

May 27, 2018

Course: CIS570 – Business Intelligence
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Assignment: Reading Discussions – Week1-Session1
Due Date: Sunday, May 27@ 11:59pm

Question 1: Pick a company or industry that generates big data. What are the sources of this data? How does the company/industry use this data?

Anadarko is an oil and gas company based out of Houston Texas with offices here in Denver and Platteville CO. The company has hundreds of oil wells across areas of Northern Colorado that are networked together which provide refined resources that we use on a daily basis. The well system has been developed over time and encompasses thousands of acres of land making it impractical for employees to physically monitor or inspect each well head on any reasonable time interval.

Thus, Anadarko employs the use of big data and BI to monitor and manage their network of wells. Much of the data they gather from the well systems comes from various types of sensors placed within the infrastructure components. These sensors monitor the oil and gas production flow from a well, temperatures and pressures within the system, physical movement of well components such as horse-head rotation, and many other key metrics.

As can be imagined, this data is generated and captured in real time and transmitted to central processing systems which then runs BI algorithms on the data, and there is a LOT of it - hence a classic example of *big data*.

Two key areas that the company focuses on are production flow and failure detection. Using BI, they understand how to drive production flow for each well and use the real-time metrics to determine if a particular well is performing at the expected rate and can make production flow adjustments based upon the real-time performance indicators.

Another focused use of BI is *failure detection*. If a well is taken out of production due to a component failure that translates to a loss in production and revenue. By collecting big data, the company can use past performance and history of wells that went into failure to detect similar performance patterns of current functioning wells to try to identify and mitigate future failures.

If they can identify wells that are exhibiting signs of failure before it actually happens they can address the condition and minimize the amount of down time on the well. This of course all contributes to the bottom line revenue numbers for the company.

Question 2. Discuss a specific example of how technology can help overcome human cognitive limitations.

Human cognition is our ability to comprehend, reason and make decisions based upon our knowledge and the world around us – at least that is how I would define it. From studies and our own personal experiences, humans simply have a short attention span. It is extremely hard for us to stay focused on a situation or task for any extended length of time as our thought process will be interrupted by an endless barrage of external events that draw our focus away from the task at hand.

While there are many situations that we endeavor in on a daily basis that would certainly require our full and focused attention, a specific task that is routinely performed is driving an automobile. One would most assuredly concede that anytime someone operates a vehicle on the road it requires our full and utmost attention at all times, however, as we know and have learned since the invention of the automobile this is just not the case.

As soon as we let our focus drift we open ourselves up to being involved in an accident that can and does have deadly consequences.

This is where technology and AI has come to the rescue so to speak. Advancements in the ability to add features and functionality to vehicles leading to the creation of autonomous or self-driving vehicles has reached the point where vehicles are now on the road driving without human intervention alongside vehicles under the control of a human driver.

While this technology is simply fascinating in and of itself, I want to focus on one small piece and how that relates to the cognitive process and that is with the ability of a vehicle to stop itself if it determines an impending accident and the *driver* has not initiated any action to stop or slow vehicle.

We have all experienced this at one point in time while driving. As mentioned, we easily lose focus when driving, and especially for a long period of time, your mind will drift. You might start thinking about the day's events, or an upcoming meeting, or looking at your cell phone for the latest text message or Facebook post (that dreaded cell phone!).

As soon as this happens your concentration on driving has been broken and you are now prone to an accident. This is where the new technology kicks in. Vehicles so equipped can now *sense* a danger situation with respect to objects in the vehicle's path which can become potential road hazards, for example, the car in front of you that has started slowing down due to a traffic backup.

As you, the driver, are now *busy* being distracted, the traffic in front of you has come to an unexpected stop. Technology kicks in on your distracted behalf and senses that your vehicle is coming exceedingly close to an object that will result in an accident unless a preventative action is taken (braking). Sensing that no braking pressure is being applied, the vehicle will automatically activate the braking system to slow and or stop the vehicle if needed. The more

drastic the situation becomes, the more pressure is applied to the brakes and if you have ever experienced this happening, you will certainly be re-engaged with present reality in no uncertain terms.

Thus, in this situation, technology comes to the rescue to hopefully save the day and perhaps lives. Similar technologies now exist which provide 360-degree monitoring around the vehicle because, as we know, danger can come from anywhere and anytime (quite unfortunate). Without this absolutely fascinating technology more and more lives will be lost on our roads as we become more and more distracted.