10th SESAR Innovation Days
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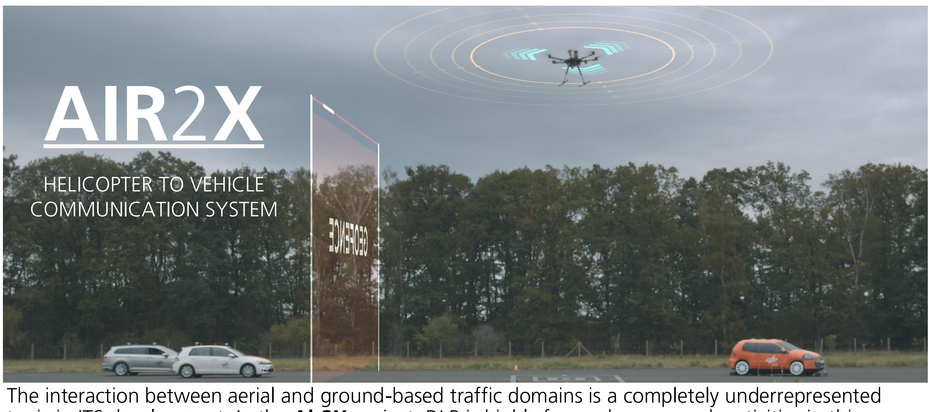
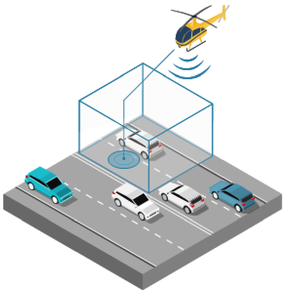


The interaction between aerial and ground-based traffic domains is a completely underrepresented topic in ITS development. In the **Air2X** project, DLR is highly focused on research activities in this sector. To identify and outline the potential difficulties of cooperative ground/air traffic, an example implementation of a particular use case is realized. The use case ***Augmented Helicopter Rescue Operation with Air2X and Virtual Infrastructure*** should improve a safe landing maneuver of a rescue helicopter on a highway or other dense traffic situations.

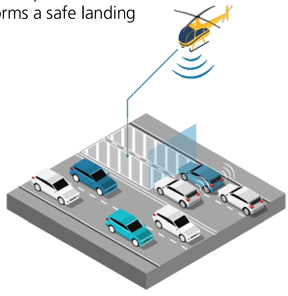
Motivation

- In case of an accident it is often necessary that a rescue helicopter is required
- If a landing on a traffic area is needed the traffic in this area has to be stopped
- Today, emergency personnel have to establish this blocked area manually
- This costs valuable time
- With communication between the helicopter and the ground vehicles a temporary establishment of a safe exclusive landing zone without ground support is possible

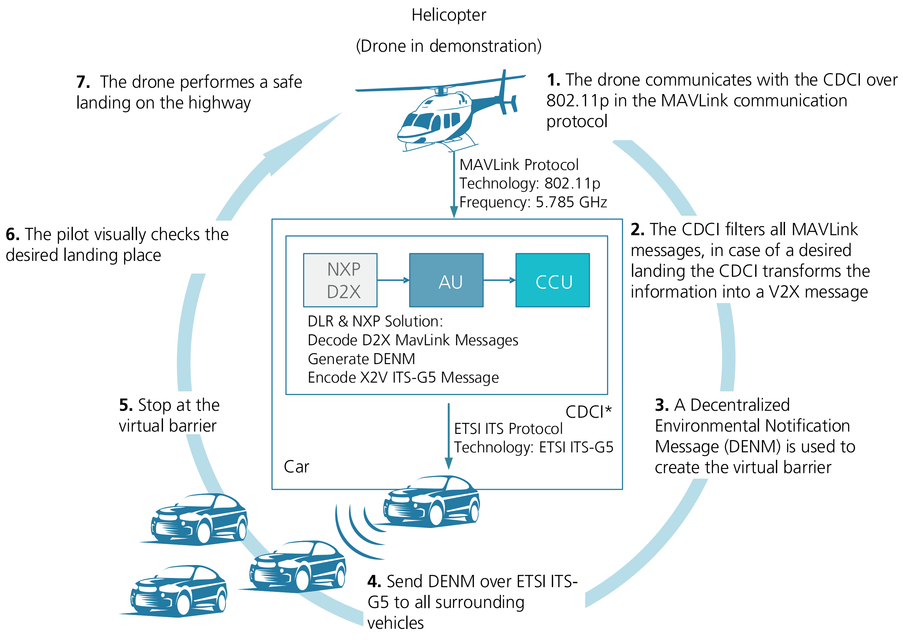


Concept

- The pilot defines the exact landing place due to the circumstances at the accident area
- After defining the landing place, the pilot triggers a V2X (Vehicle to everything) message and sends this message to all vehicles nearby
- A digital barrier prevents those vehicles which are capable to receive, decode and process the message from entering the desired landing site
- Thereby, they form a physical barrier for all following cars on their lane
- After the pilot confirms the successful blocking he performs a safe landing



Demonstration



Due to the lack of a common communication standard for ground vehicles and aircraft, an interface, denoted here as "Cross-Domain Communication Interface"* (CDCI), is required to allow the air-to-ground communication.

The DENM already contains the option to encode the use case "rescue and recovery work in process - rescue helicopter landing" and can consequently be deployed for this purpose.

Further steps

- Gather stakeholder requirements
- Identifying further possible use cases
- Discuss technical challenges:
  - Advantages and disadvantages of available communication technologies
  - Generic protocol transformation between air and ground traffic e. g. Uspace2ITS interface
  - Regulatory aspects in frequency allocation

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NXP
ADAC Luftrettung