C.A.R.E. - Community Aerial Response Ecosystem

"Safeguarding Our Schools, Protecting Our Communities."

A Schools Based Drones as a First Responder (DFR) Whitepaper

10 March 2025

Prepared For:
North Dakota State Legislature

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Purpose

This whitepaper outlines a strategic initiative to enhance school safety in Grand Forks, North Dakota and surrounding rural areas, by integrating Drone as First Responder (DFR) overwatch technology into the school system. This "Drone in a Box" capability will be a Community Aerial Response Ecosystem (C.A.R.E.). DFR is already operational in police departments across the country such as NYPD, SFPD, OKPD, and a dozen more. Its proven technology will offer real-time situational awareness and rapid response capabilities, ensuring the safety of students, staff, and the broader community. If implemented, this dual use school overwatch and DFR concept would be the first of its kind in the country.

*Some images and information were obtained from Skydio DFR Command: Software Solution for DFR Programs | Skydio

Problem Statement

Traditional methods of security and emergency response are no longer adequate to address emergent threats to our schools. Current systems often lack real-time situational awareness and rapid response capabilities. School administrators and local police will gain significant, immediate, high definition, and mobile situational awareness by incorporating proven technology such as, all-weather drones, remotely operated docking systems, perching drone overwatch (non-flying camera use), spotlights, speakers, and AI behavior assessment tools without the expense and slow response time of a police helicopter unit.

Establishing the Desired End State

DAG proposes a collaborative effort with state and local stakeholders to develop, establish, and sustain a C.A.R.E program across a few strategically chosen school districts. This initiative will create a network of centrally controlled and remotely operated drone docks that will provide both scheduled and on-demand situational awareness for school safety personnel and first responders.

Community Aerial Response Ecosystem (C.A.R.E)

Key Benefits

- **Improve School Safety Through Better Situational Awareness:** Utilize drones to provide real-time overwatch of school events (e.g., pickup/drop-off, recess, sporting events), and facilitate better decision-making for emergency response personnel. With authorized access, the Remote Pilot can share the live drone feed with local leadership via cell phone, tablet, or computer. Onboard police lights, sirens, speakers, and spotlights can diffuse situations before officers arrive.
- **Enhance Community Emergency Response Times:** When required, local Police and Fire Departments could use the drones for 9/11 calls across the greater community.
- **Reduce Use of Force Incidents:** Drones arriving ahead of officers to gain awareness of emergency events have been proven to reduce use of force incidents due to confusion. They also reduce the need for dangerous car chases.
- **Reduce or Fill in For Resource Requirements:** While there is no replacement for emergency response professionals, drones have filled in police recruiting gaps and are less costly than extra sworn officers, vehicles, and helicopter programs.
- **Crash And Crime Scene 3D Model Reconstruction:** Drones have 3D modeling software that can reconstruct crash or crime scenes in high definition.
- **Integrate with Regulatory Programs:** Demonstrate political and financial alignment with relevant federal and state grant programs and public safety policies.

Guiding Principles

To ensure the program's success, it is essential that all stakeholders follow these guiding principles:

1. **Operational Excellence:** Maintain disciplined planning, communication, training, with experienced professionals.
2. **Community Engagement:** Involve stakeholders early and maintain transparency to build trust and foster program support within the community.
3. **Regulatory Compliance:** Adhere to FAA regulations (Part 91/107 COAs and BVLOS waivers), privacy laws, and data security requirements to ensure lawful operations.
4. **Data and Evidence Management:** Establish clear policies for data retention, storage, and access in compliance with local and federal guidelines.
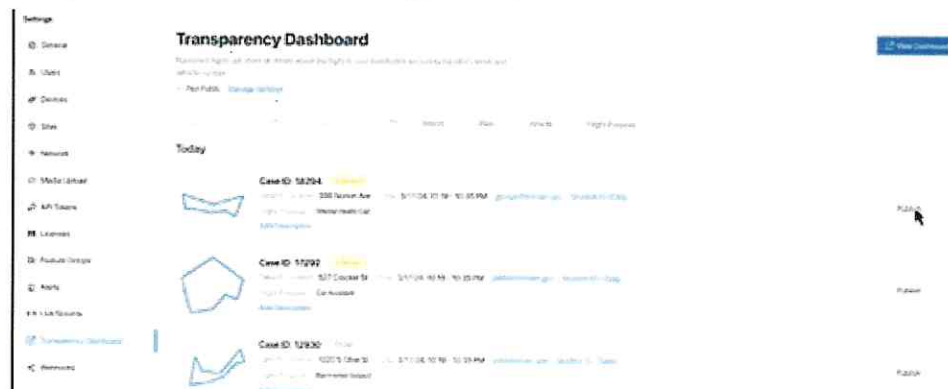
Framework of a C.A.R.E Program

Ready:
- Professionally trained staff
- Airspace awareness, risk mitigation practices, and regulatory compliance
- Strategically positioned technologies (docks, dispatch, and remote operations center)

Respond:
- Remotely piloted and live streaming
- On scene within 2 minutes
- Standoff sensors
- All weather – day and night
- Autonomous obstacle avoidance and return to home capability

Resolve:
- Evidence and data offload to a secure cloud
- Community transparency
- Data analysis and reporting

Grow:
- Scale to meet community needs
- Obtain more robust and flexible airspace waivers (Beyond Visual Line of Site "BVLOS")
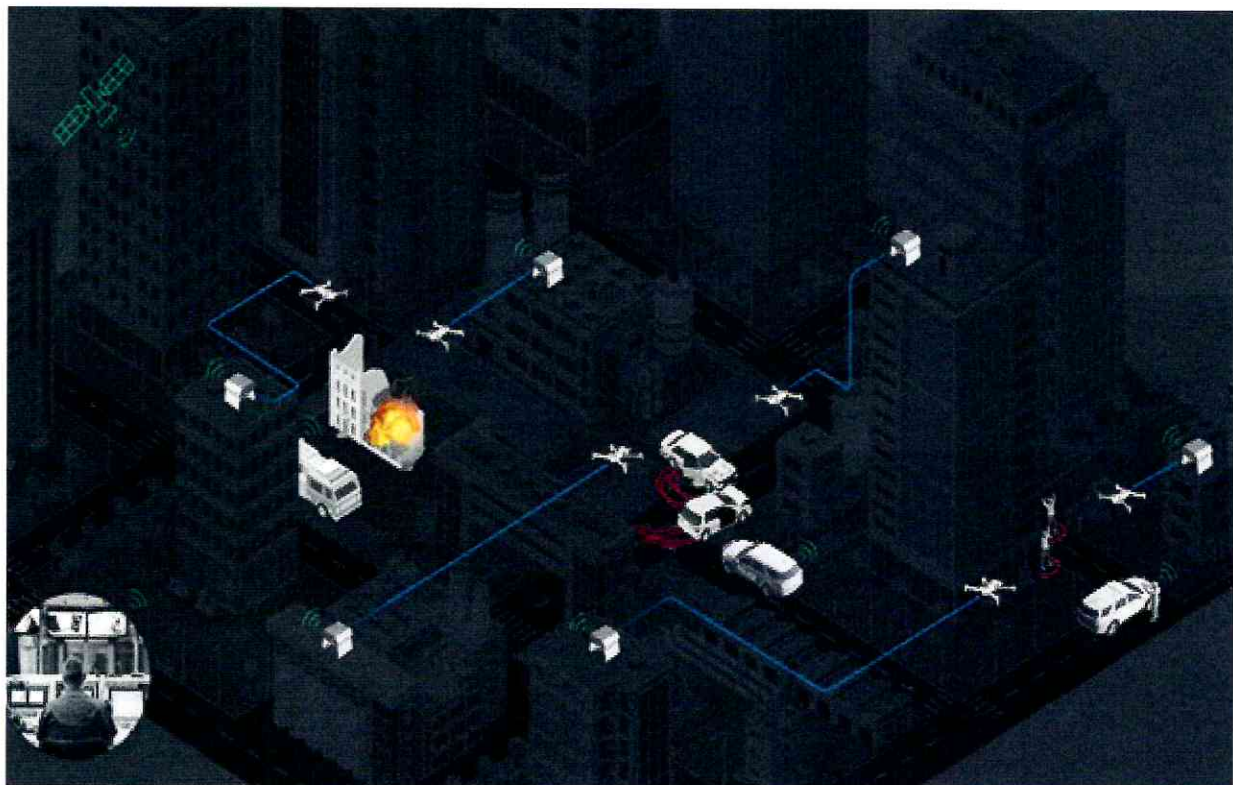
Program Management

Effective program management is key to the success of the DFR initiative. This includes:
- **Staffing**: Designate a Program Manager to oversee operations, establish policies, and coordinate training. Supplement with tactical team leads and operational analysts as needed.
- **Standard Operating Procedures (SOPs)**: Develop detailed SOPs for pre-flight, inflight, and post-flight operations, including safety protocols, risk mitigation, and emergency procedures.
- **Training**: Partner with training experts to provide initial and recurrent training, including FAA Part 107 certification and DFR-specific operational training.
- **Remote Operations Center (ROC)**: Establish a centralized command center for managing live drone operations, data analysis, and evidence management.

Financial Considerations

Implementing the C.A.R.E. program requires a strategic investment to ensure its effectiveness and sustainability. The proposed budget not only covers the initial procurement of drones and infrastructure but also allocates resources for training, regulatory compliance, and ongoing operational support for several years. This section outlines the anticipated costs and provides a roadmap for phased implementation. *The total investment for the pilot program is anticipated to be ≈$1.46M, broken down as follows:*

Total Project Investment: $1,469,300

Total Labor Costs: $786,800
Total Equipment Costs: $600,000
Total Operational Costs: $ 67,500
Miscellaneous Costs: $15,000

Labor expenses represent a key portion of the budget, totaling **$786,800** over the project period. The key roles include:

- **Program Manager:** Responsible for overseeing all aspects of the program and leading community outreach.
- **DFR SME (Subject Matter Expert):** Provides expertise in DFR operations
- **Operations Center Manager:** Manages the operations center and coordinates missions
- **Lead Pilot and Remote Pilots (RPICs):** Ensure compliance with FAA regulations and execute missions
- **Visual Observers (VOs):** Assist pilots during missions and fulfilling FAA requirements.

These roles are essential for maintaining operational readiness and ensuring that all missions adhere to safety and regulatory standards.

Equipment and Infrastructure

The budget allocates resources for the procurement of DFR systems and support equipment, totaling **$600,000**:

- **DFR Systems:**
  - **Four DFR systems** at **$150,000 each**, deployed in phases across different sites and timeframes to maximize coverage and responsiveness.
- **Operations Center Fit-Out:**
  - A one-time expense of **$35,000** for infrastructure upgrades, ensuring the facility can handle real-time mission data and command operations.
- **Personnel Safety Equipment:**
  - **$3,000 per phase** to equip staff with necessary protective gear during deployment and maintenance operations.

This investment aims to build a robust operational backbone capable of supporting both **BVLOS (Beyond Visual Line of Sight)** and **VLOS (Visual Line of Sight)** missions.

Operational Expenses

Operational costs, including insurance, safety, and contingency funds, are projected at **$67,500**:

- **Insurance:**
  - Starting at **$500 per month**, increasing to **$1,000 per month** to cover liability for both drones and ground operations.
- **Miscellaneous Costs:**
  - Includes **LTE connectivity, software licenses, and communication tools** to support remote operations and site-to-center communications.

These expenses ensure uninterrupted operations and a proactive approach to risk management.

Phased Deployment

The budget is structured for phased deployment to maximize the opportunity for the project to develop lessons learned and best practices for this concept:

- **Spring 2025 – Summer 2025:**
  - Program startup and initiation.
- **Summer 2025 – Winter 2025:**
  - Deployment of **one DFR system**. This system will be operational for approximately 8 months to generate data to inform roll out of future systems.
- **Winter 2025- Spring 2027:**
  - Deployment of **three additional systems** with at least one system allocated for a rural, remote community to gather as much data as possible.
- **Spring 2027 - Summer 2027:**
  - Program wind down or transfer.
  - Report generation: Promulgation of lessons learned and best practices.

Operational Efficiency and Cost Savings

The investment in remote operations software and DFR training aims to reduce emergency response times and minimize personnel requirements, offering a cost-effective alternative to traditional methods such as helicopters and additional personnel.

The proposed budget not only addresses the immediate requirements for launching the C.A.R.E. program but also ensures long-term sustainability through phased investments and diversified funding sources. By adopting this budget plan, North Dakota can lead the way in school safety innovation.

Desired Outcome

At the end of this project, North Dakota will have the data available to make an informed decision of the best way to institute DFR programs throughout the state. This will decrease the risk of a piecemeal approach as more and more communities desire to initiate DFR programs. This will also further cement North Dakota's roll in leading the UAS industry by leading the nation in its innovation and adoption of new and emerging technologies.

A Call to Action

The Delta Advisory Group invites city and state leadership to partner in implementing this cutting-edge initiative. By adopting the C.A.R.E program, North Dakota has an opportunity to lead the way in modern school safety and public safety innovation. Together, we can ensure a safer future for students, staff, and communities throughout North Dakota.
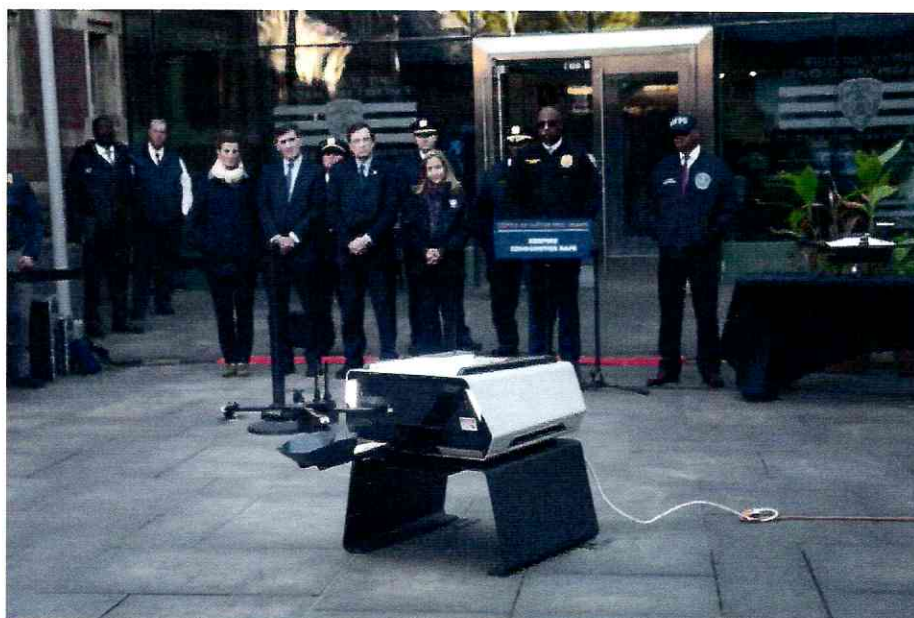
Mayor Adams and NYPD officials unveiled the department's "Drones as First Responders" program in Central Park on Nov. 13, 2024.