



TECHNISCHE UNIVERSITÄT
CHEMNITZ

Chemnitz University of Technology
Department of Psychology
Cognitive and Engineering Psychology

InMotion

Light-based communication between automated vehicles and other road users




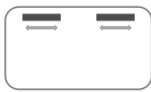
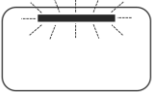
INTENTA
ADVANCED RECOGNITION COMPONENTS



1) Wizard-of-Oz study, passing pedestrians

- Aim: effects of light signals on naive pedestrians (3 modes + no signal, color turquoise)
- Setting: parking area on the campus of Chemnitz University of Technology
- Wizard of Oz-technique (driver hidden by seat suit); between-subjects-design
- Applied methods: questionnaires, interviews, video recording

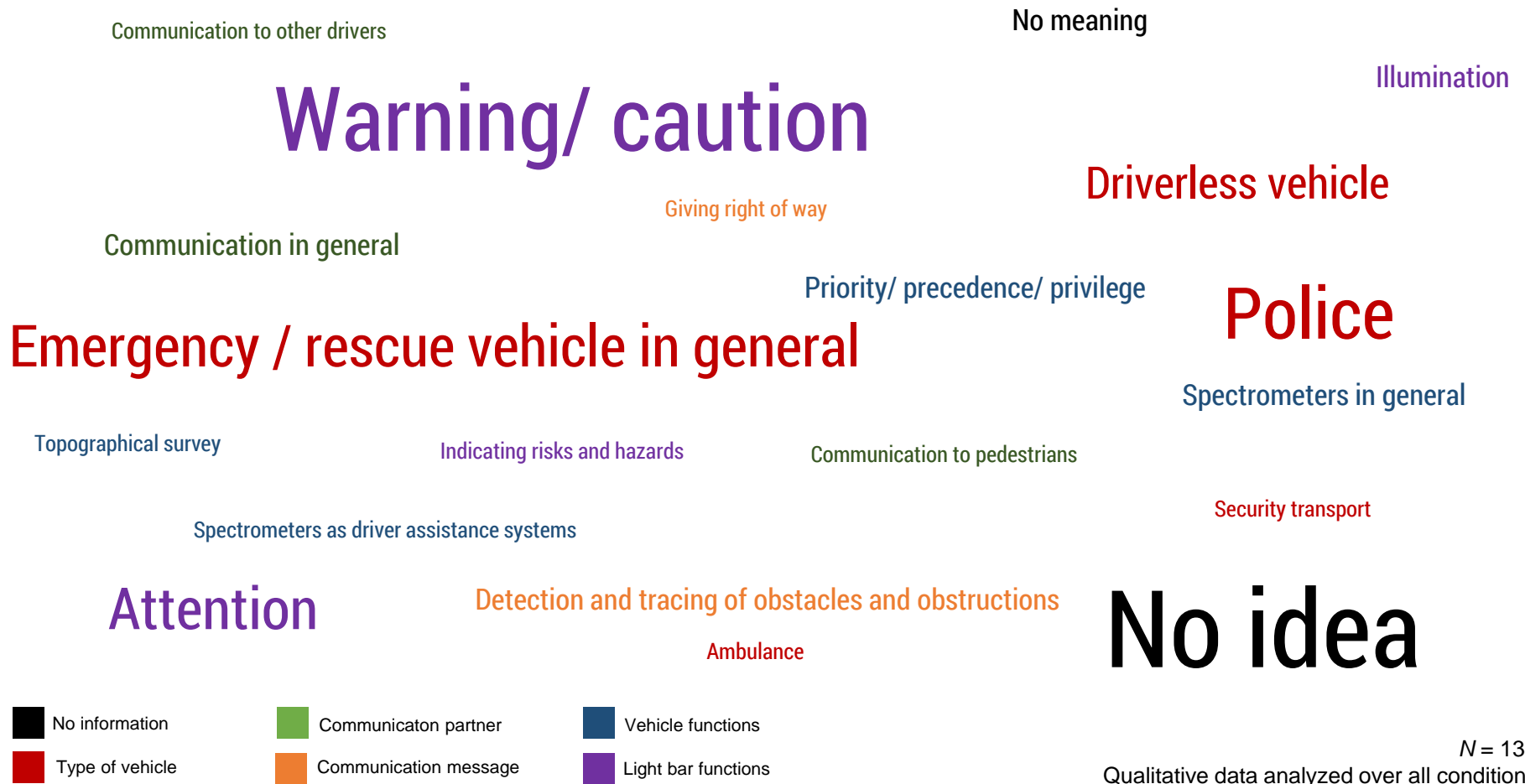


No signal	Automated mode 	Crossing mode 	Starting mode 
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Drivers' visibility	Driver visible (no seat suit)	Questionnaires, Interview data, video data
	Driver invisible (seat suit)	

Interview data (all conditions)

Open question: What do you think was indicated by the signal?

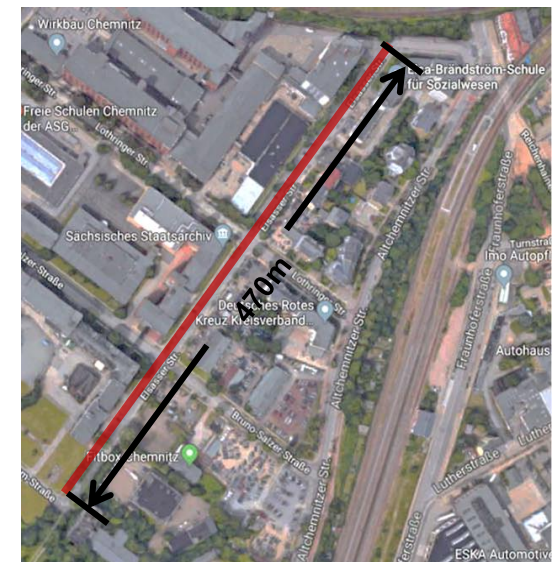


N = 138

Qualitative data analyzed over all conditions

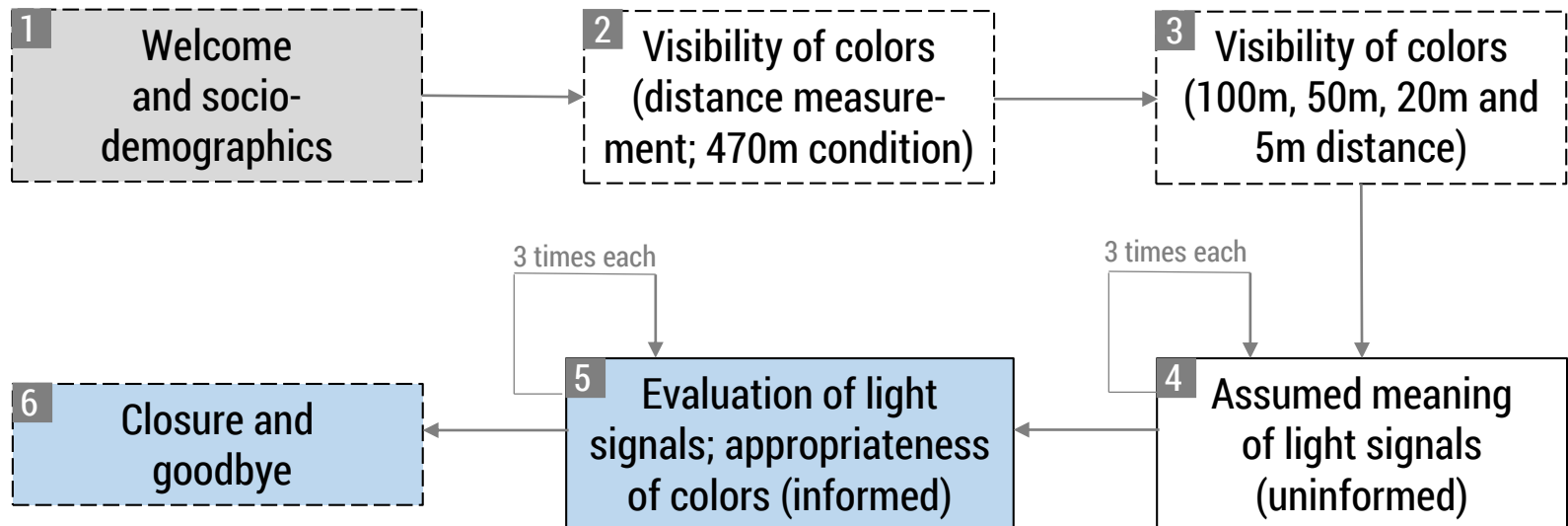
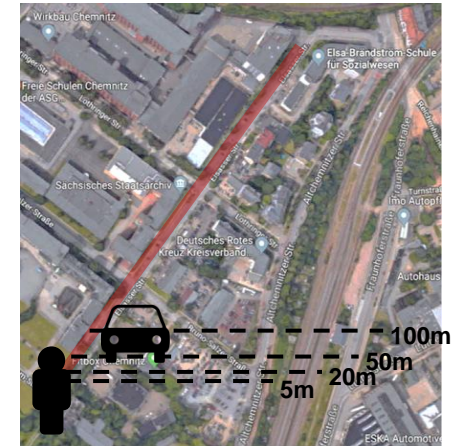
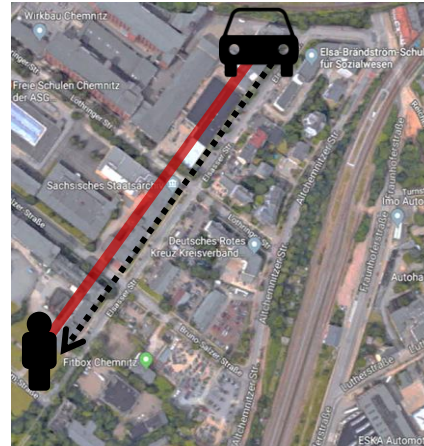
2) Field study, invited participants

- Aim: Evaluation of visibility and meaning of light signals for VRU
- 3 modes (automated, crossing, starting) and 3 colors (WHITE, TURQUOISE, PURPLE)
- Setting: field study (Elsasser Straße, Chemnitz), realistic environment, controlled conditions
- Experimental setup; within-subjects-design
- Applied methods: questionnaires, interviews, evaluation of visibility



Method & procedure field study

- Laboratory (uninformed)
- Test site (uninformed)
- Test site (informed)



Summary and overview of results

	Wizard of Oz study	Field study
Visibility of colors		Clear ranking: purple > turquoise > white
Acceptance		Good acceptance of signals
Trust in presented signals	<u>No</u> agreement regarding trust in signals	<u>Rather high</u> agreement regarding trust in signals
Meaningfulness (presented signals)	<u>Partly</u> agreement, significant differences between signals	<u>Rather useful</u> , no differences between signals
Importance of visual signals (in general)	Agreement that visual signals are generally useful for automated vehicles	
Comprehensibility of presented signals (uninformed)	Without information, the meaning of the signals is unclear	
Comprehensibility of presented signals (after explanation)	<u>No</u> agreement that presented signals are comprehensible	<u>Rather high agreement</u> that presented signals are comprehensible



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Bundesministerium
für Verkehr und
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