Decentralized mid-air
collision avoidance

Ciconia opens the skies to decongested, safe and intense use

Ciconia's vision:

- The C&CAS – Coordination and Collision Avoidance System will be the standard of the market
- All drones, above 0.5 lb., will be equipped with a provision for C&CAS
- Drones' integrators will sell their drones with C&CAS built in
- Drones' avionic providers will sell the C&CAS as part of their avionic suite having collision avoidance hardware built in

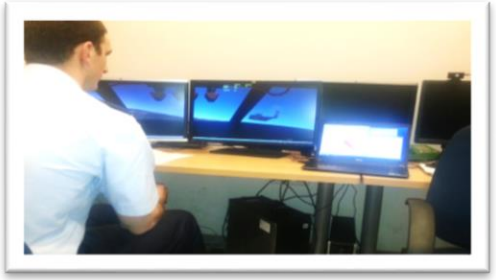
Engagement in short

- Ciconia's market size is expected to be $2B within five years
- Ciconia seeks to raise an additional $5M - $8M
- Capital raised will be matched by the Israeli 'Innovation Authority'
- Recently received funding from the "Bird" foundation's HLS fund

Ciconia is well positioned to capture a large market share

- Professional, committed team
- Flight test proven, patented algorithms (where all others failed)
- The market is ready

Ciconia's drone takes off, Sep 24th 2020 C&CAS flight test



C&CAS evaluated by an IAF pilot using an IAF simulator, 2015

The Team

- ✓ **Moshe Cohen, CEO, Col. (ret) former Israeli Air Force Cobra & Apache squadrons commander, 20 years of industry management and BD**
- ✓ **Ilan Zohar, CTO, PhD, LtCol. (ret) former IDF elite technology unit commander. electrical engineer and drones expert**
- ✓ **Gil Yannai, VP BD, LtCol. (ret) former IAF Flight test center commander, 787 airline captain, 15 years of aviation industry management and BD**
- ✓ **Misha Poyarkov, senior software architecture engineer**
- ✓ **Eran Bar-on, LtCol. (ret) IAF experimental test pilot, flight tests manager and algorithm expert**
- ✓ **Ronen Stoffman, IAF Flight test engineer & system engineer**

Drones are the future for goods delivery, Air taxis and other users will follow soon after!

The lack of a Collision Avoidance System inhibits the growth of this huge potential market

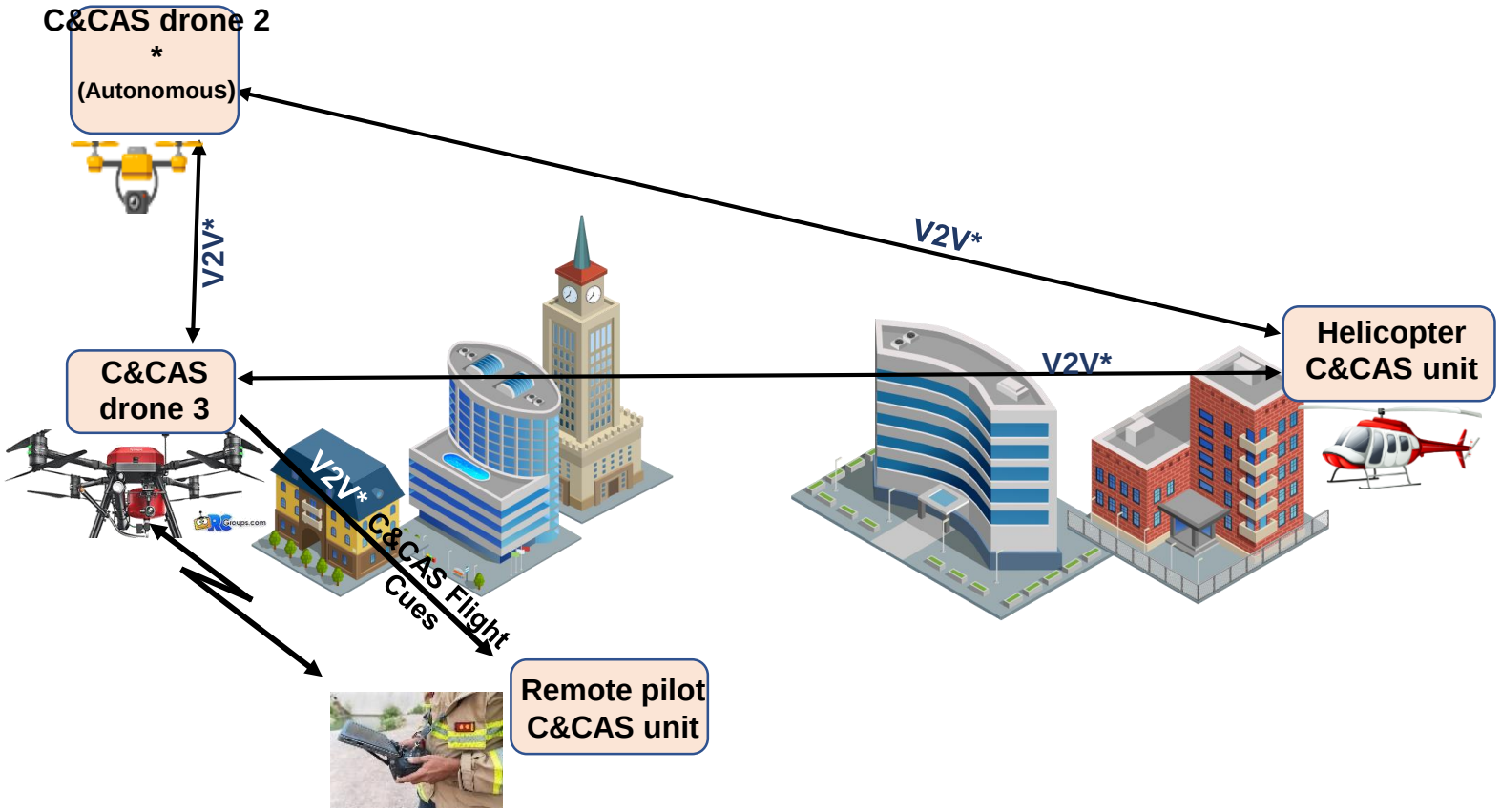
https://www.youtube.com/watch?v=NBRI0Q1fq7s

https://www.dropbox.com/s/cpfpp2qd71kktvt/Ciconia%20Ccas%20Cap.mp4?dl=0

The Solution - Ciconia's C&CAS:

- ✓Safely increasing numbers of airspace users by more than tenfold
- ✓Successfully tested onboard drones and helicopters
- ✓Saves drone operation costs
- ✓Patented, smart and unique algorithms, enhanced by multidimensional AI mechanisms

C&CAS: general operational concept



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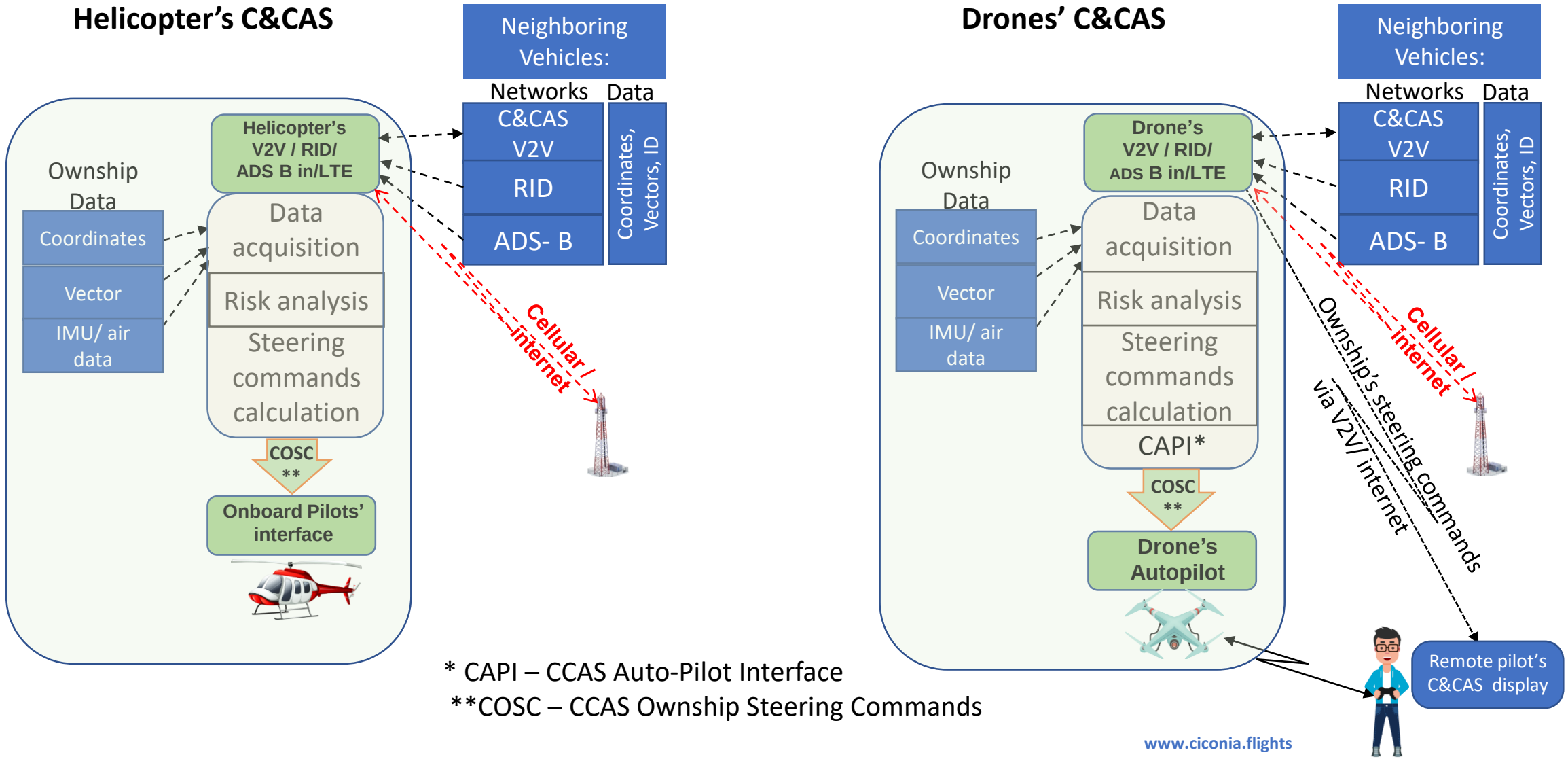
- V2V (Vehicle To Vehicle) network: a decentralized conflict management network to be shared by all air-space users; High accuracy, low latency
- Autonomous: no remote pilot in real time – no line of sight control

C&CAS - block diagram



* CAPI – CCAS Auto-Pilot Interface

**COSC – CCAS Ownship Steering Commands

At the ‘heart’ of the C&CAS is its unique, patented algorithms

Past C&CAS tests & evaluation:

- ✓ Simulations
- ✓ Off line tests
- ✓ Test flights onboard helicopters and drones

C&CAS - globally unique, flight test proven, midair decentralized Coordination & Collision Avoidance System for urban and rural skies

IAF Testimonial post C&CAS flight tests

Israeli Air Force
October 30 2017

IAF

C&CAS System Performance Acknowledgement

This letter is to acknowledge that Ciconia's C&CAS (Control & Collision Avoidance System) has been successfully tested by the IAF (Israeli Air Force) and has undergone several stages of performance verification per the IAF's requirements.
The IAF tested the first generation C&CAS system from November 2014 through March 2015 in the IAF Requirements Branch simulator. Two helicopters flying under varying flight conditions were flown in numerous inflight scenarios including formation flights, cross track and head on encounters. Each of the scenarios demonstrated the potential of an inflight collision. Several highly experienced operational and experimental test pilots flew the simulated missions and reported flawless performance throughout. No collision warnings were missed and no false warnings were generated during the simulated sorties. Further, the collision avoidance flight directives (Piloting Cues) given to the pilots were logical. Building upon the lessons learned from the first generation C&CAS, the Ciconia team pressed on with system development. The second generation C&CAS was ready for testing and evaluation in the fall of 2016. In October, this Gen 2 C&CAS underwent flight testing to verify system robustness and performance in challenging, real life scenarios. For these flight tests, the IAF utilized two UH 60 Blackhawks, each mounted with a prototype of the C&CAS Gen 2 and exercised the system in a series of challenging flight scenarios. The C&CAS has successfully met the two major criteria of a Collision Avoidance System:
1. Distinguish between risky and non-risky in-flight scenarios with no false-positive or missed alarms.
2. Introduce the pilot with timely and logical Piloting Cues allowing enough reaction time to avoid a collision.

Additional operational evaluation testing is planned for early next year, to test a sophisticated proof of concept of the C&CAS capability, to operate in an environment where manned and unmanned air vehicles are operating together. This letter does not grade the C&CAS relative to other systems and it does not commit the Israeli MOD and / or the IAF by no means to any commercial and / or technical obligation.

LTC G.E.
O.C. Helicopters and Weapons Requirements Branch

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With the C&CAS onboard – drones' delivery, Air Taxis and other users will grow rapidly

Alternative solutions to prevent midair collision:

- Regulation: maintain small number of drones in a given airspace – uneconomical
- Systems based on sensors – cannot guarantee low midair collision rates
- Central, real-time, C^2 (Command & Control) system – impractical & uneconomical

Only a decentralized, collision avoidance system, using an ad-hoc V2V network, can allow safe and dense traffic

Entry Barriers for Potential Competitors

- Ciconia's unique, flight test proven smart algorithms allow dense traffic while keeping midair collision risk very low
- Patents: one registered in Israel and in the USA, a second pending in the USA & EU
- Ciconia's multidisciplinary, experienced team, invested over 17 man-years of focused effort which has created a large gap for others to close

Ciconia is involved in the global ATM (Air Traffic Management) activity, members in the ASTM and in contact with leading entities in the FAA, NASA and industry leaders.

World-wide Drone and General Aviation in numbers

- The drone market alone is set to be worth $54 B by 2025 **/ $92 B by 2030 *
- Commercial UAS market - $13 B by 2027 (AAM – Air Taxi, UAVs)
- Conventional civilian airplanes, Helicopters - steady market **

World-wide collision avoidance market size in 2030

✓ Recreational UAVs over 0.5kg	$1B
✓ Commercial UAVs	$1.8B
✓ First responders UAVs	$0.6B
✓ Military	$0.3B

Control desk, Sep 24th 2020 C&CAS flight test

* The drone market is set to be worth USD92 billion by 2030, with a CAGR (Compound annual growth rate) of 25% over the USD9.5 billion in annual revenue for 2020. Of this revenue, 70% is in the commercial sector. ABI Research Oct 8, 2020, Teal Group Oct 7, 2020

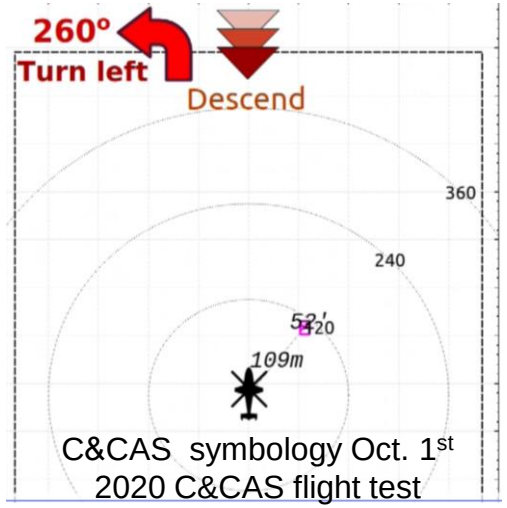
** The drone tech market accepted to grow from $30B in 2020 to $54 B in 2025. BBC research project, Aug 2021

Market Penetration

- Ciconia plans to implement the C&CAS onboard commercial drones and helicopters in 2022. To achieve that goal and to gain a large market share, Ciconia will leverage recent Israeli MOD (IMOD) flight test successes to:
- Approach potential distributers
- Approach potential business partners
- Approach first responders' operators of UAVs & helicopters
- Approach military operators
- Conduct demos to selected customers

Ciconia's tasks for year 1 & 2:

- Recruit team:
  - Development
  - BD
  - Marketing
  - Applications
- 2 commercial beta sites
- Certification
- A pilot program with:
  - 2 avionic producers
  - 1 drone integrator
  - 5 first responders' multi-disciplinary teams
  - 2 military applications (Israel and abroad)
- Continue technical development
- Develop scenario generator
- Develop auto test & evaluation machine
- Data center (gather, storage, retrieve and analyze)
- C&CAS Community



C&CAS symbology Oct. 1st 2020 C&CAS flight test


C&CAS flight test onboard an IAF Black Hawk 2016

Ciconia's business model B2B & B2C

- Distribution channels - install the C&CAS application on drones via:
  - Drone producers
  - Avionic providers
  - Operators' download – OTA (Over The Air)
- Basic C&CAS configuration will be free (hobbyists and recreational)
- Monthly fee for Enhanced C&CAS configuration (commercial, military & 1st responders)
- Data:
  - Non classified flight data is recorded by onboard C&CAS and sent to C&CAS server
  - Data is used for system analysis & improvement (using an AI algorithm)

Ciconia's C&CAS – A Technology Enabler:

- A must for economical use of dense urban and regional airspace by unmanned and manned aircraft!

The business opportunity:

- Ciconia is about to enter the commercial market and gain a substantial market share
- Ciconia's valuation will be significantly higher within a short period of time
- Ciconia lately received a grant from the "Bird" foundation
- Ciconia has received very positive signs for a mid 2022 order from a distinguished customer

https://www.dropbox.com/s/cpfpp2qd71kktvt/Ciconia%20Ccas%20Cap.mp4?dl=0