# 5.1.1 Logical camera in the factory simulation

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# Gazebo world file: basics

- Create world models that can be used in the Gazebo physics simulator
  - **s**imulation **d**escription **f**ormat (sdf) models.
  - multiple .sdf models composed in a **world file**
  - more features than URDF (friction, non-robotic elements) [1]
  - spawn urdf models in gazebo with **spawner** ROS node.

- Model functionality can be configured via Gazebo plugins
  - Logical camera plugin (libROSLogicalCameraPlugin.so)

http://gazebosim.org/tutorials?tut=ros_urdf

# Logical camera: models for factory simulation

- **hrwros_gazebo** ROS package
  - hrwros_gazebo/models

- Camera model files
  - hrwros_gazebo/models/logical_camera/**model.sdf file**

- Conveyor object(s)
  - config/conveyor_objects.yaml
  - simple box object

# hrwros_gazebo: models and plugins

```
donnie@tudelft:~/ros/hrwros_ws/src/hrwros/hrwros_gazebo/models$ tree -L 1
.
├── conveyor
├── deletion_wall
└── logical_camera
```

SDF models used in hrwros.world.

```
donnie@tudelft:~/ros/hrwros_ws/devel/lib$ ls -1 libROS*
libROSConveyorBeltPlugin.so
libROSLogicalCameraPlugin.so
libROSProximityRayPlugin.so
libROSVacuumGripperPlugin.so
```

A few plugins used in factory simulation.

# Gazebo world file: hrwros.world

hrwros_gazebo/worlds/hrwros.world

```
<?xml version="1.0"?>
<sdf version="1.5">
 <world name="hrwros_world">
  <include>
   <uri>model://conveyor</uri>
    <pose>1.2 5 0 0 0 -1.571</pose>
   </include>
   <!-- include logical camera model(s) here -->
 </world>
</sdf>
```