2a. The computing innovation that is represented in my artifact is a GPS system. GPS stands for Global Positioning System. It's main purpose is to assist with navigation and tracking. This system uses satellite data to accurately pinpoint the location of the device in use. (Garmin, *unknown*) A GPS allows the user to input a location, and then the GPS will direct the user to that location using machine learning to find the best route possible. This lets the user to get directions to any desired spot.

2b. I used Piktochart to create my artifact. I started off by typing out some of the key facts about GPS systems, and then I selected the most important ones. I put them into bullet points, and added representative icons. I searched Google Images for pictures that help to represent how satellites work, and used them in my artifact as well. I selected icons that helped to represent my points and added them in.

2c. One beneficial effect of my computing innovation on society is a free traveling guide. The GPS has changed society, due to its widespread usage, popularity, and accessibility. Some say that without it,we'd be lost. (Everett, 2017) One harmful effect, is GPS tracking. Often times, it can be found that on apps and other GPS equipped devices, the users location isn't completely private. Some companies store that data, and others might use it. Privacy breaches can be dangerous for many reasons, including danger to the safety of the user if the data is placed in the wrong hands. (Shekhtman, 2017)

2d. A GPS sends and receives many kinds of data. This data can be pictures, or the latitude and longitude of a specific point and many other kinds. (Google Patents, *unknown)* 24 different satellites circling the earth transmit 2 radio frequencies that can be translated into codes, and these codes contain information that allows the receiver of the frequencies to calculate the distance between the satellite and the user. When a few satellites combine these codes together, it helps to determine the exact location of the user. A common data privacy concern is location discovery. With the right tools, a person's location can be found if the data from their GPS device is released. This can happen when an app or website collect information without the user knowing. (Cawley, 2017)

2e.

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GPS Systems



GPS stands for **G**lobal **P**ositioning **S**ystem, and is a widely used technology that assists with navigation

Free, 100% coverage of earth and the ability to travel almost anywhere

Fast and easy directions straight from your smart phone

Satellites placed worldwide help get directions to your device