Abstract

Coupling is a challenge in software engineering, because errors or failures compromise the whole software execution. To address this issue in the healthcare domain, a Decoupled Health Software Architecture (DHSA) is proposed in this paper. This study presents the development of three components, a tool, and a formal metric. The Connector, Container and Archetype-based microservice (Archemicro) components make the DHSA, which is dynamically generated by the Microservice4EHR tool. For assessing, a legacy software used in Brazilian hospitals is migrated to the DHSA. A comparison is performed between three tools (MARCIA, Template4EHR, and EhrScape). The Archetype-based Software Architecture Coupling (ASAC) is a formal metric to measure the coupling level of Health software architectures. As a result, DHSA increases by 66.6% the decoupling index of the healthcare software. The healthcare domain therefore is benefited with a software architecture that maintains the software operation even if a component from the software architecture causes errors.
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**Index Terms**

Computer Science  
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**Keywords**

Health Information Systems (HIS); Distributed Software Architecture; Electronic Health Record (EHR); OpenEHR Archetypes; Microservices.