

COMPILATION AND RECOVERY OF TECHNICAL-SCIENTIFIC INFORMATION AND AN AGILE DEEP-DIVE INTO KNOWLEDGE ON THE AGRO HIDRO NETWORK- CRITIC@

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The CRITIC@ proposal, as a component of the project “Impacts of agricultural use and climate change on water resources in different Brazilian eco-regions: diagnosis and mitigating strategies” - AgroHidro, subsidized by Embrapa, was to concentrate the systematic analysis and organization of the information used and produced by the AgroHidro Network, made up of Brazilian researchers. The network sought to improve the management of technical-scientific knowledge in water resources and anticipating adaptation to climate change, providing an information assessment tool, which would facilitate not only identifying a body of literature and other sources of dissemination material, but also to provide information cross-referencing from several sources, in order to assess the path taken by the RD&I network and the methodologies with the greatest potential for adapting to the impacts of climate change (Figure 1). The proposal aimed to: 1) obtain analyses, considering past and present, in technological trends, research and development, in water resources in Brazil and locating the estimates obtained in time and space; 2) contribute with technological search and survey processes, with its own organization and retrieval of information, which requires cross-analysis of data; 3) specify and validate the organization of water resource knowledge in an ontological structure through a close partnership between researchers in the area of water resources and information; 4) provide an intelligent search environment for technical and scientific information used and produced by the AgroHidro Network; 5) generate a semi-automated methodology for organizing and providing technical-scientific information for similar network projects and for proposing adaptation actions.

RESULTS

- Based on the CRITIC @ tooling, it was possible to present a semi-automatic methodology to build technological portfolios, based on a large number of technical and scientific publications, illustrated in the publications, selected from the Open and Integrated System of Agriculture Information (SABIIA), which covers the entire area of interest. In order to build the portfolio, the following were adopted: some linguistic resources - such as dictionaries built by specialists in the field;

techniques for extracting information from texts by similarity; techniques of descriptive statistical analysis (percentiles, graphs); and, techniques for recognizing associative patterns (analysis of association rules). The experiment conducted showed the applicability of the methodology, resulting in a portfolio of technologies that adapt using water in agriculture. Based on this portfolio, association rules were generated to identify the relationship between technologies, locality and cultures in the regions of Brazil, in order to subsidize specialists in the field in verifying which technologies can be adapted to Brazilian biomes and adapt them to the impacts of climate change; and

- Based on this portfolio and the association rules to identify the relationship between technologies, locality and cultures, in the regions of Brazil, domain experts should check which technologies can be adapted for Brazilian biomes, or if the information presented is not sufficient for decision making, feed back into the process (increasing domain vocabulary, etc.) until the results presented are useful for this task.

NEXT STEPS AND RECOMMENDATIONS

There is no plan for maintenance or evolution of the Project. Since the results were very good, several of its components for extracting information, identifying and disambiguating place names, identifying topics in text collections and extracting item sets (formatted for use in association rules) have been used and evolved in other Embrapa Agriculture and Livestock Informatics or Embrapa Territorial.

DATA PUBLISHED IN:

MOURA. M. F.; TAKEMURA. C. M.; SILVA. I. L. C.; TÁPIAS. L. M.; OLIVEIRA. C. T. de; BASSOI. L. H.; OLIVEIRA. S. R. de M. Metodologia para a construção de portfólios tecnológicos agrícolas a partir de publicações técnico-científicas. In: CONGRESSO BRASILEIRO DE AGROINFORMÁTICA. 11. 2017. Campinas. Anais [...]. Campinas: Editora da Unicamp; Embrapa Informática Agropecuária. 2017. p. 537-546.

PROJECT COORDINATORS

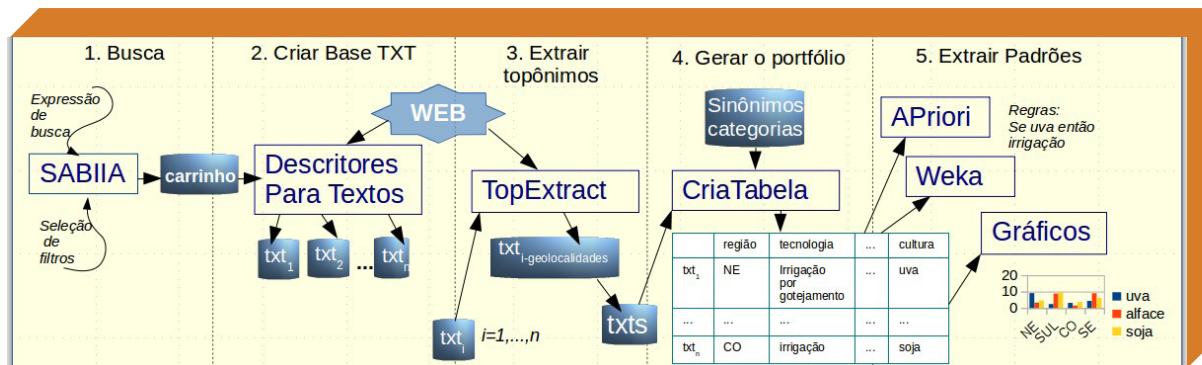
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Figure 1: Semi-automatic methodology for building technology portfolios



Source: Moura et. al. (2017).