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A Planning Guide for Digital Television Contribution and Distribution Networks 1st Edition



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This publication presents a comprehensive overview of the technical aspects of digital television transmission systems, in particular via geostationary-satellite links, and the new facilities which they provide, at the same time, giving some guidance on the economic considerations which should be made when implementing them. It also covers other transmission systems such as fibre-optic circuits and digital microwave links, and includes an exhaustive glossary of terms and extensive referencing to ITU sources. This is an essential handbook for all TV broadcasters when considering acquiring this new technology.

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1st Edition

The advantages of digital transmission, including bandwidth efficiency, delivery of consistently good quality vision and sound signals, enable the provision of new enhanced services. Potential problems are described, such as increased transmission delay or latency, possible degradation due to the concentration of compression systems and the sudden onset of catastrophic failure when link margins are inadequate. Information theory as applied to the transmission of television signals is explained, especially entropy and its antecedent redundancy, which determine how much compression may be applied. Compression techniques are described with a detailed explanation of MPEG-2 coding procedures.

Geostationary satellite links provide a very convenient means of establishing point-to-multipoint distribution networks and they also provide flexible contribution circuits. Therefore the publication describes satellite links in some detail, whilst providing a brief on other transmission systems, such as fibre-optic circuits and digital microwave links. A comprehensive glossary of terms and a list of relevant ITU recommendations and other pertinent documents is also provided.

Certain characteristics of digital transmission are fundamentally different from analogue transmission, and it is necessary to gain some understanding of these special characteristics, in order to make informed judgements about network digitalisation.

This document summarises the technical aspects of the proposed digital transmission systems and the new facilities which they provide, whilst also giving some guidance on economic considerations.

In general new technologies require several years to overcome their teething problems. Moreover professional television equipment prices normally diminish over the first few years of production, once development costs have been recuperated.

This is due to the fact that the actual hardware production costs typically represent only about 25% of the initial sale price of such equipment, the remaining 75% covering development costs. Hence once development costs have been recuperated, the equipment sale price can be significantly reduced.

Consequently developing countries would be well advised to wait until the new technology stabilises and digital transmission equipment prices diminish, before introducing the new technology.

- Sections 1 to 15 of this document give guidance to broadcasters contemplating digitalisation of their television networks.
- Appendices A to I give background information and some of the basic theory of digital transmission.
- Appendices J, K and L give a general survey of the digital compression of television signals, with an explanation of MPEG-2 coding.
- Appendices M and N provide a glossary of terms and abbreviations and a list of relevant ITU recommendations plus other source documents respectively.

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