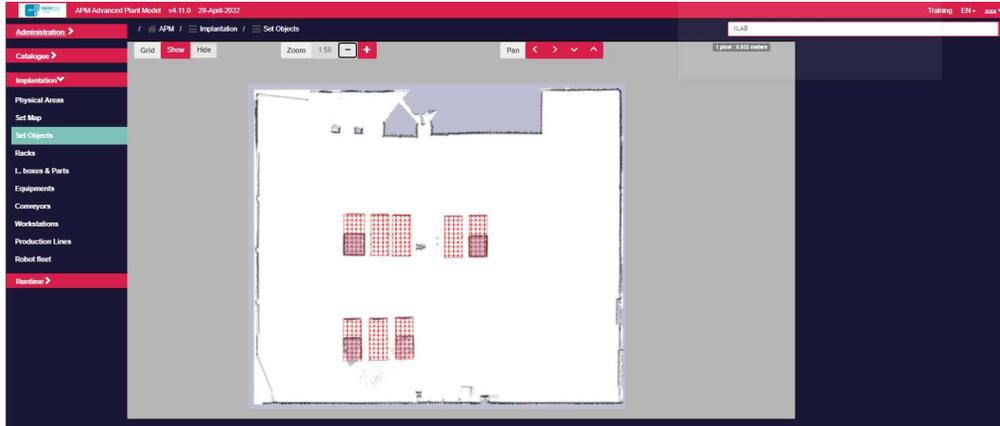


9. Go to "Runtime / World Model", a 3D visualization of the Model created so far is shown

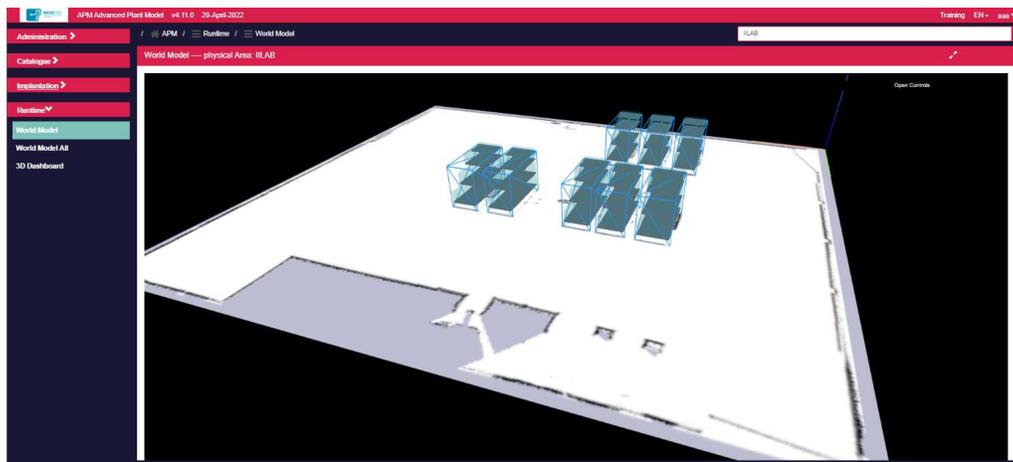


- You can zoom in and out by using the mouse wheel
- You can change the viewing perspective by selecting the left mouse button and moving the mouse around
- You can also press the right mouse button and move the mouse (image is shifted)

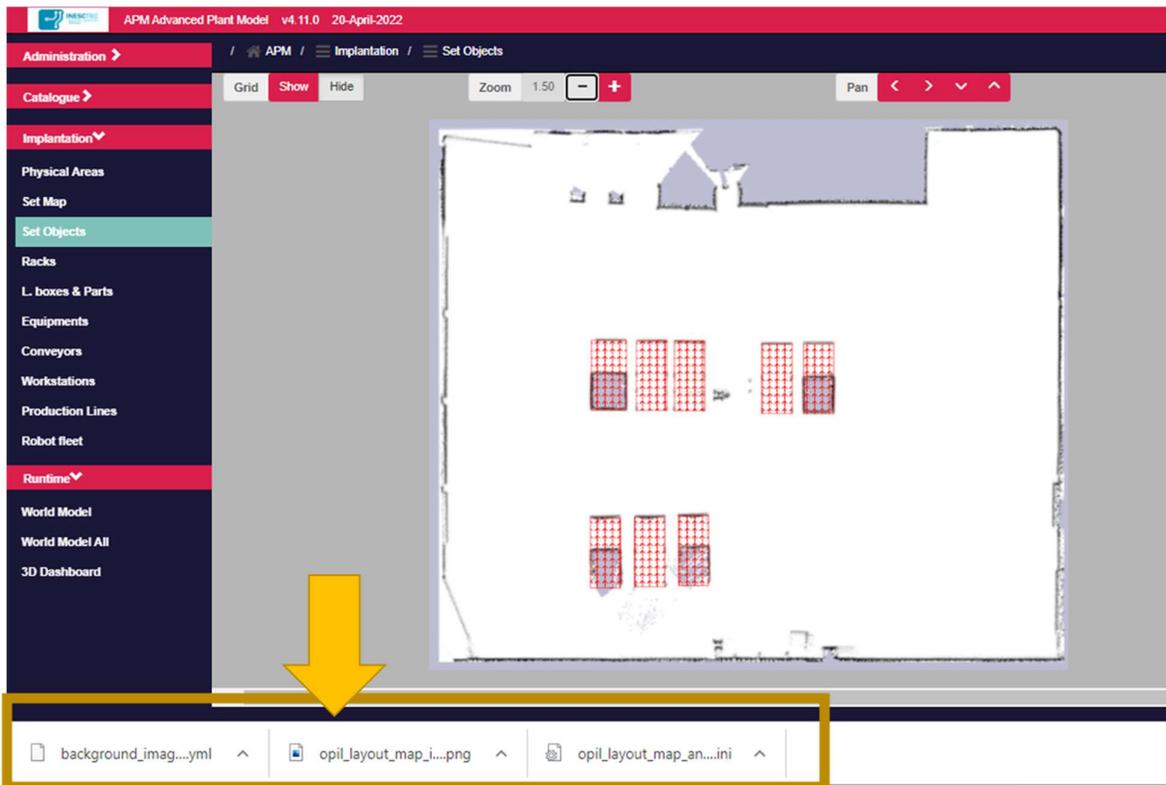
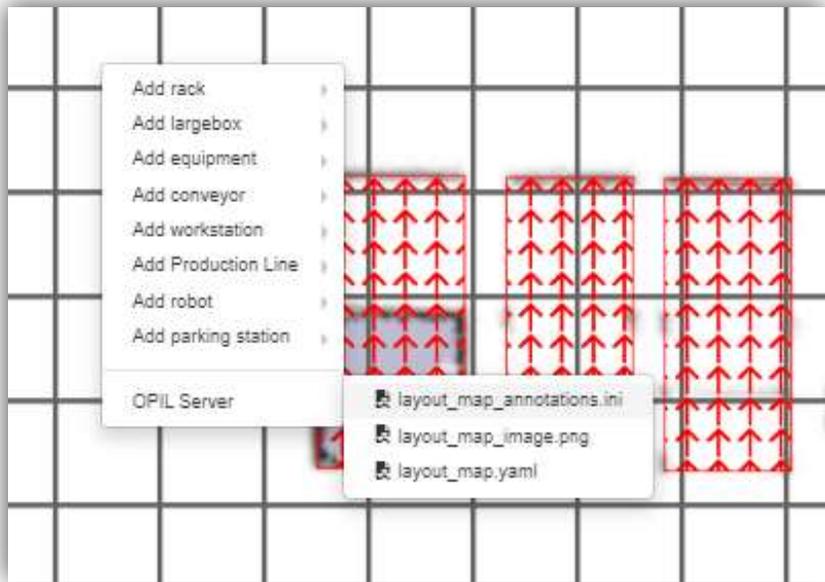
10. Go to **“Implantation / Set Objects”** and complete the digital representation of the Physical Area by instantiating more objects from the Catalogue (e.g. rack / TestSprint3 1210 x 2800).



11. Go to **“Runtime / World Model”**, a 3D visualization of the Model created so far is shown



12. Go to **“Implantation / Set Objects”**. Generate the files that can be used by the OPIL server.
- Press the right mouse button, expand the menu item "OPIL server" and you will get options that allow you to download the files *layout_map_annotations.ini*, *layout_map_image.png* and *layout_map.yaml*.



13. In this training example, the result will be as follows:

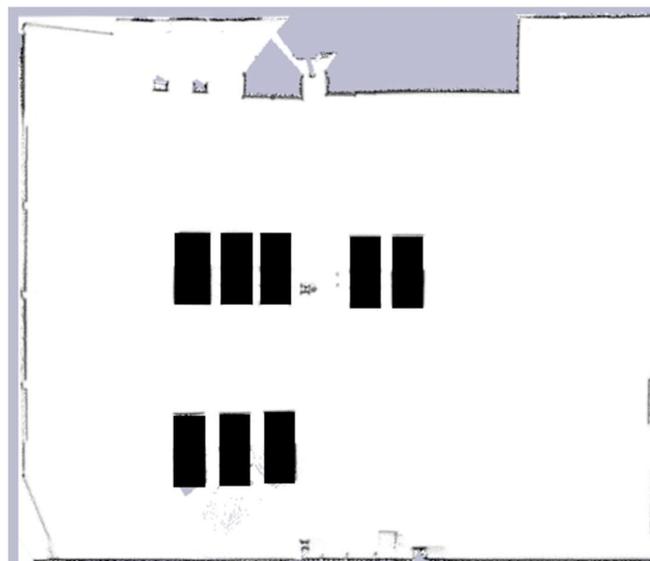
- opil_layout_map_annotations.ini

```
opil_layout_map_annotations (4).ini
1
2 # annotations.ini file automatically generated by the APM on 2022-04-28T11:53:30.580672200
3
4 [Rack.TestSprint3 1210 x 2800]
5 point_x = 10.59826086956521
6 point_y = 4.77673913043478
7 theta = 270.0
8 distance = 0.4
9
10 [Rack.TestSprint3 1210 x 2800]
11 point_x = 10.439999999999992
12 point_y = 11.777941176470584
13 theta = 270.0
14 distance = 0.4
15
16 [Rack.TestSprint3 1210 x 2800]
17 point_x = 15.619999999999999
18 point_y = 11.654999999999996
19 theta = 270.0
20 distance = 0.4
21
22 [Rack.TestSprint3 1210 x 2800]
23 point_x = 7.07652173913043
24 point_y = 4.668043478260868
25 theta = 270.0
26 distance = 0.4
27
28 [Rack.TestSprint3 1210 x 2800]
29 point_x = 8.83739130434782
30 point_y = 4.711521739130432
31 theta = 270.0
32 distance = 0.4
33
34 [Rack.TestSprint3 1410 x 2800]
35 point_x = 7.211764705882346
36 point_y = 11.810294117647057
37 theta = 270.0
38 distance = 0.4
39
40 [Rack.TestSprint3 1210 x 2800]
41 point_x = 13.939999999999999
42 point_y = 11.674999999999997
43 theta = 270.0
44 distance = 0.4
45
46 [Rack.TestSprint3 1210 x 2800]
47 point_x = 8.923294117647052
48 point_y = 11.782647058823526
49 theta = 270.0
50 distance = 0.4
51
```

- files layout_map_annotations.ini

```
background_image.yml
1 # Automatically generated by the APM on 2022-04-28T17:22:41.490940100
2 image: background_image.png
3 resolution: 0.05
4 origin: [0.0, 0.0, 0.0]
5 negate: 0
6 occupied_thresh: 0.65
7 free_thresh: 0.196
8
```

- opil_layout_map_image.png



You can now transfer these three files to the OPIL computing environment and use them.