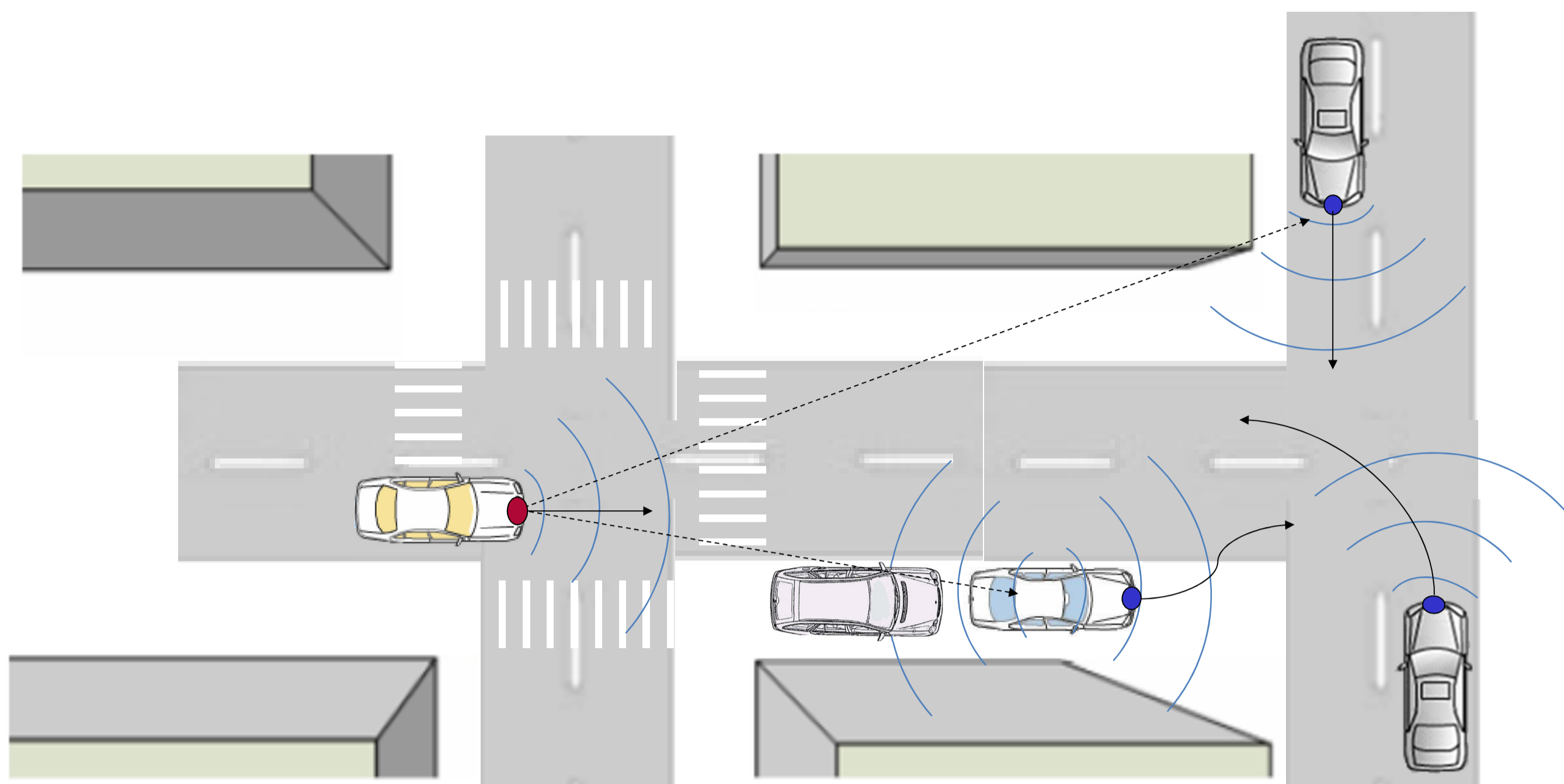


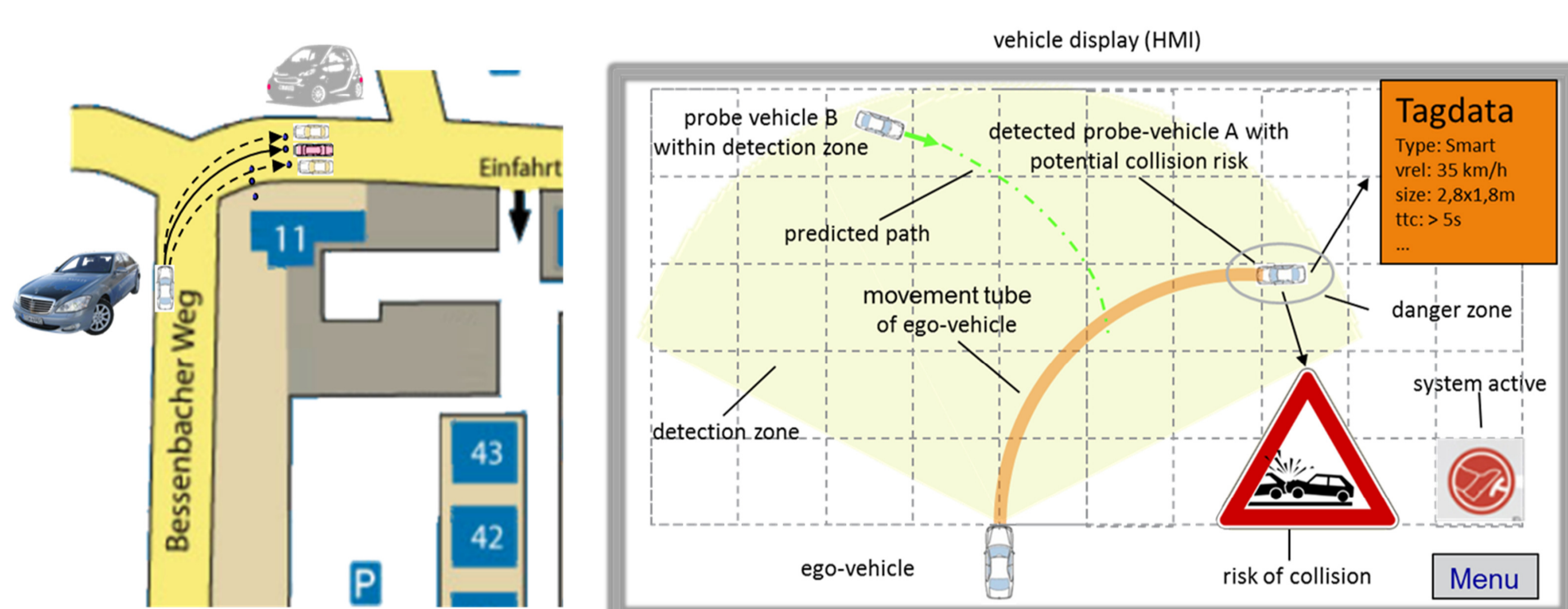
# Collision Avoidance By TBL (Transponder Based Localization)

## TBL enables driver assistance and collision avoidance functions in intersectional scenarios



- Localization and tracking of visible and occluded vehicles
- Calculation of potential collision paths
- Object classification and plausibility checks
- Driver information and warning
- Alerting and (autonomous) intervention

## Demo Part 1: Path Prediction and Object Classification

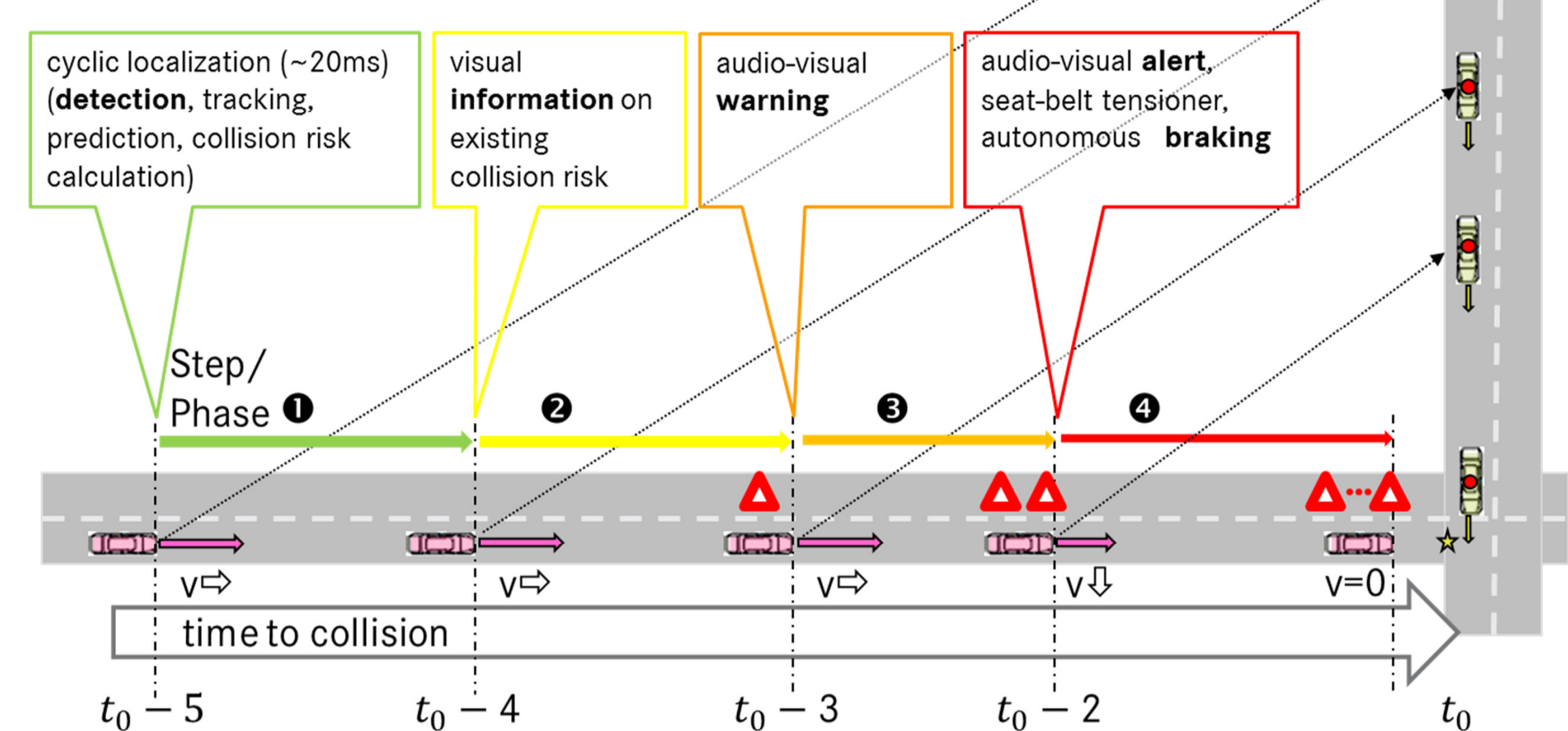


- Probe-vehicle (smart) is occluded but within the detection area of the Onboard Unit (OBU)
- Ego-vehicle (S-Class) user interface (UI) shows relative position of smart and potential trajectories of the S-Class
- Changing steering angle bends movement trajectory bundle of S-Class
- Collision path with smart or close passing can be adjusted
- S-Class moves towards smart to show localization quality (differentiation between collision course and close passing)

## (Demo) Action Concept and Warning Strategy

### Action Plan: detect – inform – warn – alert – intervention

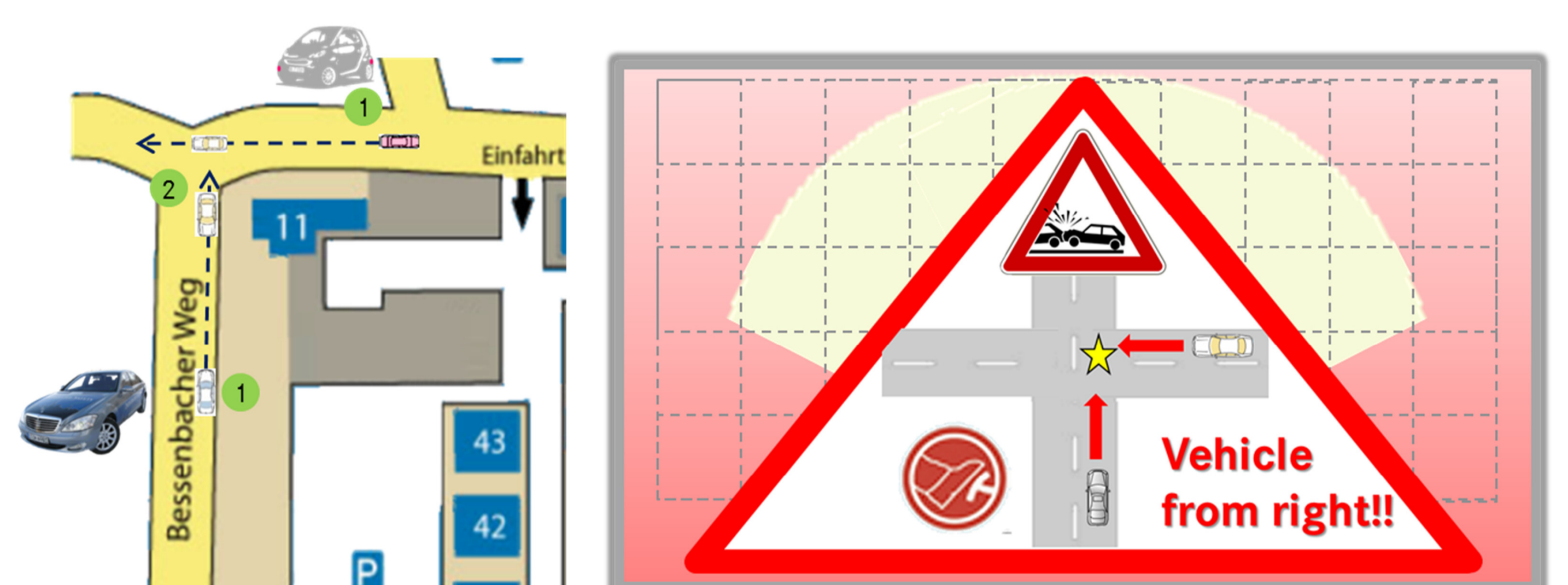
Scenario: The system detects a potential risk of collision (ROC) with an estimated time-to-collision ( $t_{ttc}$ ) of 5 sec which is increasing and valid until ( $t_0 - 2$ ).



Concept comprises the following steps:

1. **Detection:** The system is aware of a potential risk of collision
2. **Information:** The driver is informed about an existing ROC he should pay attention to
3. **Warning:** High ROC, driver must react immediately
4. **Alert & Intervention:** System triggers an autonomous braking for collision avoidance

## Demo Part 2: Collision Avoidance Driving Scenario



- S-Class and smart vehicle start at position 1
- Both cars are on collision course and would crash at position 2
- The S-Class localizes the smart and calculates ROC
- The S-Class system informs and warns the driver, if he does not react at all
- Two seconds prior to the impact the S-Class initiates an autonomous braking to avoid the collision