**What is NASA doing with Big Data today?**

Ref <https://open.nasa.gov/blog/what-is-nasa-doing-with-big-data-today/>

Summary

Article about the Nasa in the Big Data and how efficiently Nasa is planning to use the Big data in the field of Space Technology, Communication systems and other areas. The approximation of how much Data Nasa is collecting can be get through the point that within 5 seconds it collects about 1.80 Gb of data from several monitoring stations and base stations. Handling such amount of massive Data is huge and gathering information from such huge amount of data is another challenge. Data which nasa is gathering is in continuous form and getting incremented day by day. As quoted by Nasa “Our data is one of our most valuable assets, and its strategic importance in our research and science is huge. We are committed to making our data as accessible as possible, both for the benefit of our work and for the betterment of humankind through the innovation and creativity of the over seven billion other people on this planet who don’t work at NASA.”.

Nasa collection of the Big Data is Huge which can be estimated by that in year 2030 only the weather forecast data will be around 350 Petabytes. When the organizations reach to the point that volume, velocity, and the variety of the Data cannot be handled or rather say that it exceeds storage or computing capacity then the organization need face different challenges, it becomes more difficult to analyses the data using analysis tools or visualization tools. Approaching to the Big data challenge often need advanced algorithms, infrastructure, and framework. Nasa currently has two types of spacecraft one with deep space and they have earth orbiters which sends around Gb’s of Data via radio frequency which is relatively slow, In future Nasa is Planning to have Laser optics instead of Radio frequency which will transmit around 1000 more time of Data that currently nasa receives.

Not only spacecraft is the only source of Data but also the sensors, mobile devices other mobile platforms which are collecting data on daily basis. The scale of the big data challenge for NASA, like many organizations, is daunting.

Collection of the Data is not the challenge but the major challenge Is as the wealth of data increases, the challenge of indexing, searching, transferring, and so on all increase exponentially as well. Additionally, the increasing complexity of instruments and algorithms, increasing rate of technology, and the decreasing budget environment, all play a significant factor in our approach. As per the Nasa “In March 2012, the Obama administration announced the [Big Data Research and Development Initiative](http://www.whitehouse.gov/sites/default/files/microsites/ostp/big_data_press_release_final_2.pdf) to “greatly improve the tools and techniques needed to access, organize, and glean discoveries from huge volumes of digital data.” ”.

Analysis

Think of the Time when nasa has send its first mission Cape Canaveral since then there are several missions which nasa has send to deep space some mission got failed and some mission got successful. As to make the mission more secure and the probability to which the mission can be improved can only be managed with the collection of the Data, the mistakes that were made by the Nasa in the mission that got failed helps them to get prepared for the mission which are going to be successful.

NASA's way to deal with overseeing and handling information is shown by the Mission Data Processing and Control System (MPCS) which was as of late utilized by the Curiosity on Mars. MPCS interfaces with NASA's profound space organize, and thusly the Mars Reconnaissance Orbiter, to transfer information to and from Curiosity and process the raw information continuously, a procedure which it took hours if not days to fulfill.

As the Data gets transferred to the Curiosity and Rover the Data which is send back by the orbiter needs to be stored which will be done by the [NASA Center for Climate Simulation (NCCS)](http://www.nccs.nasa.gov/) which primary objective is to store the Data. The centre also has various visualization tools which allows one high resolution surface display where they can display still images, video, and other content.

After the Storage, the major task is to Archiving and Distribution there are two different systems for archiving and analyzing the Data first is  [Atmospheric Science Data Center (ASDC)](http://eosweb.larc.nasa.gov/), for Earth science and other one is [Planetary Data System (PDS)](http://pds.nasa.gov/), which is focused on planetary science. It specialized in the Climatic change and the Global change in the atmosphere, also it analyzes the impact the various human activities on environment Also it includes the petabytes of the Data which nasa has collected over the decades. This observation is the observation which are collected by the various orbiters also there are various deep spacecraft which are also sending terabytes of the Data.

Nasa uses supercomputers to analyze and process the Information collected by various centers. Which includes some of the challenging projects like solar flare, space weather. Nasa eye orbiter name Hubble telescope is another eye in the deep space which major function is to search the planets like earth and find the age of the universe and collect the information gathered from the deep space. We can analyze the complexity of the Data is there are approximately 200 billion galaxies are there and each galaxy consists of several planets as to observe the galaxies and find the symptoms of the life is again the challenging task.

The benefits of what NASA is doing in big data are not limited to just the government. In fact, this work has very real implications on the people. One real world example of how NASA big data helps, and directly affects your life, is in the field of airline safety. NASA is involved in analyzing data collected from planes [to study safety implications](http://www.allanalytics.com/author.asp?section_id=1411&doc_id=250894), which in turn will help with commercial airlines’ maintenance procedure improvements and potentially prevent equipment failures.

As the collection of the Data gets increased it will surely be beneficial for the people to get more versatile and real time information but it will also increase the challenge to process such complex data and get some meaningful information.