C. Schmandt, K. H. Lee, J. Kim, and M. Ackerman, "Impromptu: Managing Networked Audio Application for Mobile Users", In *Second International Conference on Mobile Systems, Applications, and Services*, June 6-9, 2004, pp. 59 - 69.

This paper introduced a set of applications on Impromptu platform. The Impromptu platform not only contains the telephone's mobility but also uses IP protocol, the combination of which enable this platform can provide multiple audio applications.

The author introduced its three major applications and the architecture design. The mainly techniques were explained in detail (listed below).

Techniques:

- (1) This paper is concentrated on audio applications rather than display.
- (2) About the architecture, the author separated the application manager from the client hardware. This thin (mobile) client – server mode can guarantee the user interface could response on time. Application manager is the component to intervene between client and applications. One mainly advantage for this is the speech services provided by server through application manager can be shared by different applications.
- (3) IP protocol. Considering the uncertainty of the communication demand, IP protocol would be more efficient compared with classical call. Another reason is IP is widely used so it is more compatible. The limitation is that IP protocol is unreliability. A lost packet would influence the processing quality. Or using error-retransmission protocol may prevent realtime communication work properly.
- (4) The author claimed that they chose multi-tasking and open protocol in the application. Multi-tasking, however, will lead to the mixture of output which seems to me not that useful. And there is no pleasant solution for this, they only implemented single-active application.