Fuzzy integrals - what they are?

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After a short overview of fuzzy integrals (including historical remarks), we propose an axiomatic framework for functionals deserving the name "fuzzy integral".

A special subclass called regular fuzzy integrals (containing, among others, Choquet and Sugeno integrals as distinguished cases) will be also introduced.

Extremal fuzzy integrals (regular fuzzy integrals) and copula-based fuzzy integrals will be discussed in detail.

Finally, we present recent developments and streamings of the fuzzy integral theory.