

# THE BUG FARM : Addressing the imminent swarm of domestic drones

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# INTRODUCTION

- “Drones and other robots...represent the cold technological embodiment of observation” ...“drones may help restore our *mental model* of a privacy violation. They could be just the *visceral jolt* society needs to drag privacy law into the twenty-first century” Ryan Calo (2011)
- Domestic drones - powerful surveillance tools posing risks to privacy?
- American Civil Liberties Union Domestic Drone Report 2011
- Congressional Research Service Report 2012



YO D-RON WE MISSED YOU SO  
WE'RE BRINGING YOU HOME. COOL?



# Technologies

From the battlefield to domestic skies

- Large and quadrocopter drones
- The Bug Farm of micro Ornithopters and monocopters







from <http://www.uasvision.com>



from <http://www.draganfly.com>



from <http://www.airrobot-uk.com>

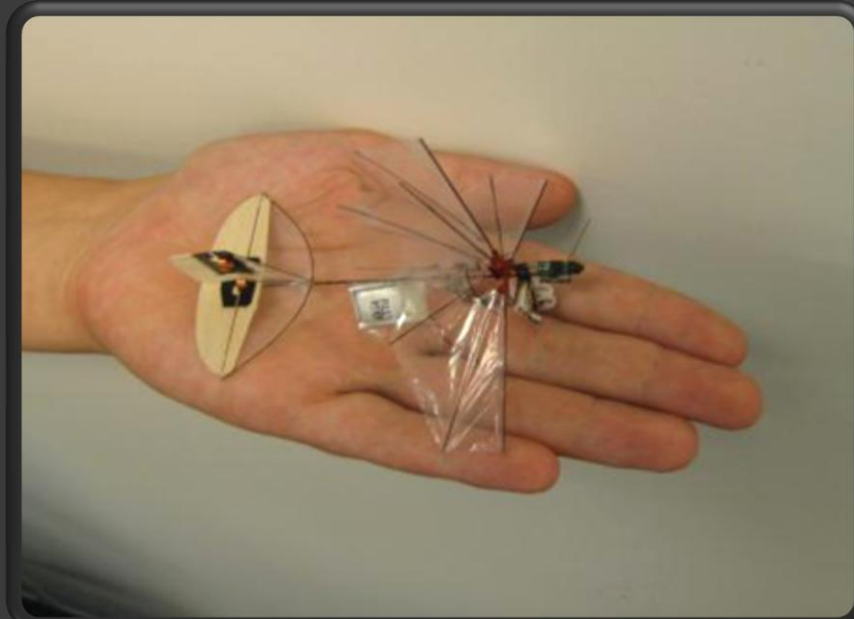




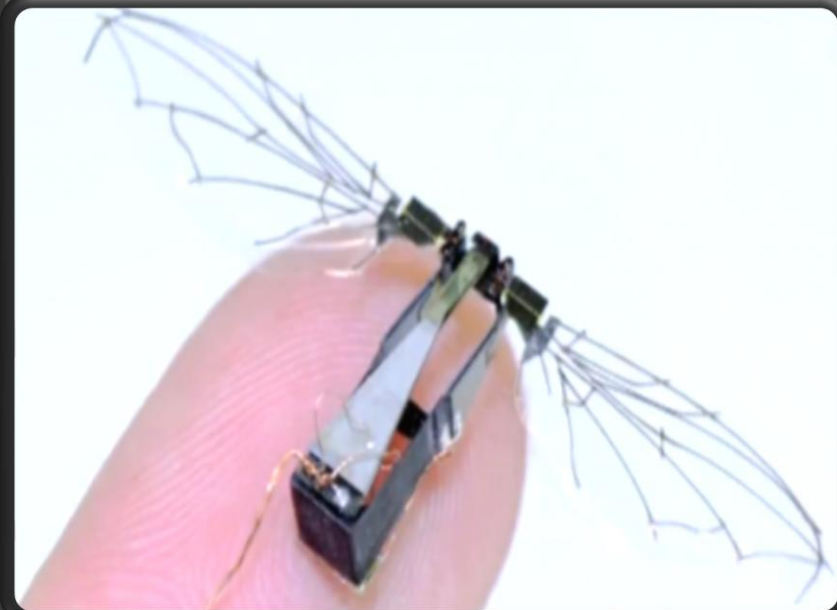


From [www.suasnews.com](http://www.suasnews.com)

<http://www.avinc.com/nano/>



From <http://www.delfly.nl>



SWARM DRONES- <http://www.youtube.com/watch?v=YQIMGV5vtd4>

from [www.lockheedmartin.com](http://www.lockheedmartin.com)

# Payloads

- ⦿ Cameras – thermal/night/infrared vision/HD video, wireless video streams, smart systems
- ⦿ WASP
- ⦿ Military tech that could filter down
  - ARGUS-IS
  - DARPA Mind's Eye

# Applications

- ◉ I. Law Enforcement
  - UK police forces
  - Monitoring farmland
- ◉ II. Border Control
  - UK South Coast Partnership
  - EU EUROSUR project
- ◉ III. Huge range of uses
  - Journalism, wildlife protection, law enforcement, public order at riots, search & rescue, traffic management (replacing police helicopters)



# UK Regulation

- ⦿ 'One size fits all' approach will not work.
- ⦿ Patchwork of regulatory options but many questions will remain
- ⦿ I. Protection of Freedoms Act 2012
- ⦿ II. Data Protection and regulation of surveillance
- ⦿ III. Civil Aviation Authority
- ⦿ IV. General



# I. Protection of Freedoms Act 2012

- ⦿ Inadequacies with current ICO CCTV Code
- ⦿ Reforms - New code of practice and regulator
- ⦿ Bring overt drone surveillance under this remit?
- ⦿ Definition of surveillance camera systems – s29(6)
- ⦿ Downsides?

## II. Data protection/regulation of surveillance

- Privacy in public
- Images and personal data
- Use in covert investigations



# III. Civil Aviation Authority and Privacy Impact Assessments

- Freedom of Information request to CAA
- 100 applications – all granted – 98 were blanket annual licenses.
- Need for privacy impact assessments during applications?
- ICO Guidance on PIA's

# IV. General ACLU Guidance



# Citizen Robotics: Domestic personal drones

- Enter the hobbyists & experimentation
- DIY Drones: 26,000 members
  - US - More domestic drones than military
  - Smartphone components
  - Homebrew Computing Club
- Open source – autopilot systems, design sharing and 3D printing
- How might democratisation of drone tech shape the future?
- Unpredictable!



<http://ardrone2.parrot.com/>



From <http://www.diydrones.com>

# Personal drones: rebalancing oppressive surveillance or feeding it?

- ⦿ Sousveillance, equiveillance and coveillance
- ⦿ Hack the City
- ⦿ Criticisms
- ⦿ Project “Electronic Countermeasures”
- ⦿ Or perhaps attention will be focused elsewhere, with startling results...



## ...Orville-copter



From Cris Toala Olivares/Reuters - <http://www.guardian.co.uk>