Abstract

Music notation modeling is entering the new multimedia Internet age. In this era new interactive applications are appearing on the market, such as software tools for music tuition and distance learning, for showing historical perspective of music pieces, for musical content fruition in libraries, etc. For these innovative applications several aspects have to be integrated with the model of music notation and several new functionalities have to be implemented, such as automatic formatting, music notation navigation, synchronization of music notation with real audio, etc. In this chapter, the WEDELMUSIC XML format for multimedia music applications of music notation is pre-
presented. It includes a music notation format in XML and a format for modeling multimedia element, their relationships and synchronization with a support for digital right management (DRM). In addition, a comparison of this new model with the most important and emerging models is reported. The taxonomy used can be useful for assessing and comparing suitability of music notation models and format for their adoption in new emerging applications and for their usage in classical music editors.

**Introduction**

The modeling of music notation is an extremely complex problem. Music notation is a complex piece of information that may be used for several different purposes: audio coding, music sheet production, music teaching, entertainment, music analysis, content query, etc. In the Internet multimedia age, music notation and associated applications are being left behind. Many other applications are getting the market and most of them will become more diffuse in a short time. A unique and comprehensive format for music incorporating other media is required. In order to satisfy diverse applications several aspects have to be considered, ranging from problems of information modeling to integrate the music notation. The main problems are related to the organization of music notation symbols in a suitable and acceptable form. Such a set of rules has never been formalized, although they are informally used in several books and considered part of the experience of professional copy editors (engravers) of music sheets. Other problems include adoption of classical music notation in applications subject to DRM (digital right management), versioning, multimedia integration, and navigation, etc.

The evolution of information technology (IT) has recently produced changes in the usage of music notation, transforming the visual language of music from a simple coding model for music sheet to a tool for modeling music in computer programs. Enabling cooperative work on music and other information integration tasks is also necessary. More recently, users have discovered the multimedia experience, and thus, the traditional music notation model is likely to be replaced with something much more suitable for multimedia representation of music. The improved capabilities of computer programs are going to solve also early music notation formatting problems with powerful tools based on artificial intelligence technologies.

In this chapter, the main problems and the most promising evolution trends of music notation are reported. To this end, a comparison of the most representative music notation formats is included. The comparison has been performed
MusicXML: The First Decade

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