



## **A PROXY-BASED SYSTEM FOR DYNAMIC CONTENT NEGOTIATION AND COLLABORATIVE OPTIMIZATION IN HETEROGENIC ENVIRONMENTS**

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**ABSTRACT**—Ubiquitous and Pervasive Computing relies on ubiquitous network access and applications' context-awareness. This pervasive access implies exchanging traffic with a wide spectrum of devices across heterogenic networks. Services and applications deployed on these networks should adapt its operation and presentation to the characteristics of the underlying network technologies and the actual client device capabilities. Cellular wide area networks like UMTS are used as Internet access networks for particular users but, in some cases, they can also be employed to provide Internet access to other smaller networks. The main inconvenient is that cellular networks have not the same bandwidth as wired networks and therefore, the cellular channel becomes a network bottle-neck. To help to mitigate this situation and in order to improve the user's experience different optimization techniques exist, especially in web traffic. This paper studies the existing synergies at HTTP layer between device capabilities expression, content negotiation, channel optimization and content adaptation. And secondly, it presents a system where HTTP requests transmission is optimized by means of HTTP header reduction over the cellular channel, showing a significant improvement in response time. In order to allow content negotiation, headers should be restored when reaching the Internet. This dynamic header reconstruction allows giving enriched and more expressive information about user's device and browser capabilities. Thus navigation speed and user's QoE can be enhanced by means of dynamic content negotiation in order to obtain adapted and lighter content and responses from web servers and adaptation proxies alike.