Unexpected obstacles generated time delay management
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**Un**expected obstacles generated **time delay management**

**Collaborators**

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- ST Microelectronics, Rousset

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**OBJECTIVES**

- Trajectory reconfiguration for the unexpected obstacles generated time delay reduction or compensation.
- Optimal production by achieving the robot transportation missions by respecting as well as possible their planned duration.

**PRODUCT TRANSPORTATION IN THE FAB**

- Integrate omnidirectional wheeled mobile robots in the fab to transport products between equipment units.
- The main objective is to optimize the production.

**Problematic:** Encountering unexpected obstacles on the robot path is inevitable in a dynamic environment such a fab.

- **Obstacle avoidance if there is enough space.**
- **Waiting until the obstacle goes away from the robot path.**

- In both cases, meeting an unexpected obstacle while operating generates a time delay with regard to the mission planned duration.
- Time delay can impact significantly the production yield.

**Solution ?** Trajectory reconfiguration with respect to the environment changing in order to compensate/reduce the generated time delay.

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**Figure 1:** Kuka robot.

**Figure 2:** $x(t)$ and $y(t)$ reference trajectories to track in the absence of obstacles.

**Figure 3:** generated velocity and position reference trajectories in the absence and in the presence of obstacles.

**Figure 4:** velocity and position reference trajectories reconfiguration for the time delay compensation.

**Figure 5:** $x(t)$ and $y(t)$ reference trajectories updating.