

**Alarm Monitoring System for  
Hutchison Telecom  
HAM**



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V. G. Nuwan Udayanga  
06/1004

Faculty of Information Technology  
University of Moratuwa  
September 2008

## Declaration

I declare that this dissertation does not incorporate, without acknowledgment, any material previously submitted for a Degree or a Diploma in any University and to the best of my knowledge and belief, it does not contain any material previously published or written by another person or myself except where due reference is made in the text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and summary to be made available to outside organization.

Nuwan Udayanga  
Name of Student



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Signature of Student  
Date:

Supervised by:

Dr. Gamini Wijayarathna  
Name of Supervisor

Signature of Supervisor  
Date:

## Acknowledgement

As the author of this documentation I am glad to publish the work I have done in order to achieve a good software system which satisfies my client requirements. I have worked with a great number of people whose contributions were in numerous ways helpful to this project and making of this thesis a meaningful & practical. It is a pleasure to convey my gratitude to all of them at least in this instance.

In the first place I would like to extend my sincere gratitude to Dr. Gamini Wijayarathna for his supervision, advice throughout the project for giving necessary advice on how to achieve my goals.

It's my privilege to be associated with Hutch and thanks all my colleagues for moral and other support from them. I thank my friends Anuradha, Herath, Inoka, Dammi and Disna who always questioned me and encouraged me on different problems with design methodologies specially activity diagrams, sequence diagrams and classes. It is because of their help this project concluded successfully.

I would like to thank The Hutchison Telecom IT department and Rasika from WiFi Sri Lanka providing internet facility throughout the whole development life cycle providing me with vital information.



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Last but not least many thanks to the academic & non academic staff members of the University of Moratuwa for their support in various aspects. Also, all the people who contributed in numerous ways in order to successful completion of this project.

## Abstract

Hutchison Telecom has more than 600 BTSs (Base Transceiver Station) Sites island wide. Each site sends its failure details to its server as Alarm records. Alarms are generated in all BTSs and Alarm records are collected at Servers (BSS Servers) for daily maintenance works. Alarms are displayed on client machines locate in OMC (Operation and Maintenance Center). However there are 5 client machines for Alarm monitoring. These machines are used for dynamic monitoring, software upgrading, site creation and “Daily maintenance Report” generation other than the Alarm monitoring. Also Alarm monitoring is not an easy job, because officers have to move to each client machines and first search site location and then open site Alarm window and search current Alarms. Hutchison does not have a perfect alarm monitoring system. Sometimes the alarm indication message displayed is incorrect.

Proper Alarm monitoring system is the solution for the above issue. The main intention of this project is a Real time Alarm monitoring system for GSM sites located all over the island.

To understand the proposed system functionality, Use Case diagrams, Activity Diagrams and Use Case Descriptions were designed. Based on these diagrams Sequence Diagrams were designed and then Class Diagram was decided. For Database design ER diagram created and hence relational tables and Normalized to Third Normal Form. Finally Implementation and Testing carried out for this good software system as a better Alarm Monitoring System for Hutchison Telecom. This system is the best solution for the staff of Hutchison Telecommunication (Pvt.) Ltd. The system is helped to realize most important events relate to operation and maintenance. This system successfully answered the main problems identified in the previous Alarm monitoring system which was not real-time and wrong alarms create.

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### Data Dictionary

Term	Type	Purpose
OMC staff	actor	OMC (Operation and maintenance Center) staffs are involving with alarm monitoring.
System	actor	Alarm monitoring system
Show Alarms	Use-case	Main function of Alarm monitoring system is indicating alarms by the system to OMC staff
GSM	Abbreviation	Global System for Mobile Communication
NGN	Abbreviation	Next Generation (IP switching) Telecommunication System
BTS	Abbreviation	Base Transceiver Station
BSC	Abbreviation	Base Station Controller
BSS	Abbreviation	Base Station Subsystem (BTS + BSC)
MSC	Abbreviation	Mobile Switching Center
NSS	Abbreviation	Network & Switching Subsystem
OMC	Abbreviation	Operation and Maintenance center
O&M Server	Abbreviation	Operation and Maintenance Server
TO	Abbreviation	Technical Officer (OMC staff)

Table I.0 – Data Dictionary