Arruti Class Additional Points

**Vehicles**

**Connected:**

A **connected car** is a **car** that is one that can communicate bidirectionally with other systems outside of the **car** (LAN). This allows the **car** to share internet access, and hence data, with other devices both inside and outside the **vehicle**.

**Autonomous:**

A **self-driving car**, also known as an **autonomous vehicle** (**AV**), **connected and autonomous vehicle** (**CAV**), **driverless car**, **robo-car**, or **robotic car**,[[1]](https://en.wikipedia.org/wiki/Self-driving_car#cite_note-:5-1)[[2]](https://en.wikipedia.org/wiki/Self-driving_car#cite_note-2)[[3]](https://en.wikipedia.org/wiki/Self-driving_car#cite_note-thrun2010toward-3) is a [vehicle](https://en.wikipedia.org/wiki/Vehicular_automation) that is capable of sensing its environment and moving safely with little or no [human input](https://en.wikipedia.org/wiki/User_interface).[[1]](https://en.wikipedia.org/wiki/Self-driving_car#cite_note-:5-1)[[4]](https://en.wikipedia.org/wiki/Self-driving_car#cite_note-4)

Self-driving cars combine a variety of sensors to perceive their surroundings, such as [radar](https://en.wikipedia.org/wiki/Radar), [lidar](https://en.wikipedia.org/wiki/Lidar), [sonar](https://en.wikipedia.org/wiki/Sonar), [GPS](https://en.wikipedia.org/wiki/GPS), [odometry](https://en.wikipedia.org/wiki/Odometry) and [inertial measurement units](https://en.wikipedia.org/wiki/Inertial_measurement_unit).[[1]](https://en.wikipedia.org/wiki/Self-driving_car#cite_note-:5-1) Advanced [control systems](https://en.wikipedia.org/wiki/Control_system) interpret [sensory information](https://en.wikipedia.org/wiki/Sensory_information) to identify appropriate navigation paths, as well as obstacles and relevant [signage](https://en.wikipedia.org/wiki/Road_signs).[[5]](https://en.wikipedia.org/wiki/Self-driving_car#cite_note-5)[[6]](https://en.wikipedia.org/wiki/Self-driving_car#cite_note-6)[[7]](https://en.wikipedia.org/wiki/Self-driving_car#cite_note-:7-7)

Long distance [trucking](https://en.wikipedia.org/wiki/Road_transport#Trucking_and_haulage) is seen as being at the forefront of adopting and implementing the technology.[[8]](https://en.wikipedia.org/wiki/Self-driving_car#cite_note-Trucks-8)

**Autonomous vs Automated:***Autonomous* means self-governing.[[45]](https://en.wikipedia.org/wiki/Self-driving_car#cite_note-antsaklis1991introduction-45) Many historical projects related to vehicle automation have been *automated* (made automatic) subject to a heavy reliance on artificial aids in their environment, such as magnetic strips. Autonomous control implies satisfactory performance under significant uncertainties in the environment and the ability to compensate for system failures without external intervention.[[45]](https://en.wikipedia.org/wiki/Self-driving_car#cite_note-antsaklis1991introduction-45)

**In plain terms:**

Who makes the decision? To be autonomous, the vehicle will make most or all of the driving decisions.

Stop at a stop sign? Disengage cruise control because too close to leading vehicle? Choose between a dog and the ditch? A dog and a ditch next to a river? A dog, a ditch next to a river, and an oncoming vehicle? A dog, a ditch next to a river, and an oncoming school bus?

**Limitations of connected and autonomous:**

How will they work in the countryside? How will they work in a rural environment? How will they work in 4,000 acres of rangeland?

How do you make infrastructure that works with vehicles from 1953, 1995, 2012, 2021, and 2025? In other words, how will the vehicle that works on rangeland work in an urban area?

**Major Concerns of Smart Cities Initiatives**

**Privacy**

Lapel video is generally open record. Your library circulation records are highly private. Video OCR capabilities make possible the release of the books you own simply as a result of walking an officer through your house to see the broken window.

**Data**

Data must be protected, managed, and provided.

**Security**

You thought having 6,000 PCs means you have a lot of entry points? How about 100,000 sensors?

**Inherent bias**

Algorithms built on biased data are likely to be biased.

**Costs**

Smart devices aren’t cheap.

Smart services will likely become mission-critical in a very short period of time.

How do you monitor and maintain the health of 100,000 smart devices?

**Technologies**

Sound detection

Video analytics

Condition sensors (light, noise, pollutants)