

# Developing a distributed control system for automated tool logistics

## Project context

All manufacturing companies rely on tools to be able to produce goods. Cutting tools to machine metals are the most prominent and commonly used group among them. The diversification of products combined with decreasing piece numbers requires a higher number of tool changes and therefore tool transports. The provision of cutting tools within a plant is mostly performed manually and is therefore prone to errors and delays. The research project *AutoWerk* is working on removing those problems by developing a concept for automated and interconnected tool logistics. The key feature of that concept is using mobile robots for the transport and handling processes required in the provision of tools. A crucial component of this concept is a distributed control system that is in development right now. Its tasks are the identification of transport demands, the combination of individual demands to tours, the assignment of tours to robots and the supervision of the complete system.

## Your objective

In this interdisciplinary project, your objective is to implement the backend of said control system in C#. The system should be designed according to an already existing general architecture of the software. In the first step of the project, the architecture model has to be detailed and refined. The next step consists in the creation of the basic software modules and definition of the interfaces they use to communicate with each other and surrounding IT systems like enterprise re-



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source planning (ERP) or tool management systems (TMS). Special focus also lies on documenting your progress diligently during the whole project.

## Your profile

- You are interested in problems in a logistics and industry 4.0 context
- You work in a structured, independent and diligent way
- You are proficient in English and/or German
- You have previous experience programming in C# and programming data bases

If you are interested in this IDP please send your application (including CV and grade report) to [florian.ried@tum.de](mailto:florian.ried@tum.de).

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