

## **SE-9.4 E|Flow – Implementation of an Intralogistics Routing-Service Basing on Decentralized Workspace Digitization (S)**

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The paper presents an intralogistics routing-service for autonomous and versatile transport vehicles. An infrastructural sensor digitize the workspace of the vehicle and is the basis for the vehicle-specific routing plan. Nowadays, a central computing unit allocates transportation task to a known number of automated guided vehicles, which are usually of the same type. Furthermore, this device generates a routing appropriate to the dimensions and the kinematic gauge of the vehicle fleet. The pathing for each specific vehicle is calculated and the result is send to the different entities. The approach of this paper bases on the digitization of the workspace with a ceiling camera, which divides the scenery into moving obstacles and an adaptive background picture. A central computing unit receives the background picture of several cameras and stitch them together to an overview of the entire workspace, e.g. a production hall. Furthermore, the approach includes the development of automated guided vehicles to versatile autonomous vehicles, were each entity is able to calculate the pathing on a given routing plan. A fleet of versatile autonomous vehicles consists of vehicles with task-specific dimensions and kinematic gauges. Therefore, each vehicle needs its own routing-plan. The solution is that each vehicles uses a vehicle parameter-server and register itself with these parameters at the routing unit. This unit is calculating a routing-plan for each specific vehicle dimension and gauge and providing it. When getting a new task, the vehicles uses this routing-plan to do the pathing. The routing-algorithm is implemented inside the service-layer of the versatile autonomous vehicle system. This approach lowers the amount of data, which is send between the service layer and the transportation entities by reducing the information of the workspace to the possible routes of each specific vehicle. Furthermore, the calculation time for routing and pathing is lowered, because each vehicle is calculating its task-specific path, but the route-map is calculated once for each vehicle-type by the routing-service.