

# Reflective architectures for adaptive information systems

Andrea Maurino, Stefano Modafferi, and Barbara Pernici

Politecnico di Milano,  
Dipartimento di Elettronica e Informazione,  
Piazza Leonardo da Vinci, 20133 Milano, Italy  
{maurino, modafferi, pernici}@elet.polimi.it

**Abstract.** Nowadays the anytime/anywhere/anyone paradigm is becoming very important and new applications are being developed in many contexts. The possibility of using applications along a wide range of devices, networks, and protocols raises new problems related to delivery of services. Current academic and industrial solutions try to adapt services to the specific distribution channel, mainly by changing the presentation of the service. In this paper, we reverse this perspective by using adaptive strategies to try to adapt the delivery channel to services as well. We present a possible architecture and focus our attention on the use of reflective components in the adaptive process. Using the reflection principle, we are able to evaluate the channel constraints and the conditions in which the distribution channel is working at a specific time. This information, built with service, user, and context constraints, is used as input to adaptive strategies to change the current channel characteristics, to new ones satisfying all the requirements. If this kind of adaptation is not possible, we consider the different QoS levels offered by the service and the user's readiness to accept a downgraded service provisioning.

**Keywords:** Adaptive information system, reflective architecture