SECURE SYSTEM DEVELOPMENT WITH UMLSEC: APPLICATION TO A B2B SYSTEM

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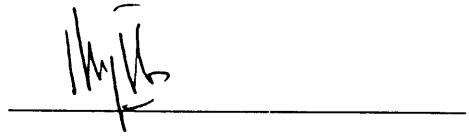
(Signature) : 

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ABSTRACT

In recent years UML has become a de-facto language for modelling software functional requirements. However, non-functional requirements such as security requirement have less attention from system designer even though the business system is exposed to security risks. Embedding security measures during design phase will help developers to reduce security vulnerabilities. Using Furniture B2B Marketplace as a case study, this study attempts to determines system security requirements of B2B system to formally specified them using UMLSec as a specification language. The result shows that some security requirements of B2B system can be modelled using UMLSec. This study also provides recommendations to suit UMLSec with B2B security requirements.

ABSTRAK (BAHASA MELAYU)

Pada ketika ini UML telah menjada satu bahasa 'de-facto' untuk pemodelan keperluan fungsian perisian. Bagaimanapun, keperluan bukan fungsian seperti keperluan keselamatan kurang mendapat perhatian yang sewajarnya daripada pereka bentuk sistem walaupun system perniagaan sekarang ini lebih terdedah kepada risiko-risiko keselamatan. Langkah-langkah keselamatan yang dimasukkan ke dalam sesebuah pemodelan sisten akan membantu pembangun-pembangun sistem untuk mengurangkan kelemahan keselamatan. Dengan menggunakan Furniture B2B Marketplace, kajian ini cuba menentukan keperluan keselamatan sebuah sistem B2B dan kemudian mespesifikasikannya secara formal dengan menggunakan UMLSec sebagai bahasa spesifikasi. Hasil kajian ini menunjukkan bahawa beberapa keperluan keselamatan sistem B2B dapat dimodelkan dengan menggunakan UMLSec. Kajian ini juga membuat beberapa cadangan to menyesuaikan UMLSec dengan keperluan keselamatan sistem B2B.

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CHAPTER 1: INTRODUCTION

This chapter is an introduction to this report. It provides the general overview of B2B e-commerce, the problem statements, as well as the goals and scope. Finally the organization of the report is explained.

1.1 The Business-to-business E-commerce

The Internet is being used more and more for conducting commerce. This has made the Internet as a new infrastructure for a new commerce model known as e-commerce. One type of e-commerce is the business-to-business (B2B) system. B2B system involves two or more companies conducting business transactions through the Internet. According to Lucking-Reiley & Spulber (2001), the popular phrase of B2B e-commerce refers to the substitution of computer data processing and Internet communications for labour services in the production of economic transactions.

It is expected that the global transaction volumes in e-commerce will increase tremendously in the near future. According to the Gartner forecast (as cited by ITAA (2001), the global B2B e-commerce will grow to a total of $8.5 trillion in 2005, which is 189% increase from the year 1999 sale transactions of B2B e-commerce. In Malaysia, the online market is expected to reach RM9.4 billion by the end of 2005, with the B2B market expected to grow approximately RM3.9 billion in the same year (PricewaterhouseCoopers, 2004). With the rise of B2B e-commerce market, security has become an issue. Without properly designed secured system, the development of

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