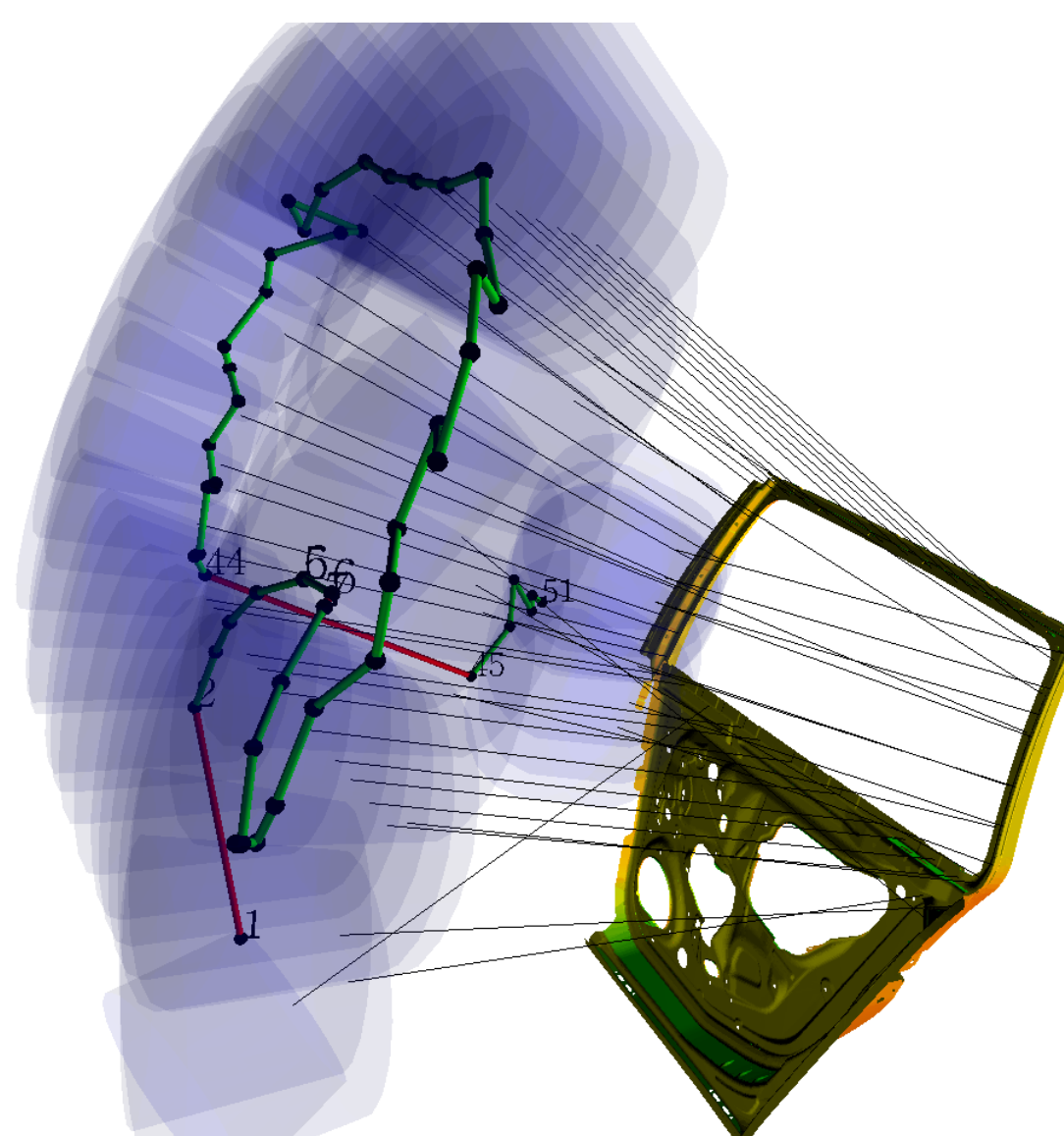
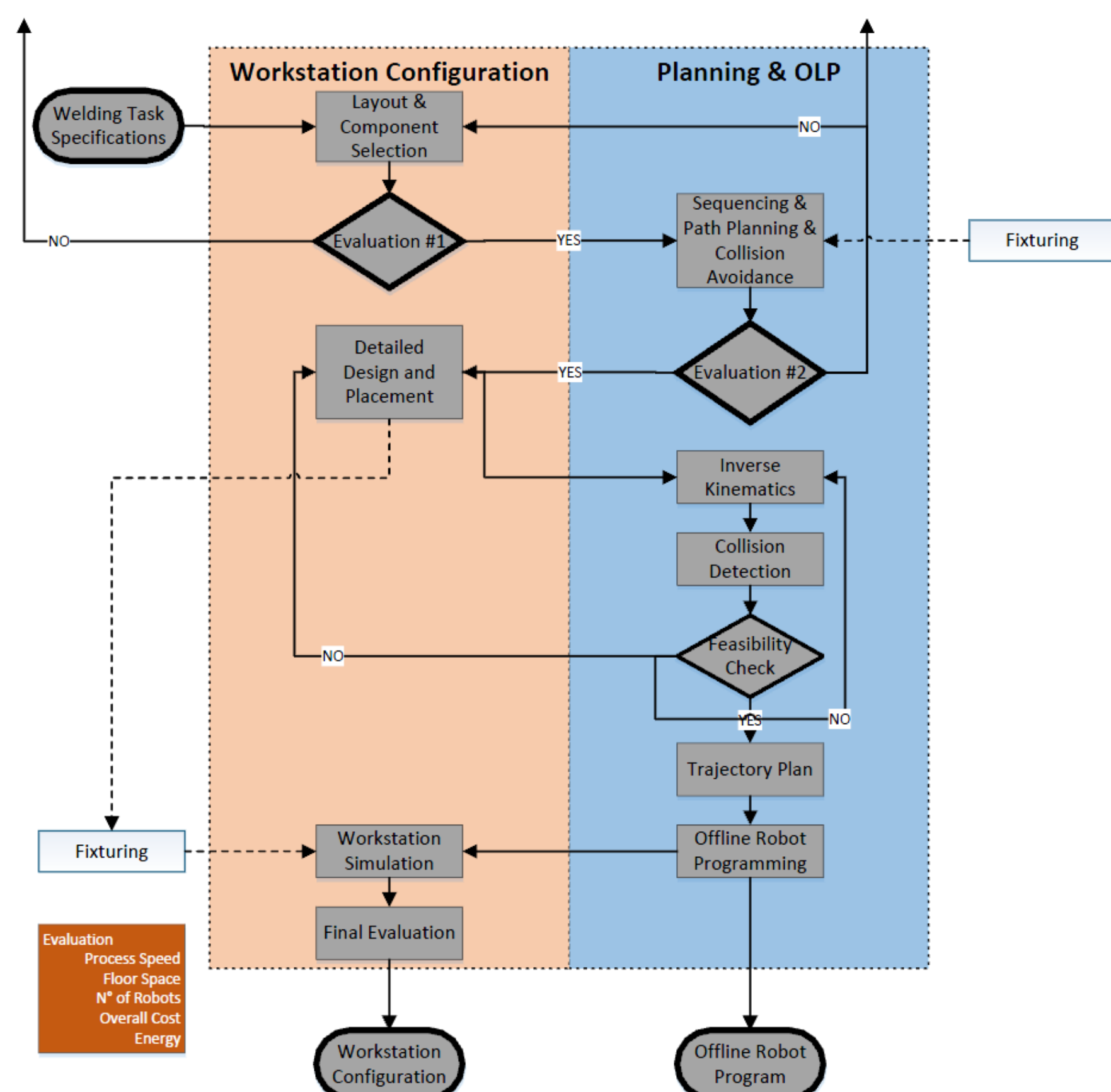
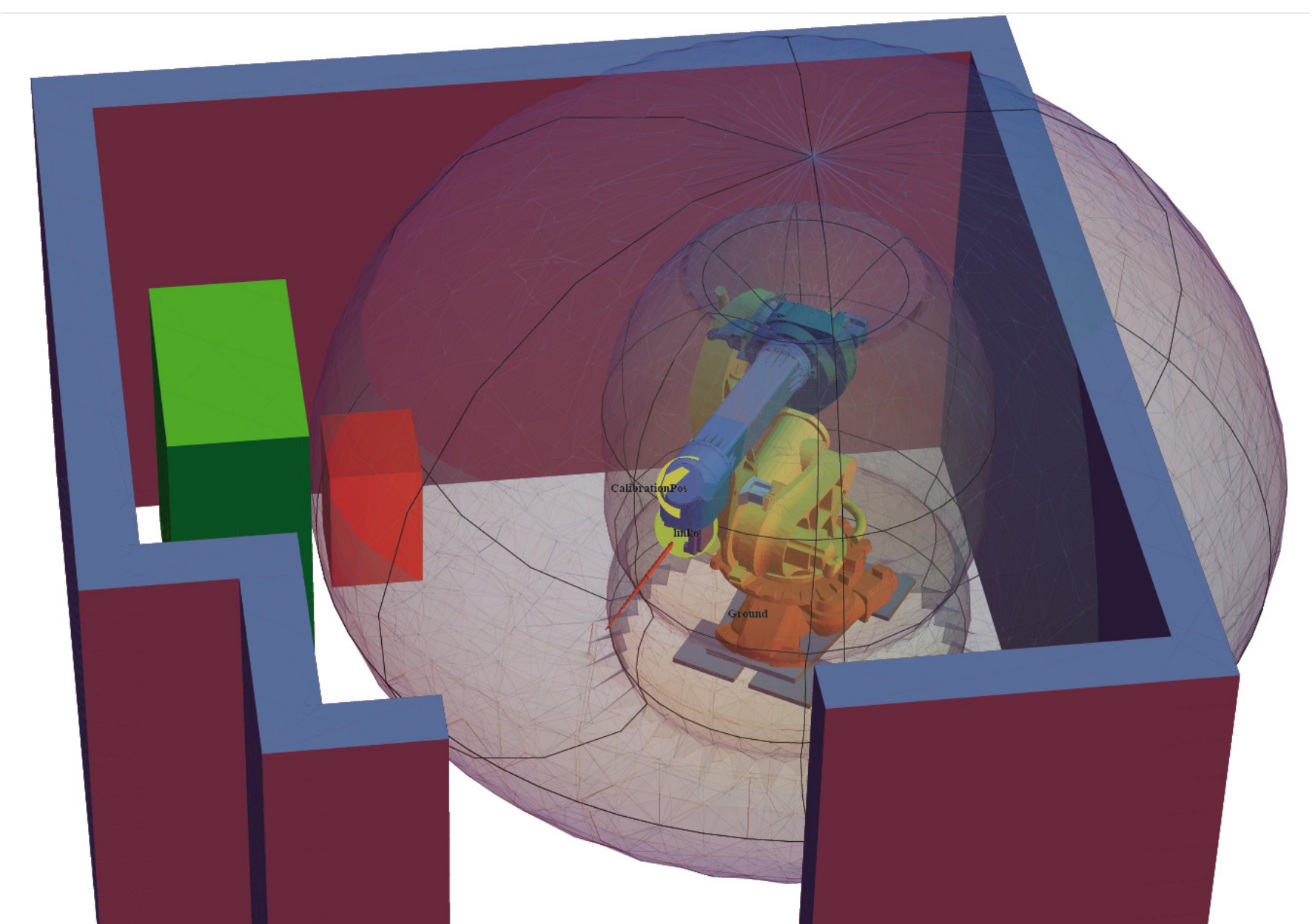


# Configuring and Programming Remote Laser Welding (RLW) Workstations

Gábor Erdős, Csaba Kardos, András Kovács, Zsolt Kemény and József Váncza  
 Fraunhofer Project Center for Production Management and Informatics,  
 Institute for Computer Science and Control (MTA SZTAKI), Hungarian Academy of Sciences, Budapest, Hungary

## Targets of research

Ultimate R&D goal is to develop methods and an appropriate software toolbox that support the configuration of for Remote Laser Welding (RLW) workstations together with the planning, programming, evaluation, and simulation of their operation. The current research scope includes workstations with a single welding robot - a typical setup in the automotive industry for assembling components of cars.



## Results

An integrated workflow has been developed where the closely interacting tasks aimed at determining the configuration and the behavior of RLW workstations are solved in close interaction.

Accessibility analysis of the welding tasks has been solved and a novel, integrated task sequencing and path planning method has been developed. The optimized path of the scanner head can be converted into the motion plan of the welding robot by appropriate inverse kinematic transformation.

According to experiments in industrial settings the proposed method leads to a substantial reduction in the cycle time of the welding operation compared to earlier approaches.

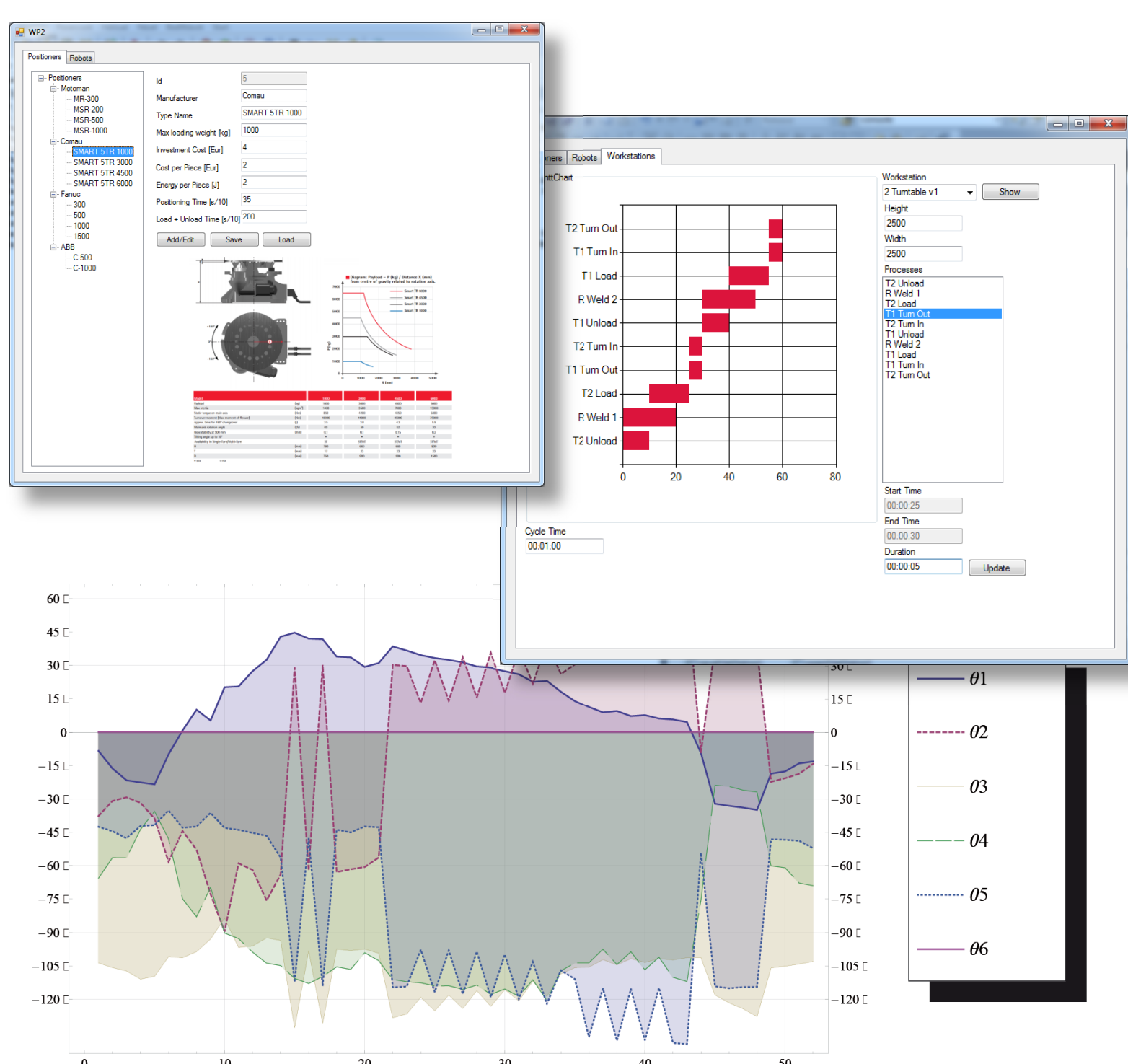
### References:

Erdős, G., Kemény, Zs., Kovács, A., Váncza, J.: Planning of remote laser welding processes. 46th CIRP Conference on Manufacturing Systems 2013, Procedia CIRP 7, 222-227, (2013)  
 Kovács, A.: Task Sequencing for Remote Laser Welding in the Automotive Industry. Proc. of the 23th International Conference on Automated Planning and Scheduling (ICAPS 2013), Rome, pp. 457-461, (2013)

### Partners:

University of Warwick (Coordinator), MTA SZTAKI, Politecnico di Milano, University of Patras, Ecole Polytechnique Federale de Lausanne, Università degli Studi del Molise, Jaguar/Land Rover, Stadco Limited, Comau Spa, Precitec Kg, Enginsoft Spa, Ulsan National Institute of Science and Technology (Korea).

Contact: [vancza@sztaki.mta.hu](mailto:vancza@sztaki.mta.hu)



Industry-University Research Programme Coordinated by WMG, University of Warwick:



Further Information: <http://RLWnavigator.eu/> or <http://digiPLM.org/> or phone +44 24 765 72681