

# Harmful Adult Multimedia Contents Filtering Method in Mobile RFID Service Environment

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**Abstract.** This paper provides a privacy-enhanced method of verifying adults in mobile RFID environment. It can be applied to check whether a user is an adult or not when he or she would like to use some adult contents using mobile terminals playing a role of tag readers in mobile RFID environment. Instead of current adult verification method utilizing the user's own mobile terminals, the proposed method uses any mobile terminal and provides users with anonymity. Additionally, instead of a conventional rating system based on the user's age, we proposed four-level rating system (0 to 3) in detail. The adult content is classified based on each category (for example, swear word, nudity, sex, and foul language) and the rating information gets assigned to the adult content based on each category. The rating information is assigned to the user data region of the RFID tag. Through this method, the rating of multi-media content can be expressed with respect to each category using the detailed rating criteria. The weight factors may be differently applied to the categories according to applications.

## 1 Introduction

Users of mobile RFID networks wishing to access an adult content service at present need to go through an adult verification process prior to using the desired adult content service. The adult verification process is as follows [1]. First, when the user selects the adult content menu through the mobile terminal, a warning message is displayed on the terminal screen of the mobile terminal. The user inputs the last 7 digits of their social identification (ID) number, and then the mobile carrier compares stored user information with the input social ID number and proceeds to identify the user as an adult. When the user is identified, a password input window appears on the terminal screen of the mobile terminal. The user can then access the adult content if the password input is correct.

In this method of adult verification, since the adult verification is achieved through direct use of the mobile terminal, minors can access adult content without control

when they are aware of the social ID number of the official user and have access to the mobile terminal [2]. For example, a teenager may attempt to use his or her parents' mobile terminal to access adult content. In addition, since the user's social ID number is required, threats to maintaining the privacy of the personal information of the user may be serious [3]. Also, the present rating system of multimedia content including adult content is currently divided into three categories based on the user's age: M-rating, R-rating, and X-rating [4]. When these simple ratings are applied to the mobile RFID services, it is expected that a rating value be recorded in a user data region of a RFID tag. However, to protect the minors from harmful materials, more detailed ratings are needed.

In this paper, we provide a system of adult verification in a mobile RFID environment [5] in which the privacy of personal information can be maintained when a user undergoes adult verification needed for accessing adult content. Additionally, we also provide a brand new rating system that rating classifications of adult content are subdivided so that minors can be effectively protected from accessing adult content. The paper is organized as follows. We show a system framework and explain adult verification processes in section 2. Also, we show our rating criteria and expression for adult verification at section 3 and finish it with conclusion in section 4.

## 2 Related Research

### 2.1 Mobile RFID Technology

RFID is expected to be the base technology for ubiquitous network or computing, and to be associated with other technology such as telemetric, and sensors. Meanwhile Korea is widely known that it has established one of the most robust mobile telecommunication networks. In particular, about 78% of the population uses mobile phones and more than 95% among their phones have Internet-enabled function. Currently, Korea has recognized the potential of RFID technology and has tried to converge with mobile phone. Mobile phone integrated with RFID can activate new markets and end-user services, and can be considered as an exemplary technology fusion. Furthermore, it may evolve its functions as end-user terminal device, or 'u-device (ubiquitous device)', in the world of ubiquitous information technology [9].

Actually, mobile RFID phone may represent two types of mobile phone devices; one is RFID reader equipped mobile phone, and the other is RFID tag attached mobile phone. Each type of mobile phone has different application domains, for example, the RFID tag attached one can be used as a device for payment, entry control, and identity authentication, and the feature of this application is that RFID readers exist in the fixed positions and they recognize each phone to give user specific services like door opening. In the other hand, the RFID reader equipped mobile phone, which Korea is paying much attention now, can be utilized for providing end-users detailed information about the tagged object through accessing mobile network.

Korea's mobile RFID technology is focusing on the UHF range (860~960MHz), since UHF range may enable longer reading range and moderate data rates as well as relatively small tag size and cost. Then, as a kind of handheld RFID reader, in the selected service domain the UHF RFID phone device can be used for providing object information directly to the end-user using the same RFID tags which have widely spread.