# EUROPEAN
# UAS INDUSTRY & MARKET ISSUES

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# OBJECTIVE OF THE EUROPEAN COMMISSION UAS PANEL

UAS DEFINING EUROPE'S STRATEGY

Provide arguments justifying the effort necessary to remove the existing barriers to non-military UAS applications

Provide the basis for the future work in the support of the development of non-military UAS applications in Europe

| | |
|---|---|
| Motivating Factors | Strategic importance to Europe<br>Economically viable<br>Technological benefits<br>Societal benefits<br>Job creation |

Over-arching Principal: There has to be a justifiable business case

# OVERVIEW

UAS DEFINING EUROPE'S STRATEGY

| | | |
|---|---|---|
| UAS Industrial Base | - Military | MTOM < & > 150 kg |
| | - Non-Military | MTOM < & > 150 kg |
| Current Market & Application | - Military | MTOM < & > 150 kg |
| | - Non-Military | MTOM < & > 150 kg |
| Market Prospects & Users | - Military | MTOM < & > 150 kg |
| | - Non-Military | MTOM < & > 150 kg |

Strengths & Weaknesses & Opportunities

Conclusions & How this could apply to SAR/CAR

# EUROPEAN UAS INDUSTRIAL BASE

## UAS (System Level)

UAS DEFINING EUROPE'S STRATEGY

| MTOM | ≤ 150 kg | > 150 kg | Total |
|---|---|---|---|
| Design, development, production : | 21 countries | 12 countries | 21 |
| Referenced design & production entities : | | | |
| - Industry | 36 | 15 | 51 |
| - SMEs | 158 | 6 | 164 |
| - Government organisations | 4 | | 4 |
| - Research organisations | 14 | 2 | 16 |
| - Universities | 8 | | 8 |
| - Teaming internat. arrangements | 7 | 19 | 26 |
| Total | 227 | 42 | 269 |
| Quantity of UAS models referenced : | | | |
| - In service | 25 | 11 | 36 |
| - Market ready | 115 | 7 | 122 |
| - Proof-of-concept | 6 | | |
| - Under development | 189 | 51 | 240 |
| Total | 329 | 71 | 400 |

# EU UAS INDUSTRIAL BASE

## UAS (Sub-System Level)

DEFINING EUROPE'S UAS STRATEGY

Airframes
Alternators
Antennas
Auto-land systems
Autopilots
Auxiliary power units
Avionics
Batteries
Command & Control
Communications
Computer systems
Control stations
Data links
Data recorders
Data terminals
De-icing systems
Electronics
Encryption
Energy storage

- UAS are systems-of-systems
- The supply chain is wide
- The ITAR (International Traffic in Arms Regulations) should be a motivation to source from within the EU

Fuel cells
Fuel systems & tanks
Landing gear
Launchers
Micro electronics

Mission planning systems
Nano electronics
Navigation lights
Navigation systems
Propellers
Propulsion
Rotors & rotor hubs
Sensors (imaging)
Sensors (non-imaging)
Servos & actuators
Signal processing
Simulators
Specialised software
Solar cells
Take-off & recovery systems
Telemetry
Test equipment
Training systems
Transponders

# EU UAS INDUSTRIAL BASE

## Technologies

UAS DEFINING EUROPE'S STRATEGY

- **UAS are systems-of-systems.**
- **These systems make use of a large variety of technologies.**
- **These technologies are not always traditional aviation-related.**
- **Many of these technologies have cross-over potential (applications in other sectors – incl. manned aviation + unmanned ground, naval & space systems).**

## Consequence

- **The relevant industry base is much wider than just UAS manufacturers.**
- **Investments in the field of UAS-related technologies will have positive spin-off effects in other areas.**
- **These spin-off effects will influence other products in a positive way.**
- **Consequently, the return of investment related to UAS can be higher than anticipated & investment should not be judged only in relation to UAS.**
- **SMEs are key in the development of such innovative technologies.**

# CURRENT EU MILITARY MARKET

**17 EU countries operate :** **31 < 150 kg (19 models)**
**[only 3 RW (< 150 kg)]** **9 > 150 & < 500 kg (8 models)**
**7 > 500 kg (6 models)**

U A S DEFINING EUROPE'S STRATEGY

## MTOM < 150 kg

| | Produced In | | In Service In |
|---|---|---|---|
| Aladin | DE | | DE, NL, NO |
| Alo | ES | | ES |
| Casper 200 | IL | | HU |
| Copter 1b | FR | RW | FR |
| Desert Hawk | US | | UK |
| DRAC | FR | | FR |
| FanCopter | DE | RW | DE |
| LUNA | DE | | DE |
| MASS | FI | | FI |
| Orbiter | IL | | IE, PL |
| Pointer | US | | FR, IT |
| Raven | US | | CZ, DK, EE, FR IT, NL, NO, ES |
| RQ-16 T-Hawk | US | RW | UK |
| ScanEagle | US | | NL (ordered) |
| Shadow 200 | US | | PL, SE |
| SkyLark I | IL | | FR, SE |
| Sojka III | CZ | | CZ |
| Spy Arrow | FR | | FR |
| Yastreb-25 | BU | | BU |

## MTOM > 150 & < 500 kg

| | Produced In | In Service In |
|---|---|---|
| Hermes 450 | IL | UK, leased |
| KZO | DE | DE |
| Ranger | CH & IL | CH, FI |
| Searcher | IL | ES |
| Shadow 600 | US | RO |
| Siva | ES | ES |
| Sperwer | FR | FR, GR |
| Watchkeeper | UK & IL | UK, ordered |

## MTOM > 500 kg

| | Produced in | In service In |
|---|---|---|
| EuroHawk | US & DE | DE, ordered |
| Harfang | FR & IL | FR |
| Heron | IL | DE, lease |
| Heron TP | IL | FR, ordered |
| Hunter B | IL | BE |
| Predator | US | IT |
| Reaper | US | IT, UK |

# UAS MARKET IN THE EU

## Non-Military Applications

## Classification & Identification

UAS DEFINING EUROPE'S STRATEGY

All UAS airframe types & all sizes

| Application Classes | Nr of Application Categories & Sub-Categories |
|---|---|
| Security Related | 39 |
| Safety Related | 35 |
| Science & Research Related | 31 |
| Contractor-Supplied Flight Services | 38 |
| Civil/Military Coordination (Mutualisation) | 34 |

Based on existing reports & studies & discussions with current & potential users

# UAS MARKET IN THE EU

## Non-Military Applications

## Security-Related

[39 application (sub-) categories]

**Anti-looting control (post riot)**
**Anti-piracy operations**
**Anti-poaching control**
**Anti-terrorist operations**
**Border surveillance**
**Coastal surveillance**
**Crime scene** (surveillance, recording, situational awareness)
**Criminal car tracking**
**Critical infrastructure surveillance**
**Crowd surveillance**
**Fight against drugs**
**Hostile protest control**
**Illegal immigrant & human trafficking control** (local, regional, national)
**Illegal activity control** (dumping & waste burning, historic site & heritage looting, drug cultivation, excavation, logging, illegal mining, ship bilge venting)
**International summit surveillance**
**Maritime surveillance** (regional area, sea lane, wide area)
**Police applications** (various)
**Regional surveillance**
**Riot control**
**Road traffic surveillance**
**Smuggling control**
**Surveillance of public gatherings** (pop concerts, sporting events)
**Urban law enforcement**
**Wildlife crime control**
**Other**

# UAS MARKET IN THE EU

## Non-Military Applications

## Safety-Related

## [35 application (sub-) categories]

UAS DEFINING EUROPE'S STRATEGY

**Avalanche survivor search**

**Dike monitoring**

**Emergency communications network (incl. relay)** (local, regional, national, EU)

**Fire scene inspection** (pre-fire, during fire, post fire)

**Fishery control**

**Forest Fire fighting** (detection, monitoring, support)

**Iceberg monitoring**

**Maritime search & rescue**

**Disaster site monitoring & mapping** (earthquake, floods, icing rain storms, landslide, mud slide, plane crashes, ship collisions, storm & hurricane, train crashes, tsunami & tidal surge, volcano eruption)

**Nuclear accident monitoring** (contamination measurement, contamination tracking & monitoring)

**Post-disaster relief operations**

**Road & highway traffic monitoring**

**Search for missing persons**

**Volcanic ash cloud** (analysis, measurement, tracking & monitoring)

**Other**

# UAS MARKET IN THE EU

## Non-Military Applications

## Scientific & Research-Related

[31 application (sub-) categories]

UAS DEFINING EUROPE'S STRATEGY

**Aerial photogrammetry**
**Agricultural** (crop monitoring & management, plant growth vigour mapping)
**Algae proliferation detection**
**Arctic research**
**Atmospheric monitoring**
**Coastal mapping**
**Environmental monitoring**
**Geophysical survey**
**Hurricane tracking**
**Invasive species identification/analysis**
**Meteorological research**
**Ozone measurements**
**Sand bank shift measurements/mapping**
**Tidal zone mapping**
**Volcano monitoring**
**Wildlife census**
**Archaeological site mapping**
**ATM Research**
**Climate monitoring**
**Coastal zone studies**
**Forestry management & research**
**Glacier & ice cap monitoring**
**Iceberg monitoring**
**Marine mammal monitoring**
**Ocean & sea research support**
**Salt water infiltration detection**
**Sea ice monitoring**
**Vegetation identification**
**UAS sensor research**
**Other**

# UAS MARKET IN THE EU

## Non-Military Applications

## Contractor Supplied Flight Services

**[**38 application **(**sub-) categories**]**

**Advertising (lighter-than-air UAS)** (indoor, outdoor)

**Aerial photography**

**Aerial news broadcasting**

**Agricultural** (Common Agricultural Policy control, crop monitoring & management, fertilizer dispensing, hydrometric mapping, insecticide spraying, monitoring for selective harvesting, plant growth vigour mapping)

**Bird (strike) control**

**Cargo transport** (small - large)

**Cinema** (aerial shots & special effects)

**Forestry** (tree growth & illness monitoring)

**Inspection, monitoring, surveying, mapping** [aerial terrain mapping: urban environment, non-urban environment, industrial site), critical infrastructure inspection, dike inspection, forest fire operations support, gas burn-off funnel tip inspection, geophysical survey, historical monument inspection, illegal crop cultivation detection, magnetic field survey (mineral search), magnetic mapping, oil & gas pipeline inspection, photogrammetry, power cable inspection, radiation measurement & monitoring, railway track bed inspection, thermal isolation analysis, wind turbine blade inspection]

**Test bed** (testing, validation, qualification of sensors, avionics, S&A, ATM, etc)

**Other**

# UAS MARKET IN THE EU

## Non-Military Applications

## Civil/Military Cooperation – Mutualisation

UAS DEFINING EUROPE'S STRATEGY

**Mutualisation** = The operation of military UAS assets by the military for non-military governmental applications.

Basic advantages of mutualisation:

- Offers the military additional UAS flight training opportunities;
- Supplies added value to military flight training exercises;
- Permits to increase the return on investment for military UAS by using them for non-military governmental missions with societal benefits (incl. European external border surveillance);
- Gives non-military governmental authorities access to capabilities they may not be able to afford otherwise and thereby increases national security & safety;
- Allows to spread the cost of such UAS missions over various government organisations;
- Can contribute to familiarizing non-military governmental organisations with the use and advantages of UAS.

# UAS MARKET IN THE EU

## Non-Military Applications

## Civil/Military Cooperation – Mutualisation

## [34 application (sub-) categories]

**Anti-piracy operations** **Border surveillance**

**Coastal surveillance** **Critical infrastructure surveillance**

**Emergency communications network** (incl. relay): (local, regional, national, EU)

**Fishery control**

**Forest fire fighting** (detection, monitoring, support)

**Illegal drug cultivation detection** **Illegal ship bilge venting detection**

**Illegal immigrant control** (local, regional, national, EU)

**International summit surveillance** **Maritime search & rescue**

**Maritime surveillance**

**Natural disaster site monitoring** (earthquake, floods, icing rain storms, landslide, mud slide, plane crashes, ship collisions, storm & hurricane, train crashes, tsunami & tidal surge, volcano eruption)

**Sea lane surveillance** **Surveillance of public gatherings**

**Surveillance of international sporting events** **Other**

# UAS MARKET IN THE EU

## Non-Military Applications

UAS DEFINING EUROPE'S STRATEGY

| CURRENT Applications | MTOM < 150 kg VLOS | MTOM < 150 kg BLOS | MTOM < 150 kg EU | MTOM > 150 kg VLOS | MTOM > 150 kg BLOS | MTOM > 150 kg EU |
|---|---|---|---|---|---|---|
| Security Related | 6 | 8 | 14 | 5 | 6 | 11 |
| Safety Related | 6 | 1 | 7 | 1 | 1 | 2 |
| Scientific & Research Related | 14 | 2 | 16 | 1 | 1 | 2 |
| Contractor Supplied Flight Services | 25 | 4 | 29 | 1 | 1 | 2 |
| Civil/Military Coop-Mutualisation | 1 | 0 | 1 | 0 | 5 | 5 |

| PROJECTED Applications | MTOM < 150 kg VLOS | MTOM < 150 kg BLOS | MTOM < 150 kg EU | MTOM > 150 kg VLOS | MTOM > 150 kg BLOS | MTOM > 150 kg EU |
|---|---|---|---|---|---|---|
| Security Related | 23 | 26 | 49 | 5 | 27 | 38 |
| Safety Related | 30 | 27 | 57 | 2 | 29 | 31 |
| Scientific & Research Related | 20 | 20 | 40 | 0 | 21 | 21 |
| Contractor Supplied Flight Services | 35 | 15 | 50 | 0 | 13 | 13 |
| Civil/Military Coop-Mutualisation | 1 | 24 | 25 | 0 | 33 | 33 |

# UAS MARKET IN THE EU

## Non-Military Applications

## The Obstacles

## Common to all UAS

UAS DEFINING EUROPE'S STRATEGY

- Absence of rules & regulations harmonized at pan-European level [standards, certification (UAS, pilot licensing, operator licensing, qualified entity, etc), ATM (operational standards)]
- The lack of regulatory framework for UAS is preventing industry from building pertinent business cases & launching developments required to answer non-military (governmental, research, commercial) needs
- Lack of political awareness (regional, national, European levels) of the potential societal benefits of UAS
- Many legal aspects have not been addressed yet
- No harmonized safety assessment approach
- Absence of European requirements for communication & navigation
- No European-wide technology gap analysis (UAS < & > 150 kg) has taken place
- No European-wide economic impact analysis (UAS < & > 150 kg) has taken place
- No entity designated as central collection point of operational data
- Third party liability insurance is not readily available on equal basis in all EU countries
- Specific policies covering equipment/accident insurance, personnel (incl. pilot) insurance & risks specific to aerial work are not readily available
- Insufficient coordination between the DGs relative to UAS-related study contracts prior to them being launched (results: duplication of effort & needless financial waste)
- There is no central repository where the results of concluded EC-funded studies and R&D contracts are stored and can be found by qualified applicants
- Insufficient use is made of academic research potential.

# UAS MARKET IN THE EU

## Non-Military Applications

## The Obstacles

### Specific to UAS with a MTOM less than 150 kg

- National certification standards & rules are applicable. Basic standards & rules exit only in Norway and UK, and are nearing completion in the Czech Rep., the Netherlands & France, but they are not harmonized on a European level. This fact poses problems for European-wide fair competition.
- National experimental flight certificates can be granted in some countries [such certificates are limited (where, on what date, at what time, for what duration, how far & how high can be flown].
- Access to airspace varies from country to country.
- There is no ongoing or upcoming funded study relative to a Sense & Avoid specifically for Small UAS (25 to 150 kg class).

# UAS MARKET IN THE EU

## Non-Military Applications

## The Obstacles

### Specific to UAS with a MTOM of more than 150 kg

- European (EASA) certification standards & rules apply, but they do not yet exist.
- Access to airspace is extremely problematic.
- It has not yet been decided if the safety objectives for military & non-military UAS should be the same.
- Training missions require to transit from reserved or non-reserved airfields to the training area or operational areas when mutualised UAS assets are used (either in GAT or under OAT).
- Trans-border flights are currently impossible.
- Short requirement lead time (urgent operational requirements) leads to partnerships with non-European industries, which does not give Europe the possibility to develop the required technologies & capabilities.

# UAS MARKET IN THE EU

## Non-Military Applications

## The Obstacles

## Funding – Common to all UAS

- There are no European institutions with adequate funding for UAS-related R&D and study programmes linked to practical demonstrator programmes (volcanic ash cloud sampling & monitoring should be an imperative).
- Neither EASA, nor EUROCONTROL, has adequate UAS-related R&D funding resources.
- FRONTEX does not have the financial means required for their ambitions.

# UAS MARKET IN THE EU

## Non-Military Applications

## Efforts Contributing to Alleviation of the Obstacles

UAS DEFINING EUROPE'S STRATEGY

### International - Regulatory

- ICAO UAS Study Group activities (publication of Circular 328).
- ICAO Civil/Military ATM Cooperation Initiative (publication of Circular 330).

### European – Political

- EC's Hearing on Light UAS (Oct. 2009).
- EC's high level conference on UAS (1 July 2010).
- UVS International's survey on Light UAS (MTOM < 150 kg) (industry base + current & potential applications) was supplied to the EC during the Hearing on Light UAS.
- UVS International's petition to the EC in December 2010
- European Commission UAS Panel Initiative

# UAS MARKET IN THE EU

## Non-Military Applications

## Efforts Contributing to Alleviation of the Obstacles

UAS DEFINING EUROPE'S STRATEGY

### European – Regulatory - 1

- EUROCAE Working Group (WG) 73 has been struggling with creating proposals for UAS standards for 4 years. This effort is based on voluntary inputs from industry (which are currently not earning any money with UAS).
- EUROCAE WG73 SG4 on Light UAS has brought out a «Europeanized» version of the CAP 722 document produced by the CAA, UK, which will supply guidance for European civil aviation authorities.
- EUROCAE WG93 on Light Remotely Piloted Aircraft Systems (RPAS) is about to kick-off.
- EUROCONTROL-funded UAS-related studies (OAT, data links, spectrum, ATC simulation, etc) have all been supplied to EUROCAE WG for consideration.
- EUROCONTROL supplies personnel support to EUROCAE.
- JARUS (Joint Authorities for Rulemaking on Unmanned Systems) has been created by European national civil aviation authorities with the intent to harmonize, on a pan-European basis, their approaches & avoid duplication of work relative to regulations and certification standards. The draft technical & operational requirements for the certification & airspace access of Small UAS (MTOM < 150) produced by JARUS are supplied to EUROCAE WG73 & WG93 for consideration.

# UAS MARKET IN THE EU

## Non-Military Applications

## Efforts Contributing to Alleviation of the Obstacles

UAS DEFINING EUROPE'S STRATEGY

### European – Regulatory - 2

In October 2009, the EC organized its first UAS-centric hearing. In the EC's final report on the hearing on Light (Small) UAS (< 150 kg), it was recommended that standardization groups like EUROCAE evaluate the possibility of starting up dedicated activities aiming to develop specific solutions for Light UAS, with the view to speed up their insertion into civil managed airspace by producing dedicated standards. This suggestion is motivated by the following:

a) The large number of SMEs involved with the development of Light UAS;
b) SMEs are unable to participate in working groups on the same basis as Industry, mainly due to insufficient personnel, as well as time & financial restrictions;
c) The standards for Light UAS have a specific & diverging nature in comparison to UAS MTOM >150 kg;
d) The work methodology adopted, must be designed to specifically accommodate SMEs.

The start-up of EUROCAE WG93 on Light RPAS (Remotely Piloted Aircraft Systems), which replaces WG73's SG4 on Light UAS, was decided in December 2011, and it takes the aforementioned points into consideration. WG93 on Light RPAS has finalized its terms of reference, has organized its own SharePoint web site, defined its internal rules and work methodology, and will be kicked off on 23 & 24 May 2012.

# UAS MARKET IN THE EU

## Non-Military Applications

## Efforts Contributing to Alleviation of the Obstacles

UAS DEFINING EUROPE'S STRATEGY

### European Studies

- EC-funded projects (INOUI study, market study by Frost & Sullivan Study, etc).
- EDA-funded UAS-related studies: SIGAT (spectrum), MIDCAS (sense & avoid), Command & Control links (with ESA).
- ASD's Air4All initiative

### NATIONAL - Regulatory

- National regulatory efforts of various depth & amplitude pertaining to UAS have taken place /are still taking place in BE, CH, CZ, FR, IE, IT, NL, NO, SE, UK.
- National activities are **not sufficiently coordinated** on a European level.

PS: National activities are mostly conducted in the national language (information sharing is problematic – and raises the problem of the funding of translation costs)

# UAS MARKET IN THE EU

## Non-Military Applications

## Efforts Contributing to Alleviation of the Obstacles

UAS DEFINING EUROPE'S STRATEGY

### NATIONAL – Regional Promotion

Various UAS-related regional initiatives, which in some cases consist of Centers of Excellence, have taken place or are starting to take place in DE, DK, ES, FR, IT, NL, NO, UK. These regional initiatives are often politically driven (job creation) and in many cases involve some form of regional investment (creation of start-ups, attracting new industry).
These initiatives are **not coordinated on a European level**.

### NATIONAL – Research & Studies

There are a good number of national R&D initiatives that have taken place and/or are still taking place. However, because national funding is used, the **results of such R&D programmes are not often shared** (for reasons of competition) with non-national entities, and consequently, there is a substantial risk of duplication of effort. The UK's ASTRAEA programme is a clear example, but also the most ambitious of such programmes.
PS: National studies are not always conducted in English (information sharing becomes problematic).

# UAS MARKET IN THE EU

## Non-Military Applications

## EU Strengths

UAS DEFINING EUROPE'S STRATEGY

- European civil aeronautics is established as a world leader.
- Aviation Industry is prepared to reinvest in R&D.
- Military UAS capability can act as early adopter.
- Mutualisation of UAS assets is seriously being considered in a significant number of European countries.
- Establishment of STANAG 4671 for military UAS.
- Establishment of EASA responsibility for UAS >150 kg.
- JARUS established & contributing to European level harmonization of rules & regulations, and taking an international leading role.
- UAS operations are taking place but under special arrangements.
- Non-military BLOS (scientific) operations are taking place in Norway (out of Svalbard) under special conditions granted by CAA, Norway and these missions can contribute to supplying valuable statistics.
- Wide industry base including a large number of SMEs involved with UAS (systems, sub-systems).

# UAS MARKET IN THE EU

## Non-Military Applications

## EU Weaknesses

UAS DEFINING EUROPE'S STRATEGY

- Lack of a coherent, well-funded, central procurement authority for non-military government applications.
- Large US governmental budgets lead to domination of international market segments.
- Availability of off-the-shelf products from US and Israel.
- No common, harmonized legislation to enable UAS insertion into non-segregated airspace.
- UAS Standards and Certification criteria are not (yet) established at European level.
- Initiatives to promote non-military applications have been ad hoc and uncoordinated.
- Key technologies for traffic insertion still maturing i.e. sense and avoid, LOS and BLOS equipment, health management and autonomy.
- Rules for segregated UAS operations vary between nations.
- Lack of agreed RF communications and sensor spectrum.
- No European-level agreement on training and licensing of UAS crews.
- No federation of European universities involved with aviation.
- No coordination of regional UAS-related initiatives on a European level.
- No European UAS centers of excellence.

# UAS MARKET IN THE EU

## Non-Military Applications

## EU Opportunities

UAS DEFINING EUROPE'S STRATEGY

- Civil market offers significant opportunities in the very short & medium term.
- Europe is very conscience of environmental issues and UAS have wide application possibilities in this arena.
- Europe can position its industrial base to help set standards for the rest of the world.
- Early access to non-segregated airspace will enable Europe to better exploit the global market.
- Emerging technologies hold promise for exploitation across aviation and other sectors.
- UAS have the potential to be more cost-effective than current manned solutions.
- UAS are capable of missions that would not be possible with manned aircraft.
- UAS can be more effective than manned aircraft at dull, dirty & dangerous tasks.
- Dual-use technologies have emerged and are already being exploited e.g. solar electric HALE UAV (< 150 kg) with record-breaking endurance.
- Exploitation of military UAS operational experience.
- Mutualization of UAS assets offers significant potential for non-military governmental and European organizations to increase their capabilities and efficiency.
- Non-military UAS applications can create a totally new flight services industry.

# UAS MARKET IN THE EU

## Non-Military Applications

## Conclusions

UAS DEFINING EUROPE'S STRATEGY

- Aeronautics is an important industry for Europe, and UAS represent a new paradigm and significant market growth opportunities.
- Military technologies have led the way; however, the non-military UAS markets promise higher and sustainable returns.
- The non-military UAS market has to be unlocked.
- Mutualisation of UAS assets could play a key role to make the capabilities offered by UAS available to non-military governmental organizations at a much reduced cost.
- Europe has a unique opportunity to build on an established technology base to fly UAS and put them to use for many public & private purposes with societal benefits.
- Europe has the potential to create a strong UAS industrial (manufacturing & services) base within this emergent strategic market & stimulate the creation of jobs.
- A robust and pragmatic UAS regulatory framework must be created.
- Investment must be stimulated in infrastructures and the prioritized core technology base at all levels, including Industry & SMEs (systems integrators, manufacturers at system & sub-system level, and service providers), scientific & academic community.
- Europe needs to act now to maintain or increase its competitive edge.
- To open the market, Europe needs to open its airspace.

UAS DEFINING EUROPE'S STRATEGY

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