

Service Oriented Computing in the context of Mathematical Software

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Abstract. This paper explores the possible migration of mathematical packages to autonomous, platform-independent web services. Mathematical computing has been a major branch of computer science since the early ages. Both numerical and symbolic computation brought up many highly specialized and efficient pieces of software.

Such software can be used to solve a broad variety of mathematical problems whose applications cover various domains. Unfortunately, most of these mathematical packages remain unknown from a significant part of their potential users: too difficult to use for non-specialists, not available on the user's platform or environment, or simply not advertised enough, mathematical packages rarely evolve beyond the stage of prototypes. A natural way to improve the accessibility of these packages is to turn them into mathematical web services.

After discussing the problem-oriented nature of mathematical packages, we present some results in mathematical service discovery. We introduce examples of ontologies and taxonomies dedicated to mathematical problem description. Finally, we show the importance of Service Brokering and Planning in this context and envision how mathematical services could be exploited in the context of web-based e-business.