ANS DE R&D POUR
L'INNOVATION
DES ENTREPRISES

SELF-DRIVING, SOCIALLY INTELLIGENT VEHICLES
Robots in interaction and hybrid reality

How can you boost the performance of self-driving connected vehicles? To a large extent, the answer lies in how space is shared with others. To do this effectively, the vehicle needs to communicate not just using wireless networks but also by behaving in a way that can be perceived by human users. The demonstration here presents these two approaches to interaction via minirobots and hybrid reality.

Carnot ARTS Institute

Scientific / technological breakthrough

Automated Guided Vehicles (AGVs) share space with other road users. Scientific research has demonstrated that behaviour based on obstacle avoidance and using empty spaces is not optimal. We therefore consider that the conflict space is negotiated through complex interactions involving signalling, 5G/G5 communication and communicative behaviour. At intersections, inter-AGV communication allows AGVs to decide jointly on the best way of crossing the conflictual space, as time- and as energy-efficiently as possible.
This communicative behaviour also enables AGVs and pedestrians to optimise their respective trajectories. The safety of the original solutions proposed is tested using hybrid reality.

Competitive advantage for the economic stakeholders

The technology being developed by Carnot ARTS helps generate non-negligible time and energy savings when deploying AGVs (Automated Guided Vehicles). Connected AGVs can self-organise at crossings to collectively prevent gridlock, reduce crossing times and meet trip deadlines. They are also capable of intelligently optimising interaction with human operators when their paths cross. AGVs display their intentions and are capable of courtesy and safe driving behaviour which considerably enhances working conditions. Immersive simulations demonstrate gains of two to three seconds at each pedestrian crossing.

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