

## Letter to IGC Delegates on Agenda item 9.3 of IGC Plenary 2008

Dear Mr President, dear Delegates

The Italian Gliding Federation FIVV has [proposed](#) a declaration of interest on the creation of an open and stable standard in air-to-air data communications, and asks to mandate an FAI/IGC committee with the development and promotion of such a standard.

The proposal is related to the widespread adoption of Flarm-compatible devices. Currently over 10'000 devices manufactured by [Flarm](#), [LX Navigation](#), [RF Developments](#), [Ediatec](#), [Triadis](#) and [Artronic](#) share the same core module, ensuring full compatibility by design. Devices are available since 2004 and have been credited on many occasions with avoiding dangerous situations and raising situation awareness. Flarm is increasingly used outside sports aviation, e.g. entire fleets of commercial helicopters and military training aircraft have been equipped.

As pilots, inventors and owners of Flarm we feel obliged to comment the proposal, moreover since you recognized and honoured our work with the *OSTIV prize* (2006) and with the *FAI Prince Alvaro de Orleans-Borbon Fund prize* (2007). Many of you are users of our technology and have been in contact with us to discuss the product and improvements, also on matters of future standardisation, technological convergence or the IGC flight recorder approval for Flarm.

Initiating an analysis with one of the possible outcomes rather than first taking a prudent look at the requirements, constraints, consequences and alternatives is inefficient and will likely result in costly reconsideration later on. This topic is far from trivial and cannot be reduced to a specification document. We therefore suggest to first have a panel of experts analyze the current situation and then issue recommendations.

We have, upon FIVV's request, provided a comprehensive reasoning on this subject ([www.flarm.com/product/Compatibility\\_Considerations\\_1\\_1.pdf](http://www.flarm.com/product/Compatibility_Considerations_1_1.pdf)). Since it was published both by FIVV and Flarm in autumn 2007, we have received little dissenting feedback, yet overwhelming support. We ask you to consider:

- The compatibility framework applied today is very lean and highly efficient in both technology and governance. Replacing it with an open standard is an entirely different approach, resulting in increase of governance, complexity, testing and cost but with unknown overall benefit. By what process can inter-system compatibility and message-integrity be ensured and governed. Who shall carry the additional costs?
- Radio transmission systems using license-free frequencies and built from off-the-shelf components easily allow any skilled engineer to legally send any data. If Flarm was based on published radio protocol specifications, what prevents an aviation-opponent from legally broadcasting phantom traffic to aircraft passing over his house? How would one deal with privacy-protection in competitions?
- Why did Flarm spread so fast? Wouldn't an FAI/IGC-standard just ruin the key advantages of today's solution? Could it result in duplication of existing standards or standardisation processes? What are the impacts of certification on cost? Could an open standard result in the lowest common denominator of possible technology, resulting in inferior performance, e.g. lots of nuisance warnings as too little data is exchanged and missing warnings due to suboptimal bandwidth-usage?
- Is the situation comparable with when FAI/IGC started to standardise flight recorders for its competitions? Can cooperative safety devices like Flarm be governed as simply as standalone systems like flight recorders documenting sportive action? Shall FAI/IGC's govern areas beyond gliding and sports aviation? What is the key motivation for change? How will the market react, considering today's huge base of installed devices with full horizontal and vertical compatibility from a variety of manufacturers? What about IP-rights, sunk cost, investments, commitments and contracts between pilots, manufacturers and developers?
- A series of trends are changing the world: mandatory usage of Mode S, developments in and around ADS-B and 'see and avoid' increasingly complemented by 'detect and avoid' (e.g. by affordable non-certified mid-range ADS-B, UAT or transponder receivers integrated in existing products). Is Flarm's technology mature enough to freeze at the current status, or is there benefit from additional innovation cycles? How to position a new standard against existing open and stable standards such as [Mode S](#), [ADS-B](#) and [UAT](#) which are becoming mandatory and deliver partially comparable functionality?

**We therefore suggest to all delegates at the IGC Plenary 2008 to vote for the following *alternative* proposal:**

IGC mandates the [FAI Technical Commission on Navigation and Airspace](#) with an analysis on air-to-air data communication. The mandate contains: i) define and prioritise the balanced requirements and constraints from all sports aviation, ii) evaluate available technologies and frameworks against the requirements and in the light of current developments, iii) derive possible strategies and list the pros, cons and consequences of each, and iv) recommend to IGC a strategy forward.

Please feel free to contact us at [info@flarm.com](mailto:info@flarm.com) if you wish to discuss this topic.

Sincerely Yours

Zurich, Switzerland, February 22<sup>nd</sup>, 2008

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Flarm is an affordable, compact and efficient cooperative traffic and collision avoidance system, based on an air-to-air radio broadcast of a predicted flight path, derived from GPS and barometric data, and efficient danger assessment algorithms to ensure warnings are highly selective. Typical ranges, heavily dependent on installation, are around 3 to 5 km when no amplifiers are installed. A wide series of products interface with Flarm-units to display traffic, such as PDA-based moving map applications; for this type of application, the serial data communication protocol is [publicly available](#). Flarm also includes a database of fixed obstacles which is updated periodically, as well as flight-recording functionality. The digital data exchanged among Flarm-compatible units over a license-free low-power air-to-air radio channel are based on a proprietary and non-public data protocol that is updated periodically in a controlled and announced procedure to incorporate improvements and additional applications. The data exchanged is not limited to traffic and collision avoidance, but also on a series of additional applications currently deployed. Software and frequent obstacle data updates (one reason why Flarm users are experienced with updates) have always been [available for free](#). Flarm is the product of a private initiative, and is based on a series of patents and exclusive patent licenses in many countries.