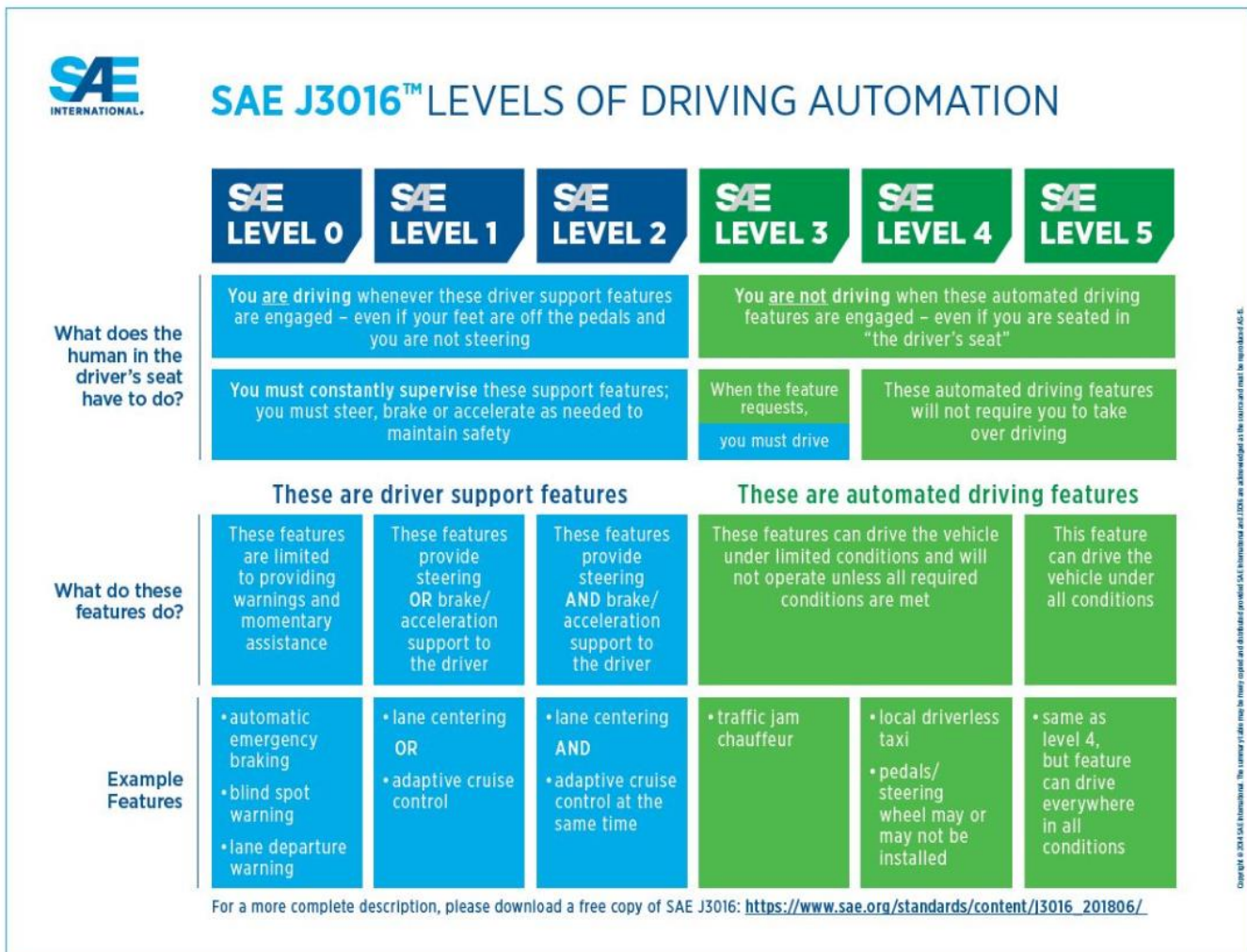


## Connected and Automated Vehicles

Terminology and definition are still evolving around Connected and Automated Vehicles (CAV). The following terms and definitions will be used for the purpose of this ENTERPRISE project and were excerpted from SAE International *J3016 Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles* revised June 2018.

**Connected vehicles** are equipped with safe, interoperable networked wireless communications allowing connections to other vehicles, roadway infrastructure, and personal communication devices. The acronym V2X is sometimes used to designate vehicle-to-everything (including pedestrian and bicyclist) communication. Such connectivity may be used for navigation, safety and entertainment.

**Automated vehicles** represent a switch in responsibility for the task of driving from human to machine. They encompass a diverse range of automated technologies, from relatively simple driver assistance systems to fully automated vehicles. SAE International defines the levels of driving automation as shown in the figure below.



**Advanced Driver Assistance Systems (ADAS)** – ADAS are becoming increasingly common and in some cases assist the driver but do not perform the driving function. These vehicle technologies are found in levels 0, 1, and 2 of driving automation. ADAS are designed to help drivers with certain driving tasks such as lane keeping, parking, braking, avoiding crashes, reducing blind spots, and maintaining a safe space cushion.

**Automated Driving System (ADS)** – The hardware and software that are collectively capable of performing the entire DDT on a sustained basis, regardless of whether it is limited to a specific operational design domain (ODD); this term is used specifically to describe a level 3, 4, or 5 driving automation system.

**Driverless Operation (of an ADS-equipped vehicle)** – Operation of an ADS-equipped vehicle in which either no on-board user is present, or in which on-board users are not drivers or fallback-ready users.

**Dynamic Driving Task (DDT)** – All of the real-time operational and tactical functions required to operate a vehicle in on-road traffic, excluding the strategic functions such as trip scheduling and selection of destinations and waypoints, and including without limitation: lateral vehicle motion control via steering (operational); longitudinal vehicle motion control via acceleration and deceleration (operational); monitoring the driving environment via object and event detection, recognition, classification, and response preparation (operational and tactical); object and event response execution (operational and tactical); maneuver planning (tactical); and enhancing conspicuity via lighting, signaling and gesturing, etc. (tactical).

**Minimal Risk Condition** – A condition to which a user or an ADS may bring a vehicle after performing the DDT fallback in order to reduce the risk of a crash when a given trip cannot or should not be completed.

**Operate (a motor vehicle)** – Collectively, the activities performed by a (human) driver (with or without support from one or more level 1 or 2 driving automation features) or by an ADS (level 3-5) to perform the entire DDT for a given vehicle during a trip.

**Operational Design Domain (ODD)** – Operating conditions under which a given driving automation system or feature thereof is specifically designed to function, including, but not limited to, environmental, geographical, and time-of-day restrictions, and/or the requisite presence or absence of certain traffic or roadway characteristics