

A REQUIREMENT MODEL FOR COMPUTER HARDWARE TRACKING SYSTEM

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UNIVERSITI UTARA MALAYSIA 2005

A REQUIREMENT MODEL FOR COMPUTER HARDWARE TRACKING SYSTEM

A dissertation submitted to the Faculty of Information Technology
In partial fulfillment of the requirements for the degree
Master of Science (Information Technology)
Universiti Utara Malaysia

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ABSTRACT

The purpose of this project is to create a requirement model for Computer Hardware Tracking system for Royal Malaysia Navy. Requirement model provide a more structured and integrated guide for the development of systems. Its serves as a good starting point or reference for system developers to understand the user's requirement which save cost, time and resources, thus, helps to decrease efforts in the system development process and increased quality of developed system. The methodology for requirement model of the CHTS derived from requirements analysis, analyze requirements and validate requirement model. System modeling and prototyping approach were used for requirement validation, while HOORA Analysis Tool (HAT) was used to validate the requirement model. Unified Modeling Language (UML) notation was adopted for the development of the requirement model. The requirement model consist of use case diagram, use case specification, class diagram, sequence diagram, collaboration diagram, activity diagram and supporting textual information. This requirement model provides a guideline in developing CHTS by specifies a solution that is right for the users need. As a conclusion, the requirement model created has solved the tracking problem asa well as managing the computer hardware all over the units and ships in RMN. The requirement model can be improved that can be used in other organization. The requirement model also can be used by similar organization like army and air force.

ABSTRAK

Projek ini bertujuan membina satu model keperluan untuk sistem pencarian peralatan komputer bagi kegunaan Tentera Laut DiRaja Malaysia(TLDM). Model keperluan ini membekalkan satu panduan yang lebih berstruktur dan berpadu untuk pembangunan sistem. Ia menyediakan satu titik permulaan yang baik atau panduan kepada pihak pembangunan sistem untuk memahami keperluan pengguna yang mana menjimatkan kos, masa dan sumber, demikian mengurangkan usaha yang diperlukan dalam proses pembangunan sistem dan meningkatkan kualiti sistem yang akan dibangunkan. Metodologi bagi model keperluan sistem ini mengandungi tiga fasa iaiti mentakrifkan keperluan, menganalisa keperluan dan menegsahkan model keperluan yang mana diperolehi daripada fasa analisis keperluan. Pendekatan sistem model dan prototaip digunakan untuk mengesahkan model keperluan. Unified Modeling language (UML) notasi telah digunakan untuk pembangunan model keperluan ini. Model keperluan ini mengandungi use case diagram, use case specification, class diagram, sequence diagram, collaboration diagram, activity diagram dan teks informasi sokongan. Model keperluan ini menyediakan satu panduan dalam membangunkan sistem pencarian peralatan computer dengan menentukan satu penyelesaian yang sesuai dengan keperluan pengguna. Secara kesimpulan, model keperluan ini dapat membantu menyelesaikan masalah mencari maklumat mengenai perkakasan komputer bagi TLDM samada di unit-unit atau kapal-kapal. Model keperluan ini dapat digunakan oleh organisasi lain dan organisasi yang mempunyai ciri-ciri yang sama seperti Tentera Darat dan Udara.

ACKNOWLEDGEMENTS

First of all, I would like to express my sincere thanks to my supervisor, Puan azida zainol for her continued supervision, knowledge sharing and helps throughout my project.

My deepest thanks go to my wife and family for their love, support and understanding.

My appreciation also goes to all person that are helped me in giving all information about the requirement and encouragement that has motivated me to complete this thesis.

Last, but not least, I would like to thanks to all who lend a kindly hand in materializing this project.

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LIST OF ABBREVIATIONS

RMN	Royal Malaysia Navy
IT	Information Technology
CHTS	Computer Hardware Tracking System
UML	Unified Modeling Language
HAT	(Hirarchical Object Requirement Analysis) Analysis Tools
ITS	Inventory Tracking System
SDLC	System Development Life Cycle
TLDM	Tentera Laut DiRaja Malaysia

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CHAPTER ONE

INTRODUCTION

Nowadays, Information and Communication Technology (ICT) becomes important for the organization to be effective and efficient. The use of Information Technology (IT) in administration and management helps the manager in making wise decision. Without effective IT asset management and the associated financial metrics, it is unlikely that an organization can attain best value for core IT enabled business process. Royal Malaysian Navy (RMN) needs to know what they have before they assigned any more budgets for the purchasing of new equipment. Thus, RMN spends a lot of money in investment for development of ICT infrastructure as well as software development.

In order to manage the computers, RMN decides to develop a system known as Computer Hardware Tracking System (CHTS). Therefore, this project focuses on creating a requirements model for CHTS as beginning. CHTS will help the management to coordinate the computer hardware as well as making wise decisions.

1.1 Problem Statements

Currently, RMN manages the computer hardwares manually that making it difficult to allocate the computers, as the computers are anywhere in the units and ships. At the same time, RMN keeps on buying new computers and hardware that increase the number of computers. So that, the management needs to manage the new computer as well as tracking the available computers.

In RMN, the management spends too much time in tracking the computers hardware because the process is handled manually. They need to seek for the information that are recorded in the books. Sometimes, the record could not be found. So that the management will create a new record.

RMN practices in record keeping involved multiple formats and standards. Therefore, the records are kept in varieties of forms and it is very difficult in searching process. Thus, the records are not updated which result in inaccurate information.

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REFERENCES

- AssetMetrix. (2002). Retrieved July 10,2004 from World Wide Web:
<http://www.assetmetrix.com>.
- BackTrack From Strandare Helps Track Computer Assets. (2000). Retrieved July 10, 2004 from World Wide Web: <http://www.backtrackgroup.com>.
- Barker Darrel. (2000). Requirements Modeling Technology A Vision For Better, Faster and Cheaper Systems. Retrieved July 20, 2004 from World Wide Web:
<http://www.ittc.ku.edu/projects>.
- Bennett, S., McRobb, S. & Farmer, R. (2002). Object-Oriented System Analysis and Design Using UML (2nd ed.). London: McGraw-Hill.
- Damiano Joseph L. (2002). A Database Model of An Computer Inventory System. Retrieve July 15, 2004 from World Wide Web:
http://www.littlehouse.netfirms.com/articles/DBM_model.htm.
- Deng G, Toa Lu, Emre Turkay, Aniruddha Gokhale, Douglas Schmidt. (2002). Model Driven Development of Inventory Tracking System. Retrieve July 17, 2004 from World Wide Web: http://dve.vanderbilt.edu/cosmic/papers/ITS_Modeling.pdf.
- Gennaro G. (1995). Hierarchical Object Oriented Requirements Analysis-HOORA. Retrieved July 20, 2004 from World Wide Web: <http://esapub.esrin.esa.it/pff/>.
- Hardware Asset Tracker v2.2. (1999), [Electronic version]. Retrieved July 19, 2004 from
<http://www.ducksoftware.com/hardware-organizer.html>.
- HOORA Analysis and Design.(1992). Retrieved July 20, 2004 from World Wide Web:
http://www.e2s.be/case_tools/.
- Ian Sommarville. (1996). Software Engineering (fifth edition). Addison-wesley publishing company.
- Jackman Phil. (2002). AssetMetrix Is Discovery, Analysis, management Instant, Simple, Secure. Retrieve July 17, 2004 from World Wide Web: <http://assetmetrix.com>.
- Kenn, L. (2003). Software Development With UML. United Stated: Palgrave Macmillan.
- The American Heritage Dictionary of the English Language (5th). (2004). Houghton Mifflin Company.
- UML Document Set. (2001). Retrieved July 10, 2004 from World Wide Web:
<http://www.omg.org/>.
- Vanier, Dana J., Lacasse, Michael A. and Parson Austin. (2001). Modeling of User Requirement Using Product Modeling[Electronic version] Retrieve July 19, 2004 from
<http://www.accessibilityforum.org/resources/user.html>.

Visual Asset Manager Features: In Depth. (2002). Retrieve July 17, 2004 from World Wide Web: <http://www.netsimplicity.com/products/vam/features.index.shtml>.

Whitten, J.L., Bentley, L.D. & Dittman. K.C. (2001). System Analysis and Design Methods (5th). Boston: McGraw-Hill.