

**SEMINAR**  
**Co-Sponsored by the University of California**  
**Transportation Center (UCTC)**

**Friday, May 9, 2014**  
**11:00 – 12:00 pm**  
**Seminar Room 4080 AIR Building**

**TRANSFORMING TRANSPORTATION RESEARCH**  
**BY LEVERAGING MULTIMODAL SYSTEM DATA**

**Robert L. Bertini, Professor**  
**Civil and Environmental Engineering**  
**Portland State University**

**Abstract**

Over the past 20 years the transportation engineering field has witnessed a data revolution—some might say that we have transitioned from a data “desert” to a data “ocean.” Join Prof. Robert Bertini as he traces aspects of his research career over this period and describes the ways in which this data “ocean” has inspired, enabled and influenced his work. We know that most transportation management, logistics, and operations systems, as well as intelligent transportation systems (ITS) applications are founded upon a data infrastructure, and sometimes these data are archived in a systematic manner. If managed properly, archived ITS data from sensors and mobile probes can provide a unique foundation for scientific discovery in the traffic and transportation field. Through careful processing and using innovative visualization techniques, transportation data can reveal fundamental traffic principles, behavior and phenomena, such as freeway merging at on-ramps and lane-drops and oscillations. Transport data may also be used to enable the optimization of the deployment of transportation resources, such as freeway sensors, traffic management applications or transit stops. Further, transport data, if analyzed carefully can provide the basis for conducting evaluations and assessments of transportation system congestion and performance, at different geographic levels, such as facility, corridor or region. Finally, the inception of a “connected” transportation environment with vehicles and infrastructure devices communicating at high frequency, we are moving to yet another level of transportation data availability. But numerous questions remain about who will own and manage these data, how will privacy be maintained and more. What does the future hold in the field of transportation enabled by an avalanche of high-resolution multimodal data? Also to be presented will be some approaches for meeting challenges and opportunities in the civil and environmental engineering field, which continues to be people-serving, relevant and critical for the future of our society. Finally some thoughts on teaching and civil and environmental engineering education will be discussed.

*Robert L. Bertini is a professor of Civil and Environmental Engineering at Portland State University. He earned a B.S. in Civil Engineering from the California Polytechnic State University, San Luis Obispo; an M.S. in Civil Engineering from San Jose State University, and a Ph.D. in Civil Engineering from the University of California at Berkeley. He is a sought-after teacher, advisor, lecturer and facilitator. He received a National Science Foundation CAREER award. He is the faculty lead for the Portland Sustainable Transport Lab, chairs the TRB Committee on Traffic Flow Theory and Characteristics and will be serving as the Chair of the TRB Operations Section (covering 13 committees). He has developed an innovative Intelligent Transportation Systems Laboratory and was the founding director of the Oregon Transportation Research and Education Consortium (OTREC), a National University Transportation Center. From 2009-2011, he served as Deputy Administrator of the Research and Innovative Technology Administration at the U.S. Department of Transportation.*