Gps Essay, Research Paper

In the 1800 s, most things were done using manpower, not machines. To plow a field it used to require a team of horses and a plow. To make butter it required a hand churn. Life was simple and people depended on themselves. In the 1920’s the automobile was a very important technological machine. Instead of a team of horses and a carriage, one could move about more efficiently in an automobile. Through the following years many advances in technology occurred: electric machines, televisions, radios, etc. In the 1980’s the personal computer emerged. In the 1990 s the world went digital with cellular phones, and digital television dishes. All of these advances in technology depend on space age technology. When each of these machines were first introduced only a few people purchased them and deemed them important. However, in a short period of time millions of people now dependent on these devices; they are almost necessary in the world of today. Each advance in technology causes people to be more dependent on new machines and less dependent on themselves. By the year 2000, a lot of big companies in society will depend on the Global Positioning System (GPS). This new system will become a necessity in tomorrow s high-tech society. In 1978, the United States Department of Defense put the first GPS satellites into orbit ( High Tech 304). The Global Positioning System is a network of satellites and ground receivers (White 102). Now in 1998, 24 high-tech satellites form a constellation around the earth. GPS uses mathematical calculations with this network of satellites to determine any point on the earth. To triangulate a position on the surface of the earth GPS needs at least three signals from three different satellites ( High Tech 304). These satellites beam the information that is necessary to calculate position to a GPS surface receiver. Thus, each satellite continuously beams their locations and time to the surface receivers (Connolly 3). A GPS data signal can be received by any device dialed into its frequency (Schwartz 1). GPS works quickly because it send signal to the receivers at the speed of light (High Tech 304). The U.S Military now uses GPS for the newest version of the Tomahawk Cruise Missile. Now, these missiles can be targeted much faster and they are more accurate ( Tomahawk Cruise Missile 1). GPS is very accurate for the U.S. Military (within 25 feet); but because of selective availability , which is an error deliberately made by the U.S. Military, this accuracy is not available to anyone but the U.S. Military. This gives the U.S. Military s GPS receivers the edge on the battlefield (Vizard 1). This means an enemy of the United States will not be accurate in finding positions as will the U.S. Military.GPS was designed for military use, but has acquired many other uses as well. The United States Department of Defense originally designed GPS as a way to track the movements of troops in 1973 ( Hi Tech 304). GPS is a marvelous system for many more uses than the purpose for which it was designed , says Richard Aronals, the Federal Aviation Administration Director of GPS communications, Navigation and Surveillance (qtd. in Steering by the Stars 1). Now, because the satellites have been available for civilian use, GPS has many more uses than excepted (White 102). Civilian use means anyone that can afford to buy a GPS receiver, which cost about $200 dollars, can use the GPS system. Even though civilians can not have the pinpoint accuracy like the U.S. military, civilians are still using GPS. Global Positioning System technology lets guys like me dream of the day when we will never have to ask for directions again. says Connolly (qtd. in Navigate the world 1). The newest civilian gadget for GPS is a sporting gear receiver that tells a person his or hers location, the location of the camp, or anything else they would like to track. This receiver can be taken with one when a person is hunting or camping (Plueddeman 79). Another use for a GPS is tracking shipments for big businesses. They can use GPS receivers on trucks and rail cars to pinpoint the exact position of their merchandise (Schwartz 2). This helps by making sure the truck driver is doing his job properly, or to make sure merchandise reaches destinations on time. GPS also can improve the tracking capability for airplanes flying in crowded air corridors (Vizard 2). This can lower the risk of a mid air collisions of airplanes, and also save lives. In addition, GPS can allow farmers to work at night in their fields (Vizard 2). Before GPS, farmers could only work from sunrise to sunset. Now, a farmer can get up at noon and work till midnight.

In the field of science, GPS also has importance. For example, special antennas can be place on the backs of surface whales to track their movements (Vizard 2). This makes the study of marine animals much easier than before GPS. During the Discovery mission, NASA tested to see if the space shuttle computers could detect a GPS signal. The experiment was a success and GPS receivers are now going to replace the outdated shuttle equipment ( Discovery 1). This will make tracking shuttles much faster and easier. Recently, GPS has also become useful in the medical field. Being able to locate a 911 caller quickly on a highway will save lives , says Phyllis Koch, director of information technology, for the city of Miami Beach, FL (qtd. in Cellular Phone Giants 1). A receiver in a car could help one find the nearest hospital quickly (Schwartz 1). Thus, being able to find the hospital may save a life. Also, a unit is currently in design for blind people. Receivers would announce the names of up-coming streets, intersections and major businesses as the users approach them ( High Tech 305). This could act as a talking seeing-eye dog making life much easier for a blind person. These types of uses are becoming more common than ever before.The GPS satellite system is not completely fail proof. Meteoroids can potentially knock out the system. In 1993, a meteor struck the European Space Agency s Olympus satellite and destroyed its directional control system , says JB (qtd. in A Leonid Meteor Storm in 1998 4). GPS satellites also have a chance of being damaged in space by either sandblasting or space garbage. Sandblasting is the effect of meteoroid particles making contact with a satellite. The odds of a meteoroid impacting a satellite are greater today than in the mid-60 s because of the number of satellites in orbit. In 1960, there were only 50 satellites in orbit. In 1998, there are over 1000 satellites in orbit (Kanipe 3). Dr. Lynch believed one particular meter shower, The Leonids, would likely pelt all satellites with meteor particles, but only superficial damage would result (Kanipe 3). Thus, Dr. Lynch recommended that sensitive instrument panels and steerable solar panels be turned away from the direction from which the meteors would approach (Kanipe 3). NASA turned the Hubbell Space Telescope so that its backside faced into the shower (Kanipe 3). This was done so sandblasting did not damage the sensitive lens of the telescope. Even though, most meter particles are the size of a grain of sand, they can impact with the same force as a 22-caliber bullet (Kanipe 3). This impact could cause electrical circuits to short or total failures to critical sensors (Kanipe 3). Dr. Binzel believes that the greatest threat to the satellites are the more than 8,000 known pieces of space garbage caught in the Earth s orbit. This space garbage consists of used rocket boosters, metal shards, screws, tools, and even paint flecks (Kanipe 3). There is a lot more space up there than satellites , says astronomer Richard Binzel of the Massachusetts Institute of Technology, and each makes a pretty small target (qt. in A Leonid Meteor Storm in 1998 3). The Global Positioning System is becoming the new wave of technology for the future. GPS can perform a variety of functions. These functions make life more convenient now, and will continue well into the future generations. In the twenty-first century, GPS will become a necessity because of its universal uses in technology.