

# Automated highway system

[Transportation](#), [Road](#)



As described and depicted in Sci-fi futuristic films like I, Robot, Minority Report and Star Wars, the Automated Highway System (AHS) features an automatically controlled transportation system that is meticulously interlaced with the highway system. The principal idea of AHS is to remove the driving operation from human control and assign it to the vehicle, which in turn collaborates with the highway system to perform such function.

Thus, the concept of AHS involves technology that can be classified into three groups namely, intelligent technology on board the vehicle, intelligent technology in the road, and communication technologies that link or connect the vehicles to road. Communication facilitates interactivity and information exchange between vehicle and highway infrastructure and action is undertaken by user/ vehicle in an automated fashion. (Ioannou, p183)

AHS technology for vehicle auto-control accentuates on how automobiles can routinely detect road driving barriers especially other vehicles, the track course, traffic management rules, as well as internal engine problems so that the vehicle can instinctively make the proper steering, turning, braking, lane changing, stopping and other related movements involved in driving.

The current trend under this heading is the blending of car and computer technology. On-board PC promises latent flexible innovations which include internet communications, car operation (sound, air-conditioning and navigating through voice) and paging, etc. (The Economist)

Current technology leading towards this end includes the intelligent cruise control system which use radar or laser to sense vehicles along its driving path that commands vehicle to decelerate or accelerate as needed or

allowed; the driver status monitoring which reveals driver status i. e. consciousness levels, stare direction, driving skill, etc. in another vehicle to warn other drivers on the road; collision notification that forewarns or notifies drivers for potential crash or collision accidents with other cars; navigation assistance systems such as traffic and traveler information and on board diagnostics system that detects potential vehicle malfunction in advance, among others. (Cheon)

AHS technology for highway control include traffic monitoring for traffic management, highway and incident surveillance technologies of which there are intrusive (pneumatic road tube, inductive loop detectors, piezoelectric sensors, magnetic sensors and weight in motion) and non intrusive technologies (video image processor, microwave radar, infrared, ultrasonic and passive acoustic array sensors (Vehicle Detector Clearing House), and lane tracking and positioning, among others.

Finally, technology for the seamless communication of the vehicle and road infrastructure is necessary for the integration, collaboration and connectivity of the system's operations. The focus of research on communications technology is the improvement in the provision of real time, reliable data communications among vehicles and between vehicles and highway infrastructure.

The global positioning system (GPS) is a promising technology for transportation communications for the fulfillment of AHS. It utilizes satellites rotating around the earth that pick up radio signals from users to calculate and determine their exact position including latitude, longitude and altitude. (Helms)

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The multifaceted potential benefits of AHS to the ordinary citizens, the transportation sector, and the general economy are both vast and profound. By removing the human component in driving and its penchant to errors, driving safety will be significantly improved. Factors such as fog, darkness and other severe weather conditions that can disturb visibility and directly impact driving performance can be eliminated.

Since driving is automated, it affords people free time for productive activities during travel such as studying and reading as well as leisure for playing, sleeping or relaxing. For the elderly, the disabled and other people who do not know how to drive, driving skill is no more a hindrance to travel and mobility. Travel time is also expected to be reduced because of free flow travel conditions as the traffic management system will control and balance the speed of cars depending on the congestion of highway used at that time. (Ferlis)