MINUTES OF MEETING dated 22 June 2012

Subject: EASA-SISA Workshop

Prepared by: Rombout Wever and Peter van der Geest

Location: EASA

Code-/Ordernumber: ---

Participants:

Clément Audard, EASA E
James Black, EGAST co-chair, ECOGAS & EAC
Arnaud Blanc, BEA
Jan Fridrich, EMF
Peter van der Geest, NLR
Emmanuel Isambert, EASA E
Leandro Jesus, DGAC
Claude Le Tallec, ONERA
Jean Pierre Magny, ANPI
Ralf Menzel, EASA C
Piotr Michalak, CAO-Poland
John Murray, IAA
Helena Piekla, EASA R
Rombout Wever, NLR
beginning only:
Werner Kleine-Beek, EASA E

Distribution:

Participants
Lennaert Speijker (NLR)
Joram Verstraeten (NLR)

On 22 June 2012 a workshop took place in support of the SISA study conducted by NLR. SISA stands for "Scoping improvements to 'See and Avoid' for General Aviation". The purpose of the workshop was to gather the views of the GA community during an open discussion. Three topics have been discussed:

- How to deal with practical limitations of see-and-avoid
- The needs, wishes and concerns for augmented traffic situational awareness
- What do you suggest to include in the NLR-ATSI study?

This report contains in bullet point style the views of the participants regarding these three topics. In addition, for people not able to attend, written contributions were accepted.

<u>Discussion: how to deal with practical limitations of see-and-avoid?</u>

Two opinions where voiced:

1) Equipment is needed, or;
2) It is all about training. Equipment is a bonus.

- Training and education are important. There may be some simple tricks and good practises that can be communicated. Two examples; (1) flying below or offset track with another aircraft, and (2) clean windscreen. Training should be about awareness, vigilance and maybe some "tricks". Retrain the people to look out. If you fly VFR it is all about looking outside. The problem with training/education is: keeping skills in place, initial training may be good, but people's skills degrade. Therefore, maintaining skills is essential. You could reach out to flight schools, and the instructors that educate their members. But there is also a majority of private pilots (individuals) that are more difficult to reach. There is no one solution to improve education and training in see and avoid.

- Pilot to pilot information using RF to communicate position may be helpful, but is also impractical in some countries. In weekends RF is too congested in the UK, it would not work. Training is relatively cheap; it is more about raising awareness about see and avoid. There are little to no costs for extra training.

- The limitations of human eye can only be overcome with equipment to improve the chance to detect traffic. Even very safety conscious and experienced pilots can have a mid-air. There are cases where the pilot just cannot see the traffic. A system is the only solution in that case. Consider human behaviour/limitations: workload, lack of skills etc. Equipment to support the pilot is the only way to overcome this.

- What is the less efficient investment? GA population is diverse and include pilots with little experience. Procedures are already complex for a weekend-pilot. Therefore; procedures/rules are not effective, because they are too complicated for the average pilot.

- There is concern about a mandatory basis for equipment. The GA community does not seem to like the idea of mandatory on-board equipment (because of certification, costs). On the other hand some have the feeling that if you do not require a system, little will happen. It is up to the pilot to decide whether he wants to buy such a system. It becomes a personal risk assessment. Benefits should be shown to pilots, but should be left to decide themselves to buy equipment.

- At some events there are high levels of traffic around airfields that do not cause incidents/accidents. What is successful in high traffic levels at airports where nothing happens? As example of air shows, like Oshkosh, are suggested.

- Equipment is ok, but the drawback is that it can lead to too much time looking at equipment instead of scanning the airspace. Pilots can become dependent on equipment, resulting in over-reliance. This could cause pilot to not look out anymore. A System is more a bonus but it should be stressed that pilots need to look outside.

- Observation: there is a lack of discipline, for example in circuit pattern adherence. There is a need for education.

- Pilot acceptance is a factor in cooperation in airspace.

<u>Discussion: the needs, wishes and concerns for augmented traffic situational awareness</u>

- ADS-B out is mandatory, ADS-B in is not. This may be a drawback for traffic awareness systems.

- A mix of different technological solutions is not favoured. The challenge with on board systems will be the diversity/interoperability: range of aircraft types, portable versus built in, etc. Interoperability is an issue, but this concerns interoperability between GA aircraft, not between GA aircraft and commercial air transport (interoperability in that respect is less important). Maybe a few technological solutions would be practical. There are already some solutions on the market which cannot be ignored, e.g. FLARM. Although it is not certificated, it can be promoted.

- There is actually a need for standards for communication/interoperability. Standards should not prescribe a solution, but should be simple, open and about communication with transponders/systems. It is recommended to create a definition of an open standard.

- There could be a standard for the communication part only, and leave it up to the industry to define a solution. The implementation of raising traffic awareness can be open. On the other hand, the benefit of a standard could be a standardised presentation of traffic and alert (e.g. by voice, aural, visual).

- Costs should be considered in relation to aircraft purchase costs. For example; 1,000 euro may be ok for an owner of a GA fixed wing aircraft, but could be very high for a paraglider.

- Return on investment of equipment should be calculated to help people convince to buy these systems. It could reduce the insurance premiums. It should be recognised that there are different traffic levels; some pilot would feel no need for a traffic alert system. The advantages should be promoted, but a personal risk assessment by the pilot could mean that someone decides not to buy it because that person flies in areas with little traffic.

- There is a "field of tension" between interoperability, mandatory equipment / certification, and costs. The group discusses pros and cons of mandatory equipment/certification. Making equipment mandatory requires a standard, certification, and costs. Pros: interoperability, standardisation. Cons: overreliance on the system, pilots not looking out anymore, while the system may not "see" everything. If systems have to be certified against a certain airworthiness standard, costs of the system may become prohibitive. On the other hand mass production could reduce costs. If FLARM would be taken as a standard (being an already widely proliferated system in GA) considerations would have to be given to the fact that several patents are involved.

<u>Suggestions for the NLR-ATSI study</u>

- UAS are coming, and are a worry for GA; should be regulated.
- The question whether systems (like FLARM) need to be mandated or not is important. IAA is not in favour of mandatory equipment. FLARM should be considered as a bonus. If see and avoid needs to be improved, better training & education should get focus.

- Should give attention to success stories (do not focus on failures of the see and avoid system, but on the reasons why it often goes well)
- Attention to pilot skills: many GA pilots are rather unskilled/inexperienced and therefore may be more often in see and avoid incidents/accidents (JB is not sure whether this can be substantiated by data). Bottom line: more attention for human factor aspects.
- If new equipment is considered, first a risk assessment has to be performed whether the system really reduces risk, or even may introduce new risks (such as overconfidence). More research required into new equipment.

- In the last years the number of accidents do not show any improvement in France. Key elements of see and avoid are not easily improved.
- Mandating equipment that improves see and avoid (such as FLARM) is a wise decision
- If mandating equipment is no option, then it should be ensured that the equipment is efficient. Cost/benefit must be clear.
- Role of EASA could be to promote a system, and define a common specification, to at least ensure inter-operability

- If a system is not mandated, it probably will not work.
- The only solution for a non-mandatory system is to make it very simple/cheap and efficient, such that it will be introduced on a large scale on a voluntary basis.
- The problem remains with equipping paragliders and Micro-lights; even cheap equipment may not find application there.
- Some countries (with low traffic density) do not see GA collision as a problem, because not many accidents occur. This may render it more difficult to get consensus within Europe concerning mandating equipment.

- Price per unit is very important in GA. It should be investigated how mass production (say 10,000 units) may affect the price.
- Interoperability is a very important issue. Should be dealt with at a sub-system level.

- In favour of non-mandatory equipment. Mode-S was mandated for GA and not a success; mandating equipment is not always the solution.
- It is questionable if a new standard will help.
- There is good experience with voluntary initiatives; for instance from flying clubs requiring FLARM to be used by members. It will not cover all, but will provide some improvement.

- Strongly against mandatory equipment
- For introduction of new equipment risk based approach should be followed. Example: for low density areas risk is low and therefore no equipment is necessary.
- A standard should be drafted for (voluntary) equipment to ensure interoperability.
- UAV problem must be solved (is becoming a threat to GA).

- There is need for better understanding of the problem (accident/incident analysis).
- A survey under GA pilots should be conducted, in particular concerning the price they are willing to pay for on-board equipment.
- The problem with UAVs should be solved based on equivalent safety (thus should be as safe as any other GA aircraft).
- In France FLARM has been a big improvement. It shows the strength of such systems even if they not solve everything.
- Using mode-S for FLARM is much too expensive.
- Voluntary systems can only work if they are cheap but efficient. Maybe even consider FLARM as a cell phone app.

Conclusions for the NLR-ATSI study:

From the discussions and the positions expressed by the participants, the following points seem to be a reasonable level of consensus:

- The key element of ‘See and Avoid’ is to look outside for potential traffic. Training and education are the best instruments on this aspect.

- This could however be complemented by an on-board equipment. Several systems are already widely used and provide help to the pilot to identify other traffic.

- The system shall be light, cheap and cooperative (non-cooperative will be too expensive).

- No mandatory carriage requirement has to be imposed. EASA’s role is primarily seen as to promote systems and provide encouragement for implementation. EASA must find the right incentives for initiatives. A standard developed by the industry need to be encouraged. This standard will ensure interoperability between systems.