Relative positioning context
- Usage of available GPS hardware
- Usage of the V2V communication for data transfer
- Improved relative positioning between two vehicles

Example applications
- Deceleration detection in directional traffic
- Detection if two vehicles are located on the same lane
- Assignment of local perception information to communicated data

Why relative positioning?
- Influence of several error factors to the absolute GPS position
- Two adjacent vehicles have correlated errors
- Elimination of systematical errors due to relative observations of two vehicles
- Minimization of the total error

Approach
- Communication of GPS raw data
- Selection of common satellites
- Calculation of the positions of the GPS satellites
- Processing of pseudo-range measurements of cooperating vehicles
- Calculation of a relative vector

Results
- Two vehicles with low-cost GPS
  - Positions vehicle A
  - Positions vehicle B
- Relative vectors are robust against errors in the absolute GPS positions