Abstract: The automotive industry is in the midst of a major technology migration resulting from the adoption of electrified vehicle technology. The number of electrified vehicle nameplates offered in the U.S. market has grown from 2 in 2001 to over 50 today. The reason for this explosive growth is the substantial opportunity that electrification offers in increasing the overall efficiency of vehicles, thereby greatly improving fuel economy. At the same time, we as a society are moving toward a world where we are always "connected". This extends into the automobile where technologies such as embedded wireless modems, Bluetooth, Dedicated Short Range Communication (DSRC), and Power Line Communication (PLC) are providing new paths to bring information into the vehicle. This talk will introduce some of the opportunities that become available when these two major trends come together in the context of automotive control systems. Previous work has shown that we can improve the overall electrified vehicle efficiency by utilizing formal optimization methods. This improvement can be taken even further through the use of preview information. We will explore this example and many others that leverage the “mashup” of onboard and offboard information to empower the vehicle in a way that will optimize the experience for you and your trip. Ultimately, we see the intersection of electrification, connectivity, and intelligent controls as a new frontier in automotive research.

Bio: Anthony M. Phillips is a Senior Technical Leader at Ford Motor Company in Dearborn, Michigan. He joined Ford as a Product Development Engineer in 1996 after receiving his Ph.D. from the University of California, Berkeley in Mechanical Engineering. He has been part of the Research and Advanced Engineering staff since 1998. In his current role, he has responsibility for Ford’s advanced vehicle and battery control system development for all electrified vehicle applications. He also oversees a portfolio of research projects spanning both in-vehicle control system technologies and control system development processes. His recent work has focused on connected vehicle control, battery management systems, and system engineering and model-based design processes. Dr. Phillips holds over 35 U.S. and international patents and has published numerous papers on automotive controls. Dr. Phillips is a member of the Society of Automotive Engineers, the American Society of Mechanical Engineers, and the Editorial Board for the International Journal of Alternative Propulsion. He also serves as Ford’s Corporate Advisory Board Member to the International Council of System Engineering and is the current chairman of the Industrial Advisory Board of the ASME Dynamic Systems and Control Division (DSCD).