

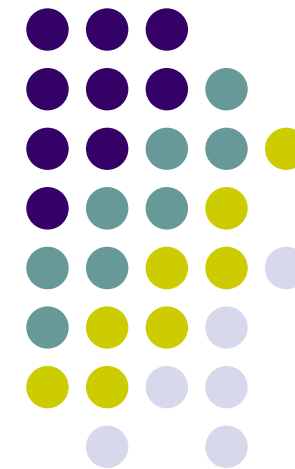
Privacy on the Roads: How the Design of New Vehicle Safety Communication Technologies Impact Drivers' Privacy in Public

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Contours of Privacy:
Social, Psychological and Normative Perspectives

Carleton University, Ottawa, Canada
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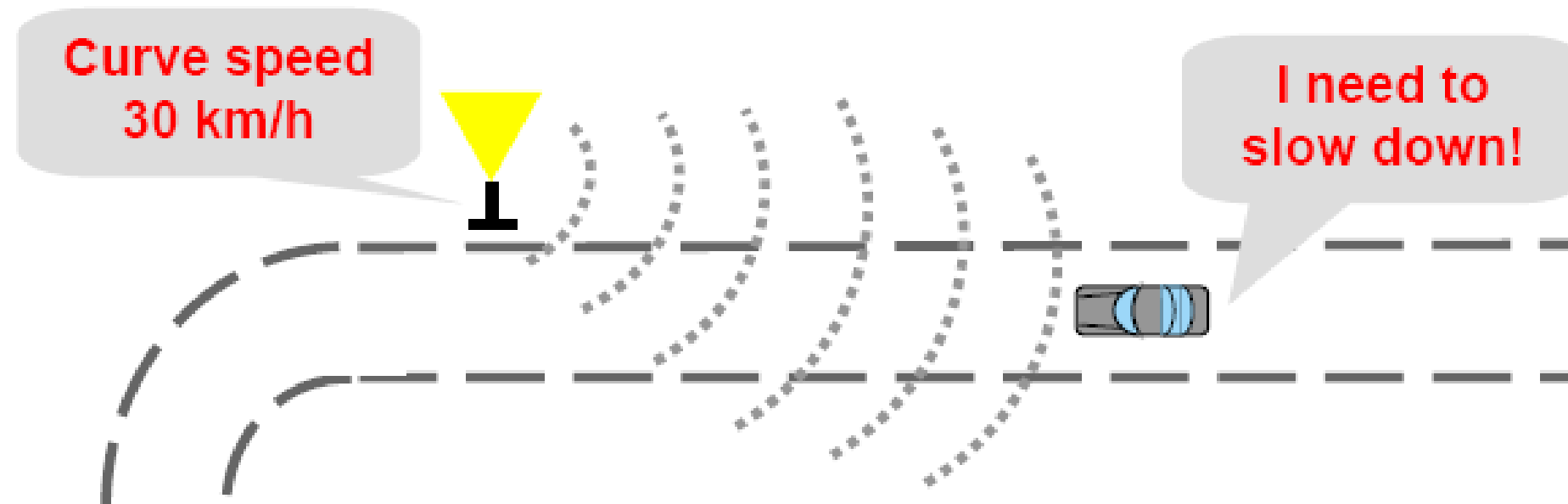
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Research in its Context

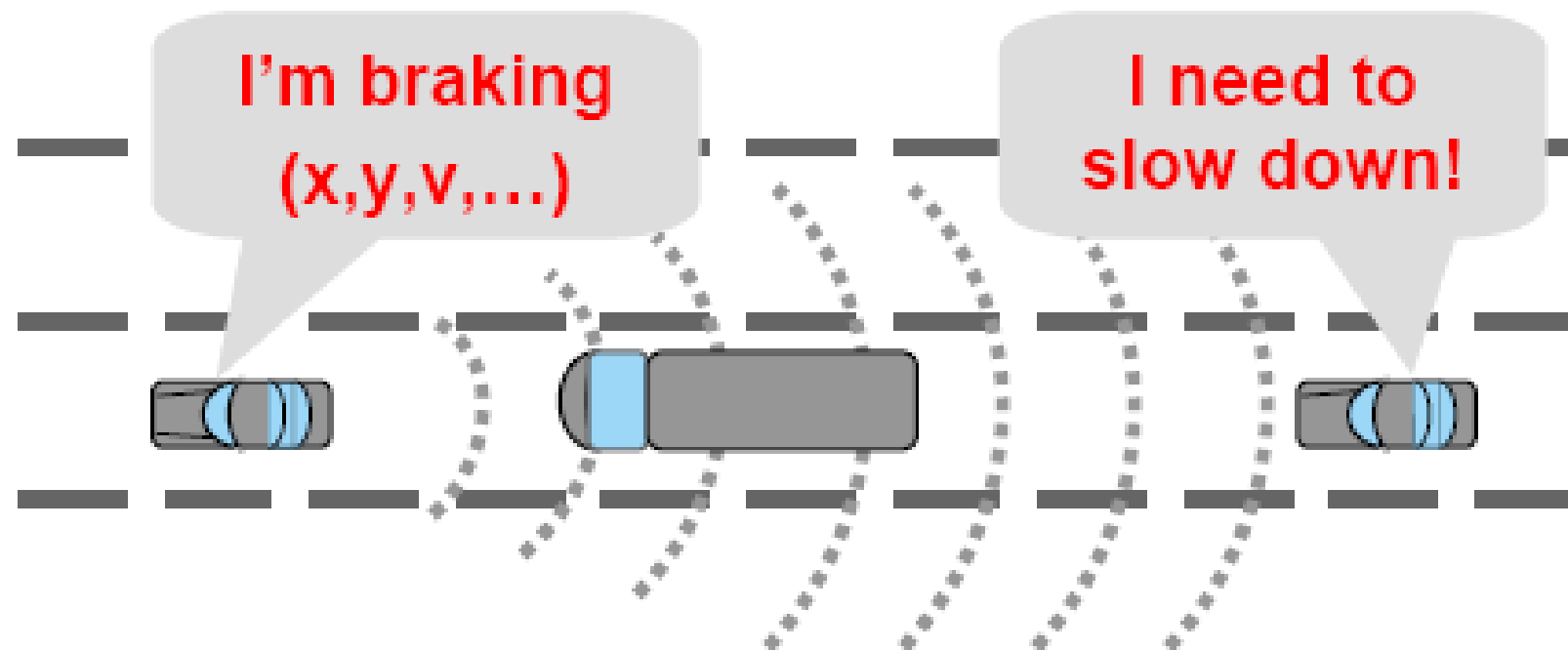
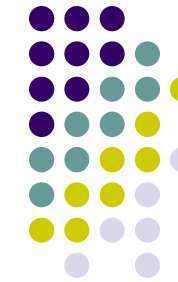


- PORTIA: Sensitive Information in a Wired World
 - Privacy, Obligations, and Rights in Technologies of Information Assessment
- Multi-institution & multi-disciplinary NSF grant to study the technical, social, and institutional issues surrounding sensitive information in a wired world
- Includes academics, policy advocates, industry representatives, designers and user communities
- <http://crypto.stanford.edu/portia/>

VSC Benefits



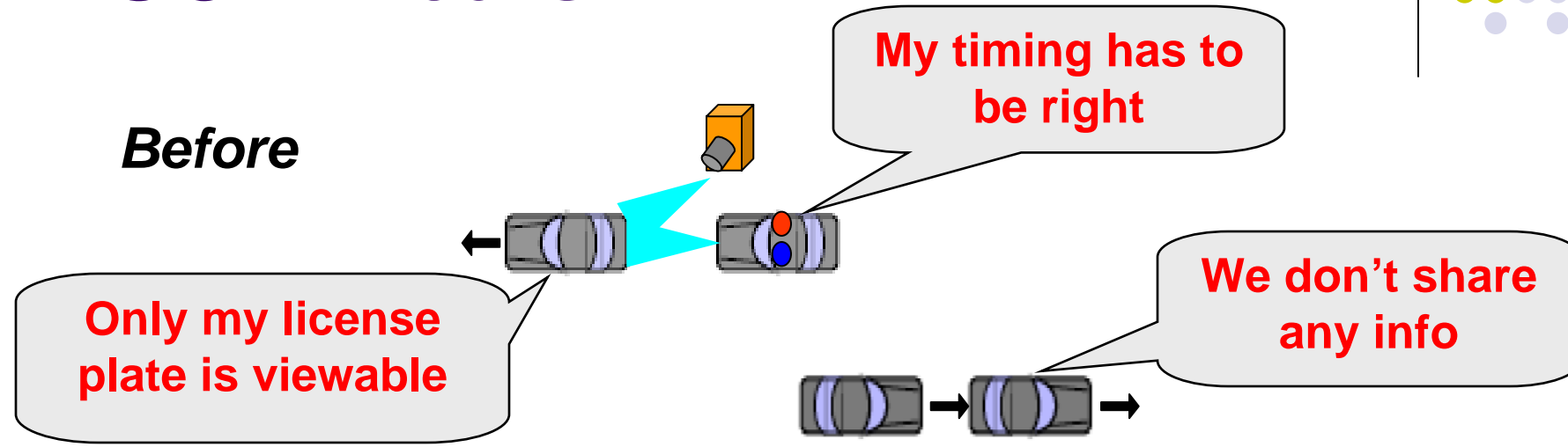
VSC Benefits



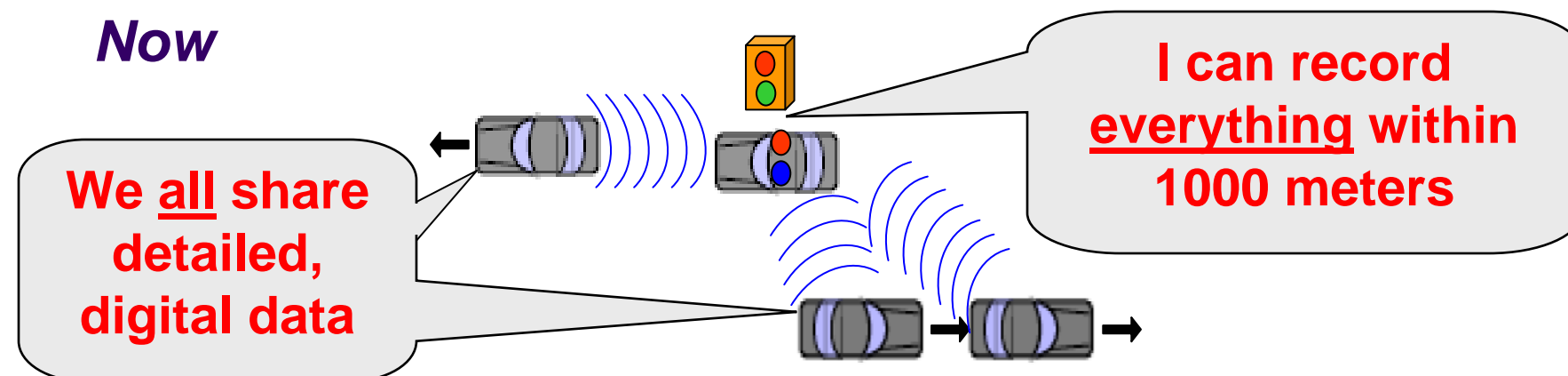
VSC Threats



Before



Now



This talk will discuss how...



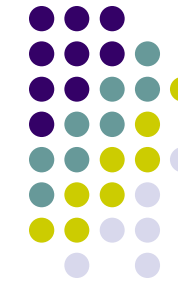
- VSC might threaten the flow of personal information
 - Value of “privacy in public”
 - Theory of “contextual integrity”
- Attention to values can inform and guide the remaining design decisions
 - “Pragmatic turn”
 - Value-sensitive design

Vehicle Safety Communication (VSC) Technologies



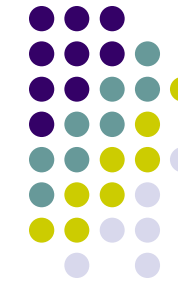
- Intelligent, in-vehicle safety applications
- Made possible by recent advances in wireless data communication technology
- Provide real-time information to prevent accidents and increase public safety

Vehicle Safety Communication (VSC) Technologies



- Ad-hoc networks connect vehicles with roadside infrastructure and with each other
- Both vehicles and infrastructure collect, process and exchange data
- Data messages transmitted 10 times per second, every second your car is on

Vehicle Safety Communications Consortium (VSCC)



- Identify and evaluate the safety benefits
- Assess the communication and data requirements
- Technical standards and communication protocols



Privacy Concerns



- Designers have only a **partial** understanding of the ethical implications of VSC
 - Focus on *data security & anonymity*
 - “Same information as the license plate”
 - “No privacy on the public roads”
- Our concern as privacy advocates
 - Potential rise in the ability to surveil people engaging in their everyday activities on the public roads
 - Concern over one’s “privacy in public”

Privacy in Public



- Value of “privacy in public” often ignored:
 - Considered paradoxical
 - Stuck in “public/private” paradigm
 - Used to have general anonymity
- But new ICT makes “privacy in public” a vital concern
- Work towards a new conceptualization of privacy: *Contextual Integrity*

Privacy as Contextual Integrity



- Dependent on the particular context
- Norms govern flow of personal information
 - Norms of appropriateness
 - Norms of distribution
- If either norm violated, contextual integrity violated
- Designed to consider the introduction of new practice or technology into a particular context

Does VSC threaten contextual integrity?



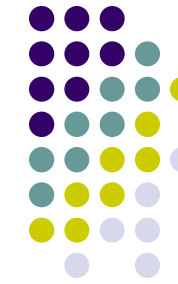
- Is there a shift in the norm of appropriateness?
 - Before VSC:
 - Only general & visually-observable information
 - License plate, view location & direction, etc
 - After VSC:
 - More specific & precise information
 - Unique identifier, GPS coordinates, telematics

Does VSC threaten contextual integrity?



- Is there a shift in the norm of distribution?
 - Before VSC:
 - Be in the right place at the right time
 - Harder to process & distribute analog information
 - After VSC:
 - Open & wide transmission of data
 - Ease of placement of data receivers
 - Ease of mining, archiving & sharing digital data

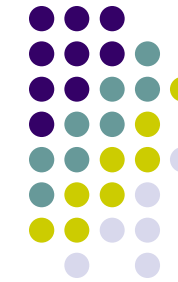
Does VSC threaten one's privacy in public?



- VSC might shift the norms of information appropriateness and distribution - violating contextual integrity
- VSC might alter personal data flows and threaten one's "privacy in public"
- VSC might contribute to the growing ubiquity of public surveillance
 - "driving into the panopticon" (Reiman, 1995)

How can we pragmatically address such ethical concerns of the design of VSC?

Value Sensitive Design



- Identify, anticipate and address the ethical and value-laden concerns with technology
- ICT are crucial sites for asserting social, political, and moral values such as *freedom*, *autonomy*, *justice*, *privacy*, and *democracy*
- Ensure a place for values as criteria by which we judge quality and acceptability of new IT
- Work towards making values integral to conception, design, and development of technologies, not merely retrofitted after completion

Value Sensitive Design & VSC



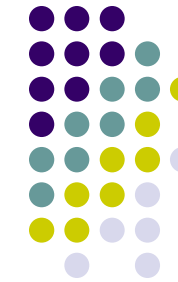
- VSC applications and their related protocols and standards are *still in the developmental stage*
- Goal to raise awareness of the value & ethical implications of their design decisions
- Designers must be **proactive** to support the value of “privacy in public”

Value Sensitive Design & VSC



- Remaining design decisions include:
 - Identifiable information
 - Encryption (Boneh solution?)
 - Opt-out?
- Policy decisions
 - Access to information
 - Access to encryption keys
 - Deployment of receivers

Conclusion



- VSC potentially increases ability to surveil people in their everyday public activities
- Vital to engage with the VSC design community to raise awareness of ethical implications
- Goal to create VSC technologies that increase public safety while maintaining the “contextual integrity” of the flow of personal information

More Information



- Download paper:
 - <http://michaelzimmer.blogspot.com>
- Visit the Values in Design website
 - <http://www.nyu.edu/projects/valuesindesign>
- Contact me:
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