## Big Data, Data Hubs, Sensors, IoT and Precision Agriculture – Their Effect on Data Collection, Analysis, Forecasting and Survey Processes

**Michael Valivullah**

USA

The National Agricultural Statistics Agency (NASS) of the United States Department of Agriculture (USDA) is in a mission to provide timely, accurate and useful statistics on US agriculture. Precision agriculture (PA) is a farming management principle that measures and responds to variability in crop conditions and animal health using sensors, robots, satellites and global positioning systems (GPS). The advent of precision agriculture has provided agricultural producers an unprecedented amount of data for use in data mining and big data analytics in farming operations. As more and more farmers are using automatic and remote sensing tools to collect data to be more productive, efficient and profitable, it is in the best interest of NASS to collect data from these sources (sensors, agribots, farm data hubs, drones, etc.,) and not burden farm producers by asking for the same data in NASS surveys. Automatic data collection (machine to machine) will also eliminate manual data entry errors. NASS needs to develop new survey and data collection processes, algorithms to validate, and analyze and process this data. Data analysis will require data scientists familiar with sophisticated algorithms, artificial intelligence, decision models, predictive analytics, etc. NASS also needs data dissemination tools with sophisticated big data processing capabilities and data visualization abilities. This presentation will discuss opportunities and challenges in dealing with big data in precision agriculture

### Biography

Michael Valivullah is currently serving as the Chief Technology Officer (CTO) at US Department of Agriculture's (USDA) National Agricultural Statistics Service (NASS). He served as Director of Information Technology (IT) and Chief Information Officer (CIO) at NASS and the Directorate of Science and Technology in the US Department of Homeland Security (DHS). He is a member of the Senior Executive Service (SES) in the US Federal Government. He has worked for 14 years in the public sector and over 15 years in the private sector and non-profits.

michael.valivullah@usda.gov