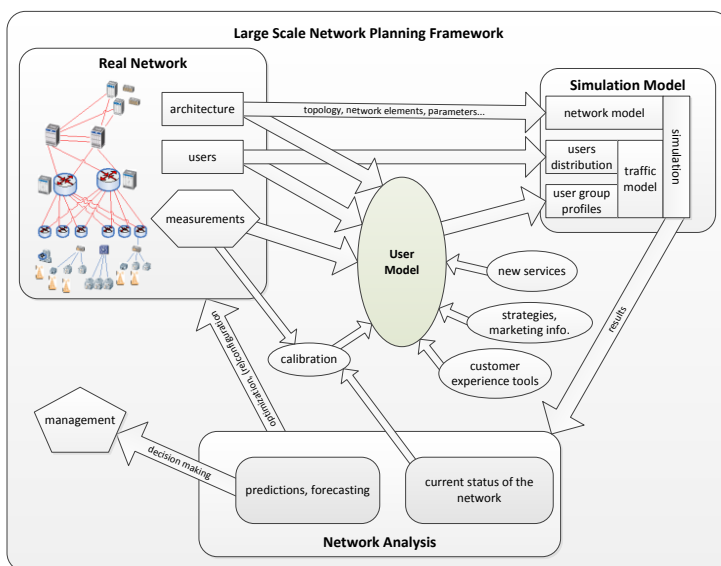


# Network-traffic modeling for load prediction: a user-centric approach

IEEE network; 2015; Vol. 29, no. 4; str. 88-96;

Impact Factor: 2.899; Authors: Aleš Švigelj, Radovan Serbec, Kemal Alič

Nowadays, networks have to be able to cope with ever-increasing traffic demands in order to deliver the desired quality to end-users. Thus, the proper network planning is essential in order to preserve telecom revenues by reduced income per bandwidth unit. This paper addresses a user-centric approach to network and user traffic modeling that has been validated and used in the process of introducing, optimizing and planning new services at the Slovenian national telecom operator and service provider, Telekom Slovenije d.d. The proposed approach is based on the end-users and their user-group profiles that are founded on the real measurements from the observed telecommunication network consisting of more than thousand MSANs and more than 300 thousand subscribers. The proposed approach has been successfully validated showing that for the observed period the modeled link load deviates less than 5% from the measurements. Furthermore, in the presented case study the proposed approach is used successfully in the process of introducing Fast Channel Change service.



User-centric approach to traffic modeling in the concept of a network planning framework, which is suitable for shortening the time-to-market of different services, and large-scale-network optimization is presented on in the figure. As we put the user in the center, by creating user-group profiles, defining the general user behavior in terms of traffic load, the introduction of new services, which usually target user groups, is fast and efficient.

In the right Figure traffic impact on the network (DL direction) is shown for the scenario where all IPTV users, which have terminals supporting the service, are using the FCC in the prime time, when the commercials start. It is clearly seen that without an upgrade of particular links or by restricting the FCC service several links have too small capacity (denoted by yellow and red color) and thus the disruption of other services can be expected.

