



Smart Tooling Promo event II

27 september 2018

Deelproject
Pipeline inspection

The aim of the development

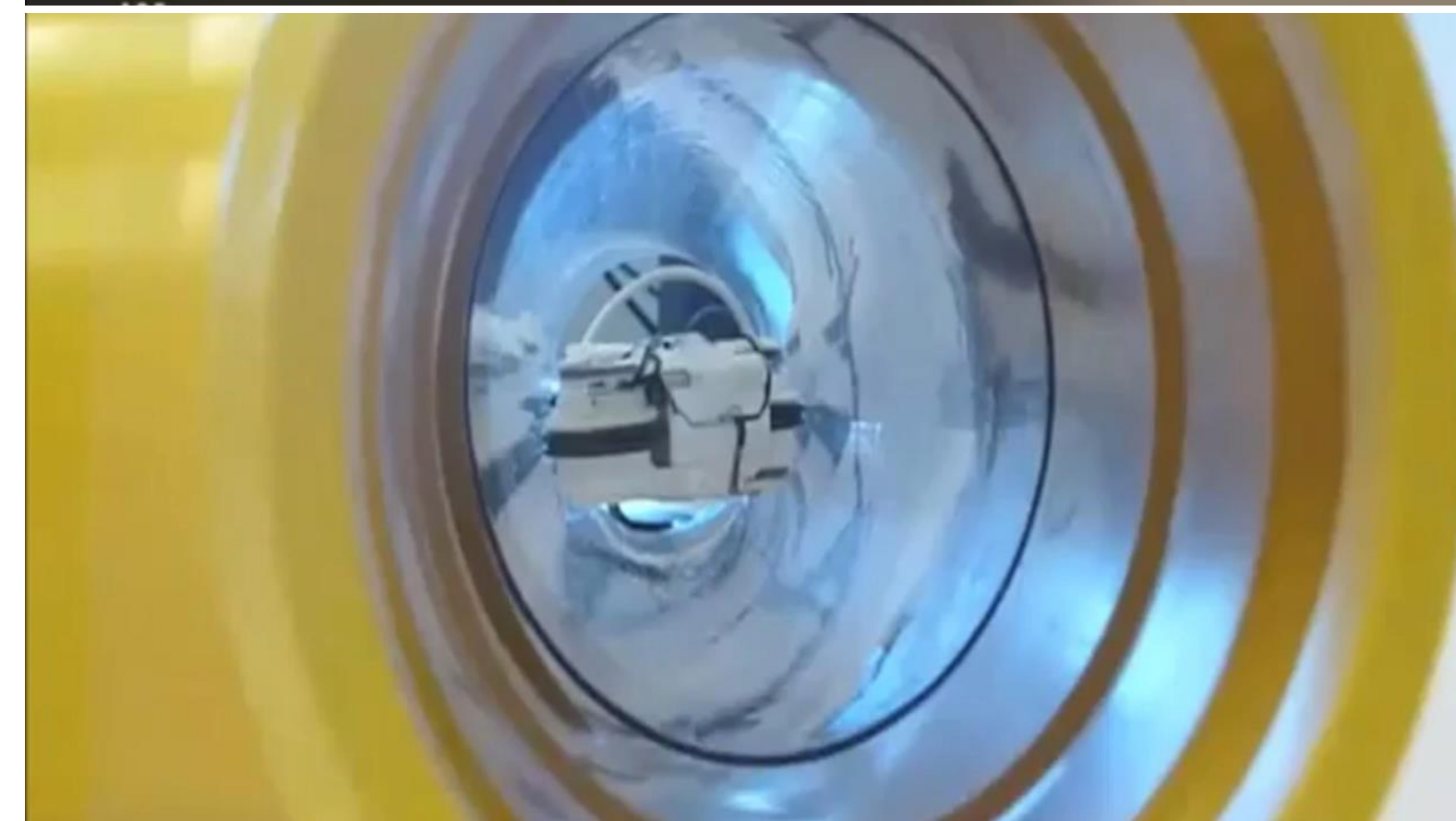
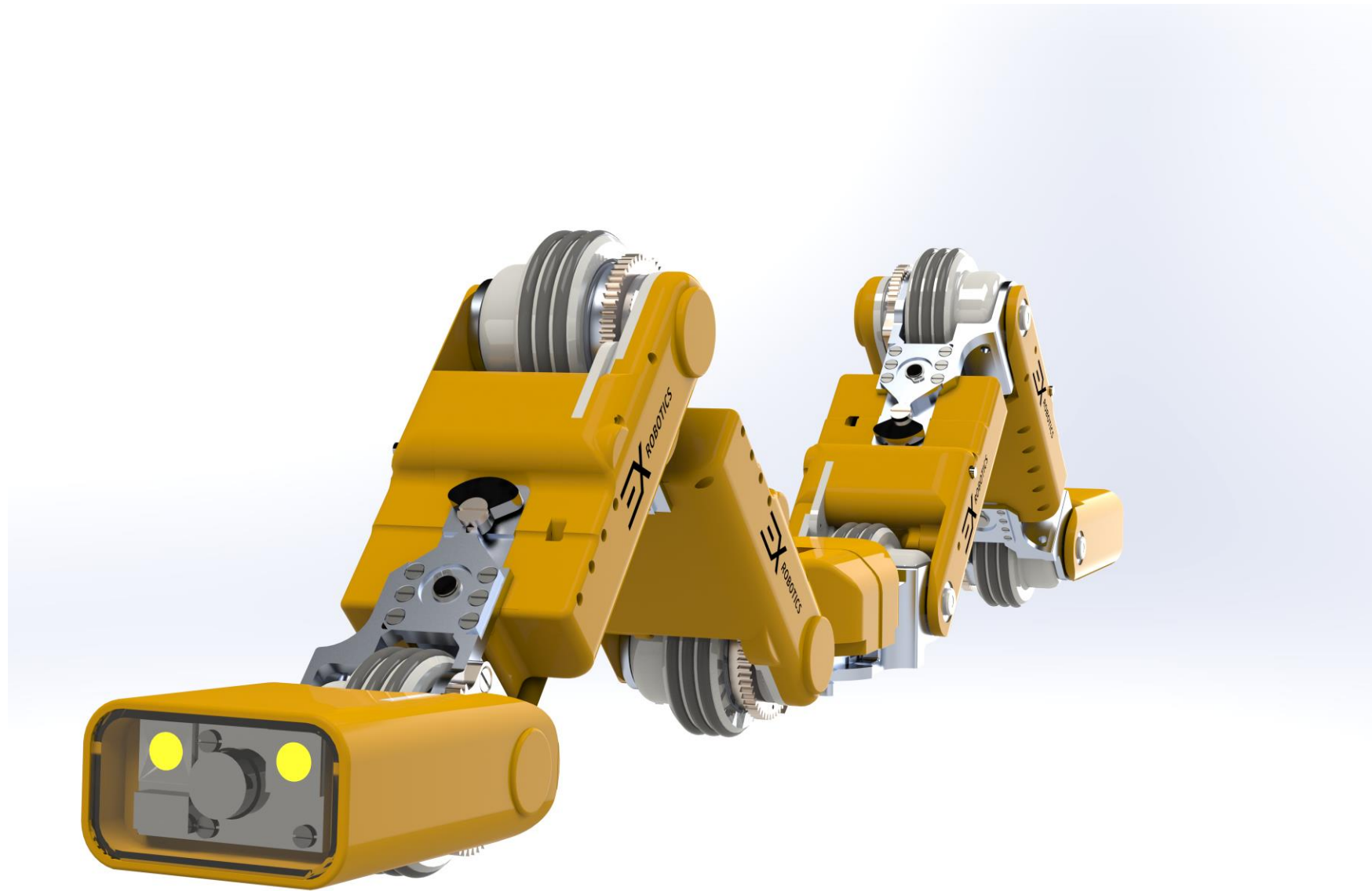
- Common problem in petrochemical plants is the so called “corrosion under isolation”



<https://www.corrosionpedia.com/2/6495/corrosion-under-insulation-cui/a-two-step-solution-to-the-high-cost-of-corrosion-under-insulation>

The robot

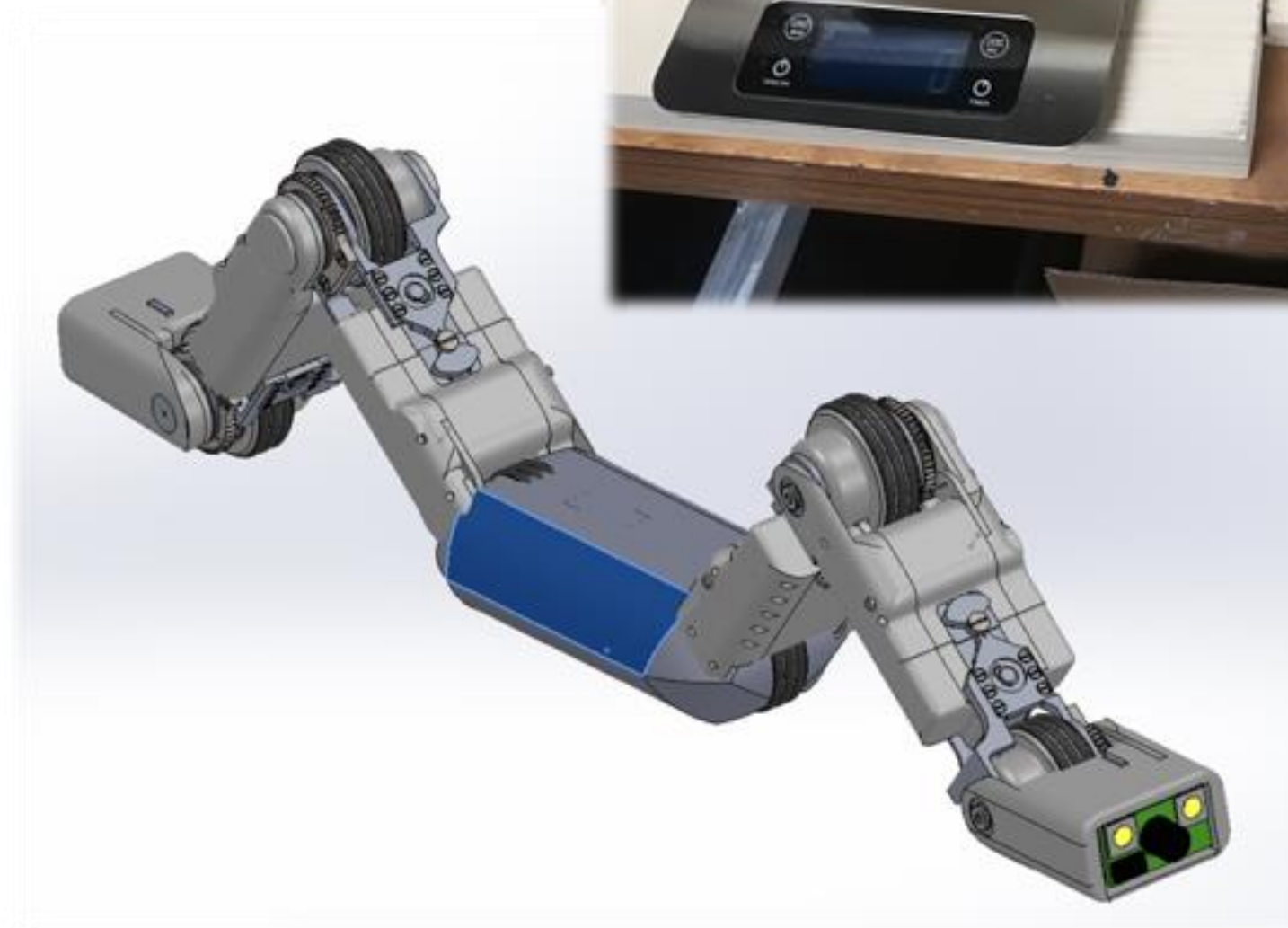
- Snake-like robot



The challenges

1. Mechatrical redesign

- Increase the robustness of the prototype
- Enough clamping force to travel vertical pipes
- Possibility to retract the robot in case of failure



The challenges

2. Autonomous navigation in partially known environment

- Turning procedure based on sensors readings

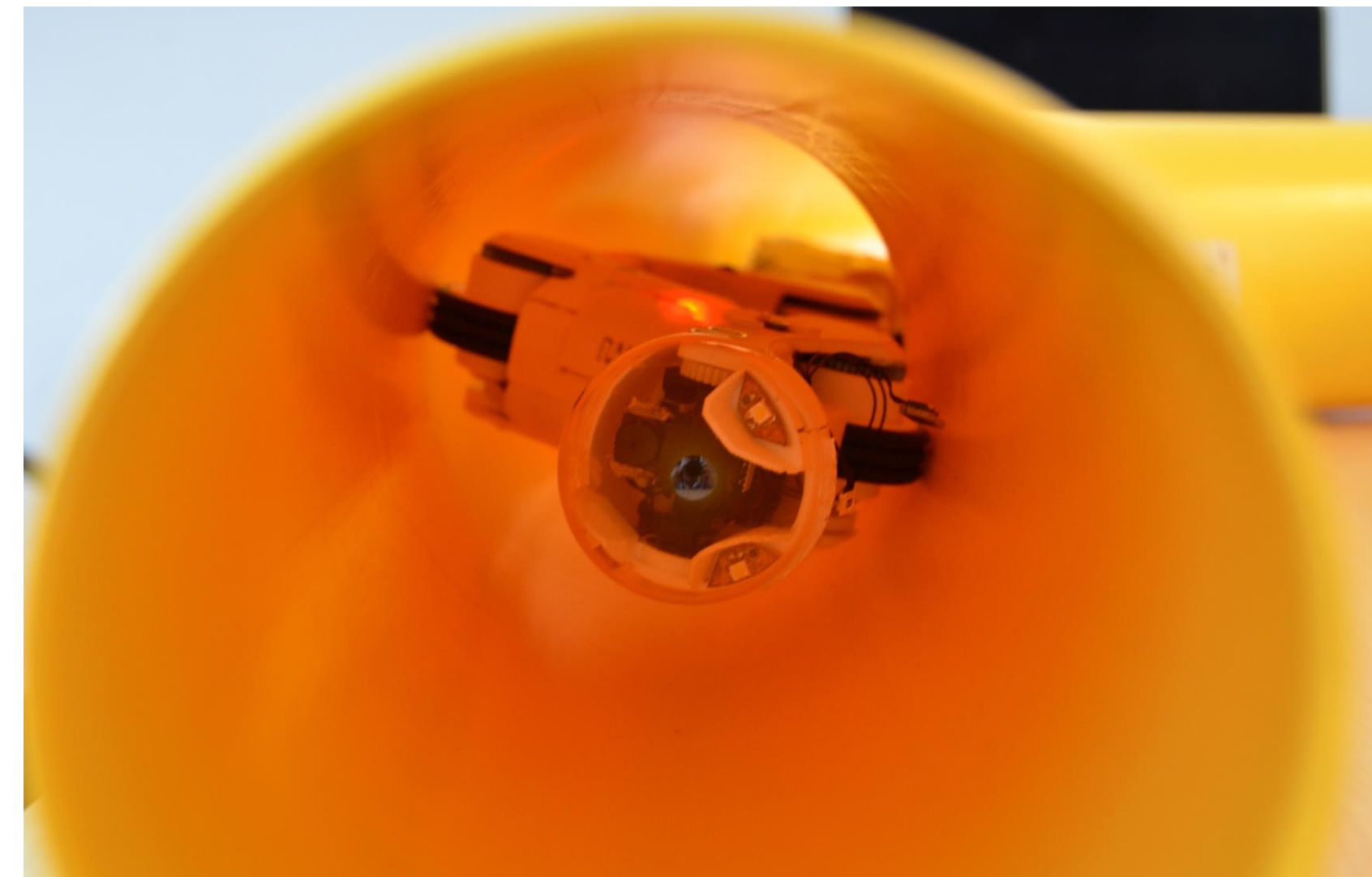


- Wheels slippage and friction coefficient identification for state estimation
- Machine learning techniques to increase the adaptability of the robot

Next steps

- **Construction of the prototype**
- **Finalising work on the primitive actions**
- **Localization of the robot in the pipe**

Thank you for your attention!!!



UNIVERSITY OF TWENTE.



UNIVERSITY OF TWENTE.