

## VISION STATEMENT

### on development of the International Rough Set Society and the field

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After almost thirty years, rough set theory is approaching its maturity. Rough set theory has two facets: one logical and philosophical, and another practical. The development of the field has been related to the development of these two facets. In fact, many important developments in rough set theory are related to logical, algebraic and topological approaches. On the other side, many successful applications of rough set theory have been experimented in many fields, ranging from medicine to environmental management, from finance to marketing. However, despite the double nature of the rough set approach, we have to admit that there is a certain gap between theoretical research from one side, and the application on the other side. There is a tendency of researchers more interested in applications to consider the theory of rough sets as too esoteric. Similarly, there is also a tendency of researchers more interested in theory to consider the applications as too trivial. These tendencies deteriorate both the theoretical research and the applied research. Indeed, what is the usefulness of a theory that does not give any insight into the real life applications? And on the other hand, how one can imagine to make a good application without a well founded theory? Therefore, rough set theory needs that its two facets, the logical and the practical, start to speak to each other, permitting to the theory to give a solid background to the applications, and to the applications to avoid ad hoc solutions. In fact, the main characteristic of rough set theory is a property that is basic both in theoretical developments and in applications: simplicity. A good theory has to be elegantly simple, as well as a good application needs an approach as simple as possible. Putting together theory and applications has to be one of main aims in any future conference dedicated to rough set theory, like RSKD, RSSC, RSFDGrC, RSEISP, RSGrC, RSCTC, RSKT. Some special sessions in this conferences devoted to the relationships between the logical and the practical aspects of rough set theory could be quite useful. Also any initiative having didactic scopes or oriented to promote rough set has to emphasize this double nature and the need of coordination of these two aspects of rough sets. A great contribution in this direction could be made by a summer school addressed to new generations of researches and practitioners in the field of rough set. In the perspective of enforcing the dialogue between theory and practice the LNCS-based Transactions on Rough Sets (TRS) can play a strategic role: not only special issues on the subject would be welcome, but, more in general, all the authors should be encouraged to take into account this concern in their contributions. Even more, all researchers belonging to rough set community should consider logical and practical aspects of rough sets in any article, especially that one submitted to major professional journals of other fields, like artificial intelligence, soft and granular computing, operational research, computational intelligence, knowledge discovery, data mining, machine learning. Starting from a reconciliation of theory and applications, rough set theory has to dialogue with other complementary theories like fuzzy sets, statistics, Bayesian reasoning, neural networks, formal concept analysis, evolutionary algorithms, logical analysis of data. With this aim, the rough set community has to participate in big international conferences, such as IEEE, EURO, IPMU, AAAI, IFSA, ECML, ICML, PKDD, INFORMS, where the most recent advances of the above complementary methodologies should be presented. It is also important to continue and to enforce the tradition to invite experts of other complementary disciplines at rough set conferences.

This effort of combining theoretical and practical aspects of rough sets should be adopted by the rough set community and for this reason it has to be coordinated by the **International Rough Set Society (IRSS)**. The IRSS should fix in discussion priority issues and formulate its main goals to be achieved by multiform activities.

If this challenging effort of constructing a new bridge between theoretical and practical aspects of rough sets is successful, we can expect a better theory supporting a better practice, confirming the promises that rough sets gave already at their conception, and renewing the interest of others in this seminal paradigm.