

io-port 05063279**Raś, Zbigniew W.; Dardzińska, Agnieszka****Solving failing queries through cooperation and collaboration.**

World Wide Web 9, No. 2, 173-186 (2006).

Summary: Sometime Query Answering Systems (QAS) for a Distributed Autonomous Information System (DAIS) may fail by returning the empty set of objects as an answer for a query q . Systems in DAIS can be incomplete, have hierarchical attributes, and the semantics of attributes and their values may differ between sites. Also, if there are no objects in S matching q , the query may fail when submitted to S . Alternatively, QAS for S may try to relax the query q as it was proposed in T. Gaasterland (IEEE Expert, 12(5), 1997, 48–59), P. Godfrey (International Journal of Cooperative Information Systems, 6(2), 1997, 95–149) and W. Chu et al. (Journal of Intelligent Information Systems, 6(2/3), 1996, 223–259). It means that q can be replaced by a new more general query. Clearly, the goal is to find possibly the smallest generalization of q which will not fail in S . Smaller generalizations guarantee higher confidence in objects returned by QAS. Such QAS is called cooperative (only one site is involved). Queries may also fail in S when some of the attributes listed in q are outside the domain of S . To resolve this type of queries, assuming that S is a part of DAIS, we may extract definitions of such attributes from information systems residing at some of the remote sites for S and next use them to approximate q in S . In order to do that successfully, we assume that all involved systems have to agree on the ontology of some of their common attributes Z.W. Raś and A. Dardzińska (Information Systems International Journal, 29(1), 2004, 47–58; Proceedings of FQAS 2004 Conference, LNCS/LNAI No. 3055, 2004, pp. 125–136); Z.W. Raś and S. Joshi, Fundamenta Informaticae Journal, 30(3/4), 1997, 313–324. QAS based on the above strategy is called collaborative (minimum two sites are involved). Similarly, a query may fail in S when the granularity of an attribute used in q is finer than the granularity of the same attribute in S . This paper shows how to use collaboration and cooperation approach to solve failing queries in DAIS assuming that attributes are hierarchical. Some aspects of a collaboration strategy dealing with failing query problem for non-hierarchical attributes have been presented in Z.W. Raś and A. Dardzińska (Information Systems International Journal, 29(1), 2004, 47–58; Proceedings of FQAS 2004 Conference, LNCS/LNAI No. 3055, 2004, pp. 125–136).

doi:10.1007/s11280-005-3044-5