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Topic III: Object-oriented technologies, component architecture

SEMANTIC INTEROPERABILITY: TALES FROM A TECHNOLOGY-LIBERATED WORLD

Invited paper

Submitted by Eurostat [1]

Summary

1.   Object-orientation is presently considered as the mainstream approach in modern software construction activities. Reuse, as well as smooth integration of objects and software components, are some of the key arguments in favor of object-oriented technologies. Object-oriented technologies are the natural choice in case of IT projects aiming at developing new software systems. However, it is for new systems to be created from scratch. Commonly, IT projects are bound by various constraints related to integration with heterogeneous hardware, including mainframe systems, as well as existing software applications that are not using object-oriented technology. Giving that context, and taking into account the large spectrum of software technologies available today, it is not very realistic to expect software solutions that are "purely" based on object-oriented technologies.

2.   Application Integration and Middleware technologies developed over the last five years make an important step towards interoperability of software technologies. The success of such integration technologies has created a new category of software that did not exist in a general-purpose, commercially available form prior to 1996. Companies selling their products under the "Enterprise Application Integration", "Business Process Management", "Application Server", "Integration Broker" or "Middleware" banners have evolved from niche players to important market makers that can rival the big traditional software vendors like IBM, SUN, or Oracle. Giving that this segment of the market is young and still under consolidation, it is difficult and often risky to make technological decisions on the basis of the results of the latest market research studies.

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3.   Based on the assumption that the technology is there to serve as a solution to a well-defined problem, we argue that the key for improving reuse and interoperability of software as well as to building scalable and easily extended software architectures is not technology per se, but a thorough knowledge of the problem to be solved. In other words, putting the focus on the content and the semantics of the information can lead to a better application of object-oriented technology and interoperability between software components and systems. Being liberated from technology makes it possible to produce better quality software.

4.   This paper will present a taxonomy of the various technological alternatives available today for enterprise computing and will present some key issues to watch for when adopting such new technologies. It will describe a problem-driven approach in software construction. It will present how such an approach is applied in the context of the STAT-OBJECT IST research project.