Scoping improvements to 'See and avoid' principle for General Aviation

ATOS 2012 – ASDA, TU Delft

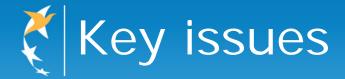
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Background

- 'See-and-avoid' (S&A): combination of seeing conflicting air traffic in time, and avoiding the traffic in an appropriate manner (ICAO Annex 2)
- 2 main contributing factors reducing the effectiveness of 'see-and-avoid':
 - Conflicting aircraft not always visible from the cockpit, and
 - 2) Workload in the cockpit and traffic density may cause a failure of the pilot to see visible conflicting aircraft.





- In 2006-2011 there were 82 mid-air collisions in Europe involving GA aircraft, causing 83 fatalities and 16 serious injuries
- Key safety issues: conflicting aircraft not visible, aircraft not in airspace portion that is scanned by pilot, pilot is not scanning airspace, pilot does not use RF to increase situational awareness
- Causal factors: high traffic density (hence during day-light in excellent weather conditions), flight near aerodromes, manoeuvring

How to deal with the limitations of S&A?

- ➤ Training: "Pilots can be taught how to search for aircraft"
- ➤ Education: "A safety leaflet from time to time is enough to keep pilots aware"
- Rules and procedures: "Rules on how to scan airspace should be drafted"
- ➤ Equipment: "S&A by the pilot is not enough, the pilot should be aided by systems"

The needs for augmented traffic situational awareness

- ➤ Performance: range, field of regard, scan rate, refresh rate, reliability, interoperability, IMC...
- ➤ Size, weight, power, costs, RF frequency
- Execution: integrated, stand-alone, display, sounds...
- ➤ What are the requirements: e.g. what can it cost? what performance is needed? must it be integrated in existing systems?
- What are the most important requirements?
- ➤ Is overconfidence a hazard when using these systems?

Objectives EASA-NLR project

- To survey/analyze options for provision of an augmented traffic situational and collision-risk awareness for VFR Pilots in light of limitations of the 'see-and-avoid' principle
- 2. To survey on-going initiatives undertaken to deploy/operate augmented enhancement means of pilots' visual observation
- To identify required actions to foster harmonization considering viewpoints of different stakeholders involved
- 4. To identify a set recommendations for stakeholder actions considering different GA stakeholder roles/responsibilities

More information on Safety Issues for General aviation:

http://easa.europa.eu/essi/egast

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