

Fowado Technology Group - sUAS-EOTACS Payloads Capability Assessment Event:
White Paper Submission

Company Name: Fowado Technology Group (FTG)

Capability Tile: FTG Loudspeaker

Date: 10 August 2019

Point of Contact:

Josh Ortiz

contactus@fowadotechnologygroup.com

813-892-9024

1013 US Hwy 301 S, Tampa, FL, 33619

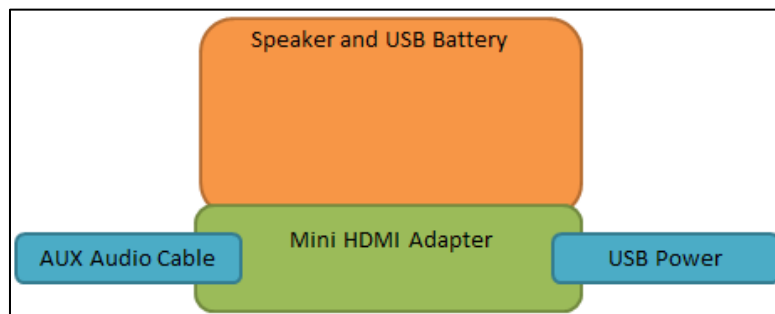
Problem Statement Tile: sUAS Loudspeaker Platform

EXECUTIVE SUMMARY

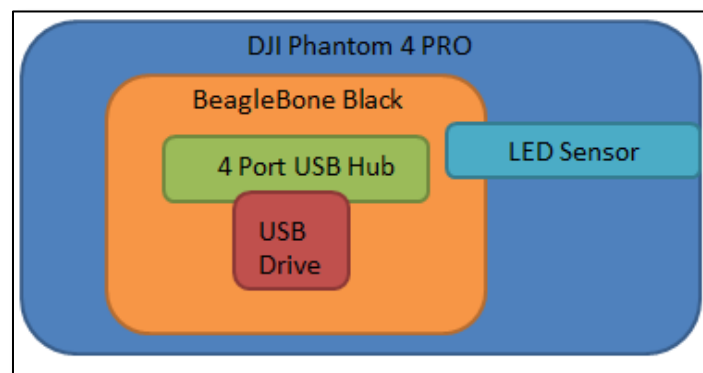
Fowado Technology Group (FTG) proposes FTG Loudspeaker as an enhancement of our SOFWERX AirSpew Challenge top three finisher to address MISO's gap in conducting loudspeaker operations from an aerial platform. Our solution will combine edge platform compute capabilities with high performance COTS speaker/microphone to meet MISO's tactical and humanitarian missions. The compute component of the payload facilitates the command and control of the loudspeaker/listen-back functionality while the COTS speaker/microphone hardware offers mature solutions for those parts of the payload.

TECHNOLOGY CONCEPT

Our technology concept is based on our successful submission to SOFWERX's OpenWERX AirSpew Challenge conducted September 2017. In our AirSpew submission one of the three interchangeable payloads integrated a speaker module with a DJI Phantom 4 quadcopter. The diagram below shows an overview of the components that were part of the AirSpew Speaker Module:



The payload also included compute capabilities that provided the processing behind the speaker functionality and which were shared with two additional interchangeable modules, outlined below:



Fowado Technology Group - sUAS-EOTACS Payloads Capability Assessment Event: White Paper Submission

The speaker playback was remotely controlled using the platform's trigger button and the audio content was sourced from a USB memory stick on the UAS. The payload was attached to the platform without structural modifications (as outlined in the AirSpew challenge). Overall, FTG's submission to the challenge placed 3rd with the Speaker Module being evaluated as the best amongst all submissions.

For a short video of the AirSpew Speaker Module visit https://youtu.be/TW44L8E1E_U

In order to meet MISO's requirements FTG Loudspeaker would enhance the original AirSpew Speaker Module in the following areas:

- All-weather condition proofing compute component and connectors (speaker component already meets this requirement)
- Allow for remote control of volume
- Allow for broadcasting of live messages
- Add listen-back capability (as either live, recorded, or both)
- Integration with MISO sUAS target platform (if different than DJI Phantom 4)

The system would carry forward the following existing features to help meet MISO requirements:

- Payload weight at or under 4 lbs.
- Self-supporting power
- Ability to play pre-recorded messages
- Integration with DJI Phantom 4

In terms of technology readiness, we believe that the foundation AirSpew Speaker Module sits around TRL6 having flown the platform with the module in operation. Additionally, SOFWERX independently operated the module in order to evaluate it for the challenge. On the manufacturing side we consider the AirSpew Speaker Module to be about MRL 5 where we have demonstrated the capabilities on a prototype but have not optimized for production. FTG Loudspeaker modifications are lower in the TRL/MRL scale since they are in the technology assessment and proving phase.

AirSpew Speaker Module was developed under a compressed schedule while developing two additional modules and using only FTG resources and time. We learned valuable lessons that if selected will directly apply to the development of the FTG Loudspeaker to meet MISO's need for loudspeaker operations from an aerial platform.

Fowado Technology Group - sUAS-EOTACS Payloads Capability Assessment Event: White Paper Submission

COMPANY VIABILITY

Fowado Technology Group (FTG) is a small, minority, veteran owned business based out of Tampa, Florida. While selling some of the most sophisticated drone equipment available to civilians FTG also offers custom UAS solutions that include engineering and manufacturing of both hardware and software components and systems. Additionally, we pilot drones for a variety customer needs; these competencies give us the unique perspective of the entire UAS lifecycle: sale, service, modification, and operation.

Our team includes a mix of former military members that understand being mission focused combined with technical and engineering expertise that cover hardware and software fields. Our company's strength is to provide customers with innovative solutions that stretch the art of the possible.

ROM COST/SCHEDULE

Current System – AirSpew Speaker Module

Assumptions and Variables:

- Assumes assembling new AirSpew Speaker Module
- Assumes availability of same/similar components as original design, unavailability of components is a variable
- Assumes same AirSpew platform (DJI Phantom 4) if MISO using different sUAS platform that integration will be part of End State System work
- **Cost: \$300 / Schedule: 30 days**

End State System - FTG Loudspeaker

Assumptions and Variables:

- Encompasses the enhancements outlined in the Technology Concept section
- Assumes one prototype system delivered
- Assumes the current system (AirSpew Speaker Module) is available as starting point (cost/schedule for that not included, see above)
- Assumes level of effort for sUAS platform integration (mechanical and logical) is similar to DJI Phantom 4
- Assumes we are provided (GFE) the sUAS target platform for integration
- **Cost: \$18,000 / Schedule: 90 days**
 - Most of the cost is the estimated non-recurring engineering work to address the shortfalls of the current system against MISO's use case