

# 適用於 UMTS 系統之以回饋為基礎的服務品質控制架構

## 摘要

未來行動通訊網路之傳輸層將以 IP 技術為主，各種 IP 多媒體服務的興起將產生複雜的訊務及動態且多樣化的服務品質(Quality of Service, QoS)需求；加上行動通訊網路具高度不穩定的特性，造成即時服務(real-time service)在 IP 傳輸層上的效能不彰，無法有效保證一定的服務品質。為有效滿足動態且多樣化的服務品質需求，不只需針對平均頻寬、延遲、抖動和封包丟失率作控制，更需即時的服務品質回饋機制以動態與精確的控制服務品質。本論文提出一回饋型服務品質控制架構與方法，將需要服務品質保證之即時服務的效能轉換為使用者滿意度並即時回饋此滿意度，以動態協商資源並調整到所需之服務品質。如此不僅更能真實反應使用者滿意程度，更能有效提升網路資源的使用。我們選擇 UMTS 系統，乃因該系統是以 IP 傳輸介面為傳輸層，並亟需服務品質控制的系統。末了，我們以模擬實驗來驗證本論文之回饋型服務品質控制架構的效能。

# Feedback-Based QoS Control Framework for UMTS

## Abstract

IP technology will be the core technology of transmission layer in the future mobile communication network. The rise of varied IP-based multimedia services will produce complicated traffic and diversified service quality (Quality of Service, QoS) demands. In addition, the wireless mobile communication network is highly error-prone, this will cause real-time services to have poor performance in IP transmission layer, and hard to guarantee services with a certain quality. To meet this, we not only need to control average bandwidth, delay, jitter and packet loss, but also a well-defined prompt feedback mechanism to dynamically and accurately control the service quality. This thesis proposes a feedback-based QoS control framework to convert QoS parameters of real-time services into user's satisfaction and then feedback this satisfaction immediately. The feedback information is used to dynamically negotiate demanding resource to guarantee a certain service quality. This framework can not only more closely reflect user's satisfaction, but also enhance the network resource usage more effectively. We choose UMTS as our target system is because its transmission layer is based on IP transmission interface, and it has emergent need to have better QoS control. At the end, we use Network Simulator-2 to verify the proposed framework is more effective.