

Developing maintainable CBR Systems: Applying SIAM to empolis orange

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Developing industrial Case–Based Reasoning (CBR) applications has become much easier since the advent of the INRECA methodology [BBG⁺99] which employs software process modelling techniques [VR95] to describe CBR system development tasks and uses the experience factory approach [BCR94] to store experience gained in the realization of CBR projects. empolis (and its former INRECA project partner kaidara¹) developed many applications using the INRECA methodology. Running for several years now, those applications make structured maintenance processes like the SIAM methodology and the maintenance manual MAMA [RBR01] a necessity.

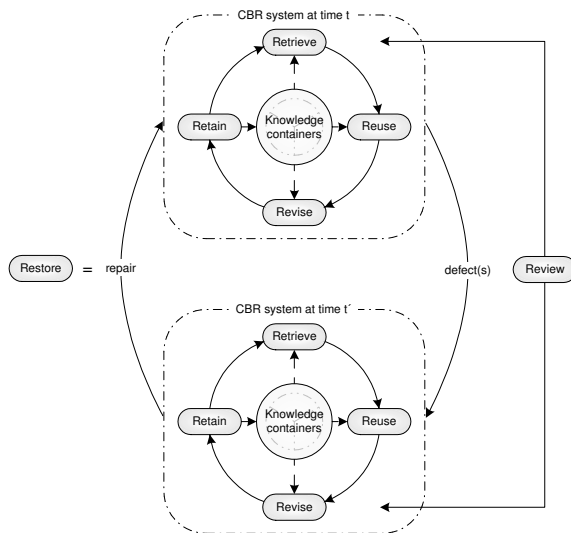


Figure 1: The control loop and the six steps process model

The control loop is the essential metaphor for the maintenance of any system (Figure 1).

¹see <http://www.empolis.com> and <http://www.kaidara.com>, respectively

An ideal system becomes faulty because of defects and repair operations put it back into a desired state of operation. In software systems, the defects are not caused by parts wearing out but by the ever changing environment. To operationalize the control loop and apply it on CBR systems, the four steps process model according to Aamodt and Plaza [AP94]) was enhanced by the two additional steps Review and Restore [RIRB01]. This six steps process model, then, was embedded into the SIAM methodology for knowledge maintenance of CBR systems which describes maintenance tasks on three levels of abstraction [RBR01].

But structured maintenance processes are not enough. The maintained system must be maintainable by design. empolis orange [Sch02] provides such a maintainable system core, not only for commercial use but also for academic research. By using the *orange: ProcessManager*, the two steps Review and Restore can easily be implemented as *pipelets*. A description on how empolis orange terminology maps on common CBR concepts as well as an example maintenance manual for case-based decision support systems built with empolis orange can be found in [RB02] .

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