

# ON CREDIBILITY OF SIMULATION STUDIES OF TELECOMMUNICATION NETWORKS

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## ABSTRACT

In telecommunication networks, as in many other areas of science and engineering, proliferation of computers as research tools has resulted in the adoption of computer simulation as the most commonly used paradigm of scientific investigations. This, together with a plethora of existing simulation languages and packages, has created a popular opinion that simulation is mainly an exercise in computer programming. In new computing environments, programming can be minimised, or even fully replaced, by the manipulation of icons (representing pre-built programming objects containing basic functional blocks of simulated systems) on a computer monitor. One can say that we have witnessed another success of modern science and technology: the emergence of wonderful and powerful tools for exploring and predicting the behaviour of such complex, stochastic dynamic systems as telecommunication networks.

But this enthusiasm is not shared by all researchers in this area. An opinion is spreading that one cannot rely on the majority of the published results on performance evaluation studies of telecommunication networks based on stochastic simulation, since they lack credibility. Indeed, the spread of this phenomenon is so wide that one can speak about a deep crisis of credibility. In this paper, this claim is supported by the results of a survey of over 2200 publications on telecommunication networks in recent proceedings of the IEEE INFOCOM and such journals as the IEEE Transactions on Communications, the IEEE/ACM Transactions on Networking, and the Performance Evaluation Journal.

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