



Nokia Drone Networks

Drones as a Service to modernize
Public Safety infrastructure

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NOKIA



The potential of 5G connected drones

A growing industry that is waiting for the power of 5G



€32 bn

Expected global revenue by industrial drones in 2023



8.3%

Annual growth (CAGR) of industrial drones until 2030



1

End-to-end 5G UAV platform for automated data collection at the edge:
Nokia Drone Networks

Nokia Drone Networks in brief

Industrial grade UAVs
for professional use

A Nokia product,
made in Finland

Integrated GPU,
onboard applications

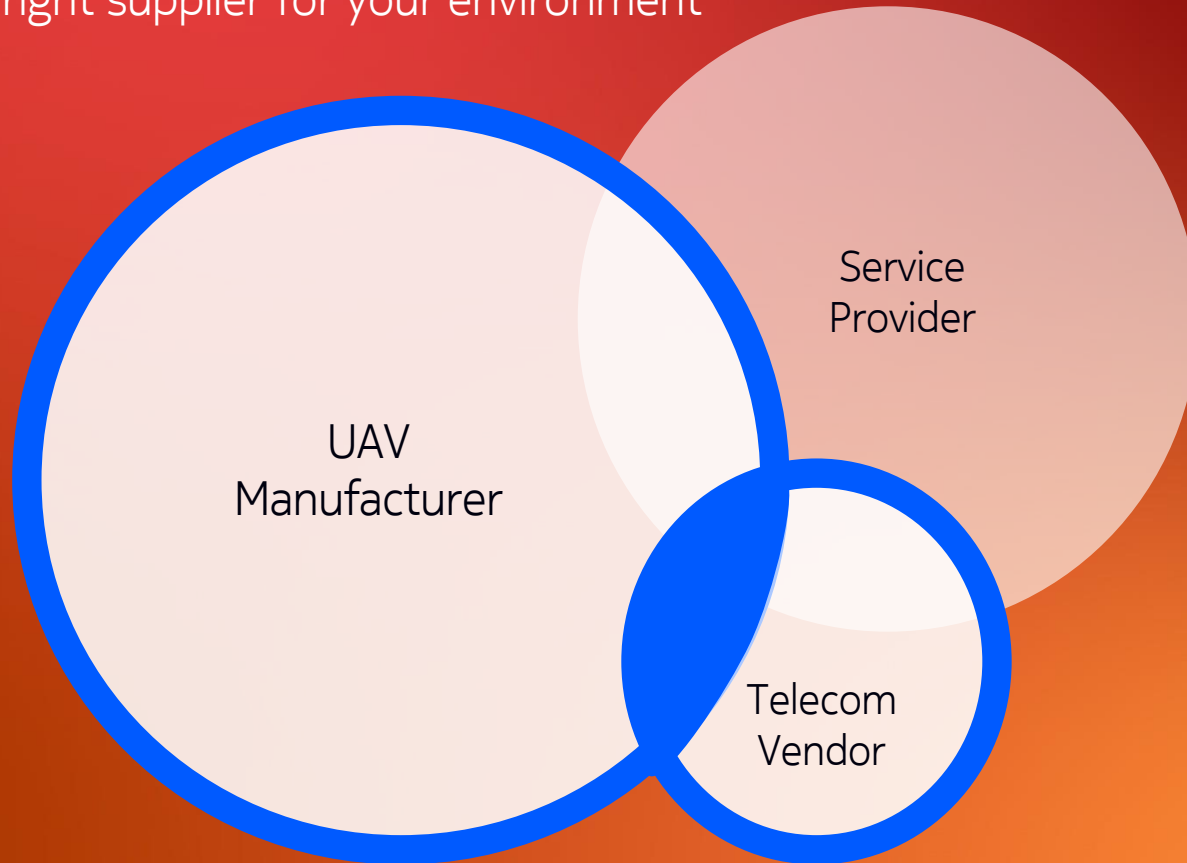
4G & 5G data collection
and processing

Open APIs for full
automation

CE & FCC Certification
as UAV and 4G/5G UE

Nokia Drone Networks – Skillset evolution with Telco know-how

Finding the right supplier for your environment



Technology that helps the world act together

Nokia Drone Networks – A turnkey Drone-in-a-Box solution for Drones as a Service



Edge-cloud based
data collection platform



Software, SLA's and
Services by Nokia

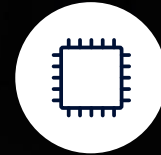


4G/5G connected,
BVLOS ready

T-Mobile certified



Made in Finland



Integrated GPU,
Onboard Apps



“aaS” or CAPEX

Nokia Drone Networks – Skillset evolution with Telco know-how


Flying Lion & Drone as First Responder (DFR)

Drone as First Responder (DFR) program:

- Drone with Ability to Fly Within 30 Seconds – Rooftop Drone with Pilot or Drone-in-Box
- Immediate response to a radio call, computer aided dispatch (CAD), Live911 and/or an Automated System [e.g. gunshot detection, alarm system, or Automatic License Plate Reader (ALPR)]
- Flown by Sworn Officer
- Live Stream to real-time watch center, command, dispatch and patrol
- Visibility of National Air Space (NAS) via Rooftop RPIC/VO
- Visual Line of Sight (VLOS) with Waiver can receive Beyond Visual Line of Sight (BVLOS) – 2 mile "Visual Detection Area" around the drone or in future 'digital visual observer' technology



Nokia Drone Networks – Skillset evolution with Telco know-how Flying Lion & Drone as First Responder (DFR)

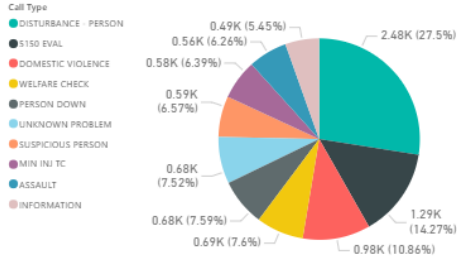
GO TO PAGE: **DFR ACTIVITY** **RESPONSE TIMES**


CHULA VISTA POLICE DEPARTMENT - DRONE AS FIRST RESPONDER (DFR)

CHULA VISTA POLICE DEPARTMENT DFR PROGRAM FACTS

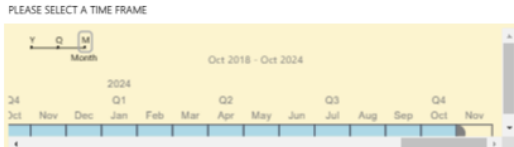
- * Selected as part of the IPP on October 2018
- * First program in the nation using Drones as a First Responder (DFR). [See FAA site](#)
- * Current status: The UAS / DFR program currently has four launch sites that provides city-wide coverage for the majority of the geographical area for Chula Vista.
- * Common use of drones in Chula Vista: Drones as first responders, documenting crime and accident scenes, searching for missing or wanted persons, fires, and evaluating damage after a major incident or natural disasters and de-escalating incidents.
- * Program envisioned December 2015

TOP 10 CALLS RESPONDED WITH DFR ASSISTANCE



Call Type	Count	Percentage
DISTURBANCE - PERSON	2.48K	27.5%
MIN INJ TC	1.29K	14.27%
ASSAULT	0.98K	10.86%
WELFARE CHECK	0.69K	7.6%
PERSON DOWN	0.68K	7.52%
DOMESTIC VIOLENCE	0.59K	6.57%
STSD EVAL	0.56K	6.26%
UNKNOWIN PROBLEM	0.49K	5.45%
SUSPICIOUS PERSON	0.38K	4.27%
INFORMATION	0.28K	3.09%

PLEASE SELECT A TIME FRAME



DFR ACTIVITY BY THE NUMBERS

TOTAL CALLS RESPONDED TO	20816
DFR ASSISTED ARRESTS	3016
DFR DEPLOYMENT AVOIDED DISPATCHING A PATROL UNIT	4427
DFR FIRST ON SCENE COUNT	15.33K
AVG RESPONSE TIMES - FIRST ON SCENE (IN SECONDS) *	92.80
AVG RESPONSE TIMES - ALL CALLS (IN SECONDS) *	110.96

* Response times from dispatch to arrival.

EARLIEST RESPONSE DATE/TIME 10/23/2018 8:29:57 AM
LATEST RESPONSE DATE/TIME 10/31/2024 5:27:06 PM



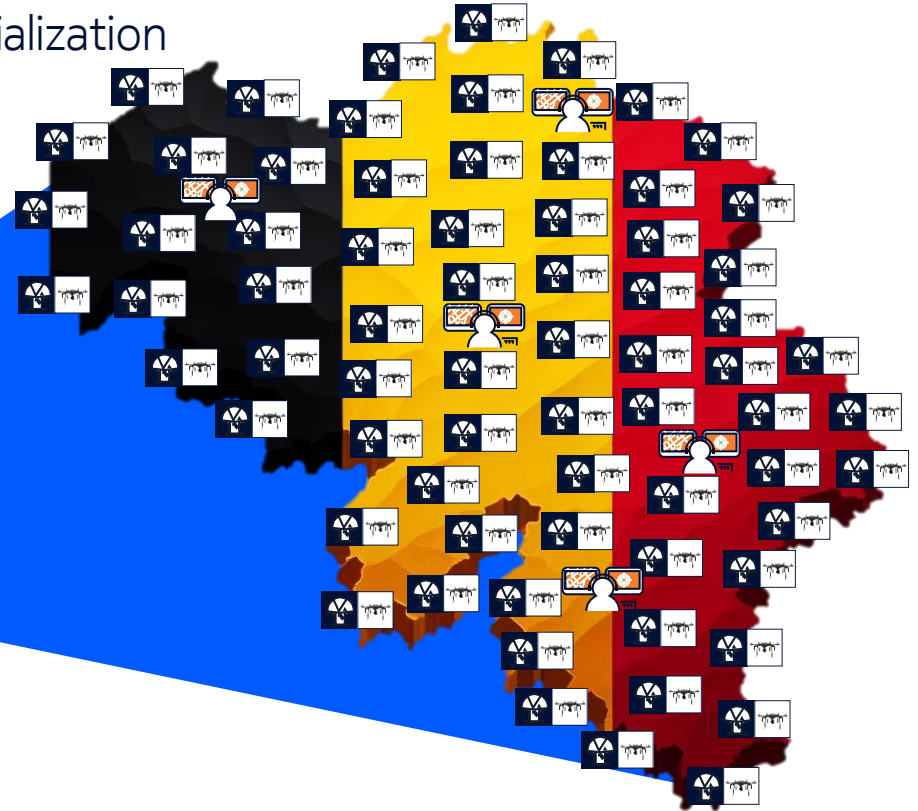
74% of Calls

Under 2 Minutes

Nokia Drone Networks in Belgium

Boosting BVLOS and broadening commercialization

- 70 Nokia Drone Networks Systems
- Plug & Play deployment Service & SLA's
- 40 Pilots in shifts, concurrently 10 on duty
- 5 Remote Operation Centers with 2 seats
- Public, Private & Hybrid Network setups
- Prime customers: Firefighters, Police, Utilities



Drone use cases for public safety

Emergency response support, search and rescue and perimeter security



Emergency response support

- Drones being dispatched to the incident scene before arrival of troops to gain better situational awareness



Search and rescue

- Search for missing person with the help of thermal camera
- Mapping and evacuation route management

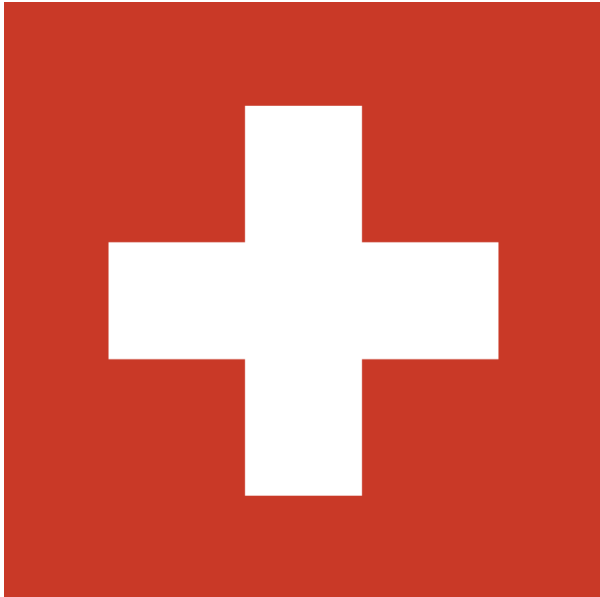


Perimeter security

- Border inspection
- Perimeter surveillance

Nokia Drone Networks in Switzerland

The next big thing



Nokia Drone Networks as a technology enabler

Private & Public networks to satisfy the needs of industry



3D LiDAR
scanner

YellowScan



HD Video
Thermal video



Network
scanner

ROHDE & SCHWARZ
Make ideas real



Enablement of
Digital Twins



Industrial
inspections



Saving
lives



Asset
tracking



Perimeter
security



Environmental
sustainability

Nokia Drone Networks – Business model evolution

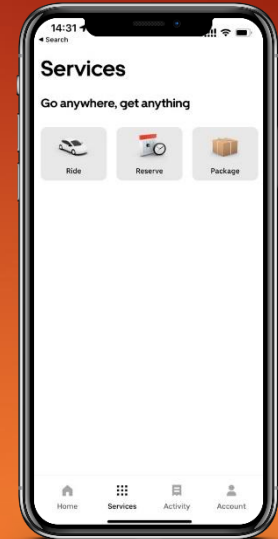
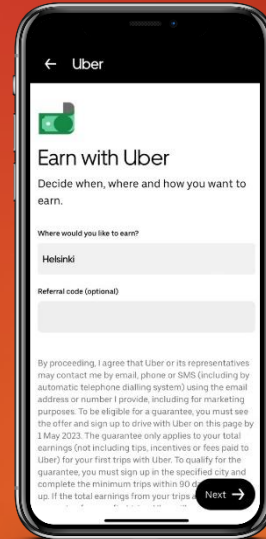
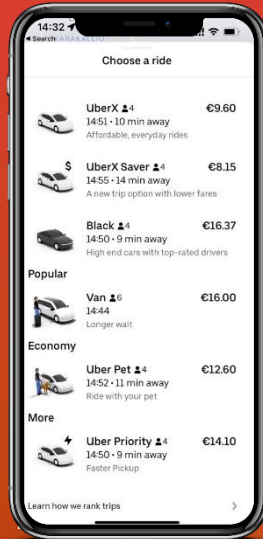
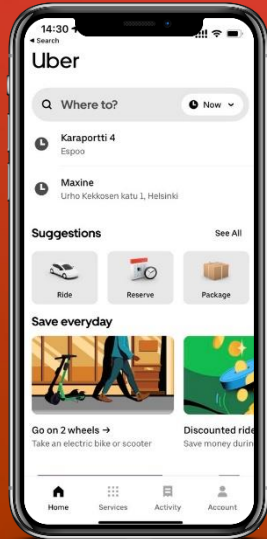
Uber analogy – Success factors for a functional “aaS” model

- Easy access
- Scalable
- Multi-platform

- Service Levels
- Pay per ride
- Predictability

- Easy onboarding
- Local regulations
- Revenue sharing

- Different services
- All “transportation”





Why Nokia Drones?

- Connectivity
- Automation
- End to End
- Certification

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Thank you!

