Implement the management number into CATS-paw

To reduce the error probability of a variable A (for instance workload), we found *n* polices in the open literature to manage its error probability. These policies are optional for policy makers and not necessarily required by law, even if they are open to interpretation differences.

- From the results of paired comparison, we have generated a different importance weighting factor w_i for each different policy *i*,. The higher w_i, the higher the impact of the policy on reducing error probabilities if the policy is installed and effective, or increasing error probabilities the policy is not installed or poorly maintained.
- Starting from the mean= μ represents the world average of workload. We asked the experts how much lower the mean is when all the policies are installed and effective. This is the lower bound *L*. And vice versa for the higher bound U: the value to which the mean shifts if none of policies are installed and effective. The interval between the lower and upper bound is the range in which the management policies can affect the workload. Actually, this interval is split into two, a lower interval (between the mean and L) and the higher interval (between the mean and U). T
- The lower range (between the mean, and the lower bound L) is divided into *n* parts: namely the number of policies that influence the mean. The relative importance of these policies (in terms of influencing the mean value) is weighted by the factor $w_i/2$.
- The higher range (between the mean, and the upper bound U) is also divided into *n* parts: namely the number of policies that influence the mean. The relative importance of these policies (in terms of influencing the mean value) is weighted by the factor $w_i/2$.
- Note that we halved the weighting factor to represent that the management can pose a policy that works well and reduces the mean by 50% of the weighting factor. If the management does not provide that policy it elevates the mean by 50% of the weighting factor.
- The actual value of the influence parameter becomes: $1+w_i/2*C_L$ for an absent or non-functional policy, and $1-w_i/2*C_U$ for a present and well functioning policy. The factors C_L and C_U are constants that translate the dimensionless factor w_i to the "real" width of the intervals for the lower and upper ranges, respectively (remember they are different). The values of C_L and C_U are calculated by fitting in excel but an analytical expression can be provided. These are the values that go into the cats-paws program.
- Because the ranges of the intervals from the mean to L and mean to U are unequal, the weighting factors differ.
- For the workload, the weighting factors are given in the table below

	Wi	0.5 Wi
inherent design	0,0482	0,0241
Maintenance	0,6592	0,3296
crew action	0,0358	0,0179
external factor	0,2568	0,1284

The actual range is given in the table below.

mean	2910
Upper	4475
Lower	2025

The multipliers that go into cats are the ones in the table below.

Policy	Policy name	multiplier -	multiplier+
1	inherent design	1,02182646	0,985913
2	maintenance	1,29850628	0,807339
3	crew action	1,01621135	0,989537
4	external factor	1,11628703	0,924946

$C_{L=}$ 0,58
C_U =0,91

- If we apply all the polices from 1 to 4, in principle the mean reaches the lower bound = 2025
- If we do not apply the policies correctly, in principle the mean reaches the higher bound = 4475
- The same strategy is followed for the other two: fatigue and weather