



Home Office

Emergency Services Applications

Single System/Multiple Application
Approach

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Trials to date - UK

- Police
 - Strathclyde
 - Merseyside
 - Staffordshire
- Fire
 - West Midlands
- EMS exercises

Trials to date

- Various countries have tried UAS for Emergency Services
 - Few have had clear plans
 - “Try it out” rather than evaluation
- Mostly multi-rotor aircraft
- Need improved stability, weather capability, flight duration

- DARPA UAV Forge
 - 1400 teams entered
 - Remote perch and stare task
 - Greatest challenge was robust communications

Tasks

- Search
 - Open areas (moors, beaches, parks)
 - Difficult access areas (roofs, cranes, steep terrain)
 - Limited access (along river banks, islets, the other side of railways / roads / rivers)
- Situational overview
- Mapping

Other Uses

- Incident / Scene recording – reduced impact on environment compared to foot access
- Collision scene (potentially a distributed area)
- Extended crime scene – provide overview or mapping for referencing evidence locations
- Visualisation for investigation/presentation
- Perimeter checking (UKAEA, MoD Police, utilities)

Benefits

- Coverage of 'hard to reach' areas
 - Rough or steep terrain
 - Large areas
 - Difficulty of access
- Hazardous environment
 - Chemical, fire, flood...
- Hazardous situation
 - Public order, firearms...

Equipment

- Mostly imagery
 - Colour, thermal, nearIR
 - Hyperspectral
 - Stabilised camera mount or orthographic mapping
- SAR
- LIDAR
- Other sensors
 - CBRN
 - Chemical – ‘Cannasniffer’

Technologies

- Interchangeable payloads
 - common across platforms?
 - Payload POV adaption
- Chemical sensors etc could be used on rotor, fixed wing, land and marine vehicles
- Automatic route planning
 - Adapts to weather
 - Terrain mapping
 - Use collision avoidance to update routing

Technologies

- Search patterns
 - Orbit / follow tracked object
 - Raster scan for mapping
- Georeferenced data
- EPIRB receiver

Autonomy...

- ...or automation?
- Minimal operator intervention
 - Collision avoidance, route planning, weather adaption, take off and landing must be automated
 - De-skilling flight operation would enable wider usage
- Decision of *what to do* remains with a person – *how to do it* lies with the UAS

Targeted uses

- Reactive tasking
- Not for pervasive surveillance
 - Not police policy – no ‘fishing expeditions’
 - Not enough time to look at the information!

Controls on use

- BBC Newsnight “should be signed out”
- Operated under same structure as manned aircraft
- Deployed by specialist team who know operating rules
 - Licensing requirements?
- Audit trail of flights
- RIPA rules applied to UAS

Media reports

- Still try to link civil use to military weaponry
 - Imagery used is Predator/Reaper/Global Hawk
 - Continued use of the term 'drone'
- Stated Concerns
 - Big brother surveillance
 - Controls on security agency use
 - Safe to fly?
- Intrusive media being highlighted by some
 - Criminal use also mentioned

Questions ?