

Agricultural Drone

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IEMA RESEARCH & DEVELOPMENT
PRESENTATION

PROBLEMS IN AGRICULTURAL SPRAYING

Labour Shortage

Millions of farm laborers leave agriculture every year

Inefficiency

Time-consuming & Nonuniform spray
→ Increased Costs & Reduced Yield



Hazardous

Continuous spraying
of chemicals leads
to illnesses

SOLUTION: AUTONOMOUS SPRAYING UAV

- Saves labor!
- Can be operated by one (or few people)
- Less intrusive practices for some situations
- Can improve efficiency



ABOUT

AN AGRICULTURAL DRONE IS AN UNMANNED AERIAL VEHICLE USED TO HELP OPTIMIZE AGRICULTURE OPERATIONS, INCREASE CROP PRODUCTION, AND MONITOR CROP GROWTH. SENSORS AND DIGITAL IMAGING CAPABILITIES CAN GIVE FARMERS A RICHER PICTURE OF THEIR FIELDS.



WAYPOINT GPS NAVIGATION TECHNOLOGY

Waypoint GPS Navigation allows our drone to fly on its own with its flying destination or points preplanned and configured into the drone remote control navigational software.

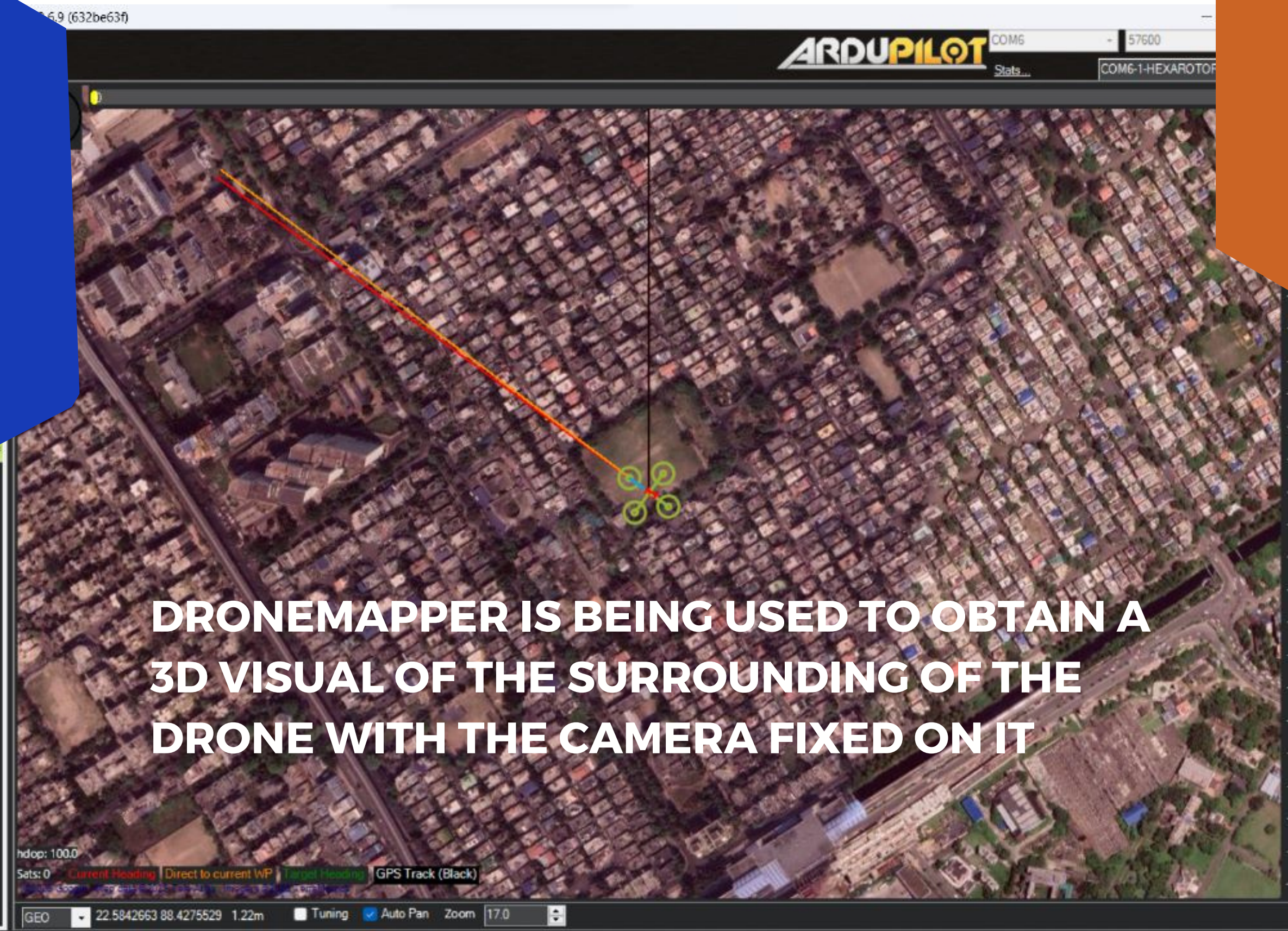
This instructs the drone where to fly; at what height; the speed to fly and it can also be configured to hover at each waypoint. It is a route and destination planner for our drone.

Image © 2023 Maxar Technologies
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Google Earth

Imagery Date: 11/8/2022 22°35'03.22" N 88°25'39.35" E elev 0 m eye alt 29 m

3D MAPPING



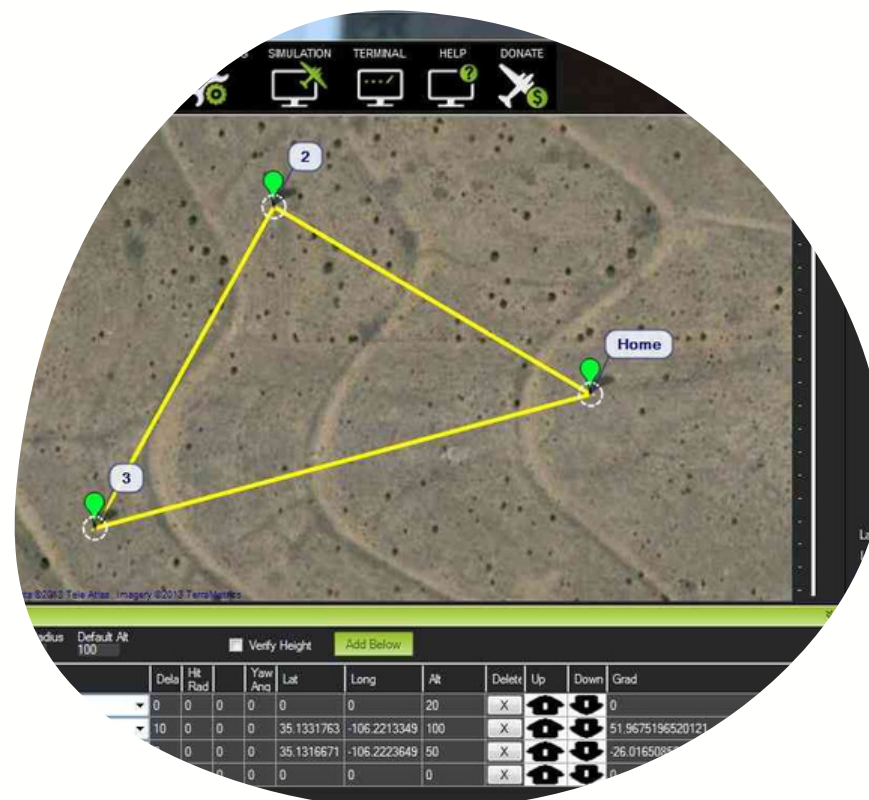
DRONEMAPPER IS BEING USED TO OBTAIN A 3D VISUAL OF THE SURROUNDING OF THE DRONE WITH THE CAMERA FIXED ON IT

OUR STRATEGY



STEP PLAN 01

DRONE MANUAL FLIGHT
TEST, WITH AND
WITHOUT LOAD



STEP PLAN 02

MAVLINK SETUP AND
AUTONOMOUS FLIGHT
TEST



STEP PLAN 03

DISPENSER AND PUMP
ATTACHMENT

HOW WE ARE USING DRONE IN AGRICULTURE

SPRAY APPLICATION

- > Crop spraying drones can carry large liquid storage reservoirs and can be operated more safely.
- > It can be operated and maintained at a fraction of the cost compared to crop dusters.

Water can be distributed in a field in the most efficient way in an effort to conserve resources.



DRONE BUILDUP

- ✓ HEXACOPTER CHASIS
- ✓ BLDC MOTORS
- ✓ 4A ESC
- ✓ 11.1V LI ION BATTERT AND CONNECTORS
- ✓ PIXHAWKS FLIGHT CONTROLLER
- ✓ TELEMETRY
- ✓ SAFETY SWITCH AND ALARM

COMPONENTS USED

FOR AUTONOMOUS FLIGHT AND 3D MAPPING

- ✓ GPS MODULE
- ✓ CAMERA
- ✓ GIMBAL

FOR SPRAYING

- ✓ 250ML WATER DISPENSER
- ✓ PIPE
- ✓ Nozzle
- ✓ PUMP

THANK YOU

WITH REGARDS,

RITESH NANDY &
UDAY SANKAR MUKHERJEE

