

Unmanned Aircraft Systems (UAS) - Non-Military Applications

Customs & Coast Guard Missions

Coastal patrol	India USA	Long endurance UAS development ongoing
On-shore border patrol	Europe	Interest expressed by authorities - USEP study
European Union maritime surveillance		
National maritime surveillance	Australia Malaysia	Aerosonde (Aerosonde, Australia) operated for Coast Guard Eagle (optionally piloted aircraft)
European Union on-shore border patrol	Europe	Interest expressed by authorities - USEP study
National on-shore border patrol	Europe	Interest expressed by authorities - USEP study

Civil Security Missions

Avalanche survivor search	Europe	Interest expressed by authorities - USEP study
Coastal water surveillance	Europe	Interest expressed by authorities - USEP study
Maritime search & rescue	Europe	Interest expressed by authorities - USEP study

National & European Union Civil Security

Maritime surveillance	Europe	Interest expressed by authorities - USEP study
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Municipal Fire Brigade Missions

Fire-related monitoring & investigation	UK	AirRobot (AirRobot, Germany) operated by a UK fire department
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Regional Fire Brigade Missions

Forest fire detection & monitoring	Hungary	Szendro Fire Brigade
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National Fire-Fighting Missions

Forest fire detection & monitoring	USA	Ikhana (General Atomics, USA) deployed by NOAA
Natural disaster monitoring	Europe	Interest expressed by authorities - USEP study

Civil Security & National Police Missions

Contamination measurement	Europe	Interest expressed by authorities - USEP study
Systematic search operations	Europe	Interest expressed by authorities - USEP study
Natural disaster monitoring	Europe	Interest expressed by authorities - USEP study
Flood monitoring	Europe	Interest expressed by authorities - USEP study
Emergency medical/food supply	Europe	Interest expressed by authorities - USEP study

Police & Homeland Security Missions

Information gathering (incl. inside buildings)	Europe	Interest expressed by authorities - USEP study
Aerial crime scene inspection	Europe	Interest expressed by authorities - USEP study
Special & anti-terrorist operations	Europe	Interest expressed by authorities - USEP study
	Canada	Predator (General Atomics, USA) deployed by Canadian Defence Forces during G7 summit
	France	- Cocinelle (Technisolar, France) experimented by GIGN - Elytre (Sirehna, France) experimented by Ministry of Interior
	Israel	Aerostar & Aerosky operated over Gaza by Aeronautics Defence Systems, Israel for Israeli Ministry of Defence
Counter-drug operations	Europe USA	Interest expressed by authorities - USEP study Predator A (General Atomics) deployed by DHS on the southern US border
Urban & sub-urban law enforcement	Europe France	Interest expressed by various authorities - USEP study ELSA (Sirehna, France) procured by Ministry of Interior for experimentation; to be delivered in Dec 2007.
	Germany	Carollo (Mavionics, Germany) being experimented with
	Italy	Interest expressed by Ministry of Interior authorities
	UK	AirRobot (AirRobots, Germany) being experimented with by Merseyside Police.
Pre-intervention information gathering	Europe	Interest expressed by authorities - USEP study
Urban riot control	Europe France	Interest expressed by authorities - USEP study Survey 2500 (EADS DS, France) deployed for Ministry of Interior in 2006
Perimeter surveillance & defence	Europe	Interest expressed by authorities - USEP study

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Hostile protest monitoring	Europe France	Interest expressed by authorities - USEP study Hunter (IAI, Israel) deployed by French Air Force during G7 summit
	Switzerland	Ranger deployed by Swiss Air Force
Criminal investigation	Europe	Interest expressed by authorities - USEP study
Surveillance of large public gatherings	Europe France	Interest expressed by authorities - USEP study Hunter (IAI, Israel) deployed by French Air Force during D-Day commemoration
	South Africa	Seeker (Denel Aerospace, S.Africa) deployed by South African Air Force
Road traffic surveillance	Switzerland USA	Ranger deployed by Swiss Air Force Cyberbug deployed by local sheriff
Delivery of non-lethal disabling means	Europe	Interest expressed by authorities - USEP study
Coastal border immigration control	Europe Italy Spain	Interest expressed by authorities - USEP study Predator A deployed by Italian Air Force Interest expressed
Ship lane surveillance	Europe Singapore	Interest expressed by authorities - USEP study Keen interest expressed
Persistent police surveillance	Europe	Interest expressed by authorities - USEP study
Land border immigration control	Europe	Interest expressed by authorities - USEP study
Maritime immigration control	Europe	Interest expressed by authorities - USEP study
National border patrol	Europe Austria USA	Interest expressed by authorities - USEP study Demonstration with S-100 (Schiebel, Austria) Predator A & Predator B (General Atomics, USA) deployed by Department of Homeland Security (DHS) Aerostar (Aeronautics Defence Systems, Israel) deployed for DHS Hermes 450 (Elbit Systems, Israel) deployed for DHS
National land border immigration control	Europe Italy	Interest expressed by authorities - USEP study Predator A (General Atomics, USA) operated by Italian Air Force
Euro Union land border immigration control	Europe	Interest expressed by authorities - USEP study
Piracy surveillance & interdiction	Europe Nigeria	Interest expressed by authorities - USEP study Aerostar (Aeronautics, Israel)
Smuggling surveillance & interdiction	Europe USA	Interest expressed by authorities - USEP study Predator B (General Atomics, USA) operated by DHS
Illegal ship bilge cleaning detection	Europe Belgium	Interest expressed by authorities - USEP study Hunter-B deployed by Belgian Air Force
Critical infrastructure inspection	Europe France	Interest expressed by authorities - USEP study Copter 1B (SurveyCopter, France)
Environmental Missions		
Local area science missions	Sweden	- SmartPlane (SmartPlanes, Sweden) - APID (Scandicraft, Norway)
National & regional pollution monitoring	Europe	Interest expressed by authorities - USEP study
Trans-boundary air pollution monitoring	Maldives	SilverFox deployed by Advanced Ceramics Research for NOAA
Wildlife monitoring (inventory, migration, conservation)	USA	
Fishery control (in-shore)	Spain	Fulmar (Aerovision, Spain) - development financed by European Commission
Fishery control (off-shore)	UK	Being considered
Ghost net detection	USA	Being considered/feasibility being investigated
Ozone level measurement	USA	Being considered/feasibility being investigated
Crop health & disease monitoring	USA	Being considered/feasibility being investigated
Poaching patrol & wildlife preservation	USA	Being considered/feasibility being investigated
Oil spill & oil slick detection & monitoring	Belgium	Hunter-B (IAI, Israel) operated by Belgian Air Force
Coastal erosion monitoring		
Sandbank shift measurement		
Glacier & ice cap monitoring	USA	Being considered/feasibility being investigated
Snow pack & avalanche monitoring	USA	Being considered/feasibility being investigated

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Meteorological Missions

Weather assessment & measurements	Australia	Aerosonde (Aerosonde, Australia) operated for national authorities
	USA	Aerosonde (Aerosonde/AAI Corp, USA) operated for NASA & NOAA
Weather research	Australia	Aerosonde (Aerosonde, Australia) operated for national authorities
	Japan	Aerosonde (Aerosonde, Australia) operated for national authorities
	USA	Aerosonde (Aerosonde/AAI Corp, USA)
operated for national authorities		
Atmospheric measurements	Greenland	SilverFox (Advanced Ceramics Research, USA) operated for NOAA
Cloud seeding		
Hurricane tracking & measurement	USA	Aerosonde (Aerosonde/AAI Corp, USA) operated for national authorities
Typhoon tracking & measurement	Australia	Aerosonde (Aerosonde, Australia) operated for national authorities
	Japan	Aerosonde (Aerosonde, Australia) operated for national authorities

Science & Research Missions

Climate monitoring	Australia Canada USA	
Marine mammal monitoring	USA	ScanEagle (Insitu, USA) for NOAA, USA SilverFox (Advanced Ceramics Research, USA) for NOAA, USA
Cryospheric research (Arctic/Antarctic)	Germany UK USA	Carollo (Mavionics, Germany) Carollo (Mavionics, Germany) SilverFox (Advanced Ceramics Research, USA)
Glacier & ice cap monitoring		
Iceberg surveillance & tracking		
Atmospheric chemistry (in situ) measurements	Antartica	
Atmospheric radiation (in situ) measurements		
Open ocean research support	Australia USA	
Land/forestry research	Sweden	SmartPlane (SmartPlane, Sweden)
Ice pack patrol	USA	
Vigor mapping & frost mitigation	USA	
Salt water infiltration detection & monitoring	Netherlands	HighEye VTOL UAS operated with TNO sensors for TNO by HighEye
Crop monitoring	UK USA	Ongoing UAS development at QinetiQ, UK Helios (AeroVironment, USA) operated over Hawaiï for NASA to investigate selective crop harvesting SilverFox (Advanced Ceramics Research, USA) operated by Agrarius LLC to survey vinyards
Volcano monitoring	Japan USA	RMax (Yamaha, Japan) SilverFox (Advance Ceramics Research, USA)
Aerial pollution monitoring	Maldives	SilverFox (Advance Ceramics Research, USA) operated by Advanced Ceramics Research for NASA
Aerial photogrammetry	Netherlands	Services supplied by E-Producties.
Coastal zone studies	Spain USA	Fulmar (AeroVision, Spain) SilverFox (Advanced Ceramics Research, USA)
Coastal mapping	USA	
Vegetation identification	USA	SilverFox (Advanced Ceramics Research & Agrarius, USA)
Invasive species identification & analysis	USA	
Wildlife sensus		
Thermal imaging of buildings (heat wastage)	USA	Being considered

United Nations & International Court (IC) Support & Humanitarian Missions

Conflict monitoring	Bosnia	UN
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Peace keeping/monitoring operations	Kosovo Balkans D.R. Congo East Timor Ivory Coast Solomon Isds	NATO CAC Systems, France Hunter-B, Belgian Air Force Aerosonde, Australian Army SurveyCopter 1, French Army Avatar, Australia Defence Forces
Genocide investigation	Ruanda	Being considered by the International Court
Disaster analysis (tsunami)	India Russia	Searcher II (IAI, Israel) operated by Indian Air Force - Irkut-2 (Irkut, Russia) - Irkut-20 (Irkut, Russia) - Irkut-850 optionally piloted aircraft (Irkut, Russia)
Disaster management	USA	Experimentation
Flood monitoring	USA	Experimentation
Land-mine detection	Germany USA	Experimentation (Camcopter, Schiebel, Austria)
Contractor Supplied Services (with or for UAS)		
Operational (flight) training	Netherlands UK	Vigilance, Netherlands West Wales UAV Centre, UK
UAS Experimentation/Validation	Finland Sweden UK	NEAT ParcAberporth
Terrain mapping	Finland Germany Netherlands Sweden UK	SmartPlane (SmartPlanes, Sweden) SmartPlane (SmartPlanes, Sweden) GeoCopter (GeoCopter, Netherlands) SmartPlane (SmartPlanes, Sweden) SmartPlane (SmartPlanes, Sweden)
Agricultural insecticide spraying	Japan	- RMax (Yamaha, Japan) - RPH-1 & RPH-2A (Fuji Heavy Industries, Japan) - YH-300SL (Yanmar Agricultural Equipment Comp. Japan) - KG-135 (Yanmar Heli Service & Kobe Giken, Japan)
Agricultural fertilizer dispensing	S. Korea Japan	RMax (Yamaha, Japan) - RMax (Yamaha, Japan) - RPH-1 & RPH-2A (Fuji Heavy Industries, Japan) - YH-300SL (Yanmar Agricultural Equipment Comp. Japan) - KG-135 (Yanmar Heli Service & Kobe Giken, Japan)
Crop monitoring	S. Korea Canada	RMax (Yamaha, Japan) Services offered by CropCam, Canada with CropCam UAS (CropCam, Canada - subsidiary of MicroPilot, Canada)
Critical infrastructure inspection	USA	SilverFox (Advanced Ceramics Research, USA)
Historical monument inspection	France	SurveyCopter (SurveyCopter, France)
Ice navigation assistance	France	SurveyCopter (SurveyCopter, France)
(for icebreakers & ice-breaking ships)	Russia	Being considered by ConocoPhillips, USA
Magnetic field survey	Australia UK	Services offered by Fugro Airborne Services, Australia (+ Brazil, Canada, Ghana, Peru, S.Africa, USA) with GeoRanger UAS (Insitu, USA) Services offered by MagSurvey, UK with a Prion UAS (MagSurvey) equipped with a fluxgate/cesium vapour magnetometer)
Network communications relay (small theatre)		
Network communications relay (large theatre)		
Emergency communications network		
Survey of drilling sites for oil & gas industry	USA	ScanEagle (Insitu, USA) operated by ConocoPhillips, USA
Oil & gas pipeline monitoring	Angola Argentina Mexico USA	Aerostar (Aeronautics, Israel) for Chevron Texaco Yagua (Nostromo Defensa, Argentina) for local oil company Services supplied by Israeli company to Pemex, Mexico Being considered by ConocoPhillips
Power line inspection	Australia	Being considered
Inspection of oil tanker cargo tanks	USA	Being considered by ConocoPhillips
Inspection of LNG carrier cargo tanks	USA	Being considered by ConocoPhillips
Railway track monitoring		

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Forest fire operations support	USA	Ikhana (General Atomics) operated by USAF for NOAA, USA
Aerial mineral exploration	Australia	See magnetic field survey
Aerial photography & video (producers)	France	- Cyclope (Vision du Ciel, France) - Copter-1b & Copter-2 (SurveyCopter, France)
	Israel	Helivision (SteadyCopter, Israel)
	Netherlands	EKH-001 (E-Producties, Netherlands)
	Sweden	SmartPlanes, Sweden
	Switzerland	Scout B2-120 (Aeroscout, Switzerland)
	USA	- Autocopter (Neural Robotics, USA) - Bergen RC Helicopters, USA - Various L-t-A (Galaxy Blimps, USA)
Aerial photography & video (services)	Chile	Ingekraft Ltda, Chile
	France	- Airshoot, France - Clikair, France - Mediazep, France
	Germany	- Flyingboxcar, Germany - Gayk-Luftbildtechnik, Germany - Photoheli, Germany
	Italy	- Anemony, Italy - Xentrix, Italy - Zeppelin Dirigibili, Italy
	Netherlands	- Lynx SkyMedia, Netherlands - Pano, Netherlands
	Portugal	Aerovisao, Portugal
	Spain	- Air Camera, Spain - Altafoto, Spain - Astrid, Spain - Flyabove, Spain - Foto-Aerea, Spain - Galia 2000, Spain - T1000 Factory, Spain
	St Maarten	- Island Computer Technologies, St Maarten
	Sweden	- Aerophoto Nordic, Sweden - Airfoto, Sweden - AirGhost, Sweden - Heliphoto Skane, Sweden - Videobolaget, Sweden
	Switzerland	- Mathys Partners, Switzerland - Minizepp, Switzerland
	UK	- Aerial 51, UK - Aerial Photography For You, UK - Aerial Pics, UK - Allsop Helikites, UK - Aerial-Cam, UK - Above It All Photography, UK - Highland Helicam, UK - Lawrence, UK - Magna Charters, UK - National Grid, UK - Rotorcams, UK - Vivid Helicams, UK
	USA	1551 registered commercial companies supplying such services - Aerosight, USA - RP Flight Systems, USA
Cinematographic aerial shots & special effects	Belgium	FlyCam (FlyCam, Belgium)
	Czech Rep.	HE series (HighEye, Netherlands)
	France	Soulcam L-t-A UAS (Pix-Scene, France)
	Hungary	HE series (HighEye, Netherlands)
	Netherlands	HE series (HighEye, Netherlands)
	USA	- FlyCam (FlyCam, USA)

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Advertising (light-than-air UAS) (indoor & outdoor)	Switzerland	- HE series (HighEye, Netherlands) - Rotomotion, USA - Skive L-t-A UAS (Skive Aviation, Switzerland) - Z10000 L-tA UAS (Minizepp, Switzerland) - Z13000 L-tA UAS (Minizepp, Switzerland)
	USA	Various (Galaxy Blimps, USA)
Research Studies		
Forest fire monitoring	Croatia	FENIX Project
	Spain	- COMETS Project - Daedelus Project (Aitem, Spain) - Horus Project (Aitem, Spain) - Sky-Eye Project (Technical University of Catalonia, Spain)
Earth observation	European	- Heliplatt Project - High altitude long endurance observation platform
		- IFATS - Unmanned passenger aircraft