

Economical Modelling and Planning for 2G to 3G Migration

Abstract

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- The evolution from existing mobile networks towards 3G requires an analysis both from technical and economical perspectives. This paper considers the dimensioning and business modeling of the evolution paths in order to compare alternatives and optimize evolution in a competitive environment.
- When a wide variety of voice, data and multimedia services is introduced in the network, a key issue in the resources dimensioning is the proper modeling for the radio access as a function of the coverage by frequency, voice traffic capacity, service data rates and sustained bandwidth rate demand as all those factors will determine not only the equipment sizing but also the cell design structure as obtained from the multi-criteria design. Those dimensioning factors have different effects in the urban, suburban, rural and hotspot scenarios. Also for the IP traffic flows, a new dimensioning through the radio and core network segments should be considered in order to assure a given GoS.
- Network infrastructure cost and new services launching to increase revenues play a key role in the business evaluation for the migration towards 3G and the growing of data services. Special emphasis is done on the modeling and evaluation of the CAPEX and OPEX for the different network layers as: physical, radio BTS, core segment, transmission, interconnection, etc. Architectures and migration paths are modeled in order to evaluate costs, revenues, cash flows, Net Present Value of the network and financial ratios due to voice and data services for different migration alternatives and paces.
- Illustrations will be given for the type of business results that are to be evaluated in the case studies as a function of the different geo-scenarios and conclusions are derived on the business scenarios in order to support the definition of an adequate migration strategy.