

**DEVELOPMENT OF VISUAL ASSET MANAGEMENT AND
MONITORING SYSTEM (VAMMS) FOR ADVANCED MANUFACTURING
TECHNOLOGY CENTRE (AMTC)**

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JUDUL: DEVELOPMENT OF VISUAL ASSET MANAGEMENT AND MONITORING SYSTEM (VAMMS) FOR ADVANCED MANUFACTURING TECHNOLOGY CENTRE (AMTC)

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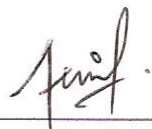
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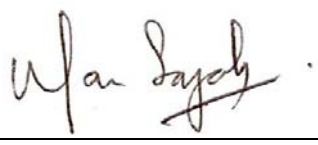
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NORHADIYATI BINTI MOHD. MOKHTAR

**A project report submitted in partial fulfillment of the
requirements for the award of the degree of Master of Science
(Computer Science – Real-Time Software Engineering)**

**Centre for Advanced Software Engineering
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OCTOBER 2008

“I declare that this project report entitled “*Development of Visual Asset Management and Monitoring System (VAMMS) for Advanced Manufacturing Technology Centre (AMTC)*” is the result of my own research except as cited in references. The project report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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To my beloved husband

To my beloved daughters Natasha Ameera, Nawwarah Auni & Nawwarah Auji

To my beloved mother and father

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ABSTRACT

Asset Management encompasses the practices and procedures for controlling assets in organizations. With no proper Asset Management and Monitoring System, an organization could not manage and monitor the assets efficiently and thus, the exact benefit of the investment could not be determined. Visual Asset Management and Monitoring System (VAMMS) was determined as a project to be developed for Advanced Manufacturing Technology Centre (AMTC), SIRIM Berhad. VAMMS was developed as the essential tool for managing and monitoring the organization's assets in AMTC. VAMMS provides the capabilities which include tracking of the location, quantity, maintenance status and depreciation status of the defined assets. This project covers the complete development of a software product, including the specification, design, coding and the testing of VAMMS. This project was supported by four software documents based on the DOD2167A Standard. Waterfall Model was chosen as the Software Development Model. VAMMS was designed using UML notation with Rational Rose as the tool, and was developed using ASP.NET. The produced system has the following modules: View Floor Plan Module, Searching Module, Asset Malfunction Report Module, Admin Module, Maintenance Module, and Reporting Module.

ABSTRAK

Sistem Pengurusan Aset merangkumi praktikal dan prosidur untuk mengawal aset di dalam sesebuah organisasi. Tanpa sistem pengurusan dan pemantauan aset yang baik, sesebuah organisasi tidak dapat mengurus dan memantau aset dengan berkesan. Oleh yang demikian, hasil yang tepat daripada pelaburan sesebuah organisasi sukar untuk dikenalpasti. Visual Asset Management and Monitoring System (VAMMS) merupakan sebuah projek yang dibangunkan untuk Advanced Manufacturing Technology Centre (AMTC), SIRIM Berhad. VAMMS merupakan alat yang penting bagi pengurusan dan pemantauan aset di dalam organisasi. VAMMS menyediakan pelbagai fungsi, termasuk mengenalpasti lokasi, kuantiti dan status penyelenggaraan serta susutnilai sesebuah aset. Projek ini telah disokong oleh empat dokumen perisian berdasarkan standard DOD2167A. Model Waterfall telah dipilih sebagai Model Pembangunan Perisian bagi system ini. VAMMS telah direkabentuk menggunakan notasi UML dengan menggunakan Rational Rose dan telah dibangunkan menggunakan ASP.NET. Sistem yang telah dihasilkan mengandungi modul seperti berikut: Modul Navigasi Pelan Lantai, Modul Carian, Modul Laporan Kerosakan Asset, Modul Pentadbiran, Modul Penyelenggaraan dan Modul Laporan.

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LIST OF ABBREVIATIONS

Name		Description
OOA	-	Object Oriented Analysis
OOD	-	Object Oriented Design
SRS	-	Software Requirement Specification
SDD	-	Software Design Document
STD	-	Software Test Description
STR	-	Software Test Report
UML	-	Unified Modeling Language
VAMMS	-	Visual Asset Management and Monitoring System

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CHAPTER 1

INTRODUCTION

1.0 Introduction

Visual Asset Management and Monitoring System (VAMMS) was determined as a project to be developed for Advanced Manufacturing Technology Centre (AMTC), SIRIM Berhad. VAMMS is considered as an essential tool for managing and monitoring the organization's assets in AMTC, Bukit Jalil.

VAMMS was designed to be a location-based asset management system tailored to the AMTC operational approach to asset management. VAMMS' visual approach allows users to view assets by location via the building floor plans. In order to specify the exact physical location of an asset, VAMMS organizes the assets based on location hierarchy starting with AMTC floor plan follows by location. An asset will be assigned to a specific location upon registration. The assets defined in VAMMS include fixed asset, mobile asset and information technology (IT) assets.

By using VAMMS, staff can easily access the information of the assets attached to the specific location and personnel. VAMMS also provides the searching capabilities to search for the specific assets based on specific criterias. Furthermore, VAMMS covers both management and monitoring processes defined in the asset lifecycle including asset registration, locating and transferring asset, asset maintenance schedule and asset depreciation. VAMMS also provides the standard reporting module to facilitate various kinds of reports needed in order to help management to make an intelligent business decision.

1.1 Background of the Organization

1.1.1 SIRIM Berhad

SIRIM Berhad is registered as a wholly-owned company of the Malaysian Government under the Ministry of Finance Incorporated on 15 November 1995. Fully operational in September 1996, SIRIM's vision is to be among the "world's best in quality and technology".

SIRIM Berhad is the leading organization in industrial research development, fulfilling the industry needs by blending new innovations with quality and standards. Continuous reinvention has enable SIRIM Berhad to ensure that it is market-driven, flexible, cost-effective and responsive to clients and customers.

SIRIM Berhad is organized into four Divisions namely; Group Corporate Division, Support Services Division, Standards and Quality Division and Research and Technology Division. The Research and Technology Division provides research and development services which focuses on Advanced Materials, Environmental and Bioprocess Technology, Machinery and Tooling Technology and Advanced Manufacturing Technology [1].

1.1.2 Advanced Manufacturing Technology Centre (AMTC)

Advanced Manufacturing Technology Centre (AMTC), a SIRIM Berhad technology centre, spearheads research and technology development activities towards developing national capability in areas of industrial and manufacturing technology.

AMTC, operated from Bukit Jalil, Kuala Lumpur, offers a wide range of services to the industries through its three programmes: Electronics and Intelligent System Development Programme, Industrial Automation and Robotics Programme and National CAD/CAM Programme.

Focusing on fields of electronic and ICT, industrial automation and robotics together with CAD/CAM/CAE technologies and manufacturing systems, AMTC offers the following services [1]:

- i. R&D (contract/strategic/joint development)
- ii. Product development
- iii. Design and prototyping

- iv. Consultancy and advisory
- v. Technical support
- vi. Technology transfer and dissemination through technical trainings

1.1.3 Electronics and Intelligent System Development Programme (EISDP)

EISDP, one of the programme under AMTC, specializes in the design and development of hardware and software for electronics and ICT application systems. It assists local industries in enhancing their competitiveness through the application of the latest electronics and information technology. EISDP also promotes R&D activities on electronics and ICT-based products, processes and system design for the industries.

The key technology focus areas are RFID and signal processing, control and instrumentation, electronics identification, communications and intelligent system development.

The Electronics Group undertakes R&D projects in the field of electronics focusing on the adopted technology areas comprising RFID and signal processing, electronics identification, communications as well as control and instrumentation.

Intelligent System Development Group undertakes R&D projects in the field of ICT technology that covers areas on system development and solution integration -Application Programming Interface (API), Artificial Intelligence (AI) technology, web and database technology, open-source system development, portal and software assurance testing [1].

1.2 Problem Background

The emergence of expensive and portable assets in workplaces has formulated the momentous need for companies to manage and monitor these assets. Of recent, many organizations face a significant challenge to identify the location, quantity, condition, maintenance status and the depreciation of their fixed asset.

Without knowing what assets exist in the organization, where the assets are located, who are using the assets, what is the total cost of assets, and the depreciation value of the assets, companies cannot collect the true benefit of their investment.

Asset Management encompasses the practices and procedures for controlling assets in organizations. With no proper Asset Management and Monitoring System an organization could not manage and monitor the assets efficiently and thus, the exact benefit of the investment could not be determined.

1.2.1 Current Problems

As described in subchapter 1.1.1, SIRIM Berhad is organized into four Divisions namely; Group Corporate Division, Support Services Division, Standards and Quality Division and Research and Technology Division. The Property Management and Information Technology Department (JPHTM) is the department under Support Services Division, based in the SIRIM Berhad Headquarters at Shah Alam. JPHTM provides services both in managing all the asset and properties in SIRIM Berhad as well as servicing the Information Technology services.

JPHTM has implemented a system named Asset Management System (ASM) to manage the asset in SIRIM Berhad. This system covers the Registration module, Admin Module and Reporting Module. However, this system is not implemented in AMTC. Assets management in AMTC depends on the asset management in SIRIM Berhad Headquarters. All assets are labeled using the asset number produced by JPHTM. In AMTC itself, automate system is not available to keep track where the location of the assets, total cost of assets by each programmes, who are responsible for certain assets and when the assets are scheduled for maintenance.

Therefore, this project was embarked in order to develop the essential tool for managing and monitoring the asset in AMTC guided by the following questions:

- i. What assets the center's owned?
- ii. Where are the assets located?
- iii. Who has the assets?
- iv. When the assets are scheduled for maintenance?
- v. What is the cost and depreciation of each asset?

1.2.2 Importance of the Project

VAMMS provides the capabilities to track location, quantity, condition, maintenance status and depreciation status of the defined assets. With VAMMS, users can quickly access information about the assets or equipment belongs to each programme under the AMTC. Furthermore, all the equipments attached to the laboratories (labs), meeting rooms and discussion rooms can be captured as well.

With the features, critical information such as the current assets belonging to the centre or programmes specific, their location, and the assets' value can be retrieved efficiently. Thus, VAMMS is an essential tool for managing and monitoring the assets in AMTC.

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