

Drones as First Responder: The Future of Public Safety



CAPE

 **SKYFIRE**
CONSULTING



Drone as a First Responder

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Agenda

1. Intro – Chief Kennedy
2. How the technology works
3. FAA Regulatory Considerations - Skyfire
4. Development of CVPD's Drone Program – Community First
5. Inception of the Drone as a First Responder (DFR) concept in partnership with Cape
6. CVPD DFR case studies / Chief's Perspective
7. Q&A

Aerial Visibility and Intelligence is Critical

- Better, faster situation assessment
- Improved resource allocation
- Keeps responding officers safe
- Replace traditional costly tools
- Improves response times
- Reduces crime

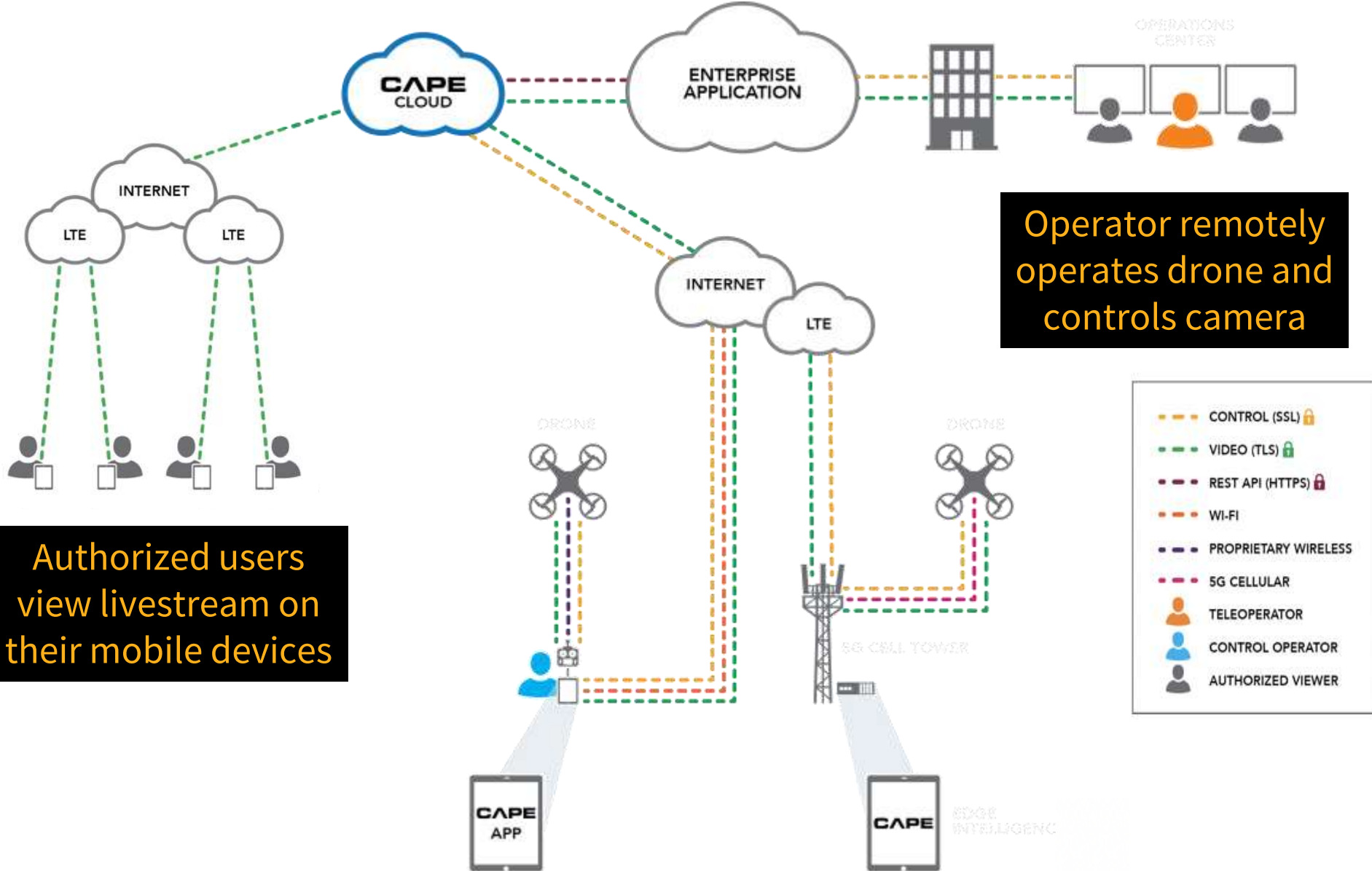


ENTERING GEOFENCE

GROUND SPEED 0km/h

MAX SPEED 0km/h

AERIAL ENTERPRISE ARCHITECTURE



Proven Technology History

Ensenada Police Department Launched Pilot Program in 2018

- 25 missions a day, six days a week
- Over 2500 mission in total
- 500 + arrests
- 10% drop in overall crime rates
- 30% drop in home robberies



June 11, 2018

**WIRED Magazine: A SINGLE DRONE
HELPED MEXICAN POLICE DROP CRIME
10 PERCENT**

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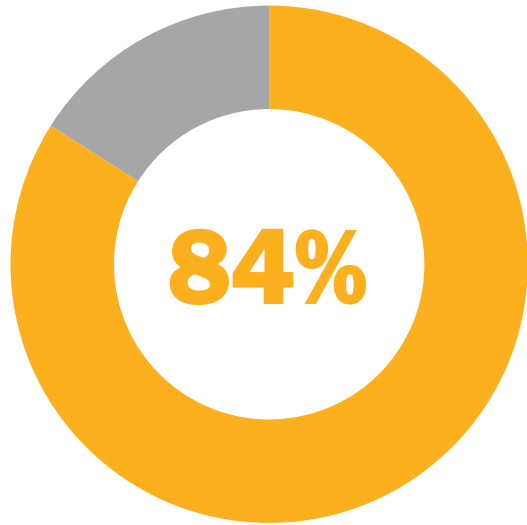
FAA Integration Pilot Program (IPP)

The UAS Integration Pilot Program is an opportunity for state, local, and tribal governments to partner with private sector entities, such as UAS operators or manufacturers, to accelerate safe UAS integration.

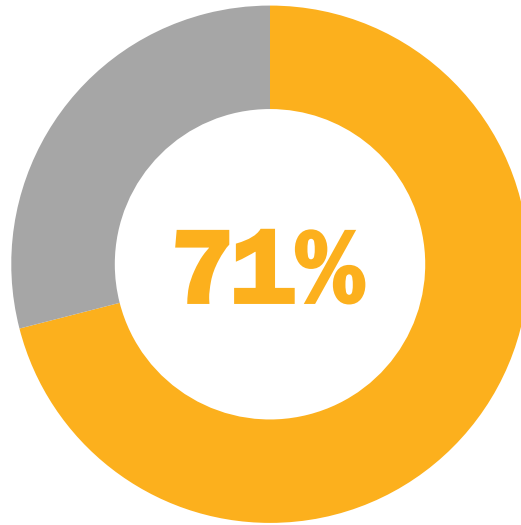
- CVPD and Cape have been tasked by the FAA to accelerate UAS integration for First Responders as part of San Diego IPP
- San Diego IPP also includes partners such as Uber, AT&T, Qualcomm, UC San Diego Health, Intel, GE, Airmap, and others
- FAA has granted San Diego IPP game changing BVLOS authorizations with the intent of expanding to all First Responders nation-wide
- Tijuana PD replicated the CVPD DFR program in less than 30 days in collaboration with San Diego IPP team



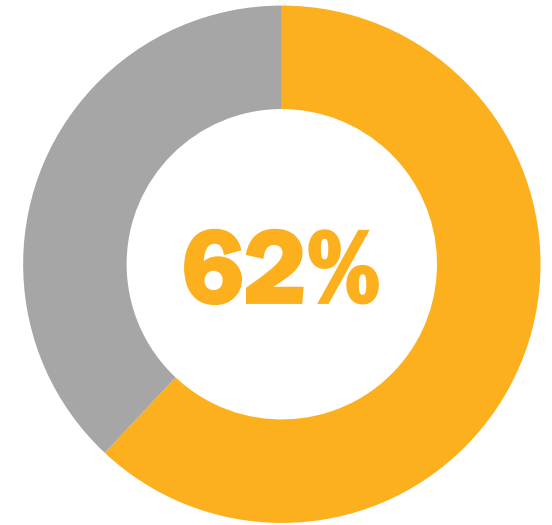
Research Proves Americans are Ready to Embrace Drones



expect local law enforcement & first responders to leverage the best possible technology/tools to ensure their safety



support the use of drones for law enforcement



would feel safer if drones were used in their communities

WHAT'S NEXT?

- Stronger US drones ecosystem
- Indoor drones for clearing buildings
- Self-docking/charging drones
- Longer and longer flight time
- Removal of PIC and BVLOS
- Drones integrated into all emergency response



Skyfire's Role

- Who is Skyfire- 1200 pilots trained, 300 agencies, 200 COAs, 1 mission
- Skyfire role within IPP
- Timeline for COAs
- Expectations
- Part 107 vs COA (civil vs PAO)
- CVPD chooses COA for most DFR ops
- Need for BVLOS and flight over people
- Only 1 BVLOS COA approved before CVPD, CVPD 1st of its kind
- Why is the FAA hesitant to allow BVLOS-



The Process



- *91.113(b) ...vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft.*
- FAA required safety mitigation for this operation to be conducted
- This was the challenge
- FAA asked us to present them with mitigations to make it safe
- Used SORA model - (Specific Operations Risk Assessment) **multi-stage process of risk assessment** aiming at risk analysis of certain unmanned aircraft operations, as well as defining necessary mitigations and robustness levels.
- Airspace analysis
- Multiple meetings with FAA produced a safety analysis that outlined specific risks and mitigations
- Approved incremental BVLOS operations

The Future

- Expand BVLOS operations in Chula Vista with continued SORA applications
- Most agencies can do this
- The FAA wants more BVLOS and DFR proposed operations
- Working with the FAA is easy
- Don't take "no" for an answer (the FAA rarely even says it)
- Find like minded agencies and discuss success/failures
- Agencies can do this all on their own, but requires resources. If they want to speed up the process, look for reputable companies





About Chula Vista

- Suburb of San Diego
- 2nd largest City in the County of San Diego
- 270,000 population
- 52 square miles
- 249 sworn
- No helicopter unit
- Rely on mutual aid from City of San Diego and Sheriff's office for support





Chief's Perspective

- Became Chief in December 2016
- Concerned over high profile local and national incidents involving police use of force
- Chula Vista has great training and equipment but no routine aerial support
- 911 callers are under stress and often don't communicate crucial details to dispatch
- Officers respond to scenes with extremely limited information, which puts them and the public at greater risk
- I challenged my leadership team to explore new ways to get critical information to our officers before they got on scene
- **DFR has its roots in problem solving and de-escalation. The key is Decision Quality Data**



DFR's role in Problem solving and De-escalation

- Before I became Chief in 2016, Watch Commanders, spurred by incidents of highly publicized police shootings nationally, discussed how to provide better intel to officers heading into uncertain calls
- They proposed a pilot program to reserve a regular patrol resource as a plain clothes “scout”
- This officer, called the SARA officer after the problem-solving model, would focus on getting to high risk calls in an undercover car and provide live intelligence and tactical advice to responding officers. The SARA officer would not intervene in the call except for an emergency
- The concept was to assess the situation and provide better intelligence to responding officers than inexperienced 911 callers - the hope was that better tactics would lead to better outcomes
- This intelligence from a seasoned officer could then be used to provide appropriate response
- ¹⁵ The SARA officer was a great de-escalation tool but not a sustainable model in the long term



CVPD Innovation Initiative

- Drone as a First Responder
- Live911
- Transparency and data dash boards
- DeX program (Smart phones as the MDC)
- BWC Program department-wide
- Cellphone deployment to all sworn
- CAD on cell phones with GPS to locate (ie: foot pursuit)
- Open Data Initiative



Chief's Perspective

- **DFR is not meant to replace officers, it is meant to enhance their safety and the safety of the community**
- **We work hard to be as transparent as possible and share our story of why drones are an important part of our response strategy**
- **DFR enhances de-escalation and gives officers critical information to formulate plans and tactics as they respond to emergencies**
- **DFR also gives supervisors and managers live information about calls – this gives us critical information when the least experienced officers are responding to calls**
- **DFR is not meant to replace manned helicopter programs, it is designed to supplement their support**
- **DFR allows us to assess and prioritize calls and sometimes clear calls without ever sending ground units**



2015 – Drones on the Horizon

- CVPD decided to study the concept of drones in policing
- We first defined our desired outcomes and mission – What will our operations look like?
- Due to public perception, we decided to “slow walk” our approach and learn from other agencies’ mistakes – we were not in a hurry to be on the leading edge.
- Instead of focusing on procuring equipment, we formed a UAS working group to study the issue and define our drone operations, build public support and develop policy .
- The UAS working group watched other agencies’ programs, studied the UAS technology space and studied the concerns of community and civil rights groups (ie: community, ACLU).
- The UAS working group was transparent and open about working toward a drone program and invited community input and met with groups like the ACLU to discuss policy and concerns.
- Build upon the relationship and trust with the community first before investing in equipment.



Transparency and Outreach

- Built website with FAQ and info: <https://www.chulavistaca.gov/departments/police-department/programs/uas-drone-program>
- Created UASTeam@ChulaVistaPD.org email to solicit and answer questions
- Held a community forum with City Council where drones were on the agenda
- Partnered with media to discuss drones and solicit public input
- Community Advisory Committee Briefings
- Transparency builds trust – get rid of the term surveillance and tell the story of public safety benefits



How Chula Vista will NOT utilize the UAS

- Spying or routine surveillance.
 - Law and policy prohibits unreasonable searches and seizures.
- Data collection.
 - UAV will be mission driven.
 - Flight time limited by battery life.
- Weapon deployment.
 - CVPD policy prohibits any weaponization...



The “Ah-Ha” Moment

How Drone as a First Responder became the new paradigm in policing



Problem:

Routinely deliver Decision Quality Data (live video) to first responders before they arrive on scene

Solution:

- First on Scene
- Overwatch and Perspective
- Deliver live Decision Quality Data (DQD)
- Incident Management and Coordination



Traditional Model for Drone Integration in Public Safety

- **SWAT Model – Reactive vs. Proactive (both have value)**
- **Reactive – after an incident or for pre-planned events like search warrants**
- **Specialized vs. Routinely Integrated**
- **Limited Coverage**
- **Inconsistent Response Times**



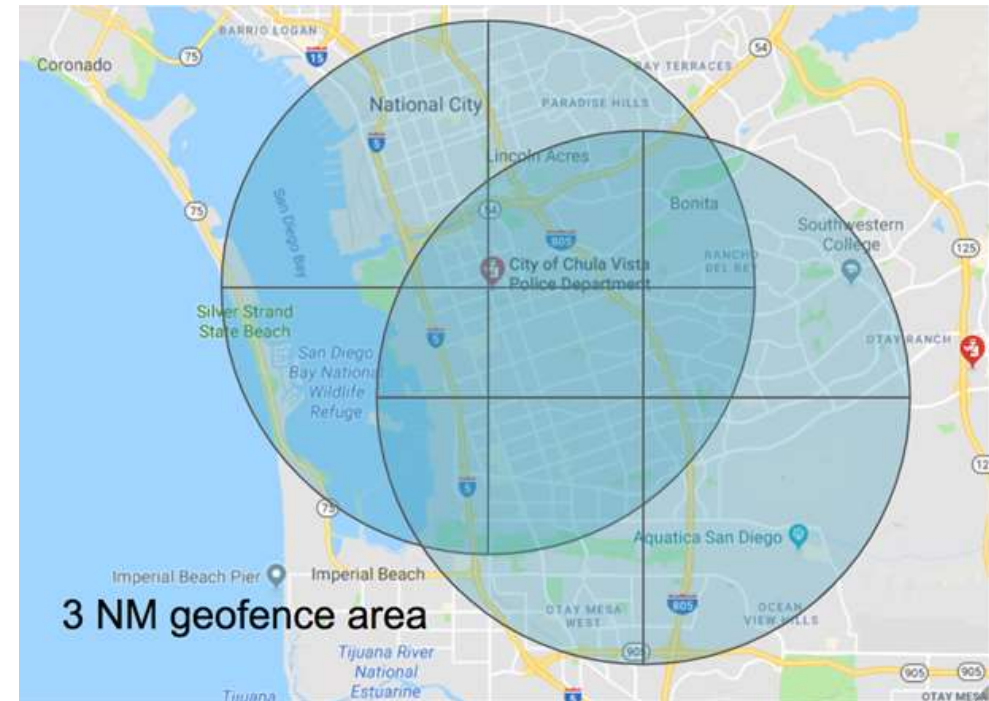
A New Model: Drone as a First Responder

- Proactive vs reactive
- Integrated into emergency response operations
- Used on “Routine” calls, not just priority calls
- Fewer limitations/greater impact potential
- Focus on telepresence and sharing intelligence
- Does not replace officers, but rather enhances what they are able to do
- Lower cost option for agencies without traditional manned air support units
- Made Possible via Cape Technology



BVLOS: A Major Regulatory Win

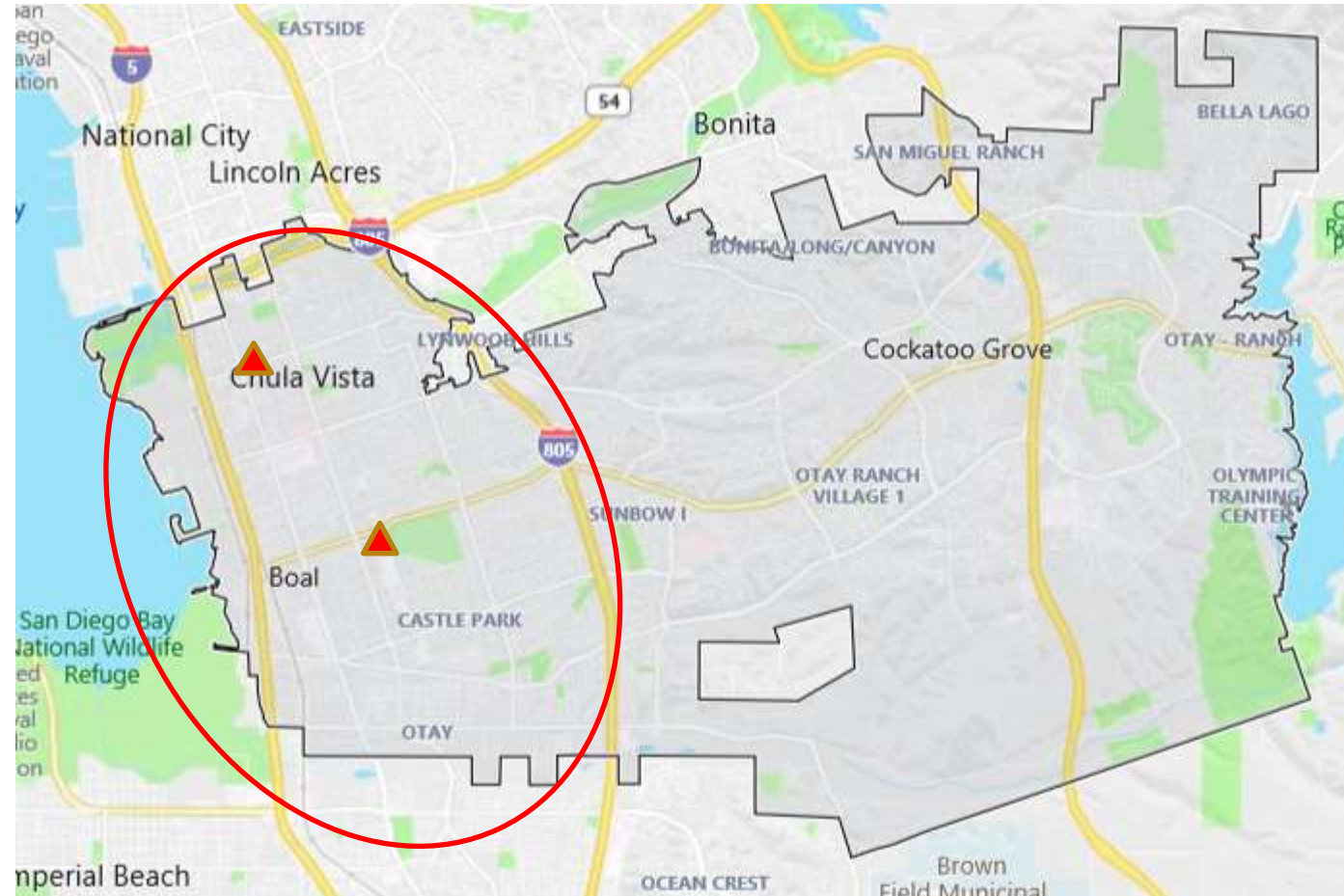
- Pre-BVLOS – limited to 1 mile radius around Headquarters
- Awarded First Public Safety COA over an urban area with BVLOS Provision for IPP
- Vastly increased total allowed area that drones can cover from 3 square miles to over a 32 square mile area
- Still reliant on visual observers for air safety and airspace awareness for now
- Working with tech partners on airspace awareness solutions





UAS Area of Operations

- 2 Launch Sites (CVPD and Bayview Hospital)
- Busiest sectors for calls
- ~33% of CV geography
- ~70% Calls for Service
- Mostly Class G airspace
- Operate above 200' AGL and below 400' AGL





DFR in Action in Chula Vista

- **Used 10 hours per day, four days a week, expanding to 7 days a week daylight hours**
- **Dispatched on high-priority calls within 3NM mile of CVPD HQ or Bayview Hospital**
- **Drones teleoperated by an officer in the command center to the location of the call**
- **Informs resource deployment to scene**
- **Responding officers can view the live stream en route to the scene**





Current Operations

- DFR Operations began Oct 26, 2018
- Monday-Thursday 0700-1700
- Expanding to 7 days a week in November 2019
- Teleoperator is Part 107 qualified
- Flies from remote “cockpit” via computer
- Part 107 certified Pilot in Command on the roof for line of sight requirements
- Cape software controls flight and geofenced area controls altitude and fences out unsafe flight areas





DFR Fleet

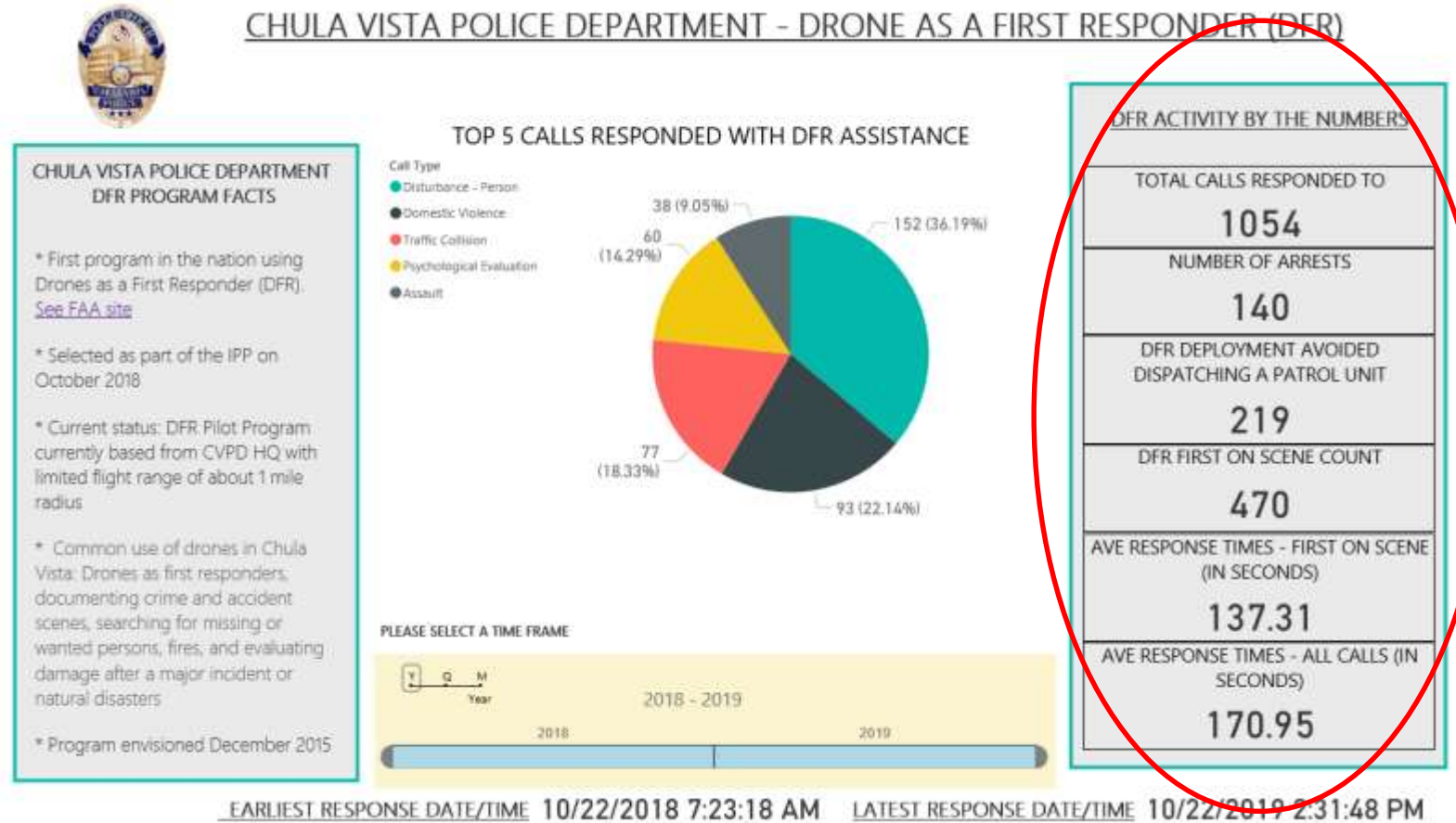
- 2 DJI M-210 Matrice v2
- 2 DJI M-200 Matrice (backup)
- Z30 zoom cameras
- About 20-23 min flight time





Progress to Date

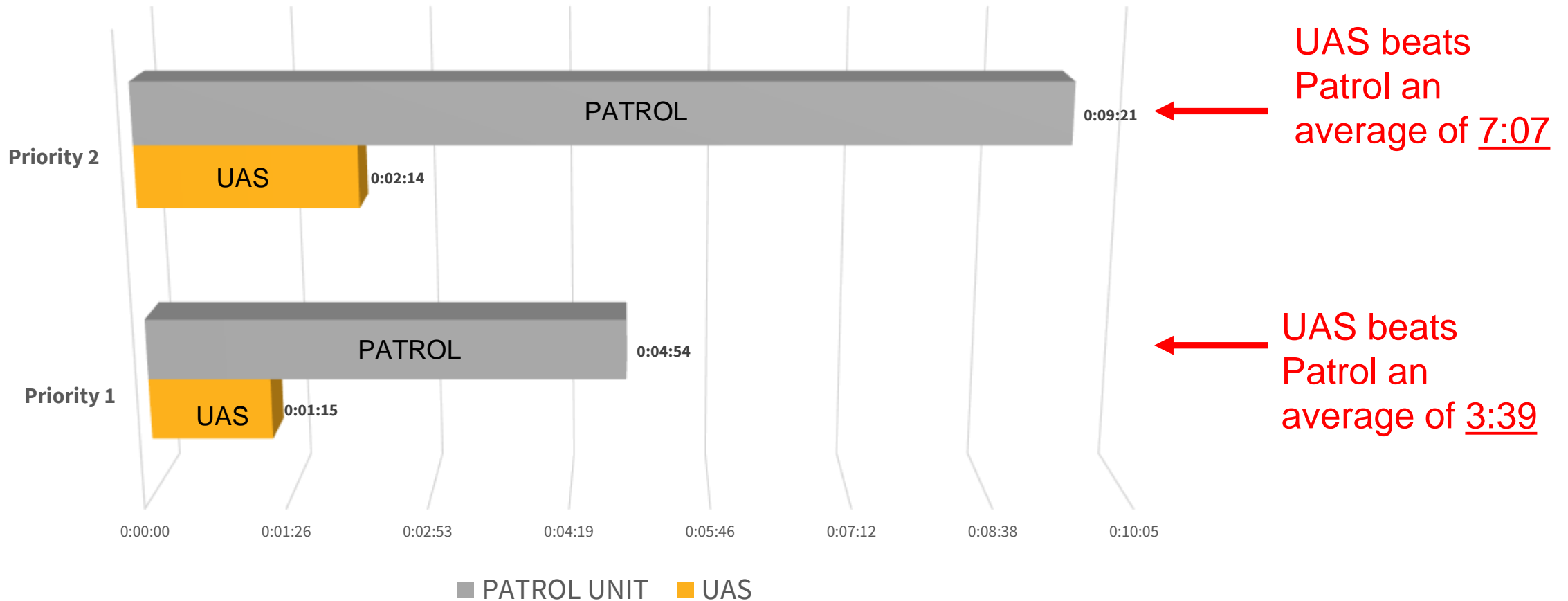
- <https://www.chulavistaca.gov/departments/police-department/programs/uas-drone-program>
- **Over 1054 DFR Flights**
- **Present or assisted in 140 arrests**
- **219 calls cleared without sending ground units**
- **First on scene 470 calls (45%)**
- **Average response time 170 seconds because we are now flying up to 3NM**
- **1 NM flight times were averaging 120 seconds**





DQD Delivered to Patrol

Average Response Times
(same incident)



Lessons Learned

- Define your mission
- Build community support
- Navigating the regulatory environment
- Importance of the right technology partners
- Need for robust “in-house” I.T. support
- Validation of the DFR concept
- Impact on resources and clearing calls





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CAPE



THANK YOU

For more information on the CVPD program and drone integration for public safety, please visit

- chulavistaca.gov/departments/police-department
- Cape.com
- Skyfireconsulting.com