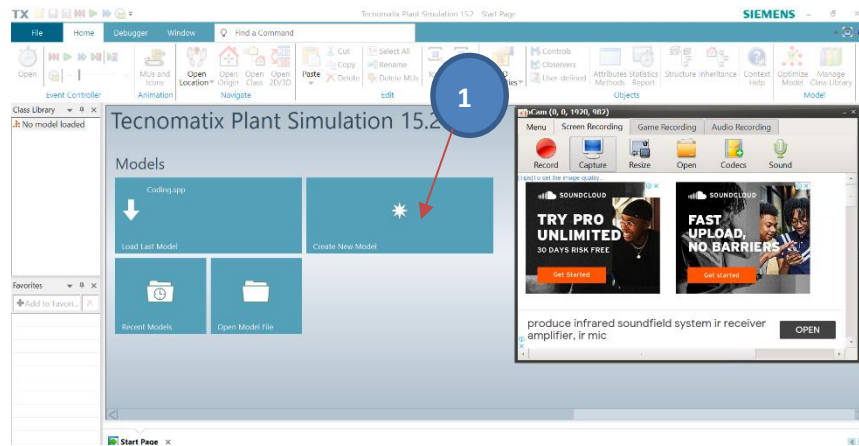


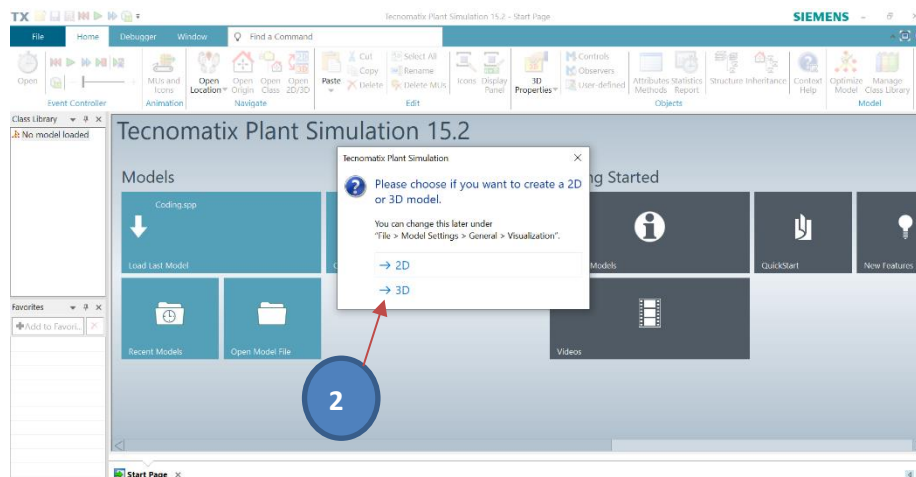
## Laboratory on collaborative machine

### Part 1: Create simulation model.

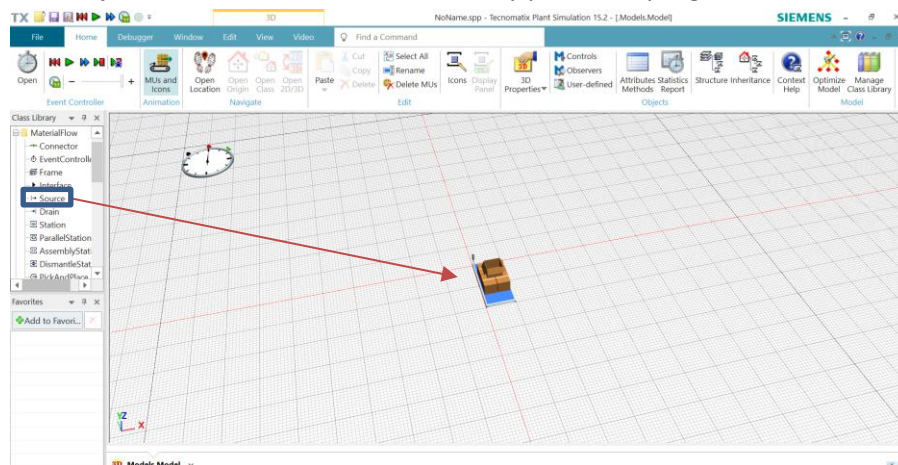
1. Create a new file in Tecnomatix Plant Simulation software.



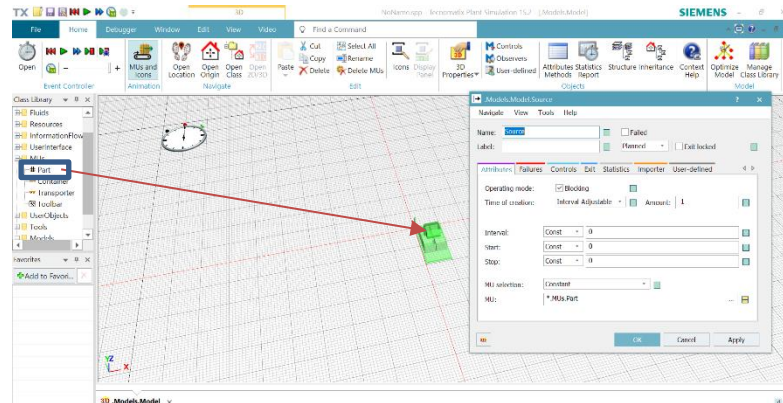
2. Choose **3D model**.



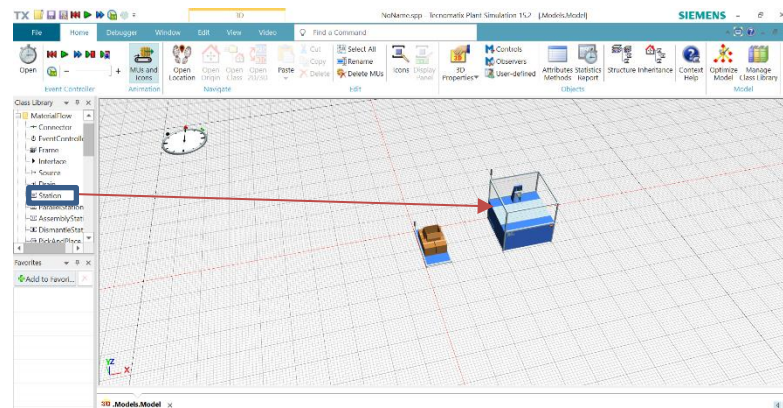
3. Select **Source** object from MaterialFlow class library places on program window.



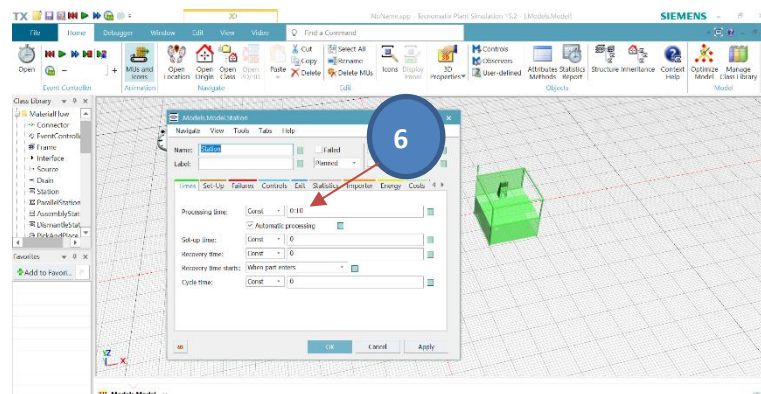
- Drag **Part** from MU class library places into the **Source** model, and double click **Source** model, set **Amount** to **-1** in Attributes property then click **OK**.



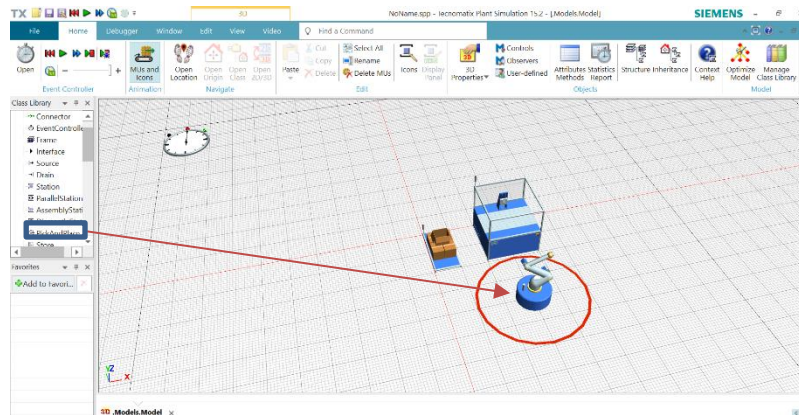
- Select **Station** object from MaterialFlow class library places on program window.



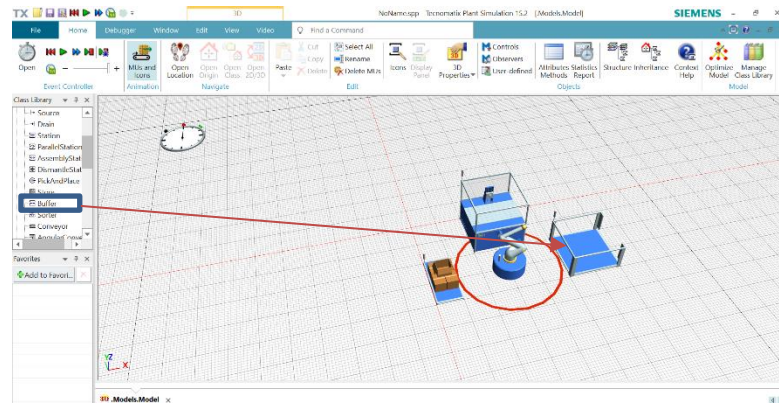
- Double click on **Station** and set **Processing time** to 10 minute then click **OK**.



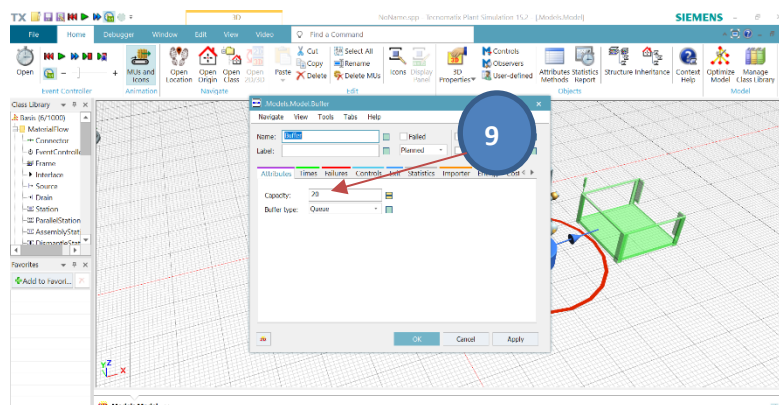
7. Select **PickAndPlace** object from MaterialFlow class library places on program window.



8. Select **Buffer** object from MaterialFlow class library places on program window.

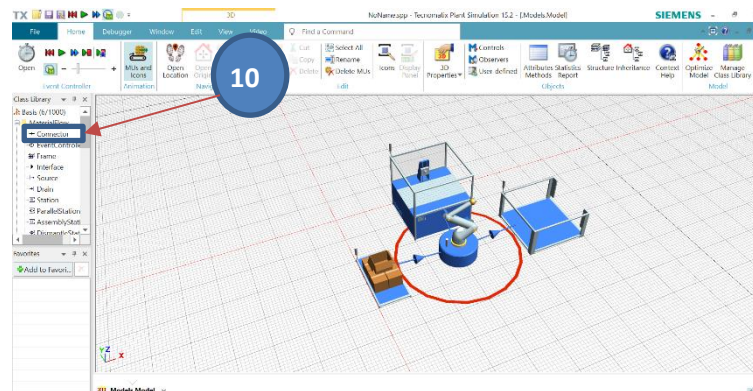


9. Double click on **Buffer** and set **Capacity** to 20 then click **OK**.

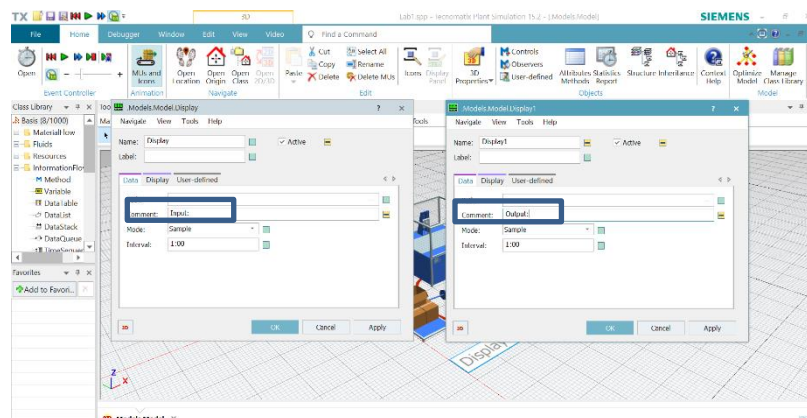
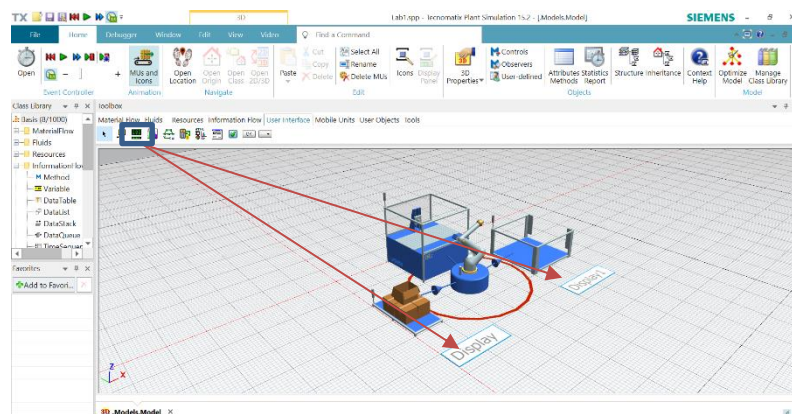




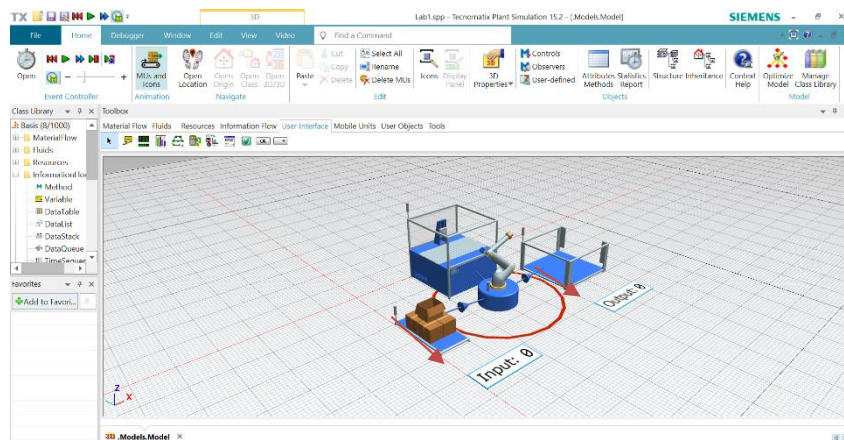
10. Use **Connector** object to connect all objects from: Source  PickAndPlace  Station  PickAndPlace  Buffer.



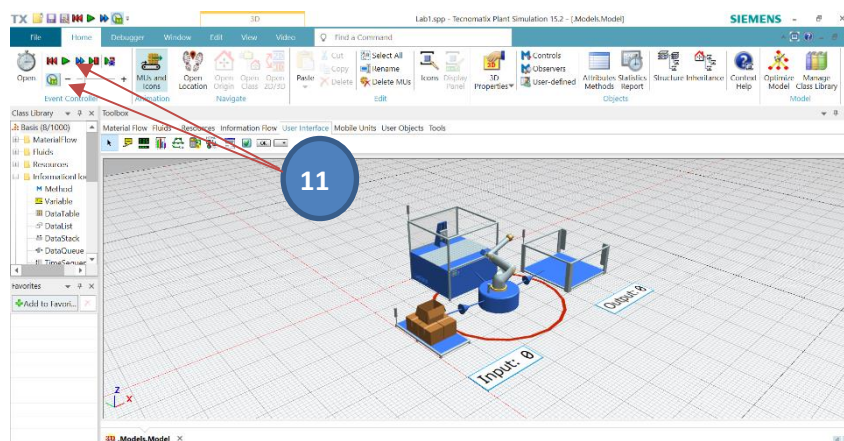
11. From **User Interface** toolbox menu, select **Display** places near **Source** and **Buffer**, double click on each display object then set **Comment** property to **Input:** and **Output:**



12. Drag **Source** object places into **Display** object and **Buffer** object places into **Display1** object.



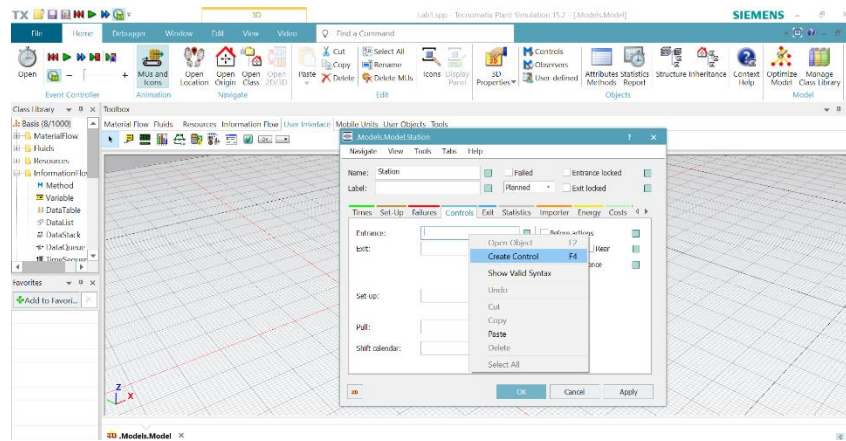
13. In **Home** tab, click **Real time** in Event Controller then click **Start** button.



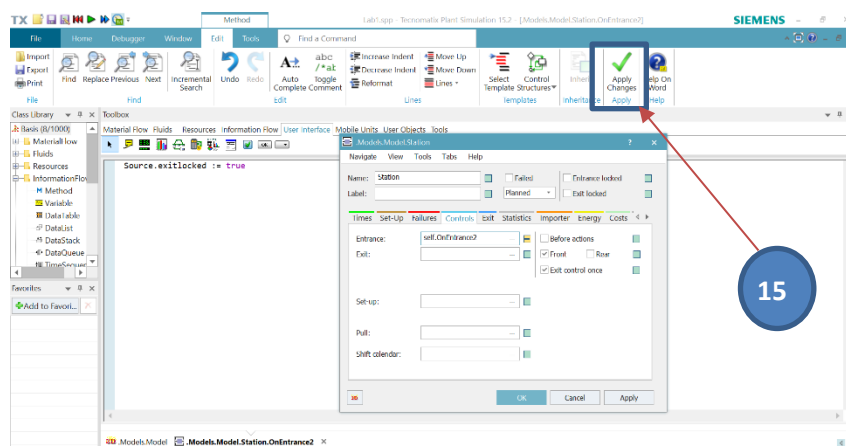
- Discuss the simulation result.

## Part 2: Set up collaborative machine.

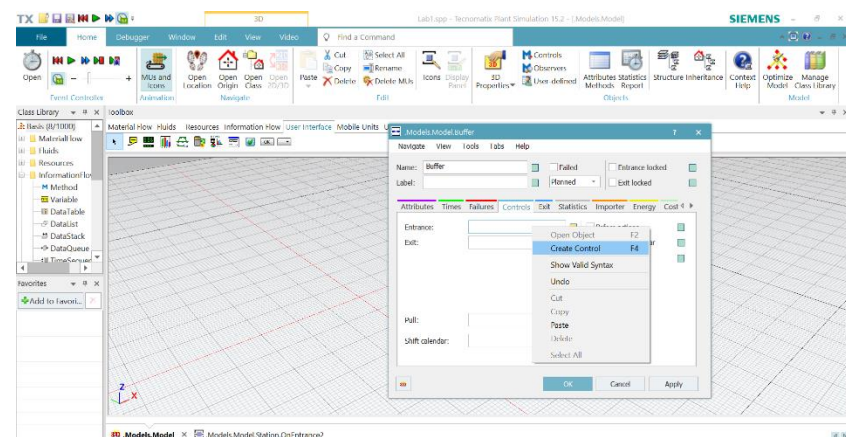
14. Double click on **Station** object then click **Controls** tab, right click in **Entrance**: then select **Create Control**.



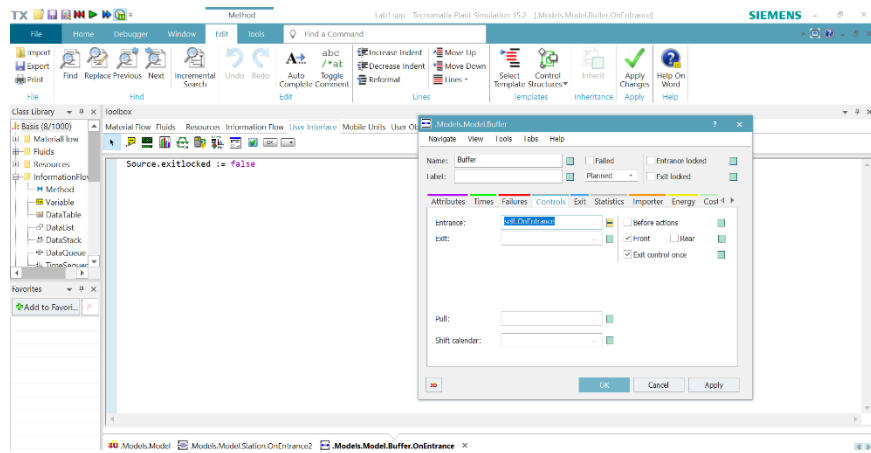
15. Type `Source.exitlocked := true` in coding area then click **Apply Change** and **OK**.



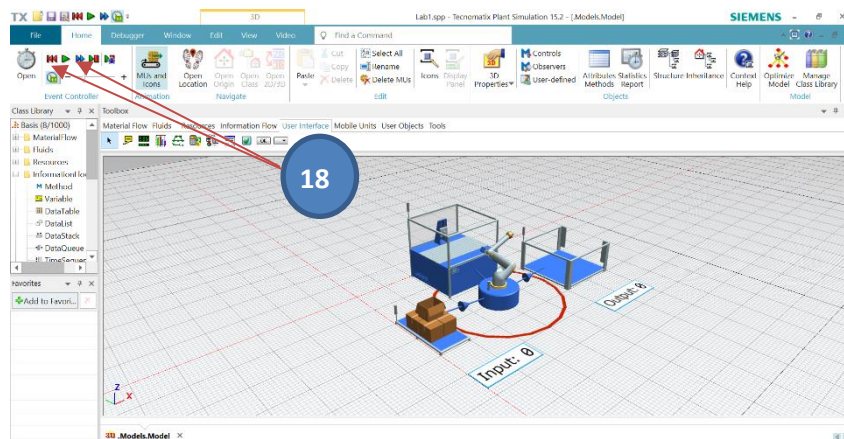
16. Double click on **Buffer** object then click **Controls** tab, right click in **Entrance:** then select **Create Control**.



17. Type `Source.exitlocked := false` in coding area then click **Apply Change** and **OK**.



18. In **Home** tab, click **Reset Simulation** in Event Controller then click **Start** button.



- Discuss the simulation result.

19. Discuss and summarize the simulation model.