ABOUT
BYTE TECHNOLOGY SOLUTIONS LLC

BYTE TECHNOLOGY SOLUTIONS LLC is a holding company established in 2020 in New Jersey with different lines of action such as drones, renewable energy and precision agriculture. Among our assets we have Solargy focused in solar energy, AgroByte focused in precision agriculture and NJ Drone Academy, company that we bought in June 2020 with the purpose to turn it into a one stop drone shop and now has evolved into BYTE DRONE CENTER.

BYTE
Technology Solutions LLC

ABOUT AGROBYTE

AgroByte is a leading company founded in 2019, specializing in digital farming and precision agriculture. We have qualified agronomists and developers, capable of creating and linking digital platforms with the customers for specific farm requirements. We encourage a work culture that is focused on our clients and the environment. We are primarily concerned for the productivity of our farmers. Implementing through drone technology, real-time monitoring of farms to better identify the physical and biological needs of their crops. We were born in 2019 and since then we have worked in several kind of farms: avocado, lettuce, berries, agave, corn, sugar cane, apples, pecans and flowers. We integrate drones, sensors, satellites and AI to help increase the yield of the crops. We believe that a comprehensive preventive maintenance turns into big profits fro the farmers.

AGROBYTE

WHAT WE DO

TRAINING

Since 2016 we have been offering different drone courses. We have trained more than 500 drone pilots interested in different industries.

AGRO DRONE SERVICES

Our team has provided drone services in different fields such as solar and wind farms, T&D lines, oil and gas, advertising, agriculture, bridges, railways, rights of ways, just to name some.

CONSULTING

We have consulted and established drone programs for law enforcement, schools, film industry, energy companies, golf courses, farms and even security agencies Our on-site track record allow us to save our clients time and money by showing them different ways and solutions according to their particular interests.
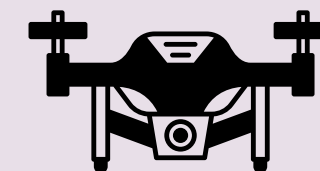
SALES, RENT & REPAIRS

Our certified crew has worked flying, assembling and repairing drones since 2016 . We understand the evolution of the drone technology and we are able to explain to our clients which is the best drone according to their particular purpose.

T E A M

- **Dan Wicks.** FAA Part 107 certified drone pilot. Byte Drone Center General Manager. With a strong background in electronics, Dan has been focused in building, programming and repairing drones. He has worked at NJ Drone Academy since 2016 also teaching several of our drone courses and helping putting together drone programs for police departments and schools. Currently he is getting trained on spraying drones.

- **Megan Cope.** FAA Part 107 certified drone pilot. VP and GIS Specialist. Megan graduated from the University of North Carolina at Greensboro with a BA in Historical Archaeology and a BA in Classical Archaeology. She then went on to receive her masters in GIS/Remote Sensing. Completing her graduate internship at Syngenta, she was hired by Timmons Group to work as an embedded contractor with NCDIT-T. Megan has experience in GIS software such as the ArcMap, ArcGIS Pro, StoryMaps, and ArcOnline as well as ground truthing GPS devices. Working with large datasets, she is able to manipulate and process raw data into user friendly data visualizations.

- **Luis Escobedo.** FAA Part 107 certified drone pilot. CEO. Born and raised in Mexico City. BA International Relations. Studied in France. Has academic and work experience in 4 different continents. Has worked in the renewable energy industry since 2008 developing wind and solar farms working for German, French and Spanish companies. Developed from scratch to RTP or RTB more than 500 MW in wind and solar energy projects. Has coordinated drone inspections in 15 solar farms and 12 wind farms in 4 different continents. Pioneer in the digital farming industry. Founded AgroByte. Has done drone consulting to Federal Agencies.

- **Tim Reinagel**. FAA Part 107 and FAA Part 137. Agronomist focused in golf courses. Tim has been working as a golf course superintendant since 2010. He has put together a drone program for turf management using multispectral sensors and spraying drones .He is Part 107 and Part 137 certified. Tim has been collaborating with NJ Drone Academy and AgroByte since 2020 as a consultant for vegetation management.

SMART FARMING

Smart farming is a management concept focused on providing the agricultural industry with the infrastructure to leverage advanced technology – including big data, the cloud and the internet of things (IoT) – for tracking, monitoring, automating and analyzing operations. Smart farming reduces the ecological footprint of farming. Minimized or site-specific application of inputs, such as fertilizers and pesticides.

DIGITAL AGRICULTURE

- Digital agriculture is the seamless integration of digital technologies into crop and livestock management and other processes in agriculture. For farmers, digital agriculture offers the opportunity to increase production, save costs in the long-term and eliminate risk. Big data, analytics and machinery that is becoming increasingly smarter and more autonomous are transforming the world of agriculture as we know it. Technological innovation is on the fast track to facilitate productivity in the agricultural sector, supporting a global population that is increasing by over 80 million people each year. Topsoil continues to erode at an alarming rate, and unpredictable weather patterns present frequent challenges to farmers, demanding nuanced real-time responses. Digital, user-friendly innovations, designed to help monitor and mitigate these challenges are needed to increase efficiencies, and to meet food quality expectations and demand.

PRECISION AGRICULTURE

- Precision agriculture (PA) is a farming management concept based on observing, measuring and responding to inter and intra-field variability in crops. First conceptual work on PA and practical applications go back in the late 1980s.[2] The goal of precision agriculture research is to define a decision support system (DSS) for whole farm management with the goal of optimizing returns on inputs while preserving resources

- We believe that with the continuous exploration of best practices, pest management, and pesticide use will be more reasonable and have less impact on the environment, the policy environment of agricultural drones will be gradually relaxed, and the space for the development of agricultural drones will broaden.

FLOWER SAMPLE FARM

We have a 6 acres flower sample farm where we collect data on a regular basis and we use as a showroom to teach our students how drones are helping manage this multi-flower nursery. We have already mapped this farm and acquired satellite imagery that helps us understand the health of the crops day by day.

INTEGRATION

We collect real time data for all variables that occur in cultivated fields. Through the use of advanced technologies we optimize the use of resources and supplies. Monitoring and processing data to obtain accurate crop counts, soil quality, soil chemistry and plants. Variations and problematic areas are detected with NDVI, VARI and more.

Reduction in the quantity of supplies and man hours needed, which decreases overall production costs.

By utilizing our service, you can increase efficiency in your crops, reduce stress and increase production and quantity by as much as 30%.

We can help you detect pests, diseases, weeds, irrigation deficiencies and provide accurate plant counts and distribution with our technology.

We assist you optimizing tasks quickly and safely, such as crop diagnosis, fumigation, fertilization and irrigation.

We also can help you reduce the amount of agrochemicals applied by as much as 50% by utilizing precision spraying methods.

HARDWARE

There are several elements to consider when selecting the correct equipment for digital farming. After trying different other drones and sensors, we decided to stick for now with DJI products since it allows us to have a smoother workflow. Our equipment consists in:

- Phantom 4 Pro V2
- Phantom 4 RTK Multispectral
- Agras T10
- D-RTK 2 High Definition GNSS Station

SOFTWARE

- As mentioned in the previous slide, we analyze the drone data using several software:
  1. Drone Deploy
  2. Pix4D Fields
  3. Solvi Agro
  4. DJI Terra
  5. Google Earth
- All these software used together, will give us a whole new level of understanding the farm. With all these tools, AgroByte's focus is to prevent instead of "repair".
- Preventive Maintenance allows the farmer to detect pests, bugs and diseases when the damage is minimum. On the other hand, by understanding what the farm specifically needs, will help you save time and money.
- The creation of prescription maps, improves the spraying precision; whether you are using a tractor or a drone, you will save gallons of fertilizer, herbicide, enhancers, etc. by applying just what is needed, where it is needed and when it is needed.

DATA COLLECTION

- Before collecting data, we use Google Earth to draw the farm's polygons. This kml file will help us study this multi-flower nursery. After doing this, using Pix4DFields, we can generate satellite imagery from the farm from Sentinel-2 satellite from 5 years to date.
- Once we have worked on the computer we are ready to go to the site. First, we map the field using a Phantom 4 Pro V2. This RGB imagery allow us to have a better understanding about the farm by creating orthomosaics and 3D models out of it using Drone Deploy. Also, this data, will let us know the plant count of the field using Solvi Agro.

After, we collect multispectral data using a DJI Phantom 4RTK Multispectral along with the D-RTK 2 High Definition GNSS Station for a better accuracy. We process this data using Pix4D Fields 2.0 to get vegetation indices such as NDVI, NDRE, VARI used to monitor the health of the crops and also to create prescription maps as shapefiles or kml files that would be uploaded to DJI Terra to be executed by the DJI Agras T10 spraying drone.

WHAT IS THE VALUE OF USING DRONES AS OPPOSED TO EXISTING OR ALTERNATIVE SOLUTIONS?

Drones are here to stay. The development of this technology in the past 5 years has been beyond outstanding. Every month new "drone software" and "drone hardware" is released. Drones in farming have been already out there for a while, however they are still very far from being mainstream. It is still hard for the 65 years old farmer to try different ways of farming, however the next generation is ready to take over and them, they want to manage their farm in the most automated way from a cool office on site or remote, where they can have a wider understanding about the health of the crops. The use of drones has demonstrated an increase up to 30% of the yield of the crops if used in a proper way. Drones, satellites and AI are going to be needed to feed the world in 2050 when we reach 10 billion people. If we keep farming, the way we have done in the past, we will never be able to mathematically nourish the whole population after 2050.
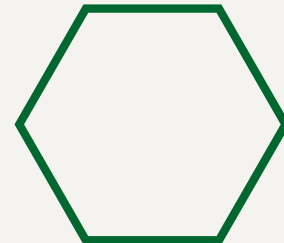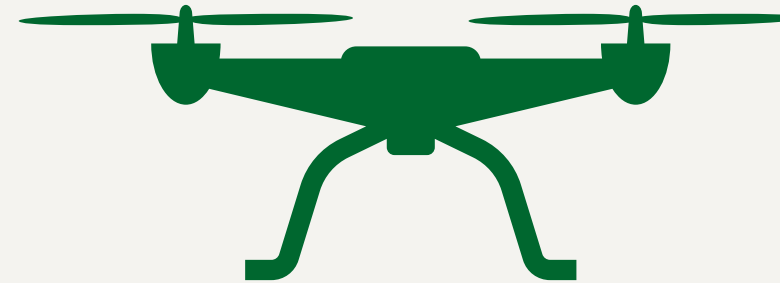
MAINTENANCE, UPGRADES, REPAIRS

It will be important to keep a record of the drones and software upgrades. Also, it will be essential to have a partner that will be in charge of the maintenance and repairs of the equipment. We have a fully equipped workshop with all the necessary tools to repair different kind of drones and sensors. We also are able to get parts and fix agriculture drones.

AGRO BYTE

AGROBYTE

THANK YOU

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