European Action Plan for Airspace Infringement Risk Reduction

Airspace Infringement Action Plan

Airspace Infringement **Action Plan**

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1. STATEMENT OF COMMITMENT

The effective design and management of airspace, and associated procedures for the use of airspace are critical to aviation safety. Airspace infringement, also known as "unauthorised penetration of airspace " is a major operational hazard that can result from the division of airspace into different classes and structures, with their associated procedures and services, and its joint use by different categories of users, often with competing objectives and different operational requirements and capabilities.

Infringements are not rare events in busy European airspaces and, without prompt action by air traffic controllers and pilots, could result in loss of separation, or even mid-air collision.

Recognising the severity of this threat to aircraft operations and the need to ensure the safe use of airspace and sustainable development of commercial, military and general aviation in the short, medium and long term, the major aviation stakeholder groups in Europe agreed that coordinated actions should be taken to control this aviation risk. The launch of the Airspace Infringement Safety Improvement Initiative in 2006 provided the vehicle for achieving this goal.

This Action Plan, the key deliverable of the Airspace Infringement Initiative, presents a set of safety improvement measures and provides guidance on how they can best be implemented. The plan was developed with the support of, and active contributions from, organisations representing the airspace users, service providers, regulatory and military authorities. Notable contributions were made by the International Council of Aircraft Owner and Pilot Associations (European region), Europe Air Sports, Association of European Airlines, International Air Transport Association, the European Commission and EUROCONTROL.

In addition, many hundreds of individual general aviation (GA) pilots contributed to the work and supported this pan-European safety improvement effort.

The organisations that have contributed to and endorsed this Action Plan are committed to enhancing flight safety by promoting the implementation of safety improvement actions in line with the recommendations of the Action Plan. Improving the safety of European airspace will require the collaborative effort of all parties concerned - national authorities, airspace user organisations, service providers and military. The coordinated action will ensure effective and harmonised application of ICAO provisions, implementa-tion of risk mitigation solutions at system level, increased safety awareness, wide dissemination and effective adoption of best practices. It is recognised that the set of safety measures to be implemented will be aligned with the established national implementation priorities based on the local operational environment and safety improvement needs.

The implementation cost of the safety improvement measures suggested by the Action Plan can differ significantly depending on their nature and scope. The cost of implementing systemic solutions, like enhanced Flight Information Service, is expected to be higher than the cost of producing awareness materials . The respective risk mitigation effects will also differ depending on the specific operational environments. **It is important to ensure that the cost considerations do not have priority over safety.** Decisions on implementation actions should aim for more efficient use of available resources, fair cost allocation and economies of scale through coordinated projects at regional and European scale.

The Action Plan aims to achieve the right balance between positive encouragement and regulatory enforcement, which is of particular importance for the development of general aviation in Europe. It is a further acknowledgement of the recognised need for harmonisation and standardisation of the services provided to all flights in European airspace, and calls for a consistent and integrated approach to the needs of general aviation, military and commercial operations.

A European Single Sky Implementation (ESSIP) objective relates to this Action Plan.

[1] As per the taxonomy used in ESARR 2 and EC Directive 2003/42/EC
[2] Initial high level cost benefit assessment is provided in Flight Information Services Survey, edition 1.0 from 4 February 2008
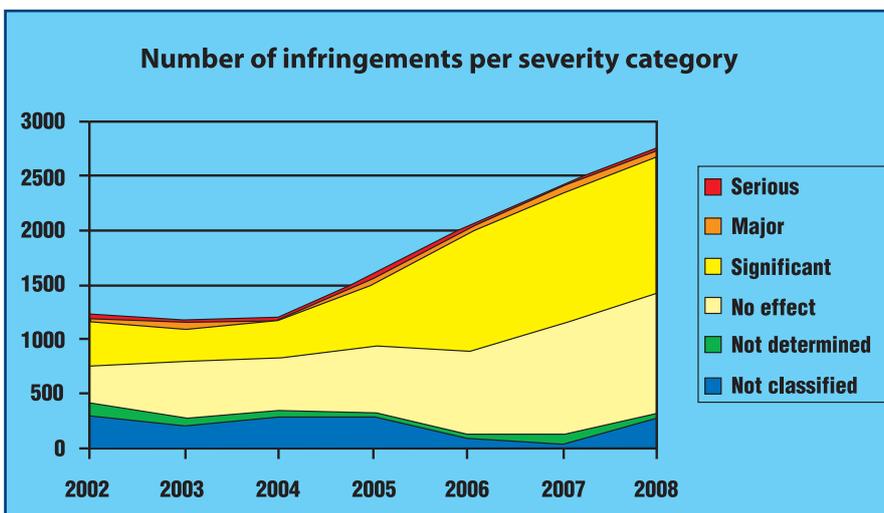
2. ASSESSING THE SCALE, CAUSES AND CONSEQUENCES OF THE PROBLEM

AIRSPACE INFRINGEMENT - THE DEFINITION

Airspace infringement (also referred to as 'unauthorised penetration of airspace') is generally defined as a flight into notified airspace without previously requesting and obtaining approval from the controlling authority of that airspace in accordance with international and national regulations. Notified airspace includes controlled airspace (ICAO airspace classes A to E[3] , such as airways, TMAs, and CTRs), restricted airspaces (e.g. Prohibited, Restricted and Danger Areas, Temporary Reserved Airspace or airspace notified by a restriction of flying in accordance with national requirements) and aerodrome traffic information zones or areas (ATZ or TIZ) implemented by a number of European states.

HOW OFTEN DO INFRINGEMENTS OCCUR?

The graph below shows the number of reported infringements for the period 2002 - 2008, taken from the annual safety reports sent to EUROCONTROL by European states.

Since 2004 the overall number of reported incidents is constantly increasing. After a significant increase of 30% in the number of reported infringements in 2005, the increase in 2006 was 29 %, which corresponds to a total of more than 2000 reported incidents. The SRC[4] annual safety reports for the years 2008 and 2009 acknowledge this upward trend by notifying of a further increase of reported infringements of 18% and 13,5% respectively. The share of incidents with a significant to serious safety impact has remained consistently more than 40% over recent years. The statistics for the years 2005 - 2008 show an increase in the number of incidents of significant and major safety impact, while the absolute number of serious incidents decreases.

The overall upward trend may be influenced by the increasing awareness of this type of risk and other improvements in the general reporting culture. However, a comparison with the evolution in the number of reported incidents assigned to other key risk areas (such as Separation minima infringement[5] and Near CFIT[6]) shows a particularly marked trend. It should also be noted that a number of States still do not report this category of safety occurrence.

Source: EUROCONTROL Safety Regulation Unit

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[3] VFR traffic cannot infringe Class E airspace because under ICAO rules neither an ATC clearance nor a radio communication is required to enter or operate within it, unless filed national differences call for one or the other (or both). IFR traffic can infringe Class E airspace when not in receipt of a clearance to enter it.
[4] EUROCONTROL Safety Regulation Commission
[5] The final data for 2007 demonstrate a stabilization of overall numbers and a slight decrease in the numbers of risk bearing (severity A and B) occurrences. (EUROCONTROL Annual Safety Report 2008)
[6] In the overall data for 2007, the total numbers are generally back at the level of 2004 and 2005. (EUROCONTROL Annual Safety Report 2008)

HOW DO INFRINGEMENTS OCCUR?

The risk studies[7] carried out within the scope of the Airspace Infringement Initiative included an analysis of reported infringements, an on-line survey and field discussions with pilots, which helped elicit in-depth information about the factors causing and contributing to airspace infringements. The major findings are as follows:

WHO IS INVOLVED?

Distribution per flight rules (2005 + 2006)

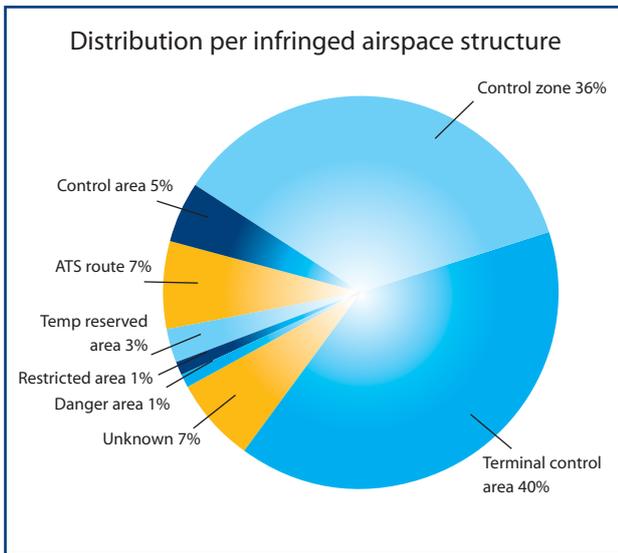VFR 56%

IFR/VFR 7%

IFR 17%

Unknown 20%
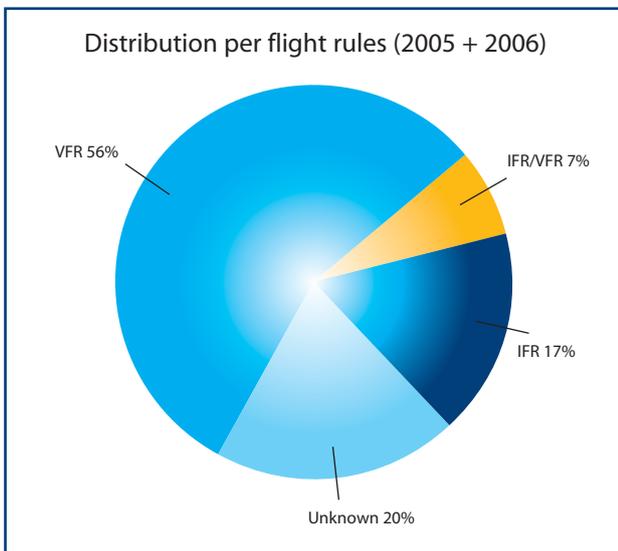
The analysis of the incidents reported in 2005 and 2006 clearly indicates that the majority of infringements are committed by GA VFR flights. The respective contribution of the commercial and military IFR flights is about 10% each[8]. This is not a surprise, as most GA VFR flights are conducted outside controlled areas and zones, and are in general flown by less trained and experienced leisure pilots, whereas IFR flights are usually contained within controlled airspace and carried out under the supervision of ATC units. However, the unavailability of reliable data at European level about the total number of GA operations (or flight hours flown) does not allow the precise establishment of the GA contribution to airspace infringement risk.

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[7] The reports from the risk studies can be viewed and downloaded from the Airspace Infringement Initiative web-site at:
http://www.eurocontrol.int/safety/public/standard_page/Airspace_Infringement_Initiative_Deliverables.html
[8] Safety analysis of airspace infringements in Europe, edition 1.2 from 8 November 2007

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Distribution per infringed airspace structure

Control zone 36%

Control area 5%

ATS route 7%

Temp reserved area 3%

Restricted area 1%

Danger area 1%

Unknown 7%

Terminal control area 40%

Causal factors' distribution

Inadequate clearance 7%

Other 32%

Navigation failure 15%

Restricted area 1%

Distraction 11%

Unfamiliar airspace 6%

Misread map 10%

Bad weather 10%

The most commonly infringed airspace structures are terminal control areas (40%) and airport control zones (36%). The majority of infringements occur during level flight rather than on departure or approach, i.e. the infringement of the lateral airspace structures' boundaries prevail (Safety analysis of airspace infringements in Europe, edition 1.2 from 8 November 2007).
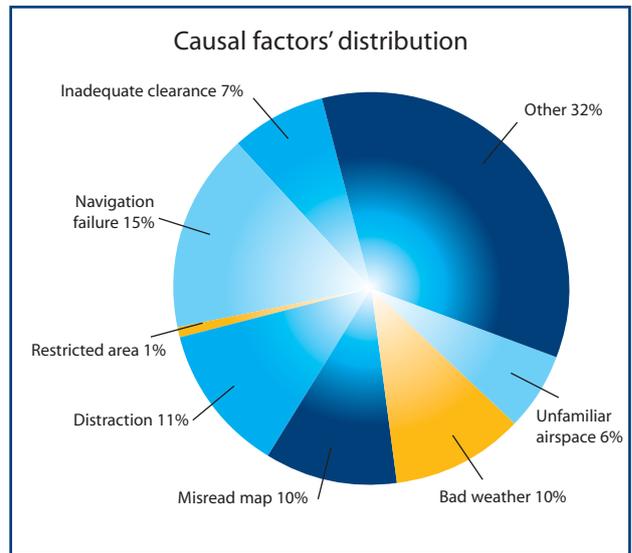
No single factor could be identified as the major cause of airspace infringements. However, pilots' navigation skills appear to play the most prominent role. The survey among the GA pilots in Europe carried out in 2007 established that although the level of navigation and communication skills acquired by student pilots during initial training raises some concerns, it is the apparent gradual diminishing of the skills of "low-hours" pilots which requires consideration and adequate measures. Refresher training is considered of particular importance by the vast majority of pilots interviewed.

As there are fewer reported infringements involving commercial and military flights, the data on causal factors associated with such flights are limited, but suggest that co-ordination between different control sectors (including between civil and military sectors) may often be an important reason for airspace infringement.

WHAT ARE THE CONSEQUENCES?

Three major categories of consequences were established following the hazard analysis performed within the scope of the Airspace Infringement Initiative. These consequences are described below in decreasing order of severity:

Mid-air collision. This is the worst-case scenario, which the Action Plan is aiming to prevent. The collaboration of all aviation sectors is essential for the achievement of this goal.

Loss of separation. An infringement leading to loss of separation may cause loss of control due to wake vortex encounter and even injuries to passengers or crew when violent manoeuvres are needed to avoid the other aircraft.

Disruption to flight operations. An infringement can significantly increase controller and pilot workload due to the need to break an approach, change aircraft sequence for landing or implement other contingency measures. Any disruption to flight operations is likely to have adverse environmental and economic impact due to increased fuel burn by aircraft subject to delays both in the air and on the ground arising from infringements. In addition, such delays will cause disruption to operating schedules and considerable inconvenience to passengers.

The risk mitigation potential of the ATM system was analysed using a dedicated safety barrier model (Safety analysis of airspace infringements in Europe, edition 1.2 from 8 November 2007). Five different barriers were identified that can prevent an airspace infringement developing into a mid-air collision. By applying the model it was established that in a quarter of all airspace infringements the only safety barrier available to prevent a mid-air collision appeared to be "see and avoid" had there been another aircraft in close proximity to the infringing aircraft.

"See and avoid" is seen as a potentially weak barrier in an IFR-VFR flight encounter and the need to strengthen the other barriers (e.g. safety nets like TCAS and STCA) is further reinforced by the mid-air collision between Pacific Southwest Airlines Flight 182, a Boeing 727 commercial airliner, and a private Cessna 172 on 25 September 1978 over San Diego, California.

3. THE AIRSPACE INFRINGEMENT INITIATIVE

Recognising the risk posed by airspace infringements, EUROCONTROL launched the Airspace Infringement Initiative at the beginning of 2006. The ultimate goal of the initiative is to develop a Europe-wide Action Plan for airspace infringement risk reduction and to assist airspace users, civil and military service providers and national authorities in implementing the recommended actions.

The approach adopted had proved its worth in other EUROCONTROL safety improvement initiatives such as those for runway safety[9] and air-ground communications[10]. It includes:

- Identification, by risk analysis and consultation with stakeholders, of the factors that lead to airspace infringements (as described in section 2);
- Collection and dissemination of locally existing experience and knowledge about the potential solutions;
- Identification of measures that can effectively and proportionately reduce the risk;
- Establishment of an Action Plan;
- Coordinated and harmonised implementation of measures by stakeholders, supported by briefing notes and guidance.

It was recognised from the outset that a priority is the involvement and cooperation of all aviation sectors in order to ensure a good understanding of their needs, draw on their experience and propose practical and effective risk solutions. Extensive efforts were taken to conduct in-depth risk analysis involving a wide range of organisations and individuals. These efforts culminated in a draft set of potential safety improvement actions, which were made available to the aviation community at the end of 2007.

THE AIRSPACE INFRINGEMENT WORKSHOP

A major initiative event - the Airspace Infringement Workshop - was held in January 2008. It brought together over a hundred representatives of major aviation stakeholder groups from around Europe, to discuss and consolidate the acquired knowledge from the risk analysis phase and elaborate the risk-reduction strategy and recommendations.

The workshop facilitated the establishment of a common understanding and awareness of the dimensions of airspace infringement risk and of the risk reduction potential that planned changes to the ATM system may have in the short and medium term. It enabled the identification of the actions considered most

relevant, achievable, and affordable, and, above all, measures that would actually deliver the improvements in safety we all desire.

The following important conclusions emerged from the workshop discussions:

- The collaboration of all actors (airspace users, service providers, regulators, military) is essential for achieving the required safety improvement; the cooperation of air navigation service providers and flying clubs is of crucial importance;
- A particular challenge is to develop an integrated approach to the needs of GA and airline operations, devising solutions that will work across the many different types of aircraft and users within the GA sector, and to communicate effectively with such a diverse group;
- Realising "quick wins" is still possible and should be actively pursued, based on: wide dissemination and effective application of existing good practices for infringement prevention; improved communication between ATC units and airspace user establishments; increased risk awareness and improved mutual understanding of each other's needs and limitations;
- Implementation of risk mitigation solutions at system level will take time and effort, but this should not preclude the inclusion of such measures in the Action Plan;
- The need for harmonisation and standardisation is recognised, on the understanding that local solutions will sometimes be required due to the different operational environments;
- The right balance needs to be struck between positive encouragement and regulatory enforcement. The former was clearly preferable - enforcement should be a last resort.

EUROCONTROL aims to address all these areas through the production of this Action Plan and further guidance material to be included in an implementation toolkit, and by co-ordinating and supporting the safety improvement efforts of all partners in this key risk area

4. HOW TO USE THIS ACTION PLAN

The safety improvement actions set out in section 5 are arranged in tables for each of the following groups of action owners:

AGY EUROCONTROL Agency
AIS AIS and MET services providers
ASP Air navigation service (including FIS) providers
MIL Military organisations (service providers, airspace users and regulators)
TRN Training organisations (whether for controllers or pilots)
REG Regulatory authorities (national and supranational)
USE Airspace users (civil and military)

Some of these action owner groups may be included in one organisational entity. For example, the provision of AIS or MET services may fall within or outside the responsibility of the ANSP (civil or military), but all entities providing such services should consider that list of actions. Similarly, training may be provided within or outside the organisational structures of ANSPs and airspace user organisations, but the actions under 'training organisations' are relevant to both.

A dedicated section identifies actions which are considered of direct relevance to military organisations. However, as indicated above, depending on the roles and responsibilities assigned to a particular military unit or entity, actions included in other sections may be relevant.

Actions requiring the coordinated efforts of several stakeholder groups appear in more than one section. This is particularly the case with the recommendations designed to improve and harmonise pilot training and licensing requirements. Specific coordination measures have not been identified for efficiency reasons and in order to avoid duplication of existing arrangements at national and supranational level. The appropriate EC, EASA and EUROCONTROL consultation mechanisms, working and reporting arrangements, such as European Single Sky Implementation (ESSIP) should be used for those actions that require coordinated efforts.

For each action owner group, the relevant safety improvement actions are assigned to two categories (and presented in two separate tables) in accordance with the results of the stakeholder consultation process that preceded the establishment of this Action Plan. These categories are:

Recommended actions: actions that received extensive support, consistently considered of key or high importance with respect to their potential for improvement of safety. Action owners should endeavour to implement them.

Proposed actions: actions that are widely supported, consistently considered of high or medium importance with respect to their potential for improvement of safety. Action owners should consider their implementation in the light of their specific operational environment and safety improvement needs.

Not all actions are phrased in precise terms as measurable achievements that can be 'ticked off' when completed. Some are, intentionally, phrased in more general terms - such as 'improve' or 'harmonise'. This recognises that some actions are matters of degree and that there should be flexibility for action owners to decide how far they need to go, in line with their particular operational context and safety needs. It is acknowledged that different action owners will start from different positions.

While airspace infringement is an important operational risk across much of Europe, the nature and scale of the problem varies between States. The complexity of the airspace structure, the scale of military flying activity, the scale and maturity of both commercial and general aviation sectors, the scope and nature of air traffic service provision and State's regulatory and legislative frameworks are the factors which will shape the local airspace infringement risk reduction strategies and determine the most appropriate and effective actions to be taken by individual States. Therefore the number of Action Plan recommendations that can be implemented is likely to differ from State to State. **National authorities should play the leading role in establishing and promoting local implementation priorities and actions in consultation with airspace users and service provider organisations.**

To help identify the type of measures necessary, safety improvement actions have been assigned to the following broad domains:

AOM   Airspace organisation and management
ATS   Air traffic services
COM   Air-ground communications
HUM   Human factors
INF   Information management
NAV   Navigation
SAF   Safety management (culture and awareness)

Each action is assigned a unique reference number and recommended implementation target date. It should be noted that some actions may require implementation in incremental steps over a number of years. Identified dependencies between actions are reflected by the "Related action" column.

More detailed information and an explanation of the recommended and proposed actions, as well as references to existing projects, best practices and guidance material in support of their implementation are provided in section 6 - Explanatory Notes. Some of the supporting materials referred to are already available, others are yet to be developed.

All actions and explanatory notes have reference numbers, which provide hyperlinks to the relevant texts. This allows easy navigation and cross-reference within the document.

An explanation of the acronyms used in this document is provided at section 7.

Annex 1 contains excerpts from ICAO documents and best practices used in FIS provision.

5. SAFETY IMPROVEMENT ACTIONS

5.1 ACTIONS FOR AIRSPACE USERS (USE)

5.1.1 RECOMMENDED ACTIONS

Ref	Domain(s)	Recommended action	Implementation target date	Related action(s)	Explanatory note ref. No
USE-R-01	SAF	Improve pilots' awareness of airspace infringement risk	Immediate[11]		6.1 page 22
USE-R-02	NAV INF	Encourage regular update of GPS systems' database by GA aircraft owners and operators	1 Jul 2010		6.2 page 22
USE-R-03	INF	Improve pre-flight briefing facilities at flying clubs and schools	1 Jul 2011		6.3 page 22
USE-R-04	HUM	Enhance pilot proficiency checks beyond simple aircraft handling to include navigation and R/T communication skills check	1 Jan 2012	REG-R-05 TRN-R-05	6.4 page 23

5.1.2 PROPOSED ACTIONS

Ref	Domain(s)	Proposed action	Implementation target date	Related action(s)	Explanatory note ref. No
USE-P-01	HUM	Implement periodic refresher training for GA pilots	1 Jan 2011	TRN-P-01	6.5 page 23
USE-P-02	SAF	Implement knowledge exchange programmes	Immediate	ASP-R-07 MIL-R-04	6.6 page 24
USE-P-03	NAV	Use better (advanced) equipment to improve navigation accuracy and integrity	1 Jan 2012		6.7 page 24
USE-P-04	NAV COM	Establish basic rules for manual input of positional data into the GPS equipment and promote their use by GA pilots	1 Jan 2011	TRN-P-03	6.8 page 24
USE-P-05	NAV	Implement procedure for pre-flight navigation equipment check for GA aircraft	1 Jan 2011		6.9 page 25
USE-P-06	NAV	Promote extended flight corridor and alternate route planning for VFR flights	1 Jan 2011	TRN-P-04	6.10 page 25
USE-P-07	HUM	Implement "tailored" training courses for pilots	1 Jan 2012	TRN-P-05	6.11 page 25

[11] Means that implementation should start without unnecessary delay

5.2 ACTIONS FOR AIS AND MET SERVICES PROVIDERS (AIS)

5.2.1 RECOMMENDED ACTIONS

Ref	Domain(s)	Recommended action	Implementation target date	Related action(s)	Explanatory note ref. No
AIS-R-01	INF	Standardise (harmonise) lower airspace charts	1 Jan 2013	AGY-R-01	6.12 page 25
AIS-R-02	INF	Investigate the feasibility of providing aeronautical information free of charge for GA	1 Jan 2011		6.13 page 26
AIS-R-03	INF	Provide and enhance on-line (web-based) accessibility of aeronautical information services	1 Jul 2011		6.14 page 26
AIS-R-04	INF	Harmonise and enhance AIS provision to VFR flights as necessary	1 Jan 2012		6.16 page 28

5.2.2 PROPOSED ACTIONS

Ref	Domain(s)	Proposed action	Implementation target date	Related action(s)	Explanatory note ref. No
AIS-P-01	INF	Improve availability of VFR charts and dissemination of updates to pilots	1 Jan 2011	REG-P-01	6.17 page 28
AIS-P-02	INF	Include geographical coordinates in information items containing position details wherever possible	Immediate	AIS-R-01	6.18 page 29
AIS-P-03	INF	Implement MET products tailored to low level VFR flights in line with ICAO requirements	1 Jan 2012		6.19 page 29

5.3 ACTIONS FOR ANS (INCLUDING FIS) PROVIDERS (ASP)

5.3.1 RECOMMENDED ACTIONS

Ref	Domain(s)	Recommended action	Implementation target date	Related action(s)	Explanatory note ref. No
ASP-R-01	HUM	Improve controllers' and FIC officers' communication skills and discipline	1 Jul 2012	TRN-P-02	6.20 page 29
ASP-R-02	ATS	Implement Area Proximity Warning function	1 Dec 2013		6.21 page 30
ASP-R-03	ATS COM	Establish coordination procedures between local ATC units and flying clubs	1 Jan 2011		6.22 page 30
ASP-R-04	ATS	Enhance and harmonise FIS provided to VFR flights	1 Jan 2013	MIL-P-01 AGY-R-04 REG-R-02	6.23 page 31
ASP-R-05	ATS	Employ appropriately trained and licensed officers to provide FIS service	1 Jul 2012	ASP-R-01 TRN-R-06 AGY-R-04	6.24 page 31
ASP-R-06	AOM	Review controlled airspace structure and simplify boundaries where possible	1 Jan 2012 and onwards	REG-P-02	6.25 page 32
ASP-R-07	SAF	Organise periodic meetings between ATC/FIS controllers, military and GA pilots at local level	Immediate	USE-P-02 MIL-R-04	6.26 page 32

5.3.2 PROPOSED ACTIONS

Ref	Domain(s)	Proposed action	Implementation target date	Related action(s)	Explanatory note ref. No
ASP-P-01	COM	Ensure adequate R/T coverage in the airspace where FIS is provided	1 Jul 2012		6.27 page 33
ASP-P-02	ATS	Transfer services to VFR traffic in uncontrolled airspace from ATC sectors to dedicated FIS positions at ACCs or aerodromes	1Jul 2012	ASP-R-05	6.28 page 33
ASP-P-03	ATS	Include dedicated and harmonised VFR services training module in ATC/FIC controller training curriculum	1 Jul 2011		6.29 page 33
ASP-P-04	ATS	Optimise SSR code assignment procedures to make best use of transponders' Mode A/C information	1 Jan 2011	REG-R-07	6.30 page 34
ASP-P-05	ATS	Improve tactical coordination procedures between adjacent civil/military control units	1 Jul 2011	MIL-P-02	6.31 page 34
ASP-P-06	ATS	Implement procedure for ATC to advise alternative route if entry clearance into CAS is refused	1 Jan 2011		6.32 page 34
ASP-P-07	ATS INF	Improve provision of airport/air-field weather information to VFR flights	1 Jan 2011		6.33 page 34
ASP-P-08	ATS	Implement enhanced FIS to assist GA pilots in avoiding adverse weather	1 Jul 2011	ASP-R-04	6.34 page 35

Ref	Domain(s)	Proposed action	Implementation target date	Related action(s)	Explanatory note ref. No
ASP-P-09	AOM ATS	Develop the means to introduce buffer airspace for mandatory SSR and/or radio communication with ATC as and when required in the vicinity of busy and/or complex controlled airspace	1 Jan 2011		6.35 page 35
ASP-P-10	AOM ATS	Introduce, where necessary, standard VFR entry, exit and crossing procedures and/or routes in busy controlled airspaces	1 Jul 2011		6.36 page 36

5.4 ACTIONS FOR MILITARY ORGANISATIONS (MIL)

5.4.1 RECOMMENDED ACTIONS

Ref	Domain(s)	Recommended action	Implementation target date	Related action(s)	Explanatory note ref. No
MIL-R-01	INF	Ensure provision of up-to-date information about activation/deactivation of restricted airspaces, including to VFR flights	1 Jul 2011		6.38 page 36
MIL-R-02	ATS	Implement Area Proximity Warning function	1 Dec 2013	ASP-R-02	6.21 page 30
MIL-R-03	COM ATS	Improve FIC controllers' communication skills and discipline	1 Jul 2011		6.39 page 36
MIL-R-04	SAF	Organise meetings with civil ATS units and GA clubs at local level	Immediate	ASP-R-07 USE-P-02	6.26 page 32
MIL-R-05	SAF	Improve airspace infringement occurrence reporting	1 Jan 2011	AGY-R-06 REG-R-08	6.40 page 36

5.4.2 PROPOSED ACTIONS

Ref	Domain(s)	Proposed action	Implementation target date	Related action(s)	Explanatory note ref. No
MIL-P-01	ATS	Harmonise provision of FIS by civil and military ATS units	1 Jan 2013	ASP-R-04 AGY-R-04 REG-R-02	6.23 page 31
MIL-P-02	ATS	Improve tactical coordination procedures between adjacent civil/military control units	1 Jul 2011	ASP-P-05	6.31 page 34
MIL-P-03	AOM	Review classification of restricted/reserved airspaces taking due account of strategic design principles and improve related airspace management procedures	1 Jan 2012 and onwards	REG-P-02	6.41 page 37
MIL-P-04	NAV	Implement automated airspace infringement alerts in the cockpit	1 Jul 2013 and onwards		6.42 page 37

5.5 ACTION FOR TRAINING ORGANISATIONS (TRN)

5.5.1 RECOMMENDED ACTIONS

Ref	Domain(s)	Recommended action	Implementation target date	Related action(s)	Explanatory note ref. No
TRN-R-01	HUM	Review private pilots' initial training content and ensure improved R/T training coverage	1 Jan 2011		6.43 page 37
TRN-R-02	HUM	Ensure adequate proficiency of flight instructors in terms of navigation and R/T skills	1 Jan 2012	REG-R-05	6.44 page 38
TRN-R-03	HUM	Improve training materials for instructors	1 Jan 2011		6.45 page 38
TRN-R-04	HUM	Improve and standardise private pilot basic training	1 Jan 2012	REG-R-05	6.46 page 38
TRN-R-05	HUM	Enhance pilot proficiency checks beyond simple aircraft handling	1 Jan 2012	USE-R-04 REG-R-05	6.4 page 23
TRN-R-06	ATS	Implement harmonised FIS officers' training curriculum	1 Jan 2013		6.24 page 31

5.5.2 PROPOSED ACTIONS

Ref	Domain(s)	Proposed action	Implementation target date	Related action(s)	Explanatory note ref. No
TRN-P-01	HUM	Implement refresher courses for private pilots	1 Jan 2011	USE-P-01	6.5 page 23
TRN-P-02	HUM	Improve communication training of FIC officers	1 Jul 2012	ASP-R-01	6.20 page 29
TRN-P-03	NAV	Establish basic rules for manual input of positional data into the GPS equipment and promote their use by GA pilots	1 Jan 2011	USE-P-04	6.8 page 24
TRN-P-04	HUM	Include extended flight corridor and alternate route planning in private pilot training content	1 Jan 2011	USE-P-06	6.10 page 25
TRN-P-05	HUM	Implement "tailored" training courses for pilots	1 Jan 2012	USE-P-07	6.11 page 25

5.6 ACTIONS FOR REGULATORY AUTHORITIES (REG)

5.6.1 RECOMMENDED ACTIONS

Ref	Domain(s)	Recommended action	Implementation target date	Related action(s)	Explanatory note ref. No
REG-R-01	SAF	Review airspace infringement risk dimensions and establish national safety improvement priorities	Immediate		6.53 page 42
REG-R-02	HUM	Harmonise the requirements for the provision of FIS and licensing of FIC officers	1 Jan 2013	ASP-R-04 MIL-P-01 AGY-R-04	6.48 page 40
REG-R-03	AOM	Ensure that airspace change processes take due account of the different airspace users' requirements	1 Jan 2011		6.49 page 40
REG-R-04	AOM	Harmonise lower airspace classification in line with the strategic airspace design principles	1 Jan 2013 and onwards	AGY-R-05	6.50 page 40
REG-R-05	HUM	Harmonise navigation and communication licensing requirements for private pilots	1 Jan 2012		6.51 page 41
REG-R-06	NAV	Establish requirement for regular update of on-board GPS systems database	1 Jan 2011	USE-R-02	6.52 page 41
REG-R-07	ATS NAV	Review and harmonise requirements for the carriage and use of transponders by light aircraft	1 Jan 2012	AGY-R-03	6.47 page 39
REG-R-08	SAF	Optimise and harmonise occurrence reporting requirements and taxonomy, including those related to airspace infringement	1 Jan 2011	AGY-R-06	6.40 page 36

5.6.2 PROPOSED ACTIONS

Ref	Domain(s)	Proposed action	Implementation target date	Related action(s)	Explanatory note ref. No
REG-P-01	INF	Ensure updated maps and charts are made available to flying clubs and schools	1 Jan 2011	AIS-P-01	6.54 page 42
REG-P-02	AOM	Undertake periodic reviews of airspace allocation and structures within the respective FIRs and improve oversight of airspace management	1 Jan 2012 and onwards	ASP-R-06 MIL-P-03	6.55 page 42
REG-P-03	SAF	Promote membership of flying clubs and GA associations among private pilots	Immediate		6.56 page 43
REG-P-04	NAV	Establish requirements for correct GPS equipment installation and maintenance	1 Jan 2011		6.57 page 43
REG-P-05	SAF	Harmonise regulation of flights by ultra-lights, micro-lights and gliders (including hang-gliders and para-gliders)	1 Jan 2013		6.58 page 43

5.7 ACTIONS FOR EUROCONTROL AGENCY (AGY)

Ref	Domain(s)	Recommended action	Implementation target date	Related action(s)	Explanatory note ref. No
AGY-R-01	INF	Support the development of European standard for VFR publications	1 Jan 2013	AIS-R-01	6.12 page 25
AGY-R-02	INF	Assess the feasibility of implementing a single web portal for aeronautical information in Europe	1 Jan 2011		6.15 page 27
AGY-R-03	ATS NAV	Support the development of an overall concept for the carriage and operation of transponders by light aircraft	1 Jan 2012	REG-R-07	6.47 page 39
AGY-R-04	ATS	Support the harmonisation of FIS services in Europe	1 Jan 2013	REG-R-02 ASP-R-04 ASP-R-05 MIL-P-01	6.59 page 43
AGY-R-05	AOM	Support the harmonisation of lower airspace classification	1 Jan 2013	REG-R-04	6.50 page 40
AGY-R-06	SAF	Support the enhancement of airspace infringement occurrence reporting	1 Jan 2011	REG-R-08 MIL-R-05	6.40 page 36
AGY-R-07	SAF	Develop toolkit in support of the Action Plan implementation	1 Jan 2011		6.60 page 43
AGY-R-08	SAF	Publish safety awareness material	Immediate		6.61 page 44

6. EXPLANATORY NOTES

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.1	USE-R-01	User organisations should organise and encourage member participation at safety seminars and other events aimed to improve pilot awareness of airspace infringement risk. Internet fora should also be considered. Examples of good practice are the flight safety seminars organised by national AOPAs and the UK CAA. Awareness materials, such as posters, leaflets, safety letters produced by international and national organisations and authorities (e.g. CAA) can be used directly or adapted according to local needs.	EUROCONTROL risk analysis reports, posters, safety letters National publications and materials (e.g. UK CAA safety sense leaflets)
6.2	USE-R-02 REG-R-06	GA organisations and establishments should encourage their members, the owners and operators (pilots) of GA aircraft to update regularly the database of the GPS systems used as navigation support means during VFR operations. The recommendation is relevant to both hand-held GPS receivers and those permanently installed on the aircraft. Reminders could be issued to pilots in case of planned implementation of considerable airspace changes. The database update procedure should also include verification of the parity between the GPS database and the VFR chart(s) used during flight. The 28-day cycle for aeronautical information publication used by the majority of GPS manufacturers and database providers need be considered in this respect. The GPS manufacturers and database providers should be asked to support this effort. They could provide regular notifications to the users of their services to download the relevant data upon update.	Procedures for update of FMS navigation database used by airlines GPS user manuals
6.3	USE-R-03	This action is designed to improve the pre-flight preparation of pilots. It calls for improvements to capabilities of existing briefing facilities and the implementation of new facilities, where they do not exist at the various GA locations, for example at flying clubs. Cooperation with the AIS and MET services providers (or ANSPs) is essential for successful implementation of this action. Support from the regulatory authorities should be sought and obtained. A typical briefing facility available at flying clubs should include provision of aeronautical and meteorological information, but also support the filing and submission of flight plans. Remote access of members to the briefing facility should be ensured. Potentially, a personal computer can serve the purpose of a flight briefing station, but those who do not use computers or are not comfortable with them will have to be considered.	

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.4	USE-R-04 TRN-R-05	Pilot proficiency checks should include verification and assessment of navigation and R/T communication skills. The verification of air-ground communication skills could include typical scenarios of air-ground communication exchange, such as requesting clearance to cross controlled airspace. It is important that the check is planned and carried out in the form of a learning exercise, not just a test. Proficiency checks should be included in the licensing schemes for PPL and glider pilot licences. The respective proficiency check requirements will be defined in the AMC material to be developed by EASA in the context of the forthcoming regulation establishing the implementing rules for the licensing and medical certification of pilots (NPA 2008-17). The AMC material should include navigation and communication aspects as well.	Action Plan implementation toolkit (under development) EASA AMC material for the new Part FCL
6.5	USE-P-01 TRN-P-01	Refresher training should be designed to achieve and maintain an adequate level of navigation and communication skills by all PPL holders. GA organisations, flying clubs and schools should offer such training courses to private pilots. Refresher training should be provided for all PPL types and include glider pilots as well. Refresher courses are considered of particular importance for recreational pilots, but this is relevant to the GA pilots in general. Implementation of refresher training every two years appears to be reasonable for PPL holders. Pilots should be encouraged to be aware of their own training needs. A refresher might involve a one-hour flight with an instructor including pre-flight paperwork. EASA has already taken action on this issue in the recently published NPA on Implementing Rules for Pilot Licensing. National authorities and GA organisations should use the consultation process to support the establishment of proportionate and safe requirements on pilot training for all licence types. Flying clubs should ensure additional training opportunities for 'low-hours' pilots. Rallies and cross country tours are an example of good practice implemented by many flying clubs. The communication training may be based on typical scenarios of R/T exchange and associated basic radio discipline rules (e.g.: think what you are going to say before pressing the button; keep transmissions clear and concise; listen before talking on the frequency, etc).	European Action Plan for Air Ground Communications Safety Allclear toolkit Action Plan implementation toolkit (under development) EASA NPA2008-17b

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.6	USE-P-02	The knowledge exchange programmes should aim to support controllers and GA pilots in sharing their knowledge of airspace and aircraft, improve understanding of each other's needs, limitations and way of working. Programmes should include pilots with different experience, e.g. pilots of light aircraft, gliders pilots, helicopters, etc. Such knowledge exchange programmes should be organised at local level in order to maximise effectiveness. Meeting events should be held at the flying schools and clubs and ATC facilities. Pilots associations and flying clubs should play an essential role for improvement of the interface to ATC.	
6.7	USE-P-03	The primary means of navigation in VFR flying is visual reference to the terrain using VFR charts. However, the use of GPS systems is spreading rapidly at a global scale. Sometimes GPS systems are used which are not certified for aerial navigation. In the context of this Action Plan "better or advanced" navigation equipment refers to modern aircraft GPS receivers, accurate GPS moving map software, data link, ADS-B and Mode S transponders. Enhanced GPS systems are already available providing cartographic map display, but also automated (audible alarm may be considered) alerts to pilots of imminent or actual airspace infringement. Such a warning could also be displayed during the planning phase, when the flight route is being set up. Advanced GPS functions can alert the pilot to deviations from the "safe flight path", for example flight alarm (FLARM) used by gliders. In the long term, digital radio could provide a simple and universal means of reliable and prompt communication between controllers and pilots. Integrative software can support download and uplink information in flight.	
6.8	USE-P-04 TRN-P-03	GA organisations, flying clubs and schools, should establish a simple set of ground rules for manual input of data into the GPS sets based on the available best practices and promote its use by the private pilots. This set of rules should be generic enough to be used with the various GPS receiver models and makes. The following best practice may be considered: • Input route data on the ground, prior to engine start at latest; • Check visually the displayed route for inconsistencies and gross errors; • Call the display of the input data (coordinates) and verify their identity with the source document (map).	Action Plan implementation toolkit (under development)

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.9	USE-P-05	GA organisations, in cooperation with the flying clubs and schools, should develop a simple checklist for use by private pilots. Further guidance and explanations may be provided in the form of a briefing note. These procedures may be included in the "pilot's notes" for each aircraft type. Developing a dedicated briefing note is considered particularly useful for unregulated recreational aviation types, ultra-lights, etc. It needs to be kept simple.	Action Plan implementation toolkit (under development)
6.10	USE-P-06 TRN-P-04	Promote awareness of the need and encourage private pilots to plan alternative/secondary routes to be flown in the event of unexpected/unforeseen circumstances, e.g. clearance to cross controlled airspace is refused, weather changes occurring faster than predicted, etc.	
6.11	USE-P-07 TRN-P-05	"Tailored" (focused) training courses designed to improve specific skills and techniques in the flight training process, depending on the type of airplane and the experience of the pilot. Based on periodical analyses of everyday operations, weak points are identified and the appropriate measures taken. For example, following identification of a weakness in landing techniques, the teaching process and/or the training syllabus should be reorganised and training hours increased if necessary.	
6.12	AIS-R-01 AGY-R-01	Improved VFR publications will contribute to better IFR traffic protection. Standardisation of VFR en-route charts is considered the highest priority. The products provided by commercial sources (different from the State AIS organisations) should be considered within the scope of this standardisation effort. There has to be a standard representation of lower airspace to prevent confusion in cross-border flights. Compliance with and common interpretation of ICAO Annex 4 requirements needs to be achieved. This includes common map layout conventions, consistent use of colour coding, symbols etc. High priority should be assigned to the standardisation of the most commonly used ICAO VFR chart (1:500 000). The action aims to improve the readability and simplify VFR charts as much as possible. Only information relevant to VFR flights should be printed. There are instances of VFR charts saturated by the volume of printed information. It takes the pilot too long to consult during flight and may lead to distraction. However, simplification should not lead to loss of important features. The clarity of frequency information should be improved. Frequencies should be indicated clearly on electronic and paper maps, allowing easy reference by pilots during flights.	ICAO Annex 4 ICAO Doc 8700 EUROCONTROL AIS Team working arrangements

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
		Harmonisation may include a review of needs and an agreement to publish charts with more appropriate scales (e.g. 1:250 000) for local flights. Harmonisation of VFR AIPs (manuals) should also be considered. The involvement of GA representatives in such reviews and in the process of VFR publications' standardisation is essential. The EUROCONTROL Agency should support and coordinate AIS providers' chart harmonisation efforts through the existing AIS Team working arrangements.	
6.13	AIS-R-02	The action aims to make aeronautical and MET information, that is relevant to lower airspace and airports/airfields open to VFR flights, freely available to the GA VFR flying community. This would reduce the probability of inadequate pre-flight preparation. For example, VFR charts should be freely accessible and downloadable via internet from the service provider sites. There is a need for a dedicated study to identify what kind of information will bring the highest benefit to the users of lower airspace. EUROCONTROL, national authorities and AIS service providers should support GA establishments in their efforts to improve the briefing facilities on airfields (for example feeding them with the relevant aeronautical data, making necessary HW/SW available, etc.). See note 6.3. A variety of solutions and business models (or combinations thereof) could be considered in this context. For instance the service provision cost could be recovered through license fees or public (state or European Community) funds. The development of the SES2 package offers an opportunity to support the implementation of a high quality and "publicly accessible" AIS portal.	
6.14	AIS-R-03	NOTAMs, maps, charts and current weather information shall be made easily accessible at the service provider websites. Dedicated pages for GA VFR flights that provide access to all information needed for a flight could be designed. Visualisation of information should be improved: it should be user-friendly and intuitively comprehensible. The mechanisms, processes and means for delivery of the actual air-space structures' status to users (in particular GA) should be reviewed and optimised. Online AIS provision should not totally replace the traditional methods. Pilots should be provided with the option to obtain pre-flight briefing materials in hard copy or to contact the appropriate briefing office (e.g. FIS free phone), whichever is the preferred method of preparing for the flight.	

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.15	AGY-R-02	The feasibility of creating a pan-European facility for integrated and timely provision of up-to-date aeronautical and meteorological information to all users in the ECAC states should be studied. The feasibility assessment should include a rigorous cost-benefit analysis. A number of implementation options could be considered, for example: ● Creation of a centralised database for aeronautical and meteorological information with ECAC coverage. ● Creation of a webpage providing links to the websites of European aeronautical and meteorological data providers ● A hybrid solution. The various options should be analysed and the most efficient solution recommended for implementation in case of positive cost-benefit ratio. The "one stop shop" should be designed in a user-friendly manner and provide for easy and prompt access to any flight related information that the pilot might need for preparation. The liability issues with regard to the provision and use of the information should be resolved. The implementation of this action may be guided by an EAIP (Electronic Aeronautical Information Publications) mandate. The site may need to be regulated to ensure a high standard, and may need to be accessible in many different languages. The European AIS Database (EAD) could be a vehicle for this. However, the quality of the information and its suitability for use by the different types of operations (e.g. GA VFR flights) needs to be examined. Publicity and guidance to GA on how to use it would need to be ensured.	European AIS Database European AIS page ESSIP objective INF04

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.16	AIS-R-04	The implementation of this action should include: ● Provision of dedicated VFR sections in the AIPs or VFR AIPs (manuals); ● Provision of up-to-date VFR charts; ● Implementation of a user-friendly NOTAM system for VFR flights. The NOTAM briefing facilities should provide for: ● Graphical visualisation of information about changes to airspace structures and activation/deactivation of restricted airspaces. ● Narrow route briefing for (long distance) route flights. ● NOTAM selection and prioritisation tool Grouping NOTAMs by topic, enabling the generation of briefing packages tailored to the needs of the various user types may be considered (e.g. a glider pilot would need different information to a pilot planning a cross country flight). In case of generation of NOTAM update packages the type of users the update is intended for should be taken into account (e.g. GA VFR flight). It would be desirable to include a short summary outlining the changes in traffic schemes and airspace. The readability of NOTAMs and other publications (AIC) of potential interest to VFR flights should be improved using plain language rather than encoded text where possible. The names of towns, villages and other well known geographic notions should be used instead of coordinates, which most of pilots can not use in-flight.	EUROCONTROL AIS Team
6.17	AIS-P-01	Both electronic and hard copy (paper) versions of maps/charts should be maintained in order to provide the preferred means of flight briefing to the different generations of GA pilots. Enabling downloads of current charts or sections thereof is an improved service requested by pilots. Further improvement could be achieved by alerting subscribers (users) to implemented changes/updates, for example by means of e-mail notification messages. In addition, site visits and seminars should be considered in the case of major airspace changes.	European AIS Database

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.18	AIS-P-02 REG-P-01	Geographical coordinates are a major issue in GPS systems. Most GPS systems provide an extensive data file including all kinds of way points, navigational aids etc. The availability of LAT/LONG information on VFR maps would support the crosscheck and input of correct data in the GPS set. However, increasing clutter on VFR charts must be avoided. Therefore, more appropriate vehicle appears to be ENR and/or AD part of the AIP, rather than charts. This information can also be provided on-line (on the service provider or CAA website) and can be picked up by commercial data providers.	
6.19	AIS-P-03	The recommendation concerns the implementation of weather reports and forecasts in line with ICAO Annex 3 requirements, e.g. GAMET and AIRMET. Integrated on-line provision of aeronautical and meteorological information should be ensured, for example on the AIS/ATS providers websites.	ICAO Annex 3 ESSIP objective INF04
6.20	ASP-R-01 TRN-P-02 MIL-R-03	This action reinforces the objectives and provisions of the Action Plan for Air Ground Communications, focusing on the aspects that are of particular importance in the communication exchange between ATS units and VFR flights. ATS staff should be trained to: ● Strictly apply the readback/hearback procedure; ● Actively seek confirmation in case of doubt; ● Use unambiguous call-signs - full call-sign or call-sign coupled with type of aircraft; ● Use published reference points in ATS messages to pilots, to the extent possible; ● Use simple ATC clearances and instructions; ● Use more concise transmissions, if necessary broken in segments; ● Use reduced rate of speech when talking to VFR pilots; ● Issue pre-warning of instructions to be passed; ● Provide FIS in English language; ● Acquire adequate knowledge of and apply communication failure procedures as required.	European Action Plan for Air Ground Communications Safety Allclear toolkit Action Plan implementation toolkit (under development) ESSIP objective SAF05

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.21	ASP-R-02 MIL-R-02	The objective is to implement an automated safety net function that should systematically alert controllers of airspace infringements, i.e. of unauthorised entries into controlled and restricted airspaces. Implementation decision should be based on positive cost-benefit-analysis and safety assessment. Area Proximity Warning (APW) is a ground-based safety net intended to warn the controller of unauthorised penetration into an airspace volume by generating, in a timely manner, an alert of a potential or actual infringement of the required spacing to that airspace volume. The safety nets APW, STCA and ACAS are three of the safety barriers that help prevent mid-air collisions, but each of them depends upon the carriage and operation of pressure altitude reporting transponders by both of the aircraft concerned. The potential of CIMACT for providing warning to military users about infringement of active restricted or controlled airspaces should be explored.	SPIN sub group work ESSIP objective ATC02.5 CIMACT
6.22	ASP-R-03	This action aims to establish standard coordination procedures between closely located ATS units, military and user sites. The implementation of such procedures will reduce the volume of routine coordination, and thus controller and pilot workload. The FUA concept implementation work should also take account of the specific needs of the GA VFR fights with regard to the timely dissemination of information about the activation/deactivation of reserved airspaces (including those for glider activity). Implementation of (direct) communication lines or means between local ATC units, military units and GA airports/airfields should be considered in this respect. The implementation of the above referred coordination procedures, which would enhance the FUA procedures in lower airspace at local level, should be preceded by careful safety assessment.	FUA specification

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.23	ASP-R-04 MIL-P-01 REG-R-02	Harmonisation of FIS provided to VFR flights should be based on ICAO recommendations and existing best practices. Examples of best practices are the Low Airspace Radar Service provided in UK airspace and the radar information services provided in German airspace. Radar-derived information available at ATS units should be used to enhance the information passed to pilots. It should include, as appropriate, navigational assistance, coordination of CAS entry/crossing clearance, passing traffic information and information about restricted airspace activation/deactivation and concerned traffic, as well as provision of other aeronautical information and information about potential hazardous conditions. The service could include provision of warnings to pilots of any unfavourable factors including airspace infringement and traffic warnings. FIS level could be raised to enable proactive prevention of potential conflict situations. The scope of this action should include the harmonisation of services provided by civil and military FIS provider organisations.	ANNEX 1
6.24	ASP-R-05 TRN-R-06	Improve and harmonise FIS officers' training curriculum. Training curriculum should be improved to adequately match the level of service to be provided. FIC staff should receive dedicated training improving their awareness and understanding of the VFR flights' needs, specificities and light aircraft performances. Best practices already exist (e.g. in Germany) to deliver emergency situation training to FIC staff and VFR pilots in a coordinated manner. A sufficient number of FIC staff should be made available to support the provision of enhanced FIS. A number of ATS providers have already implemented dedicated training programmes for staff that become redundant or underutilised due to the increasing automation of ATS provision (e.g. implementation of OLDI). See also 6.20 and 6.23 above.	Action Plan implementation toolkit (under development) ESSIP objective HUM02 and HUM05

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.25	ASP-R-06	This action is particularly relevant to areas of dense VFR traffic. It should aim to simplify, where possible, the numerous boundary level changes of TMAs and CTRs that can contribute to vertical navigation error. It should also aim to ensure the reliable protection of the IFR traffic established on the extended runway centreline and within 15 NM from the runway threshold from the nearby VFR traffic. This would reduce the number of RAs generated by TCAS. Alignment of lower airspace structure boundaries and of VFR routes (corridors) with prominent ground features and landmarks should be sought to make them more easily identifiable by pilots during flights. The review should be informed by identification of hot spots based on the analysis of (infringement) incident reports or other appropriate methods. Automated tools may also be used to plot actual flight tracks in a particular area onto the existing airspace structures in order to identify potential inconsistencies in the design of protected (controlled) airspaces. Such methods will also facilitate the identification of underutilised portions of controlled or restricted airspaces that may be released for use by GA VFR flights. This action concerns ANSPs that have been delegated the responsibility of developing and implementing changes to the airspace organisation subject to the approval of the National authorities. See also 6.55.	EUROCONTROL manual for airspace planning Action Plan implementation toolkit (under development)
6.26	ASP-R-07 MIL-R-04	"Open doors days" at ATS units and familiarisation visits by ATS staff to flying clubs and military sites should improve the understanding of each other's operational needs, capabilities and concerns. ATS staff will improve their awareness of single-pilot aircraft operation (pilot workload, limits, priorities, etc) and mission/training requirements (for military). Pilots will improve their knowledge of controllers' tasks, ways of working and the assistance that may be provided to them by ATS. Other approaches that could be adopted are dedicated safety seminars with the participation of all airspace user types, service provider organisations and regulatory authorities, or periodic safety analyses (e.g. bi-annual) of the common use of airspace. Pilot associations and flying clubs could play a role in improving the interface with ATC. Knowledge exchange programmes should include pilots with different experience from the various GA types, e.g. pilots of light aircraft, gliders, helicopters, etc.	

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.27	ASP-P-01	Review and improve, if necessary, the low-level radio coverage in particular around CTRs/TMAs and of airspaces containing high density VFR routes and choke points. Some receiver/transmitter sites, built for IFR traffic, may not be appropriate for FIS provision due to the terrain. Subject to availability, the number of ATS frequencies for the provision of FIS in busy areas may need to be reviewed and increased to ensure the required quality of service provision and better controlled airspace protection. 25 kHz channel spacing needs to be ensured, unless a decision is taken at European level to implement 8.33 kHz below FL 195. Most GA aircraft are not equipped for reduced channel spacing. Also the availability and location of DF facilities should be assessed.	
6.28	ASP-P-02	The objective is to ensure provision of FIS from dedicated positions that will not reduce the level of service to VFR flights when there is a high level of IFR traffic in the airspace assigned to the ATC sector(s). Procedures may be established for the delegation of services to VFR flights in class E airspace from the control sectors to FIC, if appropriate and depending on the specific operational environment and regulatory framework.	ESSIP objective HUM01.1
6.29	ASP-P-03	The objective is to ensure that ATS staff: ● Are aware of the different levels of training and experience of PPL holders, military and airline pilots; ● Have improved knowledge of light aircraft, ultra-light, gliders and balloons and their performance characteristics, which will ensure correct understanding and communication with GA pilots. (ATS/FIC controllers should be trained to ask, not to assume); ● Are familiar with the cockpit workload of VFR flights (mostly single-pilot operated aircraft) in the various conditions and flight phases; ● Are aware of the fact that a VFR GA flight might not be able to follow the clearance due to the need to stay in VMC. Inclusion of dedicated limited training in VFR flying may be considered. It will improve ATC/FIC controllers understanding of VFR flying.	Action Plan implementation toolkit (under development) ESSIP objective HUM02.1

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.30	ASP-P-04	Better utilisation of SSR codes can assist in the identification of traffic in congested airspace. Existing best practices should be applied as widely as possible. For example, an "FIR lost" SSR code applied by FIS units to aircraft when pilots are unsure of their position draws attention to the aircraft and its predicament without multiple communications taking place across sectors. The 'Listening out' SSR code identifies to a controller that the aircraft is listening on their frequency should they wish to call them. It is specifically valuable for aircraft operating outside a busy CTR. Other examples are: implementation of mandatory transponder areas or zones (e.g. at and above a certain altitude or flight level); SSR codes and frequency coupling; GA single event codes; dedicated codes for VFR corridors/routes etc.	Action plan implementation toolkit (under development)
6.31	ASP-P-05 MIL-P-02	Improved civil - military coordination (FUA level 3) will enable: ● The provision of up-to-date, correct information to all flights about current airspace restrictions and their use; ● Timely action by the controllers/officers (in the control units concerned) in the case of imminent or actual infringement of controlled or restricted airspace to reduce the severity of the possible consequences. Implementation of this action should be considered within the scope of efforts for further enhancement of the FUA concept.	FUA specification
6.32	ASP-P-06	When a VFR flight is refused clearance to cross controlled airspace, a possible alternative route should be proposed. However, the pilot is responsible for planning his/her flight and he/she should decide whether to follow the suggested alternative route. ATC staff should also inform pilots of the reason for refusing a service or entry into controlled airspace. This should be done in a clear and unambiguous manner to prevent discussions or debates that could "block" the operating frequency. Messages should be simple, clear and concise to keep the R/T load to the possible minimum.	
6.33	ASP-P-07	Internet, automatic broadcast (radio, telephone) and provision by FIC (on request or broadcast on the frequency) should be considered. This may include assessment of the need for and implementation of ATIS at airports, where this can bring significant safety benefits.	

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.34	ASP-P-08	Additional navigation support should be provided to VFR flights in compliance with ICAO Doc 4444 PANS-ATM, section 15.4.1 "Strayed VFR flights and VFR flights encountering adverse meteorological conditions" in order to help pilots avoid flying into meteorological conditions not conforming with the required minima.	Action Plan implementation toolkit (under development)
6.35	ASP-P-09	The objective of this action is to ensure the protection of high-density controlled airspaces, like busy TMAs and CTRs. Implementation decisions should be taken following analysis of safety data and records. It should be noted that establishing mandatory R/T buffer zone may not always be possible. Indeed, the feasibility of implementing such buffer airspace depends on the typology of adjacent airspace (continuous controlled airspace, military airspace, etc.) and relevant consultation with other stakeholders and airspace users. Implementation of mandatory R/T buffer zones should also include a review of existing "buffer airspace" at the TMA or CTR boundaries and corresponding optimisation (decrease) of such airspace to the necessary minimum due to the additional protection provided by the R/T buffer zone. A possible implementation may include tracking all flights operating within a certain range of the controlled airspace in question. Depending on the operational need a minimum altitude/level above which the requirement will be applicable may be defined. Since radio communication is not required by ICAO in class G airspace, an alternative means of reducing the probability of severe airspace infringement incidents occurring is to require GA flights to maintain listening watch on 121.5 MHz, except when in contact with an ATS unit. This would help ATC contact an infringing aircraft early enough to prevent the infringement from evolving into high-risk incident.	

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.36	ASP-P-10 MIL-P-03	Implementation of this action should support: • Achievement of high level of safety in common use of airspace by IFR and VFR flights • Fair access to busy airspaces for all airspace user types • Reduced controller workload due to standard procedures (reduced coordination and R/T) Such procedures should make good use of visual reference points (VRPs). Establishment of VFR arrival and departure routes could be a relevant safety improvement measure at airports serving both IFR and VFR traffic. Implementation should be decided on a case-by-case basis, taking due account of the local environment and traffic patterns. Simplicity (of VFR routes) should be an objective.	
6.37		Intentionally left blank.	
6.38	MIL-R-01	Two implementation aspects should be considered: • In the case of military ATS providers, the airspace status information should be made available to the units providing services to the VFR flights. Military controllers should pass this information to concerned flights which maintain radio contact. • In cases where FIS is provided by a civil entity, the airspace status information should be made available according to the implemented FUA procedures. Concerned FIC(s) may be informed directly or through the responsible FUA structures.	FUA specification Project for dynamic visualisation of activation of the RTBA in France
6.39	MIL-R-03	This action is relevant for military organisations providing FIS to General Air Traffic (GAT) VFR flights. See also note 6.20.	
6.40	AGY-R-06 MIL-R-05 REG-R-08	The action is designed to improve the overall risk picture, and in particular the understanding and management of airspace infringement risk by: • Improved reporting of infringement occurrences, and in particular of infringement of restricted and prohibited areas and zones. • The use of a harmonised taxonomy to improve the risk analysis with respect to the identification of infringement scenarios, causal and contributory factors. EUROCONTROL AST reporting arrangements should provide the vehicle for the implementation of this action. Infringement data should be analysed at national level and made available for safety analysis to EUROCONTROL in line with established reporting procedures (AST).	EUROCONTROL risk analysis reports Annual Summary Template ESSIP objective SRC-RMLK

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.41	MIL-P-03	The restricted and reserved airspace structures in lower airspace should be reviewed and their classification, dimensions and activation times updated according to actual use. Improved flexibility and airspace management procedures (including information dissemination) should be the primary objective. Restrictions should be enforced in periods of actual use of the designated airspaces and activation/ deactivation communicated in a timely manner to all concerned parties. Many restricted zones may become obsolete due to evolution and changes in the armed forces. Improving the oversight of airspace use will support implementation of the action. Periodical analyses should be carried out, providing the basis for improved restricted airspace design and management. Implementation of this action should be considered within the context of implementation of the FUA concept. Implementation of this action would help reduce the practice of "cutting the corners" of unused restricted airspaces.	FUA specification
6.42	MIL-P-04	Busy civil controlled airspace structures like TMAs and/or CTRs that are located close to the planned mission trajectory should be included in the aircraft navigational database. Alerts should be issued to the pilot in case of imminent or actual infringement of such airspaces.	
6.43	TRN-R-01	Private pilots should be taught to: ● Use unambiguous call-signs - full call-sign or call-sign coupled with type of aircraft; ● Contact ATS for assistance in complex situations (e.g. unsure of position); ● Actively seek confirmation in case of doubt; ● Strictly apply the readback/hearback procedure; ● Use 121.5 MHz in complex/unusual and emergency situations if not in contact with an ATS unit on another frequency; ● Adhere to communication failure procedures; ● Use standard phraseology in English for essential air-ground communication exchanges, like clearance requests. The training course should include practising R/T skills for the most common R/T exchange scenarios, like crossing controlled airspace, reporting basic flight plan data and requesting information.	Action Plan implementation toolkit (under development)

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.44	TRN-R-02	The navigation and communication skills requirements for flight instructors should be reviewed and updated, as needed, to meet the training syllabus needs. The requirements for the revalidation of the instructor rating in EASA NPA 2008-17 need to be taken into account. The risk awareness of instructors at flying schools should be raised through dedicated workshops, safety seminars and publications. Support from the regulatory authorities should be sought and obtained.	EASA NPA2008-17b
6.45	TRN-R-03	Training materials used by instructors should be enhanced to cover the improved scope of the pilot basic training curriculum. See explanatory note 6.46.	Action Plan implementation toolkit
6.46	TRN-R-04	The private pilot training curriculum should be enhanced in cooperation with EASA to ensure consistency with the AMC material for the new Part FCL in respect of: ● Map-reading skills (A pilot has to learn how to use the chart properly. For example using the chart correctly means also knowing how to mark and annotate the route on it.); ● GPS use; ● Use of redundant (back-up) methods of navigation (e.g. the pilot should monitor the aircraft's position at an appropriate interval (minutes) and execute VOR cross-bearing checks, verification and adjustment of navigational aids indications and settings); ● Carrying out pre-flight check of ATC/FIS frequencies along the intended route; ● Writing down clearances.	Action Plan implementation toolkit (under development) EASA AMC material for the new Part FCL

The action aims to improve the identification and monitoring of flights carried out by light aircraft and gliders in controlled airspace

Airspace Infringement **Action Plan**

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.47	REG-R-07 AGY-R-03	(class C to E) and of flights carried out in uncontrolled airspace, but in close proximity to busy control areas or zones. Various practices are used by European service providers and regulators to achieve this goal. The most common appear to be: ● Mandating the carriage of SSR (or Mode S) transponders in controlled airspace; ● Mandating/advising the carriage of SSR transponders above certain altitude/flight level; ● Establishing mandatory transponder zones (for example around airports or airfields). Exemptions are also granted according to the provisions approved by national authorities. The harmonisation of transponder carriage requirements could be based on the above commonly applied practices and should aim to achieve: ● The establishment of a common altitude above which the carriage of a Mode C capable SSR transponder is mandatory for all aircraft and gliders, except in temporary reserved airspace; ● More efficient use of equipment fitted on board aircraft and of available SSR codes. An overall concept for the carriage and operation of transponders by light aircraft, gliders and balloons should provide the ultimate long-term solution. It is considered an essential and necessary step in the implementation of the SESAR concept with respect to GA. The development of such a concept should make use of the studies addressing the detection and recognition of light aircraft in the current and future environment carried out by the EUROCONTROL Surveillance Domain. However, significant issues need to be resolved: cost (one-off and recurring); power requirements and panel space; potential impact on ANSPs RDPSs and TCAS operation. Light transponders exist, but low-power transponders are not recognised as ICAO-compliant. An example of best practice in using the SSR codes for VFR flights is the FIR code conspicuity procedure, i.e. assignment of a code different from 7000 coupled with R/T frequency listening watch requirement. The implementation of this practice is recommended in particular at units where individual code assignment is not feasible.	EUROCONTROL LAST report Amendment 31 to ICAO Annex 6 from 16 July 2007 ESSIP objective SUR02

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.48	REG-R-02	Review and enhance, as necessary, the requirements for provision of FIS and for the licensing (or certification) of FIC staff to ensure a high level of safety and quality of service provision through: ● Enhanced FIS ● Dedicated training of staff ● Refresher courses ● Competence checks See also 6.23.	ANNEX 1 Action Plan implementation toolkit (under development)
6.49	REG-R-03	The applicable airspace change processes, methodology and practices should be reviewed and, as necessary, modified to ensure that the needs of the various airspace user categories are fairly considered in the process of designing and implementing changes to airspace organisation. All stakeholders affected by the intended change should be afforded the chance to (at best) influence the shapes and volumes of airspace structures, or (at least) to make change sponsors aware of airspace user requirements so that the impacts of an airspace change can be minimised or mitigated through, for example, operating arrangements (that in effect be in the spirit of the FUA concept). Changes to lower airspace structures should be introduced following consultation with GA user representatives and organisations. See also 6.50 below.	EUROCONTROL manual for airspace planning Action Plan implementation toolkit (under development)
6.50	REG-R-04 AGY-R-05	An appropriate strategic design of the airspace is crucial in permitting the ATM System to provide the right services, at the right time and in the right places decreasing routine tasks and the requirement for tactical intervention. Harmonisation of lower airspace classification should be based on the ICAO-defined airspace classes. It should aim for the establishment of common vertical limits, as far as practicable. It should also include harmonised application of associated rules, procedures and air traffic services. It is highly recommended deploying airspace structures that provide a greater degree of strategic de-confliction with particular consideration of the Cross Border Operation. The EUROCONTROL Agency should support and facilitate the harmonisation efforts of the Member States within the framework of the existing EATM working arrangements (ANT and sub-groups) providing the required expertise, and in line with the approved Strategic Guidance in support of the execution of the European ATM Master Plan and SES regulations.	Strategic Guidance in support of the execution of the European ATM Master Plan

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.51	REG-R-05	Basic navigation and communication skills training requirements for all private pilot licences should be harmonised. Knowledge and use of GPS systems should be addressed as well. A minimum adequate level of pilot navigation and communication skills should be achieved and maintained by the introduction of mandatory refresher training. Competence checks should include exercises on basic navigation and communication exchange (e.g. requests for clearance to cross controlled airspace) irrespective of the pilot's qualification. The flight check should include "pass/fail" criteria, and could include some basic theory as well. Oversight of the pilot training process should be improved by strengthening the regulatory oversight of flying schools, training and licensing process. The competency and proficiency of instructors and examiners will need to be assessed and appropriate standards established. The currency of instructors' knowledge of aviation regulations should be ensured. EASA has already taken action on this issue by publishing on 5 June 2008 the NPA on Implementing Rules for Pilot Licensing. National authorities and GA organisations should use the consultation process to pursue the establishment of proportionate and safe licensing requirements on pilot navigation and communication skills and experience. See also 6.4 , 6.5 and 6.43.	EASA NPA2008-17b on Implementing Rules for Pilot Licensing
6.52	REG-R-06	It is recognised that there is no mandatory requirement for VFR pilots to have a GPS set in their aircraft. However, the airspace infringement causal factor analysis carried out within the scope of the Airspace Infringement Initiative indicates that a considerable number of incidents occurred due to use of out-of-date GPS maps or due to other GPS use related issues (e.g. power failure). Therefore aircraft operators and pilots, who intend to use a GPS set in the planning and execution phases of a flight, should be required to operate a GPS system with the correct database only. The suitability of placing appropriate requirements on GPS database providers could be considered in this context. See also 6.2.	

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.53	REG-R-01	The responsible national authority should review in consultation with the concerned airspace user and service provider organisations the dimensions of airspace infringement risk in their particular operational environment and establish local safety measure implementation priorities. This will enable the identification of the most relevant (for the given operational environment) recommended and proposed actions contained in this plan for implementation at national and local level. Risk awareness should be raised by dedicated safety seminars and workshops with the participation of the service providers and all airspace user types. The safety related efforts of GA organisations should be supported. Strengthening the voice and influence of GA organisations and establishments will help proactively shape pilot safety culture by campaigning on different safety issues. Various means and best practices could be used to this effect: publications (safety letters, notices, magazines), dedicated safety evenings at flying clubs, participation at flight safety seminars, dedicated safety web-pages, etc. See also 6.40.	EUROCONTROL Airspace Infringement Initiative Action Plan implementation toolkit (under development) ESSIP objectives SAF 05 and SAF10
6.54	REG-P-01	Updated VFR charts should be available on-line. Frequent changes should be avoided. Sponsorship should be considered to ensure that as a minimum the GA clubs directly affected by airspace changes (located in the vicinity) obtain the updated maps and charts for use by their members. See also 6.17.	
6.55	REG-P-02	The action is designed to support the implementation of an optimised airspace organisation that takes into account, to the extent possible, the requirements of the different airspace user categories, while ensuring the safe use of airspace. Improved efficiency of airspace allocation and management will reduce the probability (hence the risk) of airspace infringements caused by the practice of 'cutting the corners' of controlled and restricted airspaces. It should include a review and optimisation of the number and volume of restricted airspace volumes according to their actual utilisation parameters. The regime of restricted airspaces should be reviewed and tactical airspace management procedures improved, if needed. The review should include all airspace structures within the respective FIRs. It should be carried out in consultation with the concerned military organisations, airspace users and service providers. Given its scope and the amount of efforts required, it is expected that the optimisation of the airspace structure will be performed in incremental steps over a number of years. Priorities may be established, as necessary (For example areas of dense VFR traffic may be reviewed first). See also 6.25 and 6.41.	FUA specification

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.56	REG-P-03	Encouraging private pilots to become members of flying clubs, schools and/or GA associations (for example AOPA, FAI, etc) would support an improved downward flow of aeronautical information (e.g. notification of airspace changes), guidance materials and information supply in general. It would improve availability and accessibility of education and awareness materials and thus contribute to raising pilots' general knowledge and awareness of risk. However, flying schools and clubs may have to accept that this will place additional responsibility on them.	
6.57	REG-P-04	Implementation of the action should reduce the probability of GPS system failure, in particular due to loss of power supply or signal.	Industry GPS manuals
6.58	REG-P-05	A minimum level of pilot navigation and communication skills should be achieved. While the operation and licensing of sailplane/glider pilots is under EASA's remit and action has already been taken (NPA 2008-17), the other mentioned categories (e.g. micro-lights) are operated under national rules because they are Annex II aircraft.	EASA NPA2008-17b on Implementing Rules for Pilot Licensing
6.59	AGY-R-04	The EUROCONTROL Agency should: ● Coordinate and facilitate stakeholder efforts aimed at harmonisation of FIS; ● Collect and disseminate best practices in FIS provision; ● Develop guidance material to support harmonisation of services and the training curriculum for FIC officers; ● Prepare, as necessary, proposed amendments to the ICAO SARPs in consultation with stakeholders. A pan-European FIS manual could be developed along the same lines as the proposed development of a pan-European AFIS manual. See also 6.23 and 6.24.	ANNEX 1 EUROCONTROL Airspace Infringement Initiative EUROCONTROL APDSG Action Plan implementation toolkit (under development)
6.60	AGY-R-07	A toolkit will be developed to support the implementation of the actions designed to improve the navigation and communication skills of pilots, as well as the enhancement and harmonisation of FIS provision.	

Ref	Action ref	Explanatory note	Supporting material, project or working arrangement
6.61	AGY-R-08	Stakeholders' safety improvement efforts should be supported by annual airspace infringement risk analyses and dedicated safety publications, for example safety letters, posters, leaflets, etc. The feasibility and safety benefits of establishing a pan-European mechanism and means for sharing experience and disseminating lessons learnt for GA should be evaluated. Best practices in airspace infringement risk mitigation will be disseminated to stakeholders in ECAC states.	EUROCONTROL Airspace Infringement Initiative

7. ACRONYMS

Acronym or Term	Meaning
ADS-B	Automatic Dependent Surveillance (broadcast)
AGC	Air Ground Communication
AGY	EUROCONTROL Agency
AIC	Aeronautical Information Circular
AIRMET	Information about significant en-route weather phenomena for low level flights
AIS	Aeronautical Information Services
AMC	Acceptable Means of Compliance
AMSL	Above Mean Sea Level
ANS	Air Navigation Service
ANSP	Air Navigation Service Provider
ANT	EUROCONTROL Airspace and Navigation Team
AOPA	Airline Owners and Pilots Association
APDSG	Air Traffic Management Procedure Development Sub-group
APW	Area Proximity Warning
ASP	Air Navigation Service (including FIS) providers
AOM	Airspace Organisation and Management
AST	Annual Summary Template
ATS	Air Traffic Control (services)
ATC	Air Traffic Control
ATIS	Automatic Terminal Information System
ATS	Air Traffic Service
ATZ	Aerodrome Traffic Zone
BN	Briefing Note
CAA	Civil Aviation Administration
CAS	Controlled Airspace
CFIT	Controlled Flight Into Terrain
CIMACT	Civil/Military ATM/Air Defence Coordination Tool
COM	Air Ground Communications
CTR	Control Zone
DF	Direction Finder
EAD	European AIS Database
EASA	European Aviation Safety Agency
EATM	European Air Traffic Management
ECAC	European Civil Aviation Conference
NAV	Navigation
FAI	Fédération Aéronautique Internationale
FCL	Flight Crew Licensing
FIC	Flight Information Centre
FIS	Flight Information Service
FLARM	Flight Alarm
FMS	Flight Management System

Acronym or Term	Meaning
FUA	Flexible Use of Airspace
GA	General Aviation
GAMET	Area forecast for low-level flights
GPS	Global Positioning System (used in the context of GPS receiver)
HUM	Human Factors
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
INF	Information Management
IOAPA	International Council of Airline Owners and Pilots Associations
LARS	Lower Airspace Radar Service
MET	Meteorological
MIL	Military service providers and regulators
MSAW	Minimum Safe Altitude Warning
NDB	Non-directional Beacon
NOTAM	Notice to Airmen
OLDI	On-line Data Interchange
PPL	Private Pilot Licence
RAS	Radar Advisory Service
RIS	Radar Information Service
REG	Regulatory Authorities
RDPS	Radar Data Processing System
R/T	Radiotelephony
SAF	Safety Management (culture and awareness)
SARPS	Standards and Recommended Practices
SES	Single European Sky (legislation)
SID	Standard Instrument Departure Scheme
SISG	Safety Improvement Sub Group
SPIN	EUROCONTROL Safety Nets Planning and Enhancement Sub Group
SRC	EUROCONTROL Safety Regulation Commission
SSR	Secondary Surveillance Radar
STCA	Short Term Conflict Alert
STAR	Standard Arrival Scheme
TCAS	Traffic Collision Avoidance System
TIZ	Traffic Information Zone
TMA	Terminal Control Area
TRN	Training organisations (whether for controllers or pilots)
USE	Airspace users
VOR	VHF Omni-directional Radio-range
VFR	Visual Flight Rules
VPR	Visual Reference Point

Airspace Infringement **Action Plan**

ANNEX 1

This annex contains the ICAO provisions and some best practices relevant to the provision of FIS. It should provide the baseline for the harmonisation of FIS provision in Europe as recommended in actions ASP-R-04, MIL-P-01 and REG-R-02.

1. ICAO SARPs on FIS provision

ANNEX 11 - AIR TRAFFIC SERVICES

2.9 Establishment and designation of the units providing air traffic services

The air traffic services shall be provided by units established and designated as follows:

2.9.1 Flight information centres shall be established to provide flight information service and alerting service within flight information regions, unless the responsibility of providing such services within a flight information region is assigned to an air traffic control unit having adequate facilities for the discharge of such responsibility.

Note.- This does not preclude delegating to other units the function of providing certain elements of the flight information service.

2.9.2 Air traffic control units shall be established to provide air traffic control service, flight information service and alerting service within control areas, control zones and at controlled aerodromes.

CHAPTER 4. FLIGHT INFORMATION SERVICE

4.1 Application

4.1.1 Flight information service shall be provided to all aircraft which are likely to be affected by the information and which are:
a) provided with air traffic control service; or
b) otherwise known to the relevant air traffic services units.

Note.- Flight information service does not relieve the pilot-in-command of an aircraft of any responsibilities and the pilot-in-command has to make the final decision regarding any suggested alteration of flight plan.

4.1.2 Where air traffic services units provide both flight information service and air traffic control service, the provision of air traffic control service shall have precedence over the provision of flight information service whenever the provision of air traffic control service so requires.

Note.- It is recognized that in certain circumstances aircraft on final approach, landing, take-off and climb may require to receive without delay essential information other than that pertaining to the provision of air traffic control service.

4.2 Scope of flight information service

4.2.1 Flight information service shall include the provision of pertinent:
a) SIGMET and AIRMET information;
b) information concerning pre-eruption volcanic activity, volcanic eruptions and volcanic ash clouds;
c) information concerning the release into the atmosphere of radioactive materials or toxic chemicals;
d) information on changes in the serviceability of navigation aids;
e) information on changes in condition of aerodromes and associated facilities, including information on the state of the aerodrome movement areas when they are affected by snow, ice or significant depth of water;
f) information on unmanned free balloons; and of any other information likely to affect safety.

4.2.2 Flight information service provided to flights shall include, in addition to that outlined in 4.2.1, the provision of information concerning:
a) weather conditions reported or forecast at departure, destination and alternate aerodromes;
b) collision hazards, to aircraft operating in airspace Classes C, D, E, F and G;
c) for flight over water areas, in so far as practicable and when requested by a pilot, any available information such as radio call sign, position, true track, speed, etc., of surface vessels in the area.

Note 1.- The information in b), including only known aircraft the presence of which might constitute a collision hazard to the aircraft informed, will sometimes be incomplete and air traffic services cannot assume responsibility for its issuance at all times or for its accuracy.

Note 2.- When there is a need to supplement collision hazard information provided in compliance with b), or in case of temporary disruption of flight information service, traffic information broadcasts by aircraft may be applied in designated airspaces. Guidance on traffic information broadcasts by aircraft and related operating procedures is contained in Attachment C.

4.2.3 Recommendation.- ATS units should transmit, as soon as practicable, special air-reports to other aircraft concerned, to the associat-

ed meteorological office, and to other ATS units concerned. Transmissions to aircraft should be continued for a period to be determined by agreement between the meteorological and air traffic services authorities concerned.

4.2.4 Flight information service provided to VFR flights shall include, in addition to that outlined in 4.2.1, the provision of available information concerning traffic and weather conditions along the route of flight that are likely to make operation under the visual flight rules impracticable.

4.3 Operational flight information service broadcasts

4.3.1 Application

4.3.1.1 The meteorological information and operational information concerning navigation aids and aerodromes included in the flight information service shall, whenever available, be provided in an operationally integrated form.

CHAPTER 5. ALERTING SERVICE

5.1.2 Flight information centres or area control centres shall serve as the central point for collecting all information relevant to a state of emergency of an aircraft operating within the flight information region or control area concerned and for forwarding such information to the appropriate rescue coordination centre.

6.1 Aeronautical mobile service (air-ground communications)

6.1.2 For flight information service

6.1.2.1 Air-ground communication facilities shall enable two-way communications to take place between a unit providing flight information service and appropriately equipped aircraft flying anywhere within the flight information region.

6.1.2.2 **Recommendation.-** Whenever practicable, air ground communication facilities for flight information service should permit direct, rapid, continuous and static-free two-way communications.

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4.2 RESPONSIBILITY FOR THE PROVISION OF FLIGHT INFORMATION SERVICE AND ALERTING SERVICE

Flight information service and alerting service shall be provided as follows:
a) within a flight information region (FIR): by a flight information cen-

tre, unless the responsibility for providing such services is assigned to an air traffic control unit having adequate facilities for the exercise of such responsibilities;
b) within controlled airspace and at controlled aerodromes: by the relevant air traffic control units.

4.3.1 General

The appropriate ATS authority shall designate the area of responsibility for each air traffic control (ATC) unit and, when applicable, for individual control sectors within an ATC unit. Where there is more than one ATC working position within a unit or sector, the duties and responsibilities of the individual working positions shall be defined.

8.11 USE OF ATS SURVEILLANCE SYSTEMS IN THE FLIGHT INFORMATION SERVICE

Note.- The use of an ATS surveillance system in the provision of flight information service does not relieve the pilot-in-command of an aircraft of any responsibilities, including the final decision regarding any suggested alteration of the flight plan.

8.11.1 Functions

The information presented on a situation display may be used to provide identified aircraft with:
a) information regarding any aircraft observed to be on a conflicting path with the identified aircraft and suggestions or advice regarding avoiding action;
b) information on the position of significant weather and, as practicable, advice to the aircraft on how best to circumnavigate any such areas of adverse weather (see 8.6.9.2, Note);
c) information to assist the aircraft in its navigation.

9.1. FLIGHT INFORMATION SERVICE

9.1.1 Recording and transmission of information on the progress of flights

Information on the actual progress of flights, including those of heavy or medium unmanned free balloons, under neither air traffic control service nor air traffic advisory service shall be:
a) recorded by the air traffic services unit serving the FIR within which the aircraft is flying in such a manner that it is available for reference and in case it is requested for search and rescue action;
b) transmitted by the air traffic services unit receiving the information to other air traffic services units concerned, when so required in accordance with Chapter 10, 10.2.2.

9.1.2 Transfer of responsibility for the provision of flight information service

The responsibility for the provision of flight information service to a flight normally passes from the appropriate ATS unit in an FIR to the appropriate ATS unit in the adjacent FIR at the time of crossing the common FIR boundary. However, when coordination is required in accordance with Chapter 10, 10.2, but communication facilities are inadequate, the former ATS unit shall, as far as practicable, continue to provide flight information service to the flight until it has established two-way communication with the appropriate ATS unit in the FIR it is entering.

9.1.3 Transmission of information

9.1.3.1 MEANS OF TRANSMISSION

9.1.3.1.1 Except as provided in 9.1.3.2.1, information shall be disseminated to aircraft by one or more of the following means as determined by the appropriate ATS authority:
a) the preferred method of directed transmission on the initiative of the appropriate ATS unit to an aircraft, ensuring that receipt is acknowledged; or,
b) a general call, unacknowledged transmission to all aircraft concerned; or
c) broadcast; or
d) data link.

Note.- It should be recognised that in certain circumstances, e.g. during the last stages of a final approach, it may be impracticable for aircraft to acknowledge directed transmissions.

9.1.3.1.2 The use of general calls shall be limited to cases where it is necessary to disseminate essential information to several aircraft without delay, e.g. the sudden occurrence of hazards, a change of the runway-in-use, or the failure of a key approach and landing aid.

9.1.3.2 TRANSMISSION OF SPECIAL AIR-REPORTS, SIGMET AND AIRMET INFORMATION

9.1.3.2.1 Appropriate SIGMET and AIRMET information, as well as special air-reports which have not been used for the preparation of a SIGMET, shall be disseminated to aircraft by one or more of the means specified in 9.1.3.1.1 as determined on the basis of regional air navigation agreements. Special air-reports shall be disseminated to aircraft for a period of 60 minutes after their issuance.

9.1.3.2.2 The special air-report, SIGMET and AIRMET information to be passed to aircraft on ground initiative should cover a portion of the route up to one hour's flying time ahead of the aircraft except when another period has been determined on the basis of regional air navigation agreements.

9.1.3.5 TRANSMISSION OF SPECI AND AMENDED TAF

9.1.3.5.1 Special reports in the SPECI code form and amended TAF shall be transmitted on request and supplemented by:
a) directed transmission from the appropriate air traffic services unit of selected special reports and amended TAF for the departure, destination and its alternate aerodromes, as listed in the flight plan; or
b) a general call on appropriate frequencies for the unacknowledged transmission to affected aircraft of selected special reports and amended TAF; or
c) continuous or frequent broadcast or the use of data link to make available current METAR and TAF in areas determined on the basis of regional air navigation agreements where traffic congestion dictates. VOLMET broadcasts and/or D-VOLMET should be used to serve this purpose (see Annex 11, 4.4).

9.1.3.5.2 The passing of amended aerodrome forecasts to aircraft on the initiative of the appropriate air traffic services unit should be limited to that portion of the flight where the aircraft is within a specified time from the aerodrome of destination, such time being established on the basis of regional air navigation agreements.

11.4.3.1.1 MESSAGES CONTAINING TRAFFIC INFORMATION TO AIRCRAFT OPERATING OUTSIDE CONTROLLED AIRSPACE

11.4.3.1.1.1 Due to the factors influencing the nature of the flight information services, and particularly the question of provision of information on possible collision hazards to aircraft operating outside controlled airspace, it is not possible to specify standard texts for these messages.

11.4.3.1.1.2 Where such messages are transmitted they shall, however, contain sufficient data on the direction of flight and the estimated time, level and point at which the aircraft involved in the possible collision hazard will pass, overtake or approach each other. This information shall be given in such a way that the pilot of each aircraft concerned is able to appreciate clearly the nature of the hazard.

11.4.3.1.2 MESSAGES CONTAINING ESSENTIAL TRAFFIC INFORMATION TO IFR FLIGHTS OUTSIDE CONTROLLED AIRSPACE
Whenever such messages are transmitted they shall contain the fol-

lowing text:

a) identification of the aircraft to which the information is transmitted;
b) the words TRAFFIC IS or ADDITIONAL TRAFFIC IS;
c) direction of flight of aircraft concerned;
d) type of aircraft concerned;
e) cruising level of aircraft concerned and ETA for the significant point nearest to where the aircraft will cross levels.

11.4.3.1.3 MESSAGES CONTAINING ESSENTIAL LOCAL TRAFFIC INFORMATION

Whenever such messages are transmitted they shall contain the following text:

a) identification of the aircraft to which the information is transmitted;
b) the words TRAFFIC IS or ADDITIONAL TRAFFIC IS, if necessary;
c) description of the essential local traffic in terms that will facilitate recognition of it by the pilot, e.g. type, speed category and/or colour of aircraft, type of vehicle, number of persons;
d) position of the essential local traffic relative to the aircraft concerned, and direction of movement.

15.4 ASSISTANCE TO VFR FLIGHTS

15.4.1 Strayed VFR flights and VFR flights encountering adverse meteorological conditions

Note.- A strayed aircraft is an aircraft which has deviated significantly from its intended track or which reports that it is lost.

15.4.1.1 A VFR flight reporting that it is uncertain of its position or lost, or encountering adverse meteorological conditions, should be considered to be in a state of emergency and handled as such. The controller shall, under such circumstances, communicate in a clear, concise and calm manner and care shall be taken, at this stage, not to question any fault or negligence that the pilot may have committed in the preparation or conduct of the flight. Depending on the circumstances, the pilot should be requested to provide any of the following information considered pertinent so as to better provide assistance:

a) aircraft flight conditions;
b) position (if known) and level;
c) airspeed and heading since last known position, if pertinent;
d) pilot experience;
e) navigation equipment carried and if any navigation aid signals are being received;
f) SSR Mode and code selected if relevant;
g) departure and destination aerodromes;

h) number of persons on board;
i) endurance.

15.4.1.2 If communications with the aircraft are weak or distorted, it should be suggested that the aircraft climb to a higher level, provided meteorological conditions and other circumstances permit.

15.4.1.3 Navigation assistance to help the pilot determine the aircraft position may be provided by use of radar, direction-finder, navigation aids or sighting by another aircraft. Care must be taken when providing navigation assistance to ensure that the aircraft does not enter cloud.

Note.- The possibility of a VFR flight becoming strayed as a result of encountering adverse meteorological conditions must be recognized.

15.4.1.4 The pilot should be provided with reports and information on suitable aerodromes in the vicinity where visual meteorological conditions exist.

15.4.1.5 If reporting difficulty in maintaining or unable to maintain VMC, the pilot should be informed of the minimum flight altitude of the area where the aircraft is, or is believed to be. If the aircraft is below that level, and the position of the aircraft has been established with a sufficient degree of probability, a track or heading, or a climb, may be suggested to bring the aircraft to a safe level.

15.4.1.6 Assistance to a VFR flight should only be provided using an ATS surveillance system upon the request or concurrence of the pilot. The type of service to be provided should be agreed with the pilot.

15.4.1.7 When providing radar assistance in adverse meteorological conditions, the primary objective should be to bring the aircraft into VMC as soon as possible. Caution must be exercised to prevent the aircraft from entering cloud.

15.4.1.8 Should circumstances be such that IMC cannot be avoided by the pilot, the following guidelines may be followed:

a) other traffic on the ATC frequency not able to provide any assistance may be instructed to change to another frequency to ensure uninterrupted communications with the aircraft; alternatively the aircraft being assisted may be instructed to change to another frequency;
b) ensure, if possible, that any turns by the aircraft are carried out clear of cloud;
c) instructions involving abrupt manoeuvres should be avoided; and
d) instructions or suggestions to reduce speed of the aircraft or to

lower the landing gear, should, if possible, be carried out clear of cloud.

15.5.1 Strayed or unidentified aircraft

Note 1.- The terms "strayed aircraft" and "unidentified aircraft" in this paragraph have the following meanings:
Strayed aircraft. An aircraft which has deviated significantly from its intended track or which reports that it is lost.
Unidentified aircraft. An aircraft which has been observed or reported to be operating in a given area but whose identity has not been established.

Note 2.- An aircraft may be considered, at the same time, as a "strayed aircraft" by one unit and as an "unidentified aircraft" by another unit.

15.5.1.1 As soon as an air traffic services unit becomes aware of a strayed aircraft, it shall take all necessary steps as outlined in 15.5.1.1.1 and 15.5.1.1.2 to assist the aircraft and to safeguard its flight.

Note.- Navigational assistance by an air traffic services unit is particularly important if the unit becomes aware of an aircraft straying, or about to stray, into an area where there is a risk of interception or other hazard to its safety.

15.5.1.1.1 If the aircraft's position is not known, the air traffic services unit shall:
a) attempt to establish two-way communication with the aircraft, unless such communication already exists;
b) use all available means to determine its position;
c) inform other ATS units into whose area the aircraft may have strayed or may stray, taking into account all the factors which may have affected the navigation of the aircraft in the circumstances;
d) inform, in accordance with locally agreed procedures, appropriate military units and provide them with pertinent flight plan and other data concerning the strayed aircraft;
e) request from the units referred to in c) and d) and from other aircraft in flight every assistance in establishing communication with the aircraft and determining its position.

Note.- The requirements in d) and e) apply also to ATS units informed in accordance with c).

15.5.1.1.2 When the aircraft's position is established, the air traffic services unit shall:
a) advise the aircraft of its position and corrective action to be taken; and
b) provide, as necessary, other ATS units and appropriate military units with relevant information concerning the strayed aircraft and any advice given to that aircraft.

15.5.1.2 As soon as an air traffic services unit becomes aware of an unidentified aircraft in its area, it shall endeavour to establish the identity of the aircraft whenever this is necessary for the provision of air traffic services or required by the appropriate military authorities in accordance with locally agreed procedures. To this end, the air traffic services unit shall take such of the following steps as are appropriate in the circumstances:
a) attempt to establish two-way communication with the aircraft;
b) inquire of other air traffic services units within the FIR about the flight and request their assistance in establishing two-way communication with the aircraft;
c) inquire of air traffic services units serving the adjacent FIRs about the flight and request their assistance in establishing two-way communication with the aircraft;
d) attempt to obtain information from other aircraft in the area.

15.5.1.2.1 The air traffic services unit shall, as necessary, inform the appropriate military unit as soon as the identity of the aircraft has been established.

Note.- Requirements for coordination between military authorities and air traffic services are specified in Annex 11.

15.5.1.3 Should the ATS unit consider that a strayed or unidentified aircraft may be the subject of unlawful interference, the appropriate authority designated by the State shall immediately be informed, in accordance with locally agreed procedures.

2. BEST PRACTICES IN FIS PROVISION

The best practices described below were derived from the UK AIP within the scope of the FIS provision survey, carried out at the end of 2007.

The readers should note, that the UK has undertaken a review of the provision of ATC services outside controlled airspace (ATSOCAS), and the services described in UK AIP have been subject to a number of significant refinements in 2009.

LOWER AIRSPACE RADAR SERVICE (LARS)

1. AVAILABILITY

The service is available to all aircraft flying outside controlled airspace up to and including FL 95, within the limits of radar/radio cover. The service is provided within approximately 30 nm of each participating ATS unit. Unless a participating ATS unit is H24, the service will normally be available between 0800 and 1700 during wintertime and between 0700 and 1600 during summertime, except weekends and public holidays.

Some participating units may remain open to serve evening, night or weekend flying. Therefore pilots are recommended to call for the service irrespective of the published hours of ATS. If no reply is received after three consecutive calls, it should be assumed that the service is not available.

Pilots intending to operate above FL 95 may be advised to contact an appropriate ATC unit and request a RAS or RIS.

In case that VHF frequencies at military control units are not continuously monitored (unless in use), civil pilots may ask controllers to arrange a frequency on which to call the appropriate unit.

2. ESTABLISHING A RADAR SERVICE

In order to establish a radar service the pilot and controller must reach an 'accord'. When requesting a radar service the pilot must state the flight rules under which he is operating and whether he requires an RAS or RIS. If the controller is able to offer a service he will attempt to identify the aircraft. When he is satisfied that he has positively identified the aircraft, the controller will confirm the type of service he is about to provide, and the pilot must give a read-back of the service. The identification procedure does not imply that a radar service is

being provided and the pilot must not assume that he is in receipt of an RAS or an RIS until the controller makes a positive statement to that effect. If a controller is unable to provide a service he will inform the pilot.

Should the pilot fail to specify the type of service required, the controller will ask the pilot which service he requires before endeavouring to provide any service.

In order to avoid excessive RTF conversations on ATC frequencies, pilots who intend to request RAS or RIS are to make their initial request on the FIS frequency appropriate to their geographical position. The FIS controller will coordinate with the appropriate radar sector and subsequently inform the pilot whether or not an RAS or RIS can be provided and, if so, on what frequency.

A serviceable transponder will be a pre-requisite for either RAS or RIS service.

3. DESCRIPTION OF SERVICE

The service provided will be a Radar Advisory Service (RAS) or Radar Information Service (RIS).

If for any reason RAS cannot be provided (for example due to controller's workload) the controller will offer a RIS.

Outside regulated airspace any radar service may be limited. If a radar controller considers that he cannot maintain a full radar service he will warn the pilot of the nature of the limitations which may affect the service being provided. Thereafter the pilot is expected to take the stated limitations into account in his general airmanship. In particular, warning of the limitations will be given to the pilot in the following circumstances:
(a) When the aircraft is close to the lateral or vertical limits of solid radar cover;
(b) When the aircraft is close to areas of permanent echoes or weather returns;
(c) When the aircraft is operating in areas of high traffic density;
(d) When the controller considers the performance of his radar suspect;
(e) When the controller is using SSR only.

In areas of high traffic density, controllers may have to limit RAS to the extent that standard separation from all traffic cannot be maintained and advisory avoiding action cannot be given. In these circumstances, pilots will be so advised. However standard separation will be

applied between participating traffic.

Emergency Service. In emergency, pilots will be given all possible assistance.

4. PROCEDURES

Pilots intending to use LARS should note the participating ATS units close to their intended track and comply with the following procedures:

(a) When within approximately 40 nm of a participating ATS Unit, establish two-way RTF communication on the appropriate frequency using the phraseology:

'.....[name of participating ATS unit], this is .....[aircraft call-sign], request Lower Airspace Radar Service';

(b) The controller may be engaged on another frequency; pilots may, therefore, be asked to 'stand-by for controller'. When asked to go ahead, pilots should pass the following information:

- Call-sign and type of aircraft;
- Estimated position;
- Heading;
- Flight level or altitude;
- Intention (next reporting/turning point, destination etc);
- Request for radar service (RAS or RIS);

(c) Pilots should:

- Maintain a listening watch on the allocated RTF frequency;
- Follow advice issued by controllers, or if unable to do so, advise controller of non-compliance;
- Advise the controller when service is no longer required.

Reporting of flight conditions is not required unless requested by controllers.

Aircraft will be identified and pilots so informed before radar service is given.

Aircraft receiving RAS under LARS must be flown in accordance with the flight level allocation rule, except during short term manoeuvres, as advised by the controller for separation against known participating traffic, or avoiding action against non-participating traffic.

Whenever possible, aircraft will be handed over from controller to controller in an area of overlapping radar cover and pilots told to contact the next unit. When this cannot be effected, pilots will be informed of their position and advised which unit to call for further service.

If a pilot wishes to enter regulated airspace, even though he may be in receipt of a LARS beforehand, he remains responsible for obtaining the required clearances before entry. LARS controllers may assist in obtaining clearance, if workload permits, but pilots must be prepared to carry out this task independently.

The provision of LARS is at the discretion of the controllers concerned because they may be fully engaged in their primary tasks. Therefore, occasionally, the service may not be available.

While every effort will be made to ensure safe separation for pilots complying with RAS procedures, since compliance is not compulsory, some aircraft may not be known to controllers. Pilots should therefore keep a careful look out at all times.

5. TERRAIN CLEARANCE

Terrain clearance will be the responsibility of pilots. However, LARS units will set a level or levels below which a RAS is to be refused or terminated.

RADAR ADVISORY SERVICE (RAS)

RAS is an air traffic radar service in which the controller will provide advice necessary to maintain prescribed separation between aircraft participating in the advisory service, and in which he will pass to the pilot the bearing, distance, and, if known, level of conflicting non-participating traffic, together with advice on action necessary to resolve the confliction. Where time does not permit this procedure to be adopted, the controller will pass advice on avoiding action followed by information on the conflicting traffic. Under an RAS, the following conditions apply:

1. The service will only be provided to flights under IFR irrespective of meteorological conditions.
2. Controllers will expect the pilot to accept vectors or level allocations which may require flight in IMC. Pilots not qualified to fly in IMC should accept an RAS only where compliance with ATC advice permits the flight to be continued in VMC.
3. There is no legal requirement for a pilot flying outside controlled airspace to comply with instructions because of the advisory nature of the service. However, a pilot who chooses not to comply with advisory avoiding action must inform the controller. The pilot will then become responsible for initiating any avoiding action that may subsequently prove necessary.
4. The pilot must advise the controller before changing heading or level.
5. The avoiding action instructions which a controller may pass to resolve a conflict with non-participating traffic will, where pos-

sible, be aimed at achieving separation which is not less than 5 nm or 3000 ft, except when specified otherwise by the regulating authority. However, it is recognised that in the event of the sudden appearance of unknown traffic, and when unknown aircraft make unpredictable changes in flight path, it is not always possible to achieve these minima.

6. Information on conflicting traffic will be passed until the confliction is resolved.

RADAR INFORMATION SERVICE (RIS)

RIS is an air traffic radar service in which the controller will inform the pilot of the bearing, distance, and, if known, the level of the conflicting traffic. No avoiding action will be offered. The pilot is wholly responsible for maintaining separation from other aircraft whether or not the controller has passed traffic information. Under an RIS, the following conditions apply:

1. The service may be requested under any flight rules or meteorological conditions.

2. The controller will only update details of conflicting traffic, after the initial warning, at the pilot's request or if the controller considers that the conflicting traffic continues to constitute a definite hazard.

3. The controller may provide radar vectors for the purpose of tactical planning or at the request of the pilot. However, vectors will not be provided to maintain separation from other aircraft, which remains the responsibility of the pilot. There is no requirement for a pilot to accept vectors.

4. The pilot must advise the controller before changing level, level band or route.

5. RIS may be offered when the provision of RAS is impracticable.

6. Requests for an RIS to be changed to an RAS will be accepted subject to the controller's workload; prescribed separation will be applied as soon as practicable. If an RAS cannot be provided the controller will continue to offer an RIS.

7. For manoeuvring flights which involve frequent changes of heading or flight level, RIS may be requested by the pilot or offered by the controller. Information on conflicting traffic will be passed with reference to cardinal points. The pilot must indicate the level band within which he wishes to operate and is responsible for selecting the manoeuvring area, but may request the controller's assistance in finding a suitable location. The controller may suggest re-positioning on his own initiative, but the pilot is not bound to comply.

8. The pilot remains responsible for terrain clearance. ATSUs providing an RIS will set a level or levels below which vectors will not be provided, except when specified otherwise by the regulating authority.

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