Proposition de recherche doctorale

Evaluation and optimization of the quality perceived by mobile users for new services in cellular networks

Mots clés :

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- **Co-encadrant(s)** :
- **Unité de recherche** : Laboratoire Traitement et Communication de l'Information
- **Ecole doctorale** : École Doctorale Informatique, Télécommunications, Électronique de Paris
- **Domaine scientifique principal**: Divers

Résumé du projet de recherche (Langue 1)

There is a need for simple, yet realistic methods for evaluation of quality of service (QoS) in wireless networks capturing both the spatial distribution of the elements of the network and the temporal dynamics and having a limited number of parameters. This can be obtained via modeling based on probability theory and more speci cally on queuing theory and information theory. The probabilistic setting re‡ects the network variability in time and space; this is particularly relevant for wireless networks. The modeling approach consists in representing the con guration of users (positions, call durations or volumes, allocated resources) as a random object (point pattern with asso-ciated random variables) which evolves in time. Thus the temporal evolution of the con guration of users may be viewed as a realization of a stochastic process. The quality of service perceived by the users may then be expressed as a function of the stationary state of this process and thus will depend only on its distribution parameters. This approach often allows for an explicit evaluation of the key characteristics such as users QoS and for eficient optimization of the network cost and capacity. The thesis will be carried at France Telecom, Research and Development Division (38/40 rue du Général Leclerc, 92794 Issy-Moulineaux). Academic partnership: Bartlomiej Blaszczyszyn (INRIA and ENS ULM; http://www.di.ens.fr/~blaszczy/).