

Project Information Form

Project Title	Examining the Safety, Mobility and Environmental Sustainability Co-Benefits and Tradeoffs of Intelligent Transportation Systems
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Brief Description of Research Project	<p>As part of Intelligent Transportation Systems (ITS) development, a significant number of Connected and Automated Vehicles (CAV) applications are now being designed to improve a variety of transportation-related Measures of Effectiveness (MOEs). Safety, mobility and environmental sustainability typically represent the three cornerstones when evaluating the effectiveness of a CAV application system. These key MOEs can be evaluated through various performance indicators, many that are described in the literature. Most CAV applications are typically developed with the major goal of improving one of these key elements.</p> <p>To date, very few studies on CAV applications have been conducted that provide a <i>holistic</i> assessment of all three of these MOE elements. Many CAV applications may have co-benefits in the sense that they can improve a combination of safety, mobility and environmental sustainability. On the other hand, some CAV applications may actually have tradeoffs between these elements.</p> <p>As part of an initial research project, the researchers conducted an in-depth literature review across a wide range of CAV applications and have broadly classified these applications into vehicle-centric, infrastructure-centric, and traveler-center CAV applications. This classification is dependent on the “focus” of the objects that have been involved in the application’s developing and deploying process. In this white paper, the authors briefly describe the three major MOEs, followed by a categorization summary based on the most recent literature. Next, a number of typical CAV applications have been examined in depth,</p>



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	providing a detailed analysis of the different MOEs co-benefits and tradeoffs. Further, three representative CAV applications have been examined in detail in order to show the association between the application focus and tradeoffs/co-benefits of different performance measures. The authors then highlight several future research directions, including the identification of key influential factors on system performance and how to obtain co-benefits across all key MOEs.
Describe Implementation of Research Outcomes (or why not implemented) (Attach Any Photos)	
Impacts/Benefits of Implementation (actual, not anticipated)	
Web Links <ul style="list-style-type: none">• Reports• Project website	https://ncst.ucdavis.edu/white-paper/safety-mobility-and-environmental-sustainability-co-benefits-and-tradeoffs-of-its/