Sudan University for Science and Technology
College of Graduated Studies

Implementation and Evaluation of Systems Security for Engineering Capability and Maturity Model

التقويم والتطبيق لنموذج قياس قابلية ونضج هندسة الأنظمة الآمنة

A Masters Thesis Submitted in Partial Fulfillment of the Requirements for the Degree "Masters in Software Engineering" (M.Sc.)

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المستخلص

ساهم الإنتشار الواسع المتزايد لتطبيقات الأعمال الإلكترونية والموبايل في النمو المتطرد للإهتمام بتأمين نظم المعلومات, وعليه أصبح تأمين منتجات وخدمات البرامج يلعب دورا موثراً في صناعة البرامج. فشملت دورة حياة تطوير البرامج متطلبات وآليات التأمين في كل مراحلها, لأنه غير ملائم أن يكون التأمين من الخصائص المضافة لمنتجات البرامج.

يهدف هذا البحث لقياس قابلية ونضج بيوتات البرامج السودانية في تطوير وصناعة برامج آمنة وفق إحدى النماذج القياسية واسعة الإستخدام وهو نموذج قياس قابلية ونضج هندسة الأنظمة الآمنة(SSE-CMM) . وقد تم تطوير آلية لجع البيانات بخصوص ممارسات هندسة الأنظمة الآمنة لتلك البيوتات و من ثم تحليل وتقييم النتائج ذات الصلة, والتي تخلص إلى أن ممارسات هندسة الأنظمة الآمنة متباينة جداً بين تلك الشركات, والمفاجئ في الأمر لا توجد شركة استوفت المستوى الأول وفق النموذج القياسي المتبع, مما قد يعكس حقيقة ممارسات التأمين لمنتجات البرمجيات.

Abstract

Increased use of Electronic and Mobile Businesses (E/M-business) as well as their countless associated applications has introduced a growing concern about information system security. Hence security of software products and services plays a major role in software industry. Since software security feature is not appropriate to be added through the addition of sets of features, it must be designed and integrated with the every phase of the software development life cycle.

The aim of this thesis is to measure the capability and maturity of some Sudanese software companies in developing secure software products. In order to achieve above goal, this thesis has used widely accepted standard System Security Engineering Capability Maturity Model (SSE-CMM) as a reference model.

Surveys were conducted in some of the local software companies to gather the data regarding the system security engineering practices being performed. Data collected from the surveys were analyzed and were statistically compared. Results obtained from the analysis indicated that security engineering activities practiced by the companies differ from one to another and none of the companies succeeded in achieving SSE-CMM Level 1, which might reflect the actual security practices for the developed software products.

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