Next Generation Networks: Information Management Issues

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Abstract

New paradigms like pervasive and mobile computing clearly show a trend of using computing and communication power to overcome the physical limitations inherited from state-of-the-art desktop computers. Technologies like wireless networks, ambient intelligence, mobile agents, miniaturized computing devices, embedded systems, etc., have enabled a plethora of new types of applications and services. However, usage statistics showed that there is still a huge gap between the potential of such services and their acceptance in practice.

In this talk, an overview of existing technological developments towards future generations networks will be given along with a critical review of existing services and applications identifying potential barriers hindering their acceptance. One of the major questions to be answered is to enable the human users to cope with this omnipresence of information. We already observe in the "traditional" Web people suffering from information overflow, receiving too much, the wrong, or even unwanted information on the web. Personalization and adaptivity appear to be potential solutions to this problem but bear the risk of putting the user out of control. Approaches trying to overcome this area of conflict will be the focus of the presentation.

Outline of the Presentation

1. Introduction

What are the potential applications and services for future generation networks? What are the major issues and challenges?

2. Existing Technologies

Paths to future generation networks, 3G-centric, IEEE 802.16e and 802.20, etc.,

3. Technological Developments

    - Computer, Computing and Communication Tech. Evolution
    - IDC/SOC: Intersection of WbS, P2P, Grid
    - Embedded Small Computers
    - Tiny Chips
    - RFID and Attachable e-Tags
    - Sensors, MEMS, NEMS

- Wearable Computer/Networks
- Computer/Net Blended Textiles
- Augmented Reality (AR)

4. Information Management in next generation networks
    - Data modeling
    - Interaction Design
    - Situation approximation
    - Adaptation, customization, user needs
    - How spatial/temporal/other conventional dimensions are related?
    - Self awareness
    - Layered models, looped decisions
5. Conclusions and final remarks