Abstract

The Model-Driven Architecture (MDA) concept is a recent evolution of software development that uses the model to drive software process. MDA provides different levels of model; Platform Independent Model (PIM) is a model that represents application details but not specific platform details. PIMs are usually represented in UML. Developing application in conventional way, analyst and designer will concentrate first on the functional requirement to create PIM. While the non-functional requirement, especially security, will be incorporated after the complete application development. This leads to greatly increased development costs when defects are found. In this paper, we propose an approach to extending PIM with security features early in analysis and design phases. The security requirements cover authentication, confidentiality and integrity. In our approach, we extend security features to UML metamodel. This approach will help analysts and designers who are not security experts to correctly incorporate security requirement to PIM. We also propose an approach to transforming PIM with security features to Platform Specific Model (PSM). We used web service application and Servlet as an example to validate our approach. Then, we use WS-Security and Servlet's security for the implementation of security requirement. In this research, our approch and PIM metamodel which we extended with security features can apply to implement the real application which already has security property.