PROPOSAL TO IGC PLENARY 2016
Year 2

Proposed by Netherlands

Affects: Annex A scoring formula

Proposal
Following the acceptance, in principal, of the philosophy to devalue competition days in which few pilots finish the Task, we offer the following implementation in this Year 2 Proposal.

Define the "completion ratio" as the number of speed finishers divided by the number pilots who attempted the task. Completion ratio (CR) = n2/n1

Define a new Day Factor F_{CR}

F_{CR} = the lesser of 1 and 1.2 CR + 0.6

Apply F_{CR} in the same manner (and in addition to) the current Day Factor, F.

Discussion
This is a proposal to devalue Distance days as a function of the completion ratio. A "Distance Day" is a day in which less than one third of the pilots who attempt the task get speed points.

The day is devalued by a factor that ranges from 60% (no finishers) to 100% (i.e. no devaluation if there are more than 1/3 finishers.

On a day in which there are no finishers, the winner would receive, at most. 600 points, instead of the 1000 points awarded in the current rules.

Reasons to support the Proposal
Distance days occur either because the Task is grossly overcalled, or because the soaring day ends unexpectedly due to a change in weather.
The pilots who happen to be highest when the soaring day ends will have the best performances, and the ones with the best glide ratios will be rewarded for a reason other than soaring skill. With the current scoring the difference in points on Distance days is too much in relation with the normal competition days. One Distance day can devaluate the results of all the other competition days which is not fair.

A Distance Day is a day which has failed, at least partially. The contribution to the overall results of a Distance Day should be reduced and must be in balance with the other competition days.

Equations for scoring of Racing tasks

Rearranged and visualized

Reno Filla
Eskilstuna FK, Sweden

created: 2016-01-24
last updated: ____-__-__
last cosmetic update: ____-__-__

According to Sporting Code 3 Annex A: http://www.fai.org/downloads/igc/SC3A_2015
(times T in hours, distances D in km, speeds V in km/h)

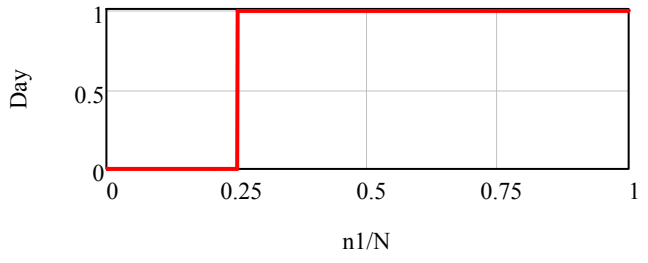
Competitor's Score for the Day

$$S = Day \cdot F \cdot F_{CR} \cdot (P_v + P_d)$$

Competion Day (binary switch)

$$Day = \begin{cases} 1 & \text{if } \frac{n_1}{N} > 0.25 \\ 0 & \text{otherwise} \end{cases}$$

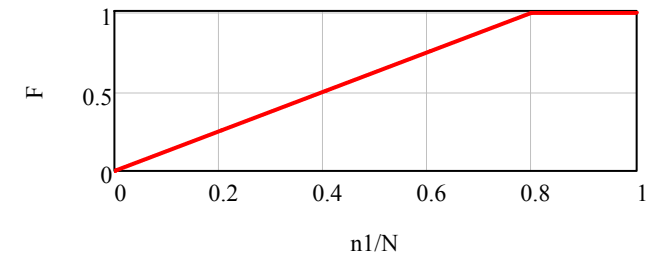
Competition day if more than 1/4 of the pilots fly at least D_m = 100km



Day Factor

$$F = \min\left(1, 1.25 \cdot \frac{n_1}{N}\right)$$

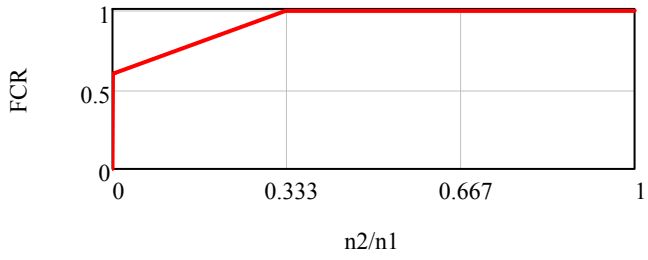
No devaluation by the day factor when at least 4/5=80% of the pilots fly at least D_m



Completion Ratio devaluation
(proposal 8.1.4 at Plenary 2016)

$$F_{CR} = \min\left(1, 1.2 \cdot \frac{n_2}{n_1} + 0.6\right)$$

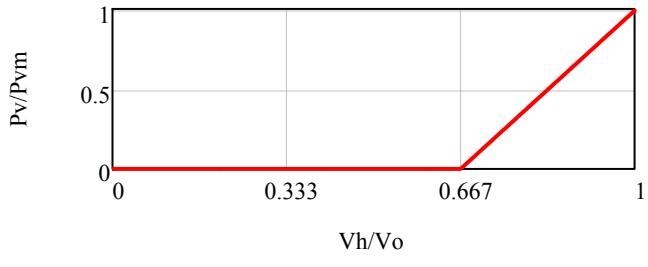
No devaluation by the proposed completion ratio when at least 1/3 of the pilots that managed a distance of at least D_m also finish the task with more than 2/3 of the highest task speed this day.



Individual speed points

$$P_v = P_{vm} \cdot \max\left(0, 3 \cdot \frac{V_h}{V_o} - 2\right)$$

Speed points only for pilots with a task speed of more than 2/3 of V_o = highest finisher's Handicapped Speed of the Day (non-finishers have V_h = 0 thus no speed points anyway).



Individual distance points

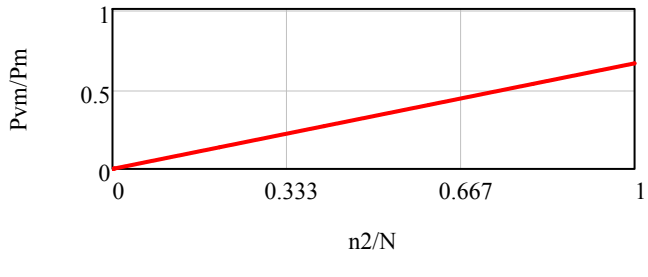
$$P_d = P_{dm} \cdot \frac{D_h}{D_o}$$

Distance points in proportion to D_o = Highest Handicapped Distance of the Day.

Maximum available Speed Points for the Day

$$P_{vm} = \frac{2}{3} P_m \cdot \frac{n_2}{N}$$

Max speed points for the day are up to 2/3 of P_m = Maximum available Score for the Day (before the factors are applied), in proportion to % of pilots finishing with a task speed of more than 2/3 of the highest finisher's Handicapped Speed of the Day.



Maximum available Distance Points for the Day

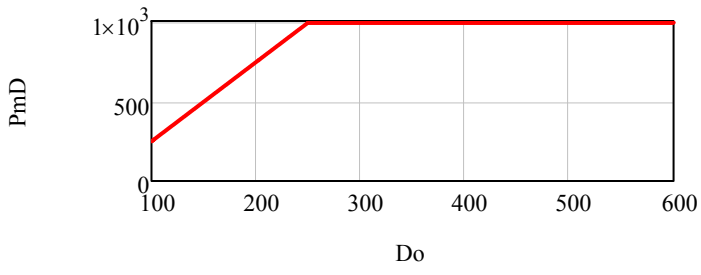
$$P_{dm} = P_m - P_{vm}$$

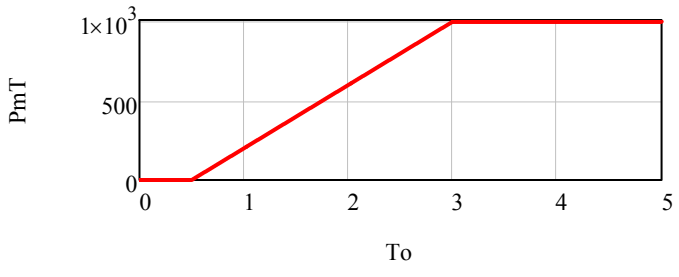
Max distance points for the day are the amount of the day's max available score that has not been allocated as speed points.

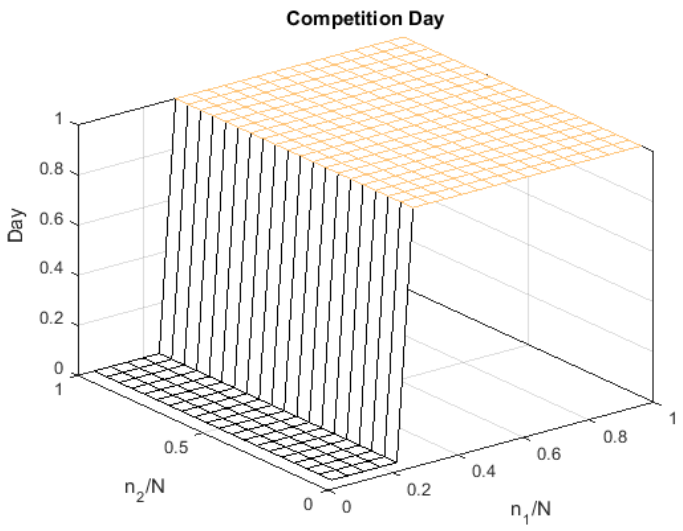
Maximum available Score for the Day
(before the factors are applied)

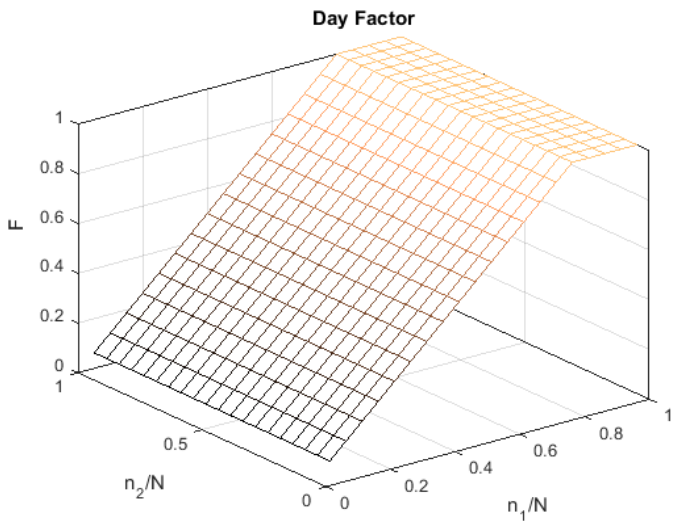
$$P_m = \min(1000, 5 \cdot D_o - 250, 400 \cdot T_o - 200)$$

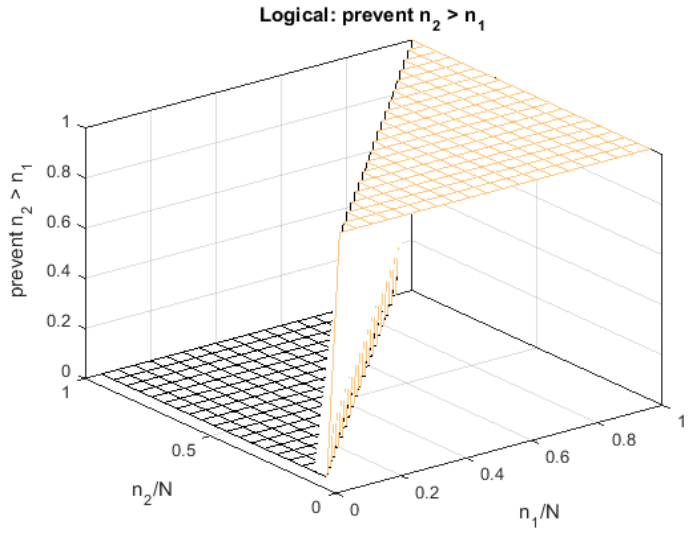
Maximum day points of 1000 only if at least one pilot has flown at least 250km and the winner's time is at least 3h (T_o = 0 if there is no finisher).

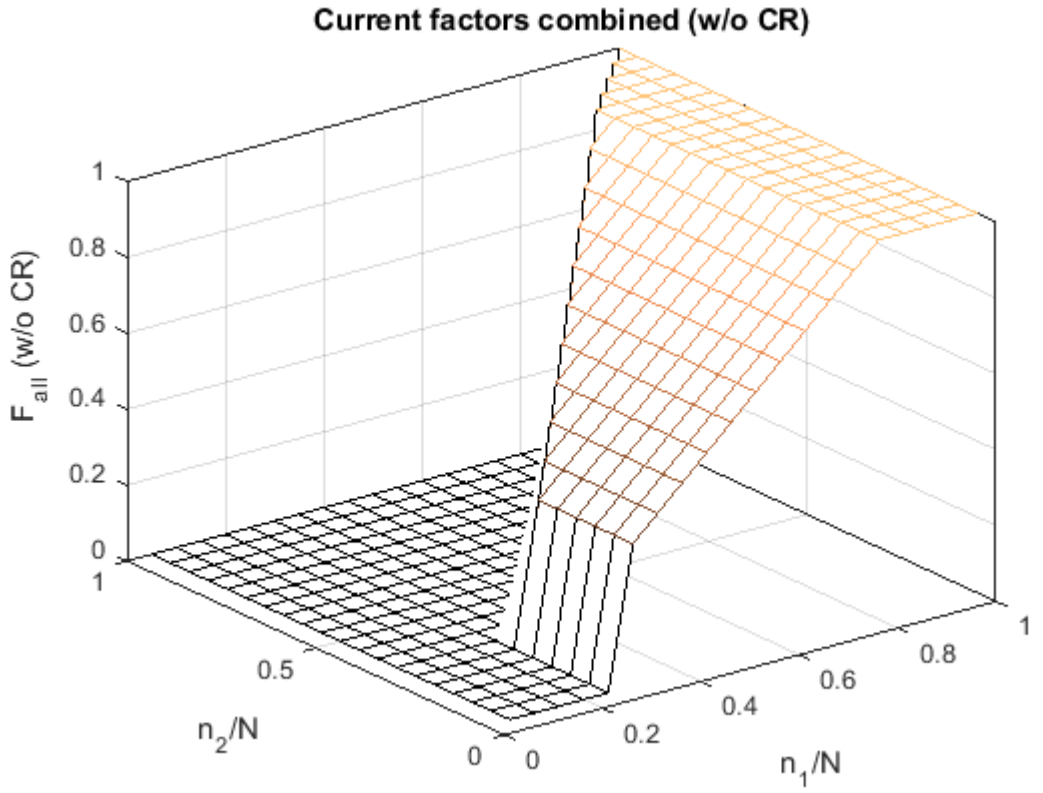


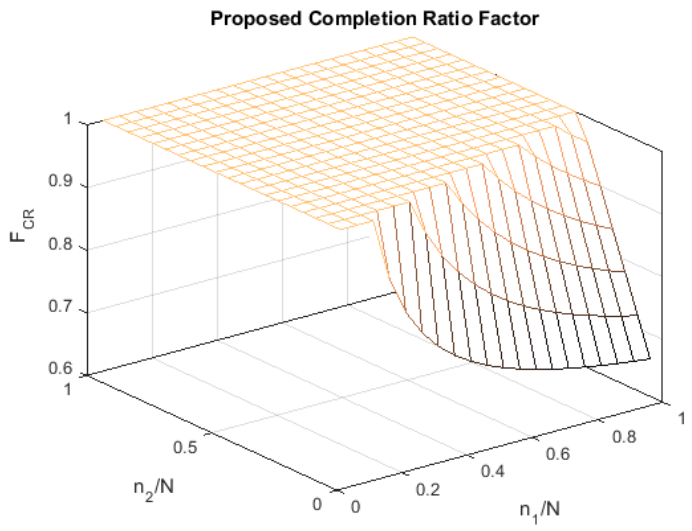


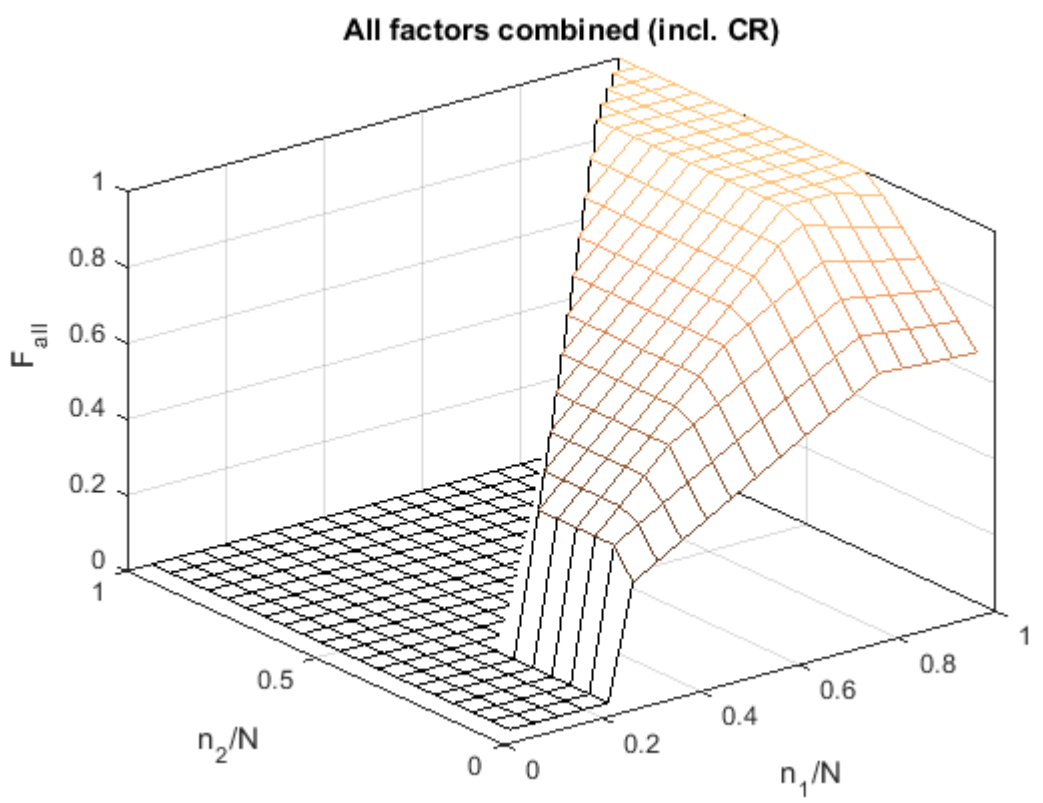

Competition Day
Day
n_2/N
n_1/N


Day Factor
F
n_2/N
n_1/N


Logical: prevent $n_2 > n_1$
prevent $n_2 > n_1$
n_2/N
n_1/N


Current factors combined (w/o CR)
F_{all} (w/o CR)
n_2/N
n_1/N


Proposed Completion Ratio Factor
F_{CR}
n_2/N
n_1/N


All factors combined (incl. CR)
F_{all}
n_2/N
n_1/N

(times T in hours, distances D in km, speeds V in km/h)

Competitor's Score for the Day $S = Day \cdot F \cdot F_{CR} \cdot (P_v + P_d)$

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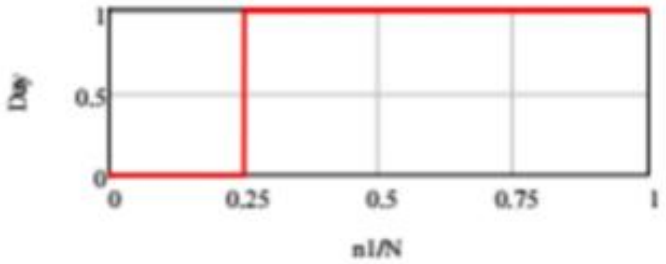

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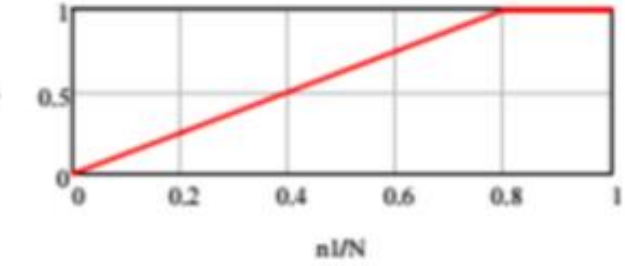

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