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## STANDARDS FOR THE NEXT-GENERATION NETWORK

In this issue of the Standards Series we present three articles covering standards on the next-generation network (NGN). The concept of a new integrated broadband network has developed over the last few years and been labeled NGN. The International Telecommunication Union — Telecommunication Standardization Sector (ITU-T) has led the standards activities in collaboration with regional standards bodies and fora. This feature topic is organized to present the current situation in the development of NGN standards; or, what, when, and how is NGN?

Given the already “universal nature” of the Internet and its associated infrastructure and applications such as email, file transfer, and Web, it can be assumed that IP-based systems will form the basis of the NGN. Thus, the NGN is an enhanced IP-based network. It is generally agreed that the main difference between traditional telecommunications services and NGN is the shift from separate vertically integrated application-specific networks to a single network platform capable of carrying any and all services. For telephone services this includes a shift from a circuit-switched to a packet-switched infrastructure. The NGN activity is aimed at ensuring that next-generation IP-based networks will be able to meet the standards of service normally associated with public telecommunications networks, not only for telephone services, but also for the widest possible set of present and future multimedia applications.

The introductory article, “Realization of the Next-Generation Network,” by Chae-sub Lee and Dick Knight, provides some insight into the history, definition, requirements, and future trends of the NGN standards. It concentrates on a high-level overview to provide a strategic direction for standards toward a complete NGN providing fixed-mobile convergence, tele-broadcasting, and all aspects of 21st century communications.

The second article, “Introduction to ITU-T NGN Focus Group Release 1: Target Environment, Services and Capabilities,” by Marco Carugi, C. Brent Hirschman, and Atsunobu Narita, describes some interesting use cases of services and capabilities to be supported in NGN. The target environment, relevant services, and some critical capa-

bilities identified by the ITU-T Focus Group on NGN (FGNGN) for the first phase of NGN deployments, NGN Release 1, are then described. Finally, some examples of services to capabilities mapping are provided.

The last article, “NGN Architecture: Generic Principles, Functional Architecture, and Implementation,” by Naotaka Morita, Thomas Towle, and Keith Knightson, describes architectural aspects of NGN in terms of general principles, functional representation, and a typical realization. According to the general reference model that assumes decomposition of service and transport, the NGN can be represented by multiple functional groups. One of the key realizations for session-based services, based on the IP multimedia subsystem (IMS), is introduced with enhanced points to meet both fixed mobile network requirements.

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### BIOGRAPHIES

YOICHI MAEDA [M] (maeda@ansl.ntt.co.jp) received B.E. and M.E. degrees in electronic engineering from Shizuoka University, Japan, in 1976 and 1978. Since joining NTT in 1980, he has been engaged in research and development on access network transport systems for broadband communications including SDH, ATM, and IP. From 1988 to 1989 he worked for British Telecom Research Laboratories, United Kingdom, as an exchange research engineer. He currently leads the Global Strategy and Full Service Access Systems Groups in NTT Access Network Service Systems Laboratories. Since 1989, he has been an active participant in ITU-T Study Groups 13 and 15 and Full Service Access Networks initiatives. He is currently serving as Chairman of ITU-T SG15. He is a member of the IEICE of Japan. He has been feature editor of the Standards Series in *IEEE Communications Magazine* since 1999.

BRIAN MOORE (brian@bwmc.demon.co.uk) received B.Sc. and M.Sc. degrees in electrical engineering and telecommunications systems, and is a Chartered Engineer and Fellow of the Institution of Electrical Engineers, United Kingdom. He has been working in the telecommunications standardization field for over 30 years and has held many chairmanships in CEPT, ETSI, and the ITU in the area of network standards. He has been involved in standards development for data networks, signaling systems, ISDN, and IP-based networks. He is currently Chairman of ITU-T Study Group 13, which is the focal point for the standardization activities on NGNs. After a career of over 30 years with British Telecom, he has for the last eight years been a consultant to Lucent Technologies.