

IoT, Big Data and Location – Transforming our World

Our world is awash with data. How much? A recent EMC and IDC study forecasts that the digital universe doubles every two years and will reach 44 zettabytes by 2020. For comparison, there were only 4.4 zettabytes in 2013. That is a 10-fold increase in only seven years. In tandem with and helping to fuel this explosion of data is the expected growth of IoT – sensor devices connected to the internet that monitor and measure everything. Autonomous IoT devices are expected to increase three-fold, from an existing base of 15 billion to 50 billion in the next five years. This is the equivalent of 7 connected devices for every man woman and child in the world.

The promise of IoT is not that it will continue to overload our world with data but that it can help transform the collected data into useful information and actionable intelligence. Data that cannot be acted upon is of little use. As an example, think of how weather forecasts help us in our daily lives. The forecast tells us what to expect. Should we wear a jacket or shorts? Do we need an umbrella or sunscreen? The forecasts are developed by analyzing temperature, barometric pressure, humidity, wind, satellite imagery and a myriad of other data collected from sensors. A communications network feeds the sensor data into a weather model developed by the meteorologist. The model is the application that then predicts the weather for all of us. This looks a lot like the basic model for IoT – sensors, communications, analysis and actionable intelligence. However, for our example to be useful we still require one additional ingredient, location.

For the weather forecasting model to work, it must know the location of the sensors. This seems to make sense, but is this the only location requirements? For the information to be actionable by you or me, we need to know where the forecasts are applicable. It is nice to know weather forecasts around the globe but unless I am taking a trip I am primarily concerned about the weather in my local area. Knowing that Siberia is about to be hit by a major winter storm is interesting but unlikely to influence what I will wear in California.

So, we have determined we have a lot of data. With the explosion of IoT sensors we will have even more data. Location is important if we want to forecast the weather but what about other aspects of our lives. Will developing an IoT ecosystem help? If it will, does location matter beyond weather? I firmly believe the answer to the last two questions is a resounding yes!

Sure, sometimes I find it a bit scary to think about my phone and any other device I might wear or carry turning me into a walking, talking sensor – tracking, measuring and analyzing my every movement. It can be a bit frightening until I think about my daily commute. I usually take the train to work. My worse feeling is arriving at the platform only to see the train pulling away. I just missed it. Sure, I know the schedule and another one will be along in 15-20 minutes. The problem is that the train arrival and departure can vary by 15-20 minutes. So I usually arrive 5-10 minutes early and wait. This works most times unless the train is early or late. In which case I watch it depart before I can get to the platform. Wouldn't it be great if the train and my phone communicated? My phone could monitor the train and notify me when I needed to head to the station. My GPS equipped phone also knows where I live and how long it will take to get to the station. How many minutes do I waste every day by arriving early, only to still miss my train on occasion. There is probably an app that I could load on my phone to help. Fantastic! Until I decide to take a business trip that requires flight. Now I need another app for that?

Unfortunately, I look at apps like the numerous remote controls I have in my house. Too many and too confusing to use. I have one for each device – the TV, the set top, the DVD (yes, I still have one but the VCR is long gone), and the stereo. They all have different layouts, buttons (it is amazing how many different color palettes vendors can create), and all profess to be universal remotes if you can only figure out how to program them. You can even use your phone or tablet as a remote. Personally, I am waiting for them to integrate with the microwave. I see the IoT promise as the reheat button on microwave. All I need to do is hit the universally understood reheat button and it knows what I want.

The IoT ecosystem will contain tens of billions of sensors connected seamlessly through the internet, collecting relevant data that once processed and analyzed will be transformed into actionable intelligence. The sensors data can be used for multiple applications but not require multiple apps. Weather forecasts will be recommend what clothes to wear, set home thermostats, warn of icy roads and advise you of flight delays before you leave the house.

Will location matter? Absolutely! The last thing I want is for some smart home application to turn up the heat in my California home because of the winter storm in Siberia. We live in a global world but on a daily basis we live, work and care about what is close to us.