

International Workshop on Intelligent Design and Performance Evaluation of LTE-Advanced Networks

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Keynote speaker

Eric Hardouin - Orange Labs, France
"LTE-Advanced and the road towards 5G"

Important Dates

Paper Submission: 17 December 2014
Acc. Notification: 26 January 2015
Camera Ready: 16 February 2015

Call for Papers

Mobile networks are rapidly evolving towards new technologies that are characterized by an increasingly sophisticated radio interface. The aim is to provide higher bit rates while ensuring ubiquitous quality of service. Although 4G network deployments are still incipient, the first upgrades towards LTE-A solutions are already planned by operators and further LTE-A features are defined in the standards. In parallel to these LTE-A standardization efforts, important research activities on 5G networks are currently getting under way.

However, before post-LTE systems will be deployed, network operators need to achieve a satisfactory return on investment. To do so, the performance of LTE-A systems must be enhanced by means of intelligent design of LTE-A features and the fine tuning of the corresponding parameters. In particular, interference management is a key issue for the HetNet paradigm to achieve its promised capacity gains and multi-node cooperation, with its inherent interference mitigation capability is an ideal candidate for this challenge. However, issues such as limited or imperfect channel feedback, mobility or complexity should be addressed. On the other hand, LTE-A networks should implement automated operation and management solutions in order to reduce operational and capital expenditures of the operator. Therefore, intelligent and practical self-x functionalities are an indispensable part of LTE-A design. Energy efficiency is another essential component of LTE-A, compelling energy saving mechanisms to be incorporated. Last but not least, techniques for offloading traffic from the macro-cell network to the small cells are seen as important solutions for increasing capacity and thus increasing user QoS.

Although smartphones and tablets are revolutionizing the usage of mobile networks and generating new traffic profiles, industrials, but also academics, are still evaluating and benchmarking these solutions using tools adapted to classical voice or best effort services. This raises fundamental questions about the validity of the presented performance results and their pertinence in the framework of future networks. There is thus an obvious need for novel performance evaluation tools, based on the latest developments in queuing theory, that are able to tackle the complexity of traffic profiles in LTE-A).

Submissions should be written in English with a maximum paper length of 5 printed pages (10-point font) (maximum 1 additional page with over-length page charge if accepted). Papers will appear in the conference proceedings and will be available on IEEE Xplore. More details can be found on the workshop website: <http://lia.univ-avignon.fr/idefix/workshop-LTE-A-Design>. Topics of interest are centered on three major themes:

LTE-Advanced features design:

- 1- Multi-node cooperation techniques in LTE-A
- 2- Advanced multi-antenna techniques
- 3- HetNets
- 4- Intra-RAT (e.g. eICIC) and inter-RAT offloading (3GPP-WLAN)
- 5- Device-to-device communications and advanced relaying techniques

Performance evaluation of LTE-A features:

- 6- Analytical performance evaluation tools
- 7- New Erlang formulas for LTE-A
- 8- Queuing theory models for service mixes
- 9- Advanced system level simulation techniques
- 10- Mobility models and their application to LTE-A

Network design and control:

- 11- Mobility Management in LTE-A
- 12- Self Organizing features for LTE-A
- 13- Game theory tools for LTE-A network control
- 14- Energy efficient design of LTE-A
- 15- Economic models (profit sharing, multi-operator relationships)
- 16- LTE-Advanced enablers for 5G