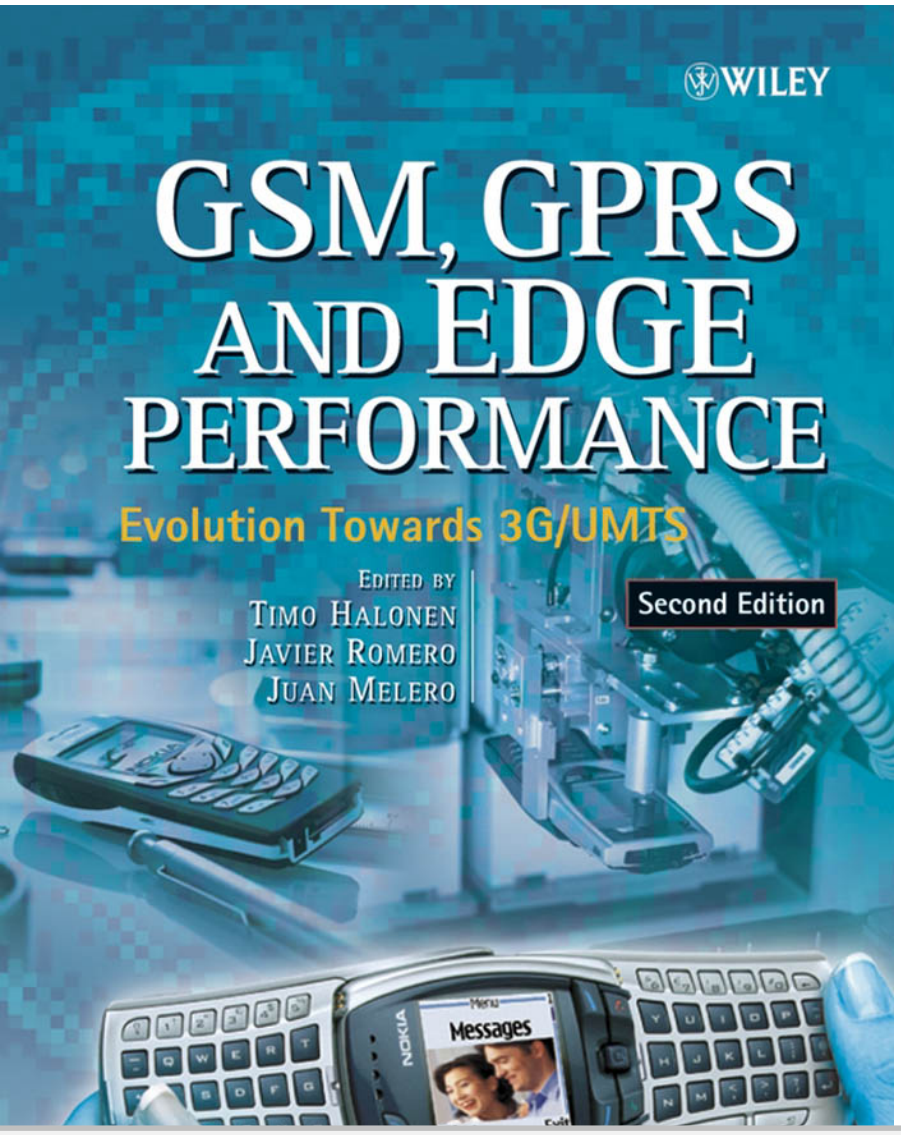

GSM, GPRS AND EDGE Performance

Evolution Towards 3G/UMTS

Second Edition

Edited by

Timo Halonen
Nokia

Javier Romero and Juan Melero
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Forewords

(Taken from GSM, GPRS and EDGE Performance, 1st Edition).

I have worked in the mobile communications industry longer than I would like to admit. In the early 1970s, I started my career as a radio engineer for Motorola. At that time, Motorola designed and manufactured low-, mid- and high-tier private land mobile radios. Motorola had few competitors for the mid- and high-tier product lines (50- to 100-W radios). However, in the low tier, less than 25-W radio category, there were numerous contenders, mostly from European manufacturers with a 'Nordic Mobile Telephone' heritage.

But times were changing. In the late 1970s, the American public got their first taste of mobile communications when Citizen Band (CB) radio became popular ('10–4, good buddy'). It was an unlicensed, short-range, 'party-line' experience. Those skilled in the art knew that something better was needed. And the American communications industry responded. The Federal Communications Commission and major industry players, like AT&T and Motorola, specified America's first public mobile radio telephone system, AMPS (Advanced Mobile Telephone System). By the mid-1980s, AMPS was a proven technology and cellular subscriber growth was constantly exceeding forecasts.

By the early 1990s, cellular technology had become so popular that the first-generation analog systems could not keep up with the demand. New second-generation digital systems were developed to address the capacity shortfall. In the United States, three digital technologies were standardized and deployed: IS-136 (a TDMA technology utilizing the AMPS 30-kHz structure), IS-95 (a 1.25-MHz CDMA carrier scheme) and GSM (the European 200-kHz TDMA standard). This multi-standard wireless environment provided a unique proving ground for the three technologies. While IS-136 and IS-95 engaged in 'standards wars,' GSM gained a foothold in America. At the same time, GSM was achieving global acceptance because it offered a rich selection of capabilities and features that provided real incremental revenues for operators. As more and more countries adopted the technology, GSM experienced tremendous economies of scale for everything from chipsets to handsets, infrastructure and applications.

While the industry continued to experience stellar growth, American manufacturer dominance was challenged by Nordic companies, especially for the GSM technology. They brought to the United States, innovative, competitively priced products, backed by talented communications professionals with years of experience in designing, manufacturing, engineering and installing cellular equipment and systems throughout the world.

By the late 1990s, the Internet was pervasive and the wireless industry looked to mobile data as the growth opportunity. Once again, the industry undertook the task of defining

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