Overview

❖ Millions of drones
  • No air traffic control
  • No detect-and-avoid

❖ Patented solution licensed from NASA
  • Software
  • Hardware integration

❖ Existing infrastructure

❖ Standalone, online/offline
The Problem – Aircraft Encounters

- 600,000 Registered
- Average 3.5 per day
The Problem – Getting a Lot Bigger

- All drones: 1.9M/year → 4.3M/year
- Commercial drones: 600K/year → 2.7M/year
What are NextGen and ADS-B?

- FAA’s “NextGen” air-traffic control system
- Required on all aircraft by 2020
- ADS-B: Automatic Dependent Surveillance - Broadcast
The Solution

- Transponder Integration
- Algorithms
- Detect/Track/Avoid
- Existing Infrastructure
- Software Suite
- Testing
- Researched Interface
- Researched scenarios
- Exclusively Licensed Patent 9,405,005
- Future sensors
The Product

FlightHorizon Software:
- Traffic Visualization
- Detect-and-Avoid

Operator's Drone

ADS-B Out

Other Aircraft

ADS-B Out

Control Signal

Operator

ADS-B Out

FAA ADS-B Towers
Fully Installed System

- PingNAV
- Ping2020
- PingEFB
FlightHorizon User Interface

- Tracked Aircraft
- Traffic Alerts
- Traffic Warnings
- Ownship
- Flightpaths, Waypoints, Charts
FlightHorizon User Interface

Synthetic Cockpit View

Tracking Beyond Sight
FlightHorizon User Interface

Air Traffic Control Zones

Weather Radar
FlightHorizon: Summary

- Detect-and-avoid software for manned and unmanned
- Compliant with FAA part 107.30 and RTCA SC-228
- Patented user interface, detect and avoid functions
- Proprietary detect-and-avoid (DAA) algorithms
- Tablet or laptop-based
- NASA testing with FAA observation and collaboration
Business Model

- Annual software licensing
- Feature and data updates
- “App” online/offline distribution model
- Online software upgrades
- Hardware/software bundles
Products Outline

- **Stage I: FlightHorizon™ GA**
- **Stage II: FlightHorizon™ UAS**
- **Stage III: FlightHorizon™ Enterprise**
End-User Market

➤ **Manned Aircraft**
- $4 billion spend on ADS-B compliance – 2016 to 2020
- 157,000 GA aircraft installations
- 25X increase needed / 100 installs per day

➤ **Unmanned Aircraft**
- 2.7 Million commercial unmanned purchased per year by 2020
- Spend on commercial unmanned aerial systems (UAS) in the US is expected to grow to $11.5Bn a year by 2022.
The Market: UAS Industry Segments

- **Hardware**
  - Drones, airframes, servos
  - DJI, 3DR, General Atomics

- **Payload**
  - Sensors, actuators, processors
  - L3, FLIR, Aeryon, Trimble

- **Systems**
  - Autopilots, fleet managers, data managers, compliance managers, logging systems
  - AirWare, DroneDeploy, SkyCatch, etc.
Types of Traffic Awareness & Detect-and-Avoid

Cooperative
• ADS-B, TCAS, Air Traffic Control
• Stop Lights and highway lanes – everyday control

Non-Cooperative
• Visible, infrared, RADAR, LIDAR, Machine Vision
• Bumpers and air bags – last ditch mitigation
Additional Sensors

- Echodyne Micro Radar
- Fortem Tech Micro Radar
- Intel Real Sense Camera Kit
- Integrated Robotics Imaging Micro Radar
The Technology Licensing Process
Team

- Kraettli L. Epperson, CEO and Co-Founder
- Michael Tharp, CFO, Co-Founder and Board of Directors
- Robert Heard, Co-Founder and Board of Directors
- Dr. Ricardo Arteaga, Inventor, NASA Engineer
Recent Industry Press
Awards & Recognition

- Federal Laboratory Consortium Far West Region - Outstanding Technology Development Award - 2014
- Federal Laboratory Consortium Far West Region – Outstanding Technology Commercialization Award – 2016
- Top 4 Break-Through Air Navigation Technologies – August 2016
Company Summary

- Exclusive License
- Market Opportunity
- Platform Technology
- Existing Infrastructure
- Detection at Point of Flight
- Independent
- Tested
- Ready
- Recurring Revenue, Sticky Product
- Strong Margins Anticipated
Questions?

➢ **Contact:**
  - Kraettli L. Epperson, CEO
  - KLEpperson@VigilantAerospace.com
    - Tel: (405) 445-7224

➢ **More Info:**
  - www.VigilantAerospace.com

➢ **Available upon request:**
  - Financial Projections
  - Full business plan
  - Technology demonstration
  - Patent details
  - Technical diagrams