

## A Methodology for Mobile Network Security Risk Management

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### Abstract

*Based on the risk analysis done in the GSM network of Iran a methodology for cellular mobile network risk management is established. Primarily we focus on the importance of risk management in the GSM Network and then introduce very briefly the suggested method for managing risk in Iranian GSM security. GSM Security risk evaluation is a method for increasing the efficiency of security policy in the manner that security threats and vulnerabilities against the mobile network is identified and prioritized. Keywords: Risk Management, Mobile Security, Mobile Network, GSM, M-Commerce, Telecommunication.*

### 1. Introduction

The use of mobile technologies has become more prevalent. As a result, there is a strongly increasing amount of services offered through mobile networks, which is known under the M-commerce. Security of this information is very important in M-commerce, so providing the security of the mobile infrastructure like cellular networks (e.g., GSM as the most popular one) is vital too. The security level of transactions depends on security policy of the mobile network operator. Security policy is the directives and practices for managing, protecting and distributing assets of the GSM mobile network which are included sensitive information.

### 2. GSM security management system

There is an increasing international focus on data protection and privacy in the communication age. World-companies need to ensure that individuals' rights and information are adequately protected. During recent years, Government and commercial organizations rely heavily on the use of information to conduct their business activities. The loss of confidentiality, integrity, availability, accountability, authenticity and reliability of information and services can have adverse impacts on M-commerce.

This requirement to protect information is particularly important in today's environment because many organizations are internally and externally connected by mobile technology. This technology has been causes to establish a new professional science about security management in GSM for implementing ISMS-T.

An ISMS-T process in GSM network can be used to achieve and maintain appropriate levels of security especially in M-Commerce. The management of the GSM network security includes the analysis for the security requirements, establishment of a plan for satisfying these requirements, implementation of this plan and maintenance and administration of the implemented security. According to the current standards and GSM network, the five steps are suggested for ISMS-T implementation in the GSM network. A brief summary of each ISMS-T paradigm activity follows:

- Determining the GSM network security objectives, strategies, and policies.
- Managing security risk of the GSM network within the organization.
- Implementing GSM security plan.
- Implementing and developing GSM security awareness and training program.
- Following up the GSM security plan.

### 3. GSM Security risk management

As we could not find any good and complete methodology for our mobile security projects in the GSM –related or security-related standards, this method for security risk management is suggested based on the experiences in technical and managerial mobile security related projects in the GSM network.

Our suggested method has four steps. First step is “primary analysis of current GSM network”, the second step tries to show how should be the system, which is “documentation of expected security system and trust model”, third step is the main step and we named it “analyzing the GSM risk” and the final step is “giving the recommendations”. In the following we describe these steps.

### 4. Primary analysis of current GSM network

At the first step it is suggested to do the following activities to understand what the mobile networks is.

- Analyzing recent standards on GSM Security, to understand the new changes in ETSI, ITUT and other standards, as point, we should consider that, because the lack of security standards in the mobile field, new standards is going to publish.
- Benchmarking or analyzing the succeed stories, from the similar projects in other operators.