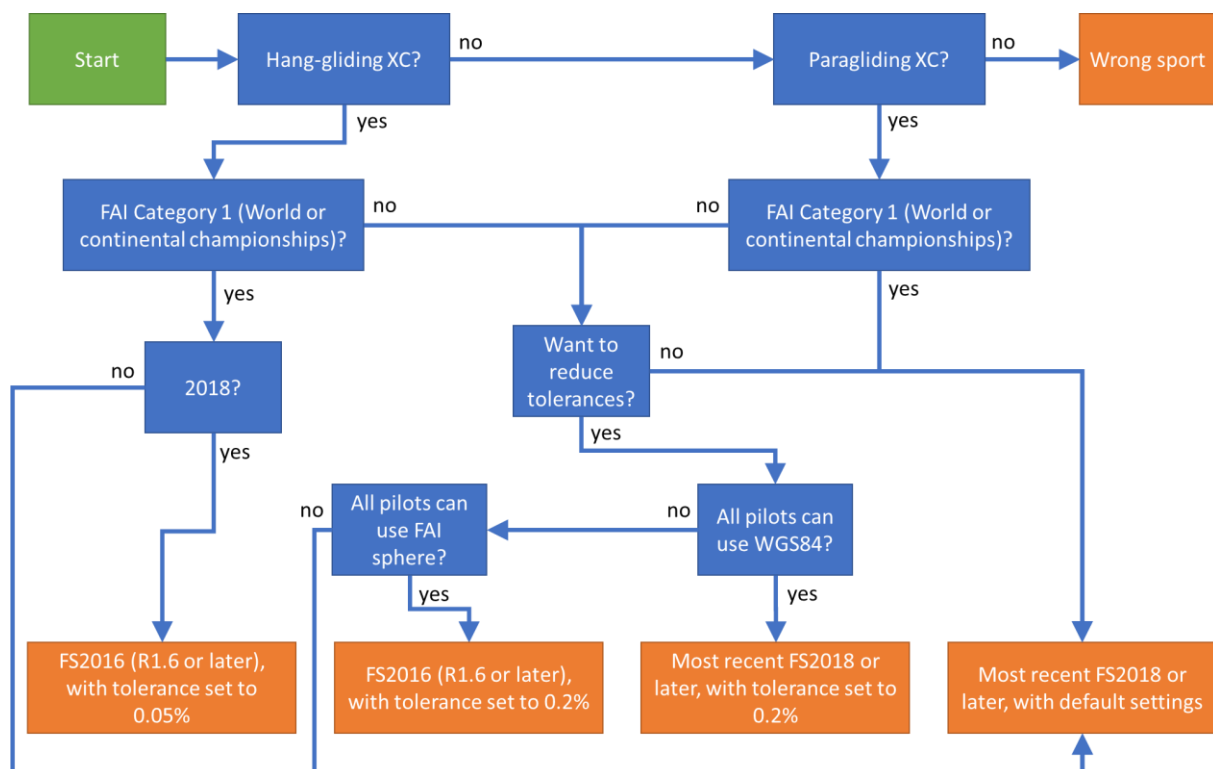


New FS releases, recommendations to competition organizers and score keepers

On June 17, 2018, Volirium, CIVL's software development and maintenance partner, released two new versions of FS:

- 1. FS2016 R1.6:** Compared to the last published version (FS2016 R1.3), this fixes a bug in stopped tasks, and adds a 5-meter minimum to the turnpoint radius tolerance. The latter follows the 2018 CIVL Plenary decision to reduce the tolerance in FAI Category 1 events, with a minimum of 5 meters. Distance calculations in this version are done on the FAI sphere. You find detailed information on all changes and a download link here: <http://fs.fai.org/trac/wiki/FS2016R1.7>
- 2. FS2018 R1.0:** In this version, distance calculations are done on the WGS84 ellipsoid. The turnpoint tolerance is automatically reduced for FAI Category 1 events. You find detailed information on all changes and a download link here: <http://fs.fai.org/trac/wiki/FS2018R1.1>

How to choose the correct FS version



Important information for competition organizers and score keepers

To reduce turnpoint radius tolerances, and force again all pilots in a competition to fly the same distance, the 2018 CIVL Plenary decided the following:

1. In FAI Category 1 events (world- and continental championships), only one earth model will be used for evaluation:
 - a. FAI sphere for hang-gliding (2018)
 - b. WGS84 ellipsoid for paragliding, and from 2019 for hang-gliding as well
2. The turnpoint radius tolerance is reduced from 0.5% to 0.05%, with a minimum of 5 meter

Important: This rule applies exclusively to FAI Category 1 events, where pilots can be expected to fly with equipment that complies with this rule.

For FAI Category 2 events, and all unsanctioned events, CIVL recommends to

1. Transition to WGS84 where possible (using FS2018)
2. Continue using a tolerance of 0.5%

This allows pilots flying with various that measure distance exclusively on the FAI sphere (as was the rule until April 30, 2018) to still compete, and be confident that turnpoints reached on their instrument will be validated by the scoring software as well. FS2018 will automatically use these settings for Category 2 and unsanctioned events.

Competition organizers who want to reduce the tolerance below 0.5% can do so (see below for instructions). But before doing this, they must ensure that all pilots in their competition use an instrument that is capable of measuring distances with the one earth model they that will be used (FAI sphere or WGS84 ellipsoid), and have set up their instrument accordingly. If this cannot be assured, CIVL strongly advises to continue using the default tolerance settings of 0.5%.

How to change the tolerance in FS

FS2016

In the main menu, under “Tools” – “Options”: Change the value for “Turnpoint radius error margin”, confirm with “OK”. To apply this to existing tasks, go through all tasks, set all competitors to “NYP”, check all tracklogs, then score the task.

FS2018

- **For all future tasks in a competition:**
 1. In the main menu, choose “Views” – “Competition Details”
 2. Click on the Scoring Formula button, select GAP2018 or newer
 3. In the competition parameter window, click on the “Advanced settings” button

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4. Change the value for “Turnpoint radius tolerance”
 5. Confirm with “OK” on the advanced settings and the competition parameter window, and finally on the competition details window
- **For all existing tasks in a competition:**
 1. In the main menu, choose “Views” – “Tasks”
 2. In the task list, select each existing task, then select “Tasks” – “Edit task” from the menu
 3. Click on the Scoring Formula button, select GAP2018 or newer.
 4. In the scoring formula parameter window, click on the “Advanced settings” button
 5. In the advanced settings window, change the value for “Turnpoint radius tolerance”
 6. Confirm with “OK” on the advanced settings and the competition parameter window, and finally on the task editor window
 7. Set all competitors to “NYP” if FS does not do so automatically, check all tracklogs, then score the task

Why do we even need a tolerance?

Calculating the distance between two points, given by their coordinates, is complicated when assuming that the coordinates represent points on an ellipsoid. There exist several different ways to do this calculation, some of which are extremely accurate, but require the high computing power of a PC. Others are less accurate, but better suited to handheld devices such as our flight instruments. To compensate for the slight differences between those different distance calculation methods, we apply a tolerance. This way, if your vario tells you that you just barely crossed into a cylinder, but the score keeper's PC, with its higher computing power and more accurate calculation method, finds that in fact you did not cross into the cylinder by a few centimetres, you still get that turnpoint.

A word of caution


Because of the different distance calculation methods used in FS and in our instruments, the 0.05% tolerance set by the CIVL Plenary may be too small. To date we do not know whether the different instruments out there calculate distance on the WGS84 ellipsoid with sufficient precision to work with such a small tolerance. The Paragliding World Cup, for example, reduced the tolerance in 2018 from 0.5% to 0.2%. For this reason, we currently recommend that FAI Category 2 and unsanctioned competitions reduce the tolerance - if at all, see above - at most to 0.2% as well. Once we gain more experience with single earth model evaluation, we may be able to recommend lower settings.

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In FAI Category 1 events, we will monitor the situation closely, and if necessary adjust the tolerance as is then deemed appropriate.

Support and further information

For support and further information, contact Volirium at support@volirium.com.

FS development, maintenance and support by  volirium