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*Master Thesis*

**„Position Dependent Addressing of  
Vehicles in Inter-Vehicle Communication  
Systems”**

*by  
Dietmar Wiget*



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### **Introduction**

**FleetNet project\**



**Objective and partner**

**Application classes**

### **Master Thesis**

**Objectives**

**Possible approaches**

### **Summary**



***Vision***      ***Development of technologies for communication between vehicles as active mobile Internet nodes free of charge***

***Partners***

DaimlerChrysler AG

Fhl Fokus

NEC Europe Ltd.

Robert Bosch GmbH

Siemens AG

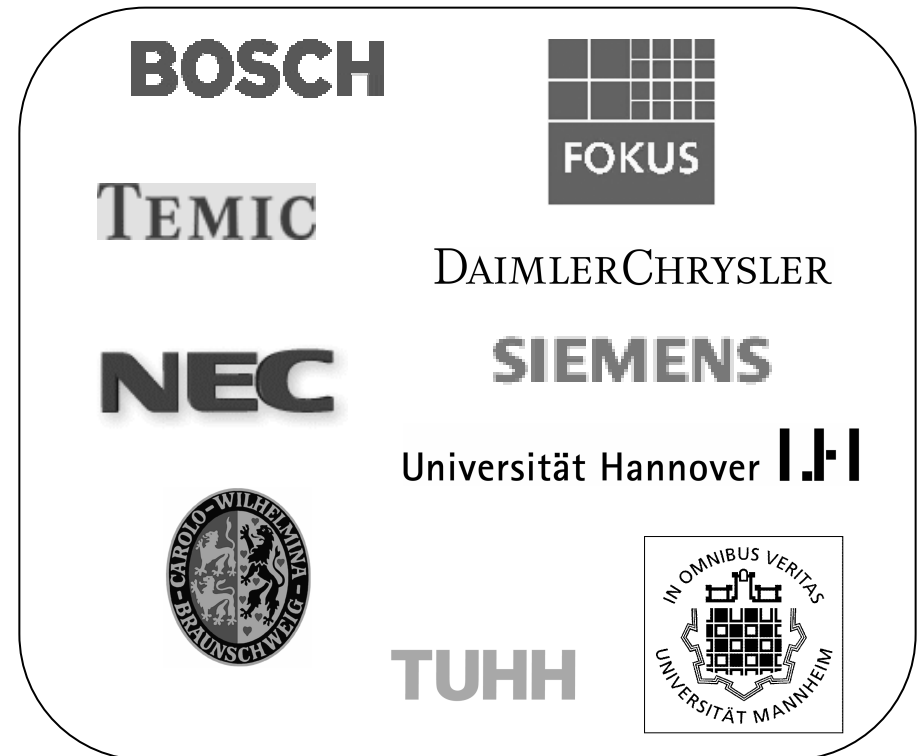
TEMIC TELEFUNKEN microelectronic GmbH

TU Hamburg-Harburg

University of Hannover

University of Mannheim

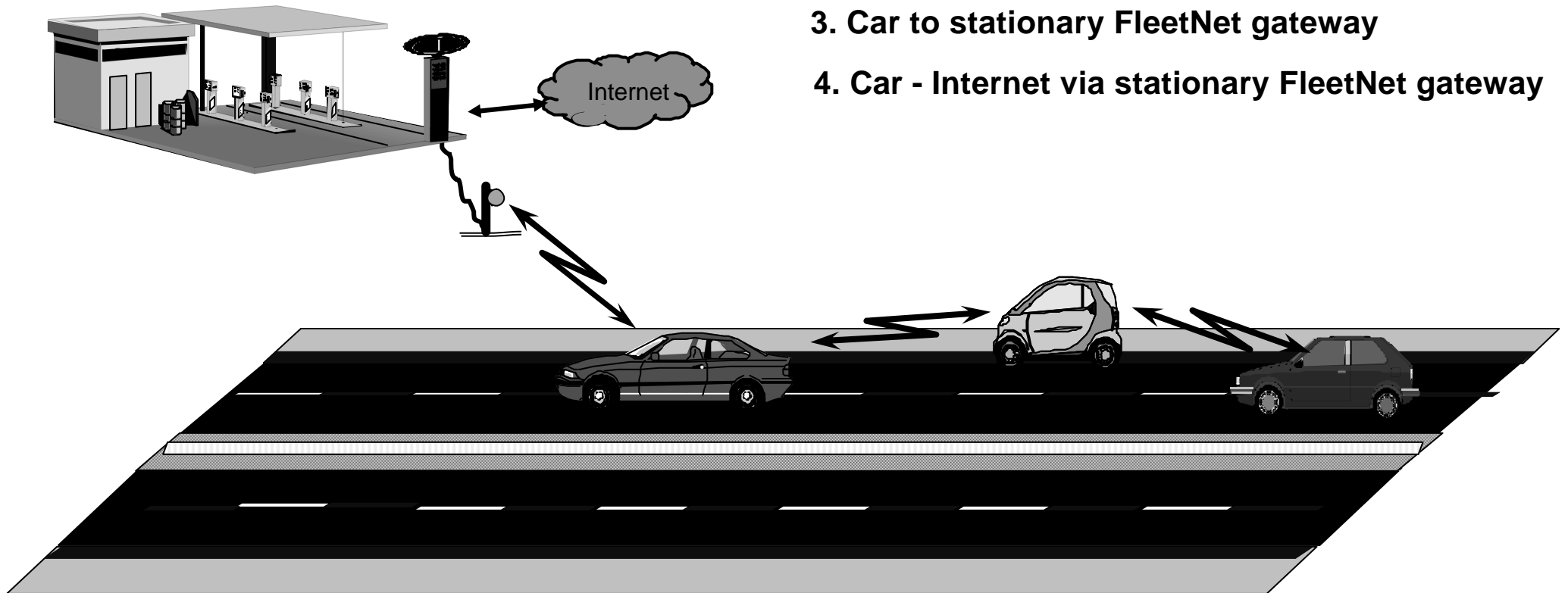
TU Braunschweig





## *Inter-Vehicle Communications Platform*

1. Car-to-car direct
2. Car-to-car via relaying by intermediate cars
3. Car to stationary FleetNet gateway
4. Car - Internet via stationary FleetNet gateway





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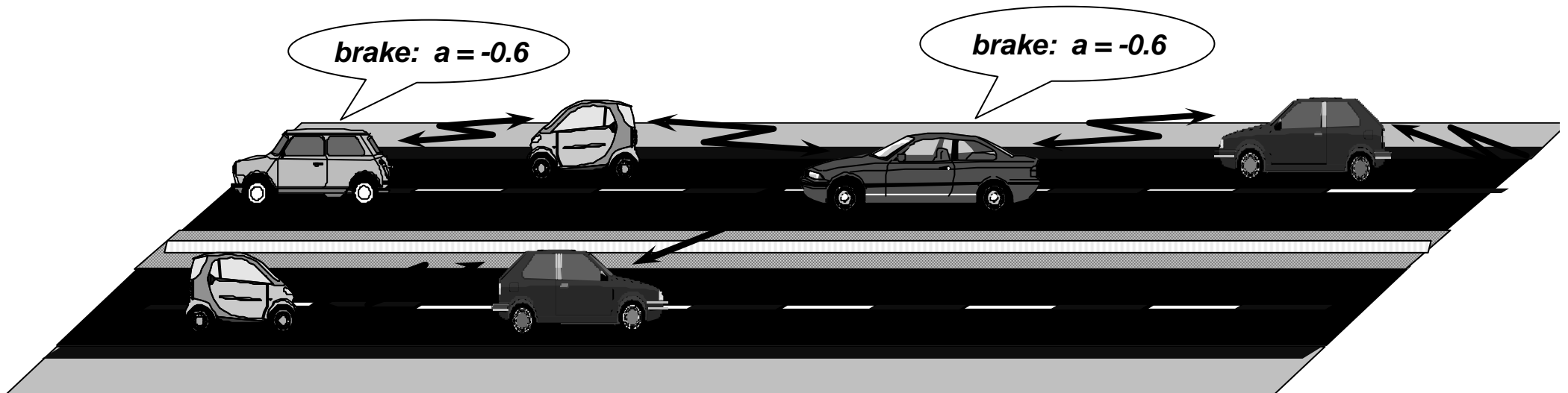
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## ***Application Classes***

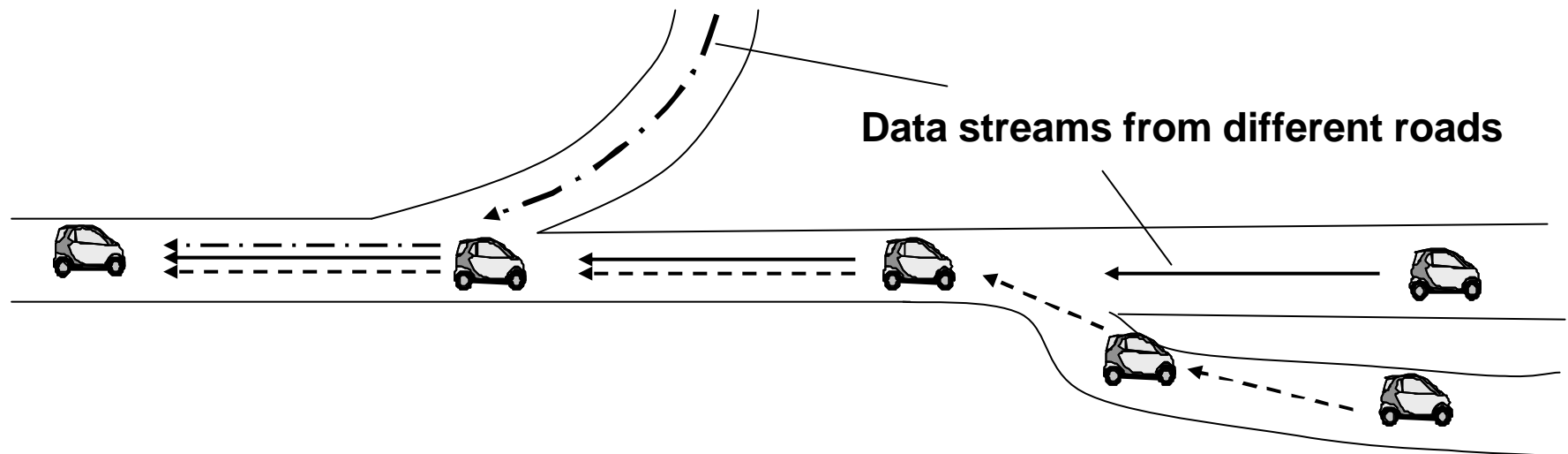
- ✍ Cooperative Driver Assistance***
- ✍ Decentralized Floating Car Data***
- ✍ User Communication and Information Applications***

## Cooperative Driver Assistance Applications

- ✎ Relaying of sensor data
- ✎ High demands on transmission delay and security
- ✎ High priority when related to passengers' safety
- ✎ Position dependent addressing



## ***Decentralized Floating Car Data Services***

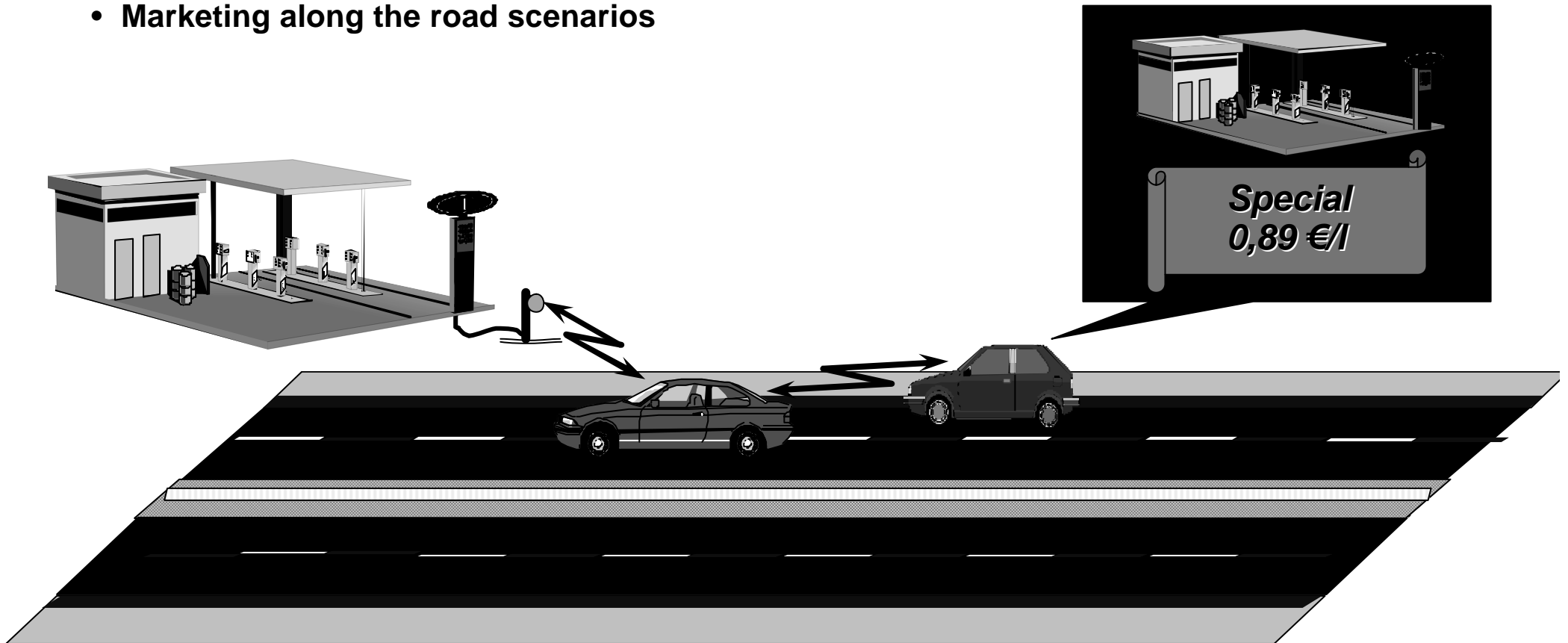


- **Example: Provision of a traffic flow profile on the anticipated route**
- **Data from different routes may be evaluated and provided to a onboard navigation system**
- **Transmissions occur periodically**
- **Communications based on broadcasts**



## *User Communication and Information Applications*

- Common Internet applications (Mail, Chat, WWW, ...)
- IP-addressing and position dependent addressing
- High bandwidth demands
- Marketing along the road scenarios





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## ***Objectives***

### **Task A**

~~✍~~ target area definition data

packet header size (position data, coordinate system)

### **Task B**

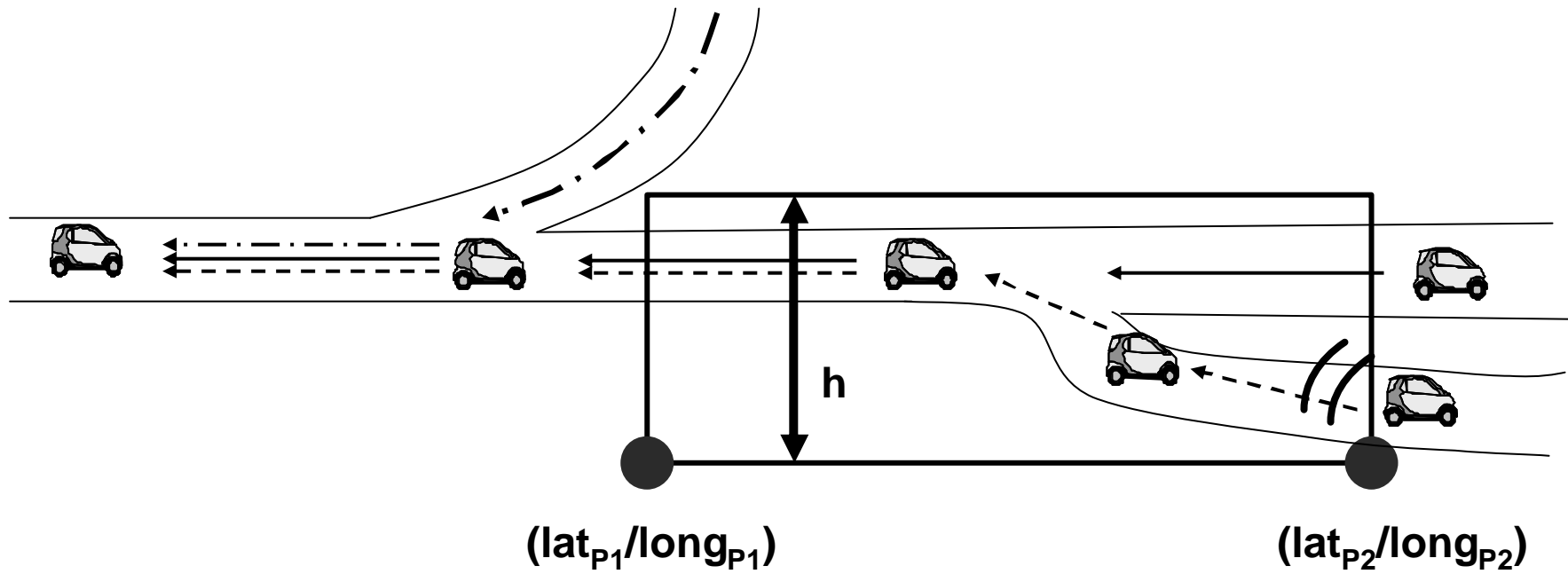
~~✍~~ algorithms deciding whether a node is inside or outside the  
target area



**Tradeoff between processor load & accuracy!**

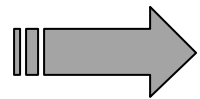
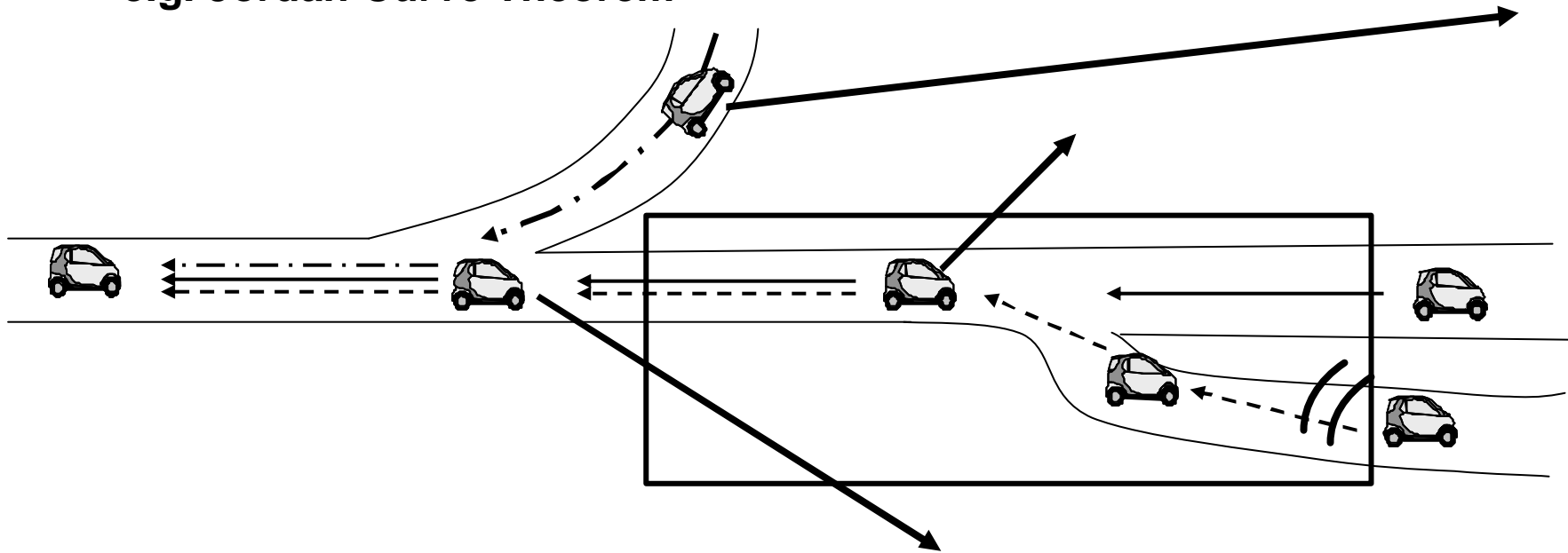
## Possible approach – target area definition

e.g. rectangle



## Possible approach – algorithm

e.g. Jordan Curve Theorem



**Principle: number of intersections!**



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## ***Summary***

**Ad hoc radio networks will provide new applications**

- ✍ Which will complement today's telematic services**

### **Application Fields**

- ✍ Cooperative Driver Assistance Applications**
- ✍ Decentralized Floating Car Data Services**
- ✍ User Communication and Information Services**

**Further Information:      *[www.fleetnet.de](http://www.fleetnet.de)***



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**I'm looking forward to answer your  
questions!**