AUTOMATED VEHICLES SYMPOSIUM 2014
DRIVERS. VEHICLES. INFRASTRUCTURE.

BREAKOUT SESSION

REGIONAL PLANNING AND MODELING IMPLICATIONS OF DRIVERLESS CARS

CO-ORGANIZERS:

CHANDRA BHAT, UNIVERSITY OF TEXAS AT AUSTIN
CHARLIE HOWARD, PUGET SOUND REGIONAL COUNCIL

This topic area will be focused on the potential impact of driverless cars on our community and regional design/planning, built infrastructure development, transportation policies, and, at a more fundamental level, human activity-travel decision making. How may our activity participations and activity-travel patterns change, and how may city designs and land-use planning elements change to respond to changes in individual activity choices?

Key questions remain on how autonomous vehicles may affect travel:

- *Will autonomous vehicles reduce roadway congestion and expand people's willingness to be in a car through reduced stress and ability to do other tasks, thereby increasing commute-sheds and lengthening trips? Or, will a new ownership paradigm emerge in which people don't own cars, but rather buy transportation services by the mile from fleet companies at the time of use, thereby reducing travel demand through this pay-per-use model? Or will this new technology just substitute for the old technology with no change in travel behavior? Answers are likely to be very nuanced.*
- *What impacts might there be on older individuals? Would driverless cars allow more mobility and lead to less social exclusion for the older generation? What kind of differences in activity-travel patterns might be manifested between younger and older generations as they interact with this new technology?*
- *And what about the impacts of driverless technology on freight systems, and public transit and taxi systems?*

Unlike other workshops that have been focused on technology aspects of automated cars and/or privacy and security considerations (which are all critical elements of a driverless car system and do have indirect impacts on behavior), the emphasis in this workshop will be on the mobility choices of individuals, households, and firms as the end-consumers of new technology on the one hand, and the decisions of car manufacturers, transit and transportation planning agencies, taxi systems, and freight carriers as system

providers and intermediary-consumers of new technology on the other. The motivation for this workshop stems from the rather sparse attention on activity-travel behavioral impacts, and long-range regional transportation planning and policy implications, of driverless car technology.

The end-objectives of the deliberations at the Symposium will be two-fold: (a) Develop a limited set of plausible scenarios of autonomous vehicles in society; each scenario will represent some combination of the dimensions of time frame, technology, lifestyle choices (such as all households owning no cars and purchasing services versus owning large autonomous vehicles), market groups of relevance (individuals and households, freight carriers, taxicab companies, etc.), and regulatory policies and public/private cooperative models, and (b) Use the framing of the scenarios as a starting point to develop a modeling framework for analysis and planning.

Plenary Presentation (Tuesday Afternoon)

Speakers: Charlie Howard, Director of Planning, Puget Sound Regional Council
Jane Hayse, Director of Center for Livable Communities, Atlanta Regional Commission
(20 min)

This presentation will discuss the broad transportation planning, community/regional design and planning, built infrastructure development, and transportation policy development considerations relevant to automated vehicle technology. It will also identify key market groups of system providers (car manufacturers, taxicab companies, freight carriers, transit agencies, etc.) and end-consumers (individuals, households, firms, etc.) of automated vehicle technology, and potential response patterns of the end-users.

Break-out Session 1: Framing of Scenarios (Tuesday Afternoon)

First Speaker: Kevin See, Lux Research, followed by discussion (1 hr)

Discussion of technology scenarios, their availability, the time frames, and potential consumers of the technology scenarios. These represent the offerings of technology by car manufacturers and infrastructure system providers.

Second Speaker: Steve Polzin, University of South Florida, followed by discussion (1 hr)

Discussion of market adoption by different segments based on technology acceptance and diffusion patterns in other product contexts.

Audience Discussion and End-result (Moderator: Ram Pendyala, Arizona State University) (1 hr)

Bring together the previous presentations to posit a handful of likely scenarios, each representing some combination of the dimensions of time frame, technology, lifestyle choices, market groups of relevance, and regulatory policies and public/private cooperative models.

Break-out Session 2: Develop Modeling Framework (Wednesday Afternoon)

Initiate a modeling framework for assessing travel impacts in the presence of autonomous vehicle technology, including considerations of mixed fleet presence

<u>First sub-session – Three presentations</u>

Introduction (Joan Walker, University of California, Berkeley): Review of framing from Breakout Session 1 and charge of this session, 5 min

First Speaker: Eric Miller, University of Toronto, followed by discussion (25 min)

What's different on demand and what can be captured with existing models.

Second Speaker: Srinivas Peeta, Purdue University, followed by discussion (25 min)

What's different on supply and what can be captured with existing models.

Third Speaker: Hani Mahmassani, Northwestern University, followed by discussion (25 min)
What structural changes are necessary in demand and supply models.

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Second sub-session (1 hr 15 min) – Panel on research and development needs consisting tentatively of: Thomas Adler, Resource Systems Group, Inc.; R. Jayakrishnan, University of California, Irvine; Dale Thompson, USDOT (invited); Billy Charlton, Puget Sound Regional Council; Michael Gucwa, Google, Inc. and Stanford University; Elizabeth Sall, San Francisco County Transportation Authority (invited). Panel will be followed by audience discussions.

Wrap up and next steps (Moderator: Joan Walker, University of California, Berkeley) (30 min)