

## Preface

Radical changes have begun in the methods used in the production, post production, and distribution of television programs. The changes leverage the technologies of digital signal processing, computers, and data communications. They offer the possibilities of significantly enhanced creativity, improved efficiency, and economies of scale in the creation of television programming. Driven by the growing demand for programming to fill the multiplicity of competitive distribution channels to consumers that are being put into place around the world, they are likely to become pervasive in teleproduction over the next five to ten years.

To harness the full potential these changes present, certain prerequisites must exist. These include well-understood methods for dealing with a variety of compression schemes, standard interfaces for the interconnection of equipment, standardized file formats, uniform means for collecting and storing the many elements that contribute to programs, and common mechanisms for describing program elements and for accumulating related information. For maximum benefit to be derived from the new techniques, the underlying supporting structures must be implemented identically world wide.

With this background, the European Broadcasting Union (EBU) and the Society of Motion Picture and Television Engineers (SMPTE) formed a joint Task Force for the Harmonization of Standards on the Exchange of Television Programs as Bit Streams. As its first assignment, the task force was charged with producing a blueprint for the implementation of the new technologies looking forward a decade or more.

This rather remarkable document is the result of that effort. It was produced by a group of some 80 experts from Europe, Japan, and North America, meeting formally five times over a period of less than six months. It represents the first attempt by the several industries involved to look into the future together and to set a direction for all to follow. It takes as its premise the need to identify requirements that users will have as they adopt the new methods. It includes the views of users and manufacturers, both of which are needed in order to get a picture of what will be implemented and how it can be done.

At the start of this activity, some saw it as an opportunity to select a single video compression scheme to be used at a moderate bit rate for a wide range of production and post production applications. After thorough discussion, however, it was recognized that such a goal was not realistically achievable. Because of the many trade-offs that exist between compression methods, their parameters, and the performance achieved in specific applications, different techniques will be required in particular situations to meet explicit requirements. Thus the greatest benefit to all concerned will come from providing mechanisms that will permit systems to easily handle various compression schemes while maintaining the maximum quality of the program elements.

To this end, significant progress has been made in identifying the structures that will be necessary to support television production using compression and in initially defining their characteristics. Among these is one of the most important findings of this effort, a new class of program-related data called "metadata," which is descriptive and supporting data connected to programs or program elements. Metadata is intended both to aid directly in the use of program content and to support the retrieval of content as needed during the post production process.

The work of the task force is not done. This report is therefore something of a snapshot of where the work stands currently. Over the next six months or so, the task force will build on the results reported herein and devise the development strategies that will permit development to be done, tests to be conducted, and standards to be written that will begin implementing the future envisioned herein. The work products required will be described and assigned to follow-on activities for their completion. A further report is likely upon completion of that step.

This report is divided into an Executive Summary, an Introduction, and three Chapters – on Compression, Physical Links and File Formats, and Wrappers and Metadata, respectively. The chapters are followed by a series of Annexes. The chapters contain the major findings of and are the work of five separate sub-groups that were assigned the tasks of investigating each of the subject areas. The Annexes contain supplementary and tutorial information developed by the sub-groups as well as information from the various sections brought together in one place. As they were written separately by different authors, the sections do not have the cohesiveness of style that might come from common authorship. Nevertheless, an attempt has been made to reconcile differences in terminology so that individual terms have a single meaning throughout the document.

The work of the task force and the preparation of this report have provided a unique opportunity to put aside the short term business of technology development and standards preparation and to take a longer term view into the future with the hope of directing its path. As co-chairmen, we are honored to have been given the responsibility to lead the exercise. We wish to thank all those involved, both through direct participation and through financial and travel support of the many participants, for their efforts. There have been many long days spent by a large number of people to produce this initial output. We believe the result has been worth the labor.

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