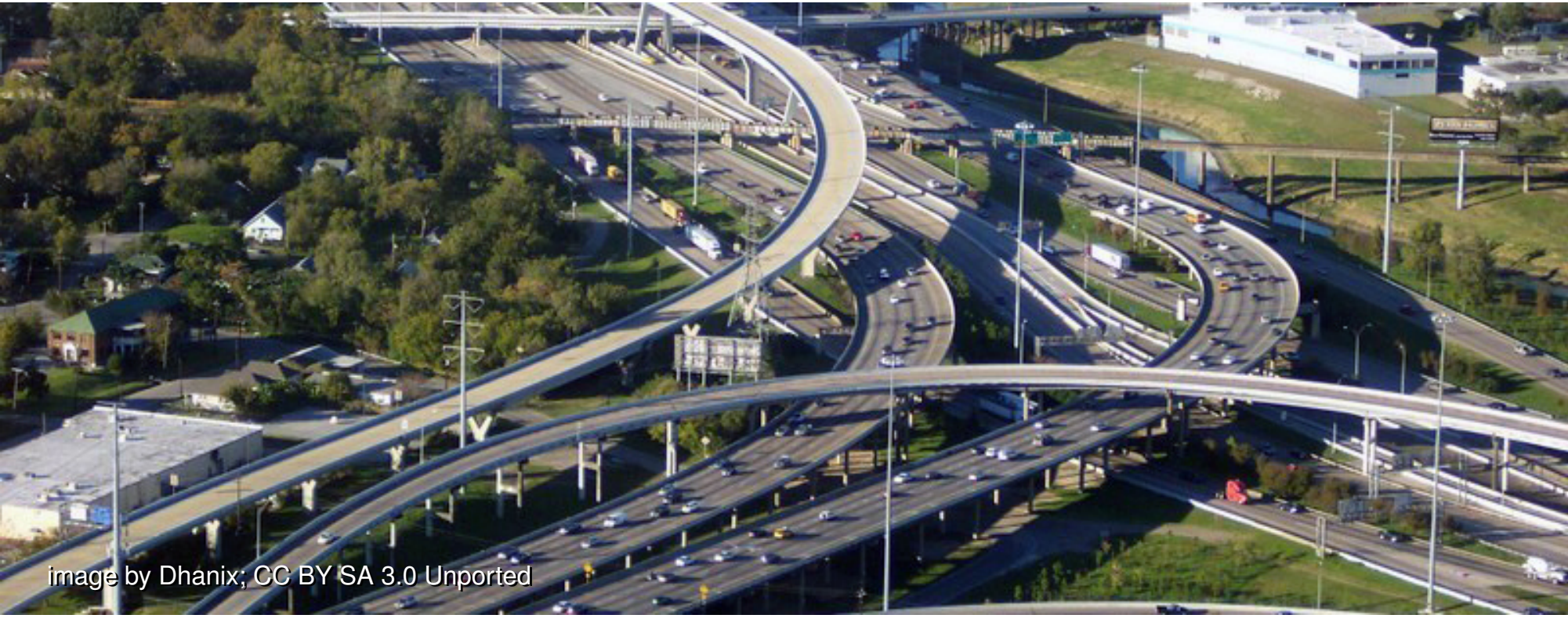

Differentiating misbehavior and anomalies for VANETs

2nd GI KuVS Fachgespräch

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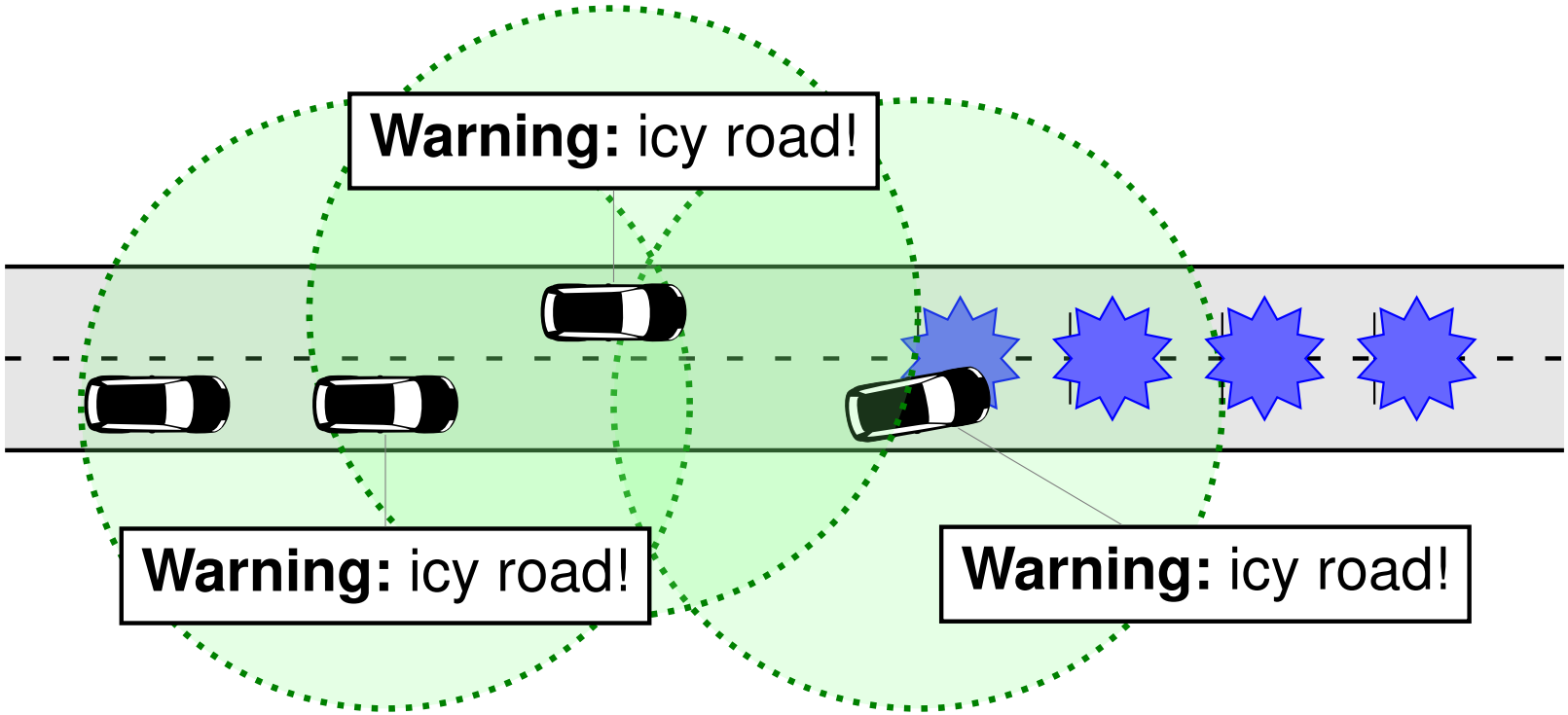
Institute of Distributed Systems

20.02.2014

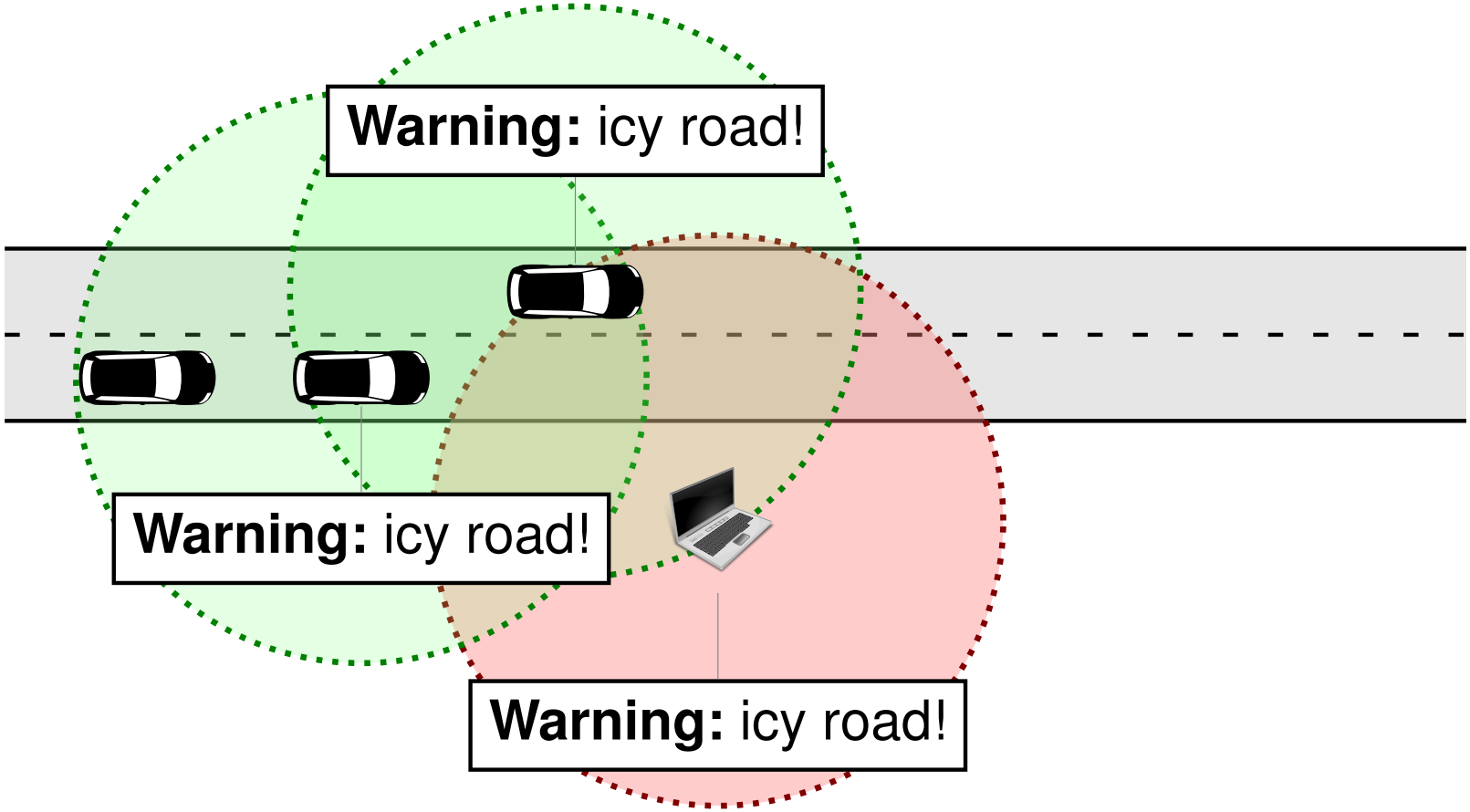
VANET Goals

- **traffic efficiency**
- infotainment
- **safety**

Example



Example



VANET Security

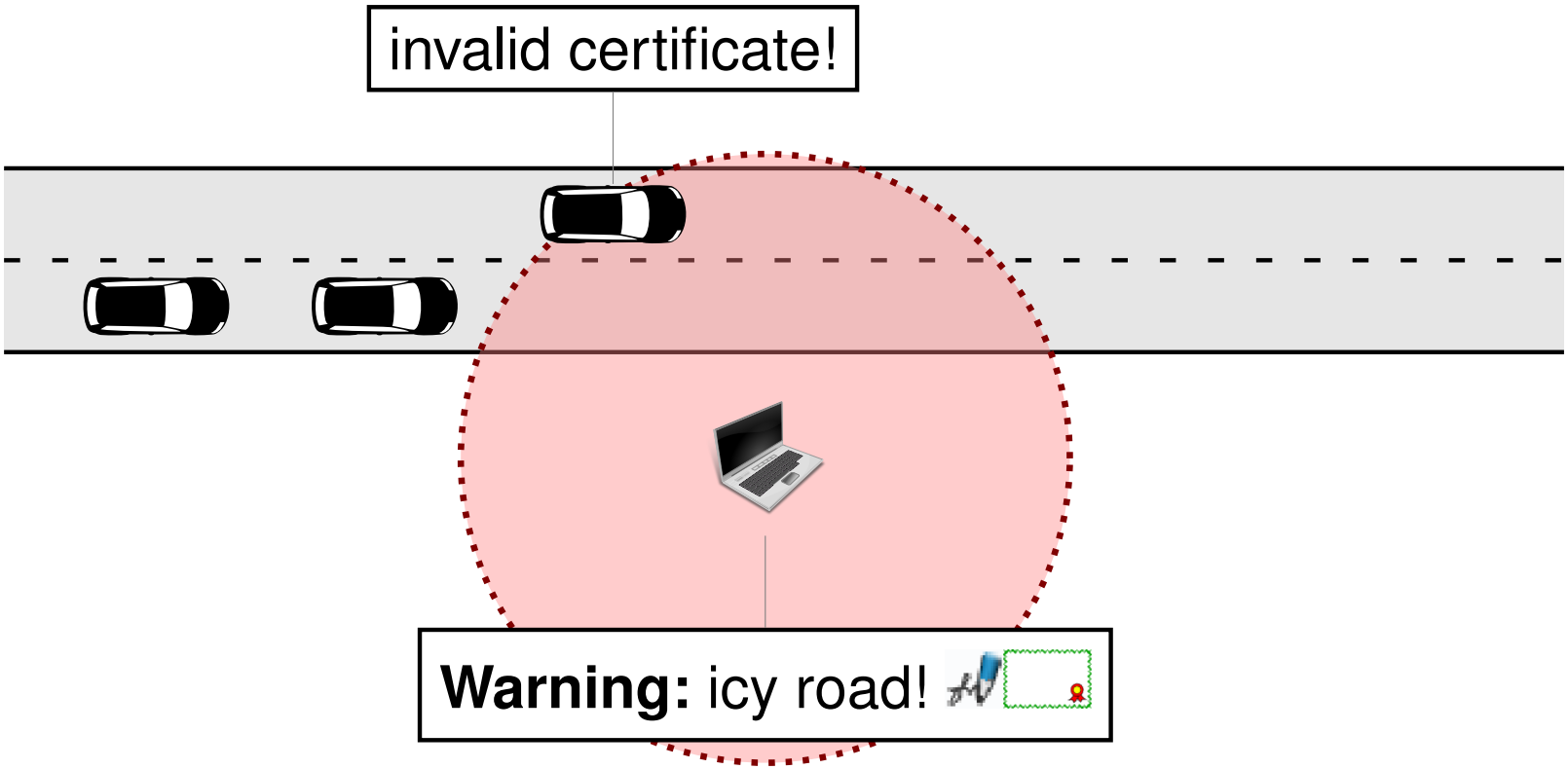
Cryptography!  

VANET Security

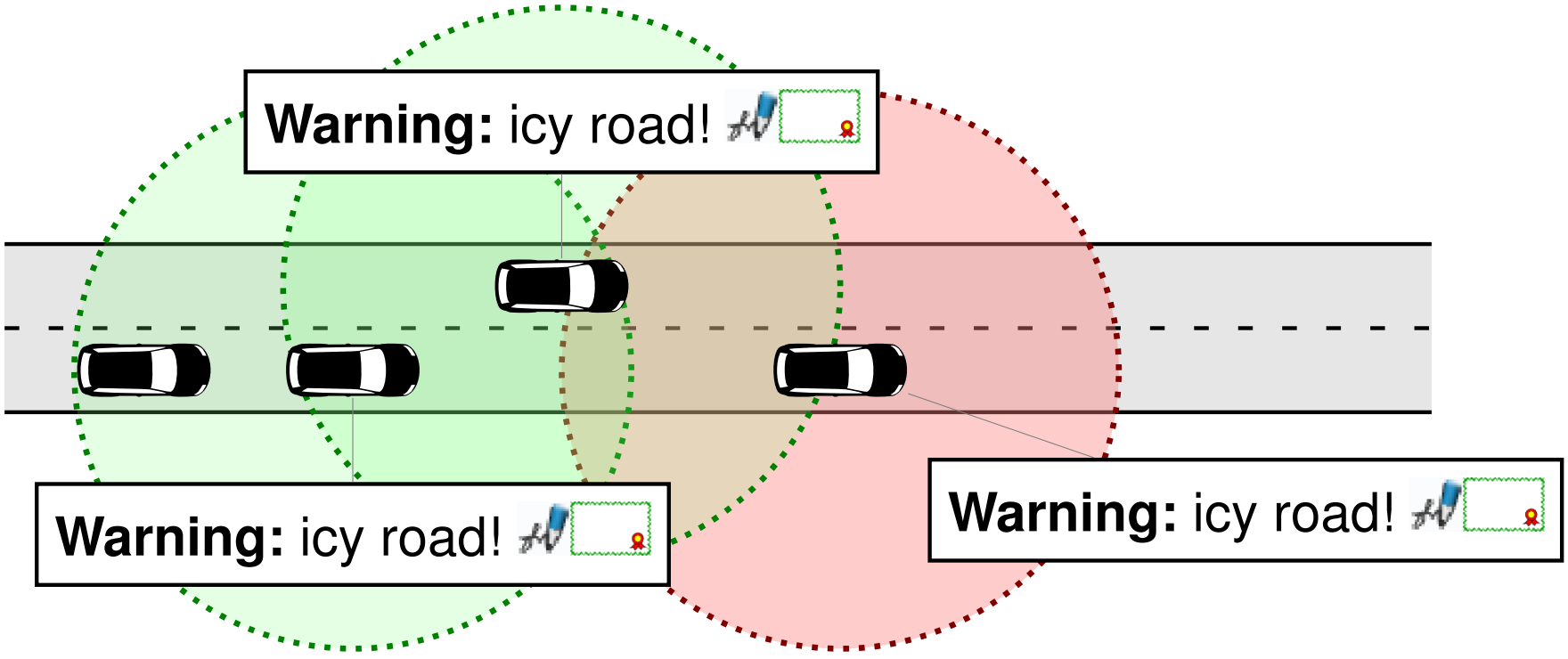
Cryptography!  

Problem solved?

Example

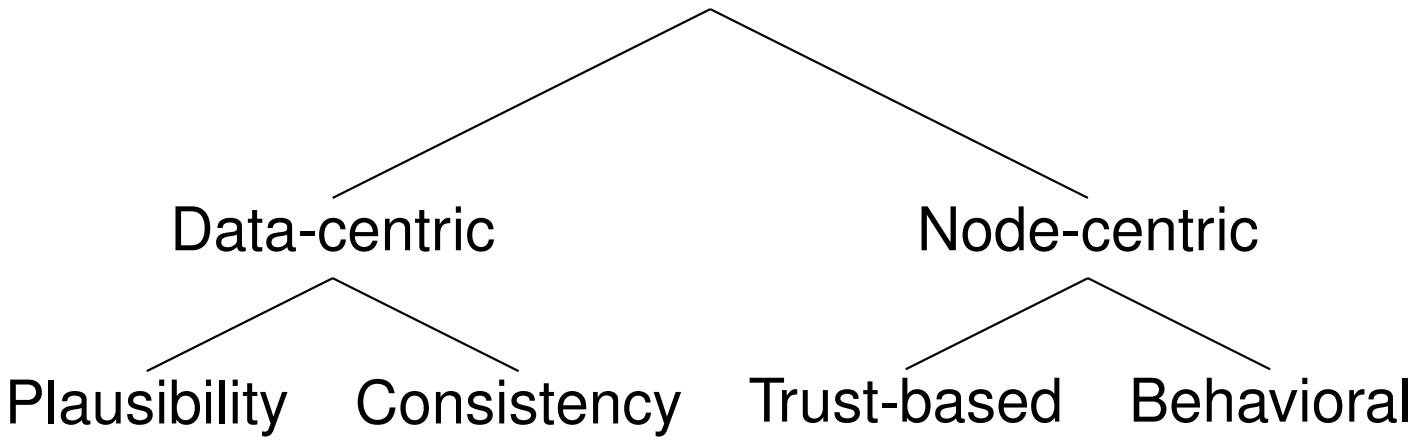


Example

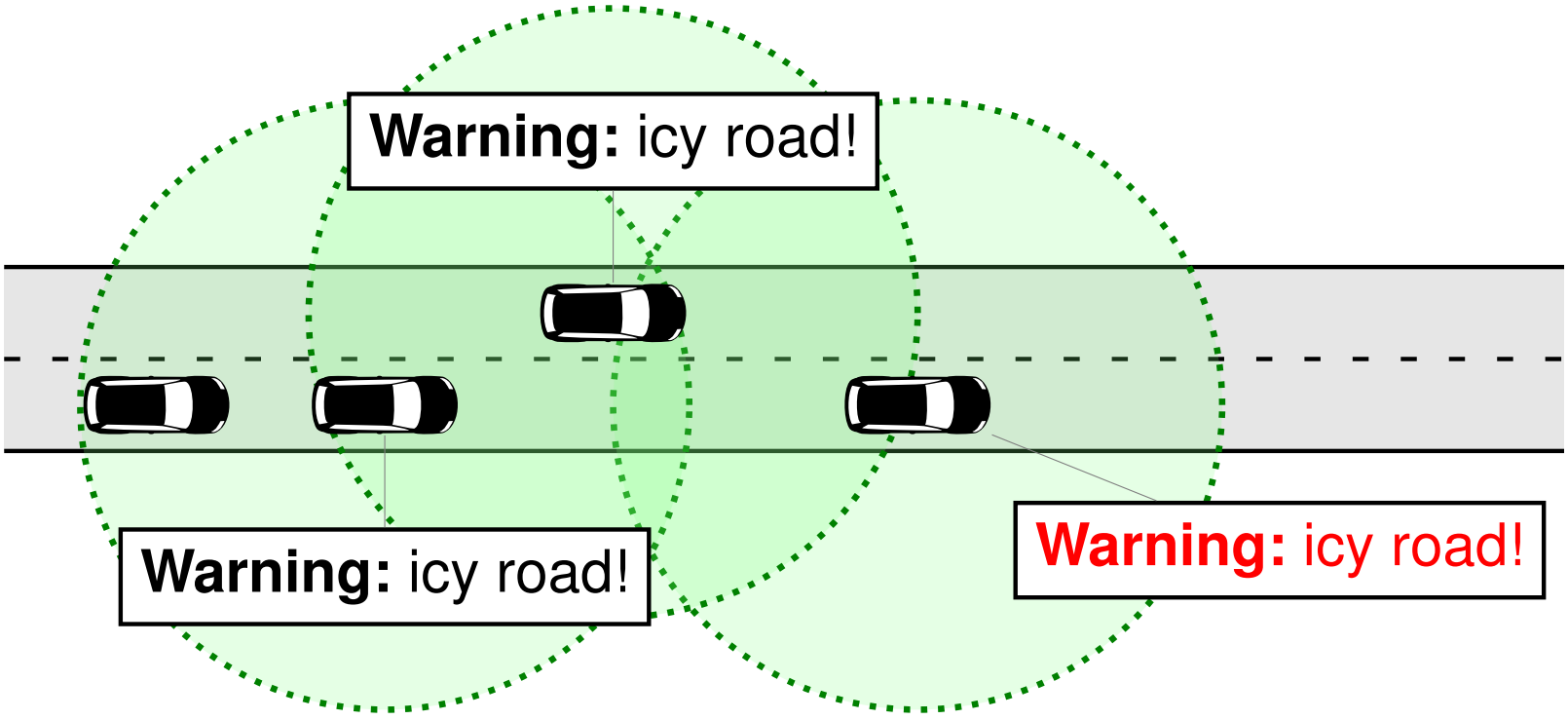


VANET Security: Reactive

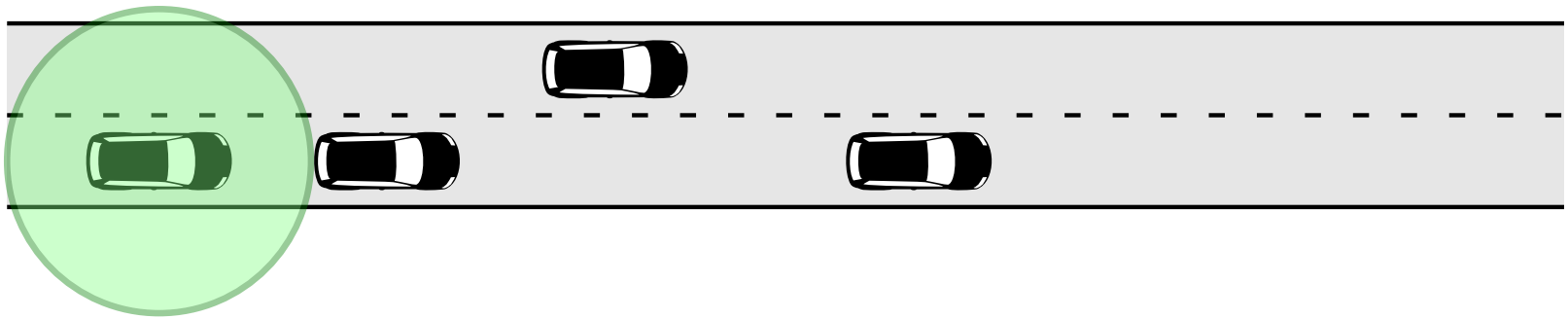
Solution: misbehavior detection



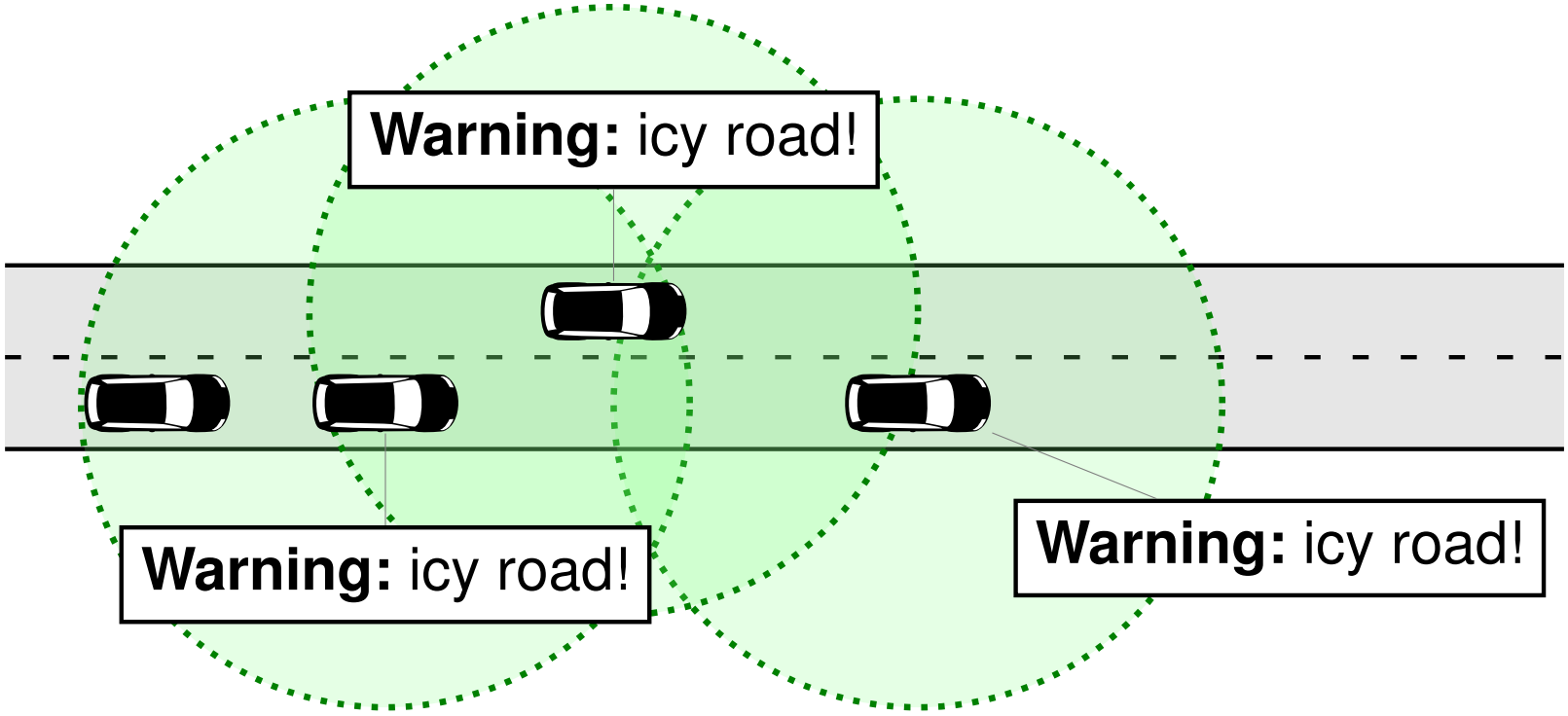
Example



Example

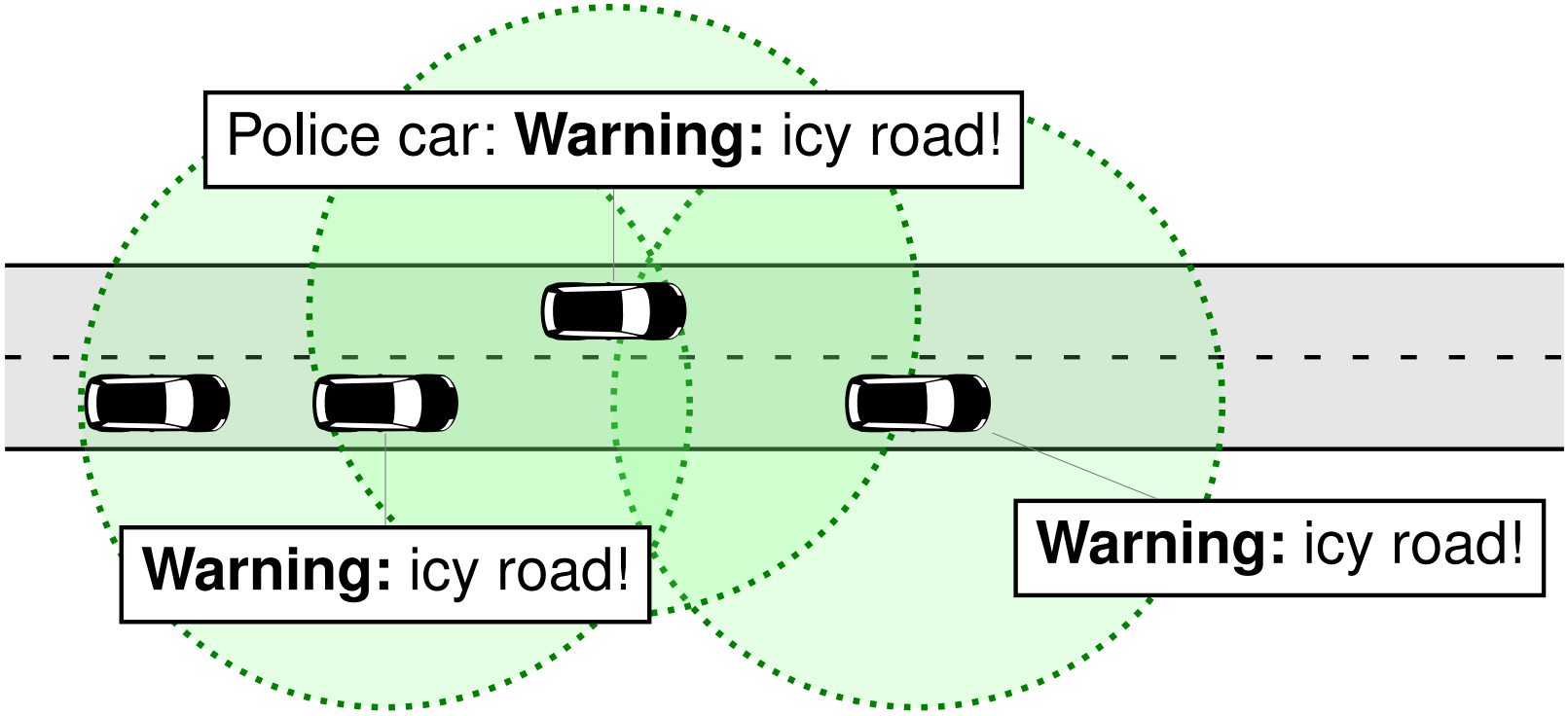


Example: Data-centric Detection



Verify using temperature and road properties.

Example: Node-centric Detection



A police car has higher base trust.

VANET Security: Summary

- Cryptography to exclude external attacker
- Detect false/incorrect data
- Revocation

VANET Security: Frameworks

- Effective detection in all situations?

VANET Security: Frameworks

- Effective detection in all situations?
- Employ multiple mechanisms
- Framework for combination (e.g., weighted average)

VANET Security: Frameworks

- Effective detection in all situations?
- Employ multiple mechanisms
- Framework for combination (e.g., weighted average)
- Detector effectiveness depends on context!

Context-dependence

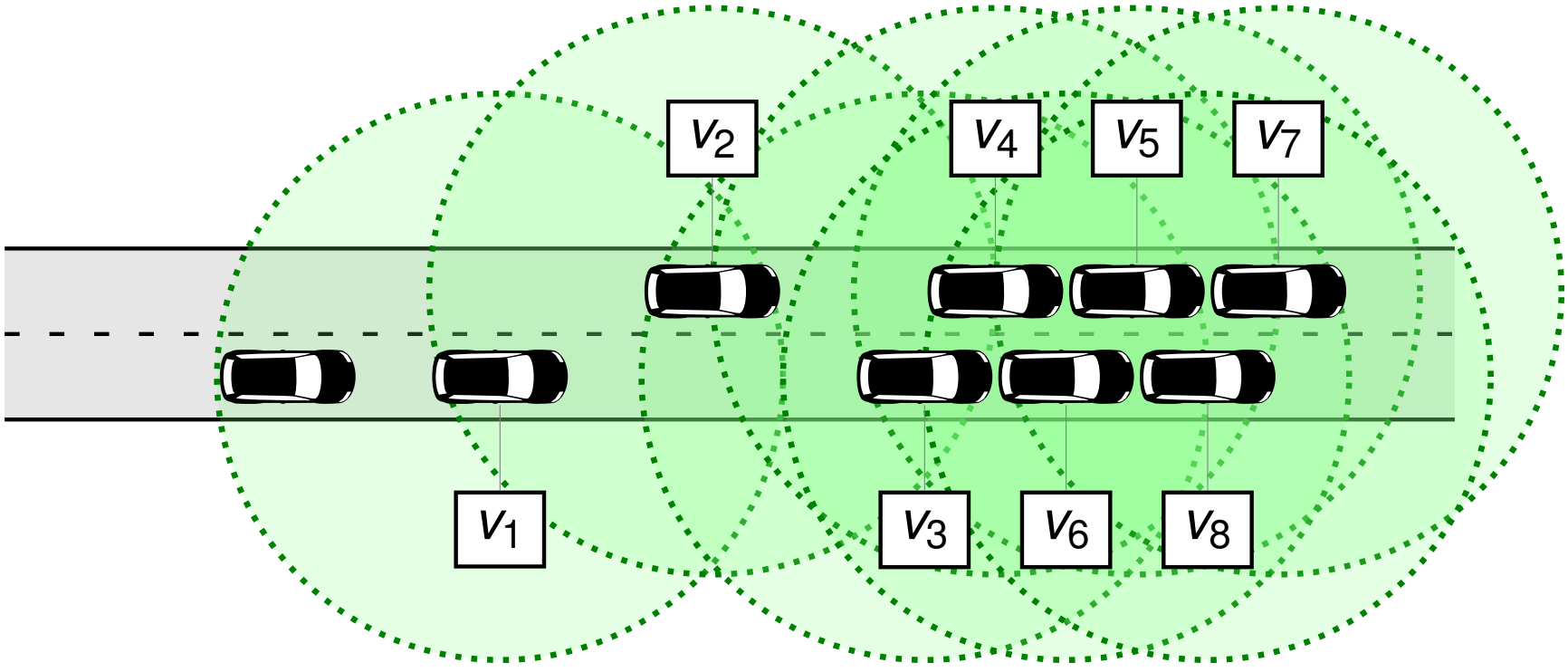
Context-dependence

- Vehicles behave differently in different contexts
- Detection mechanisms are often context-dependent
- This allows better parameterization of mechanisms

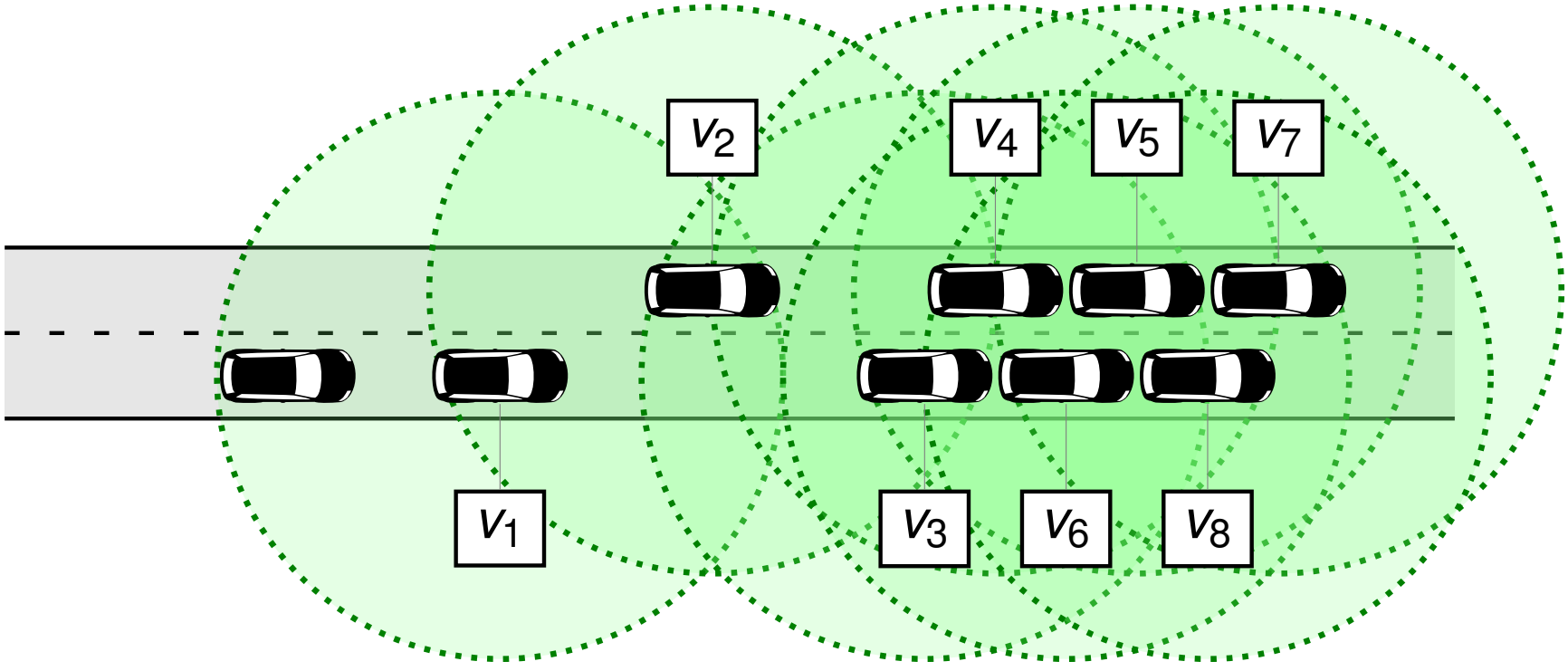
Detecting the Context

- Level of detail
- Using context to (pre)select mechanism
- Subject to manipulation

Other VANET Applications

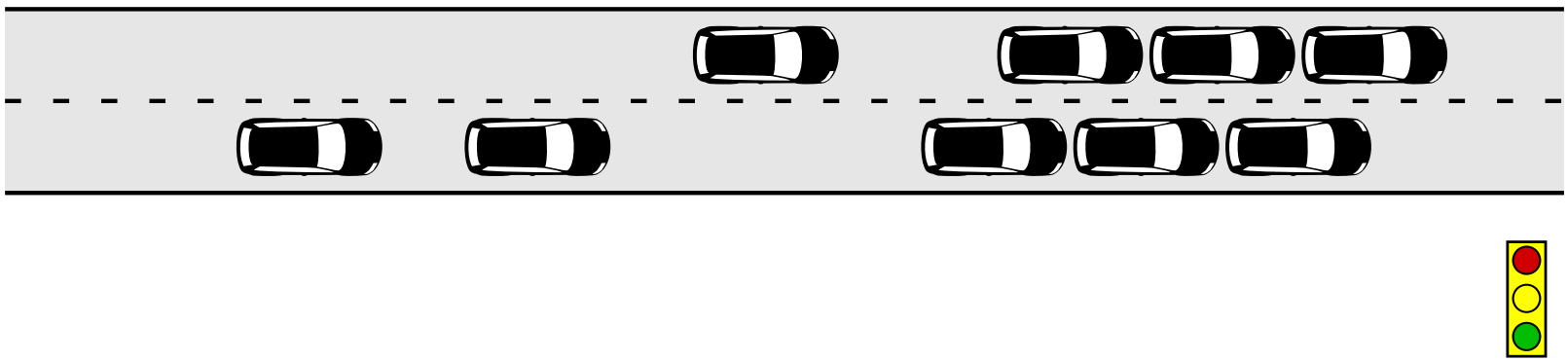


Other VANET Applications



potential traffic jam?

Other VANET Applications



potential traffic jam? Nope!

Discussion!

Questions:
What level of detail is appropriate?
How much should the identification of the context depend on the messages received through the network?
How do we choose the mechanisms based on the scenario?

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