メタフロンティア
映像メディアとメタデータの
技術コンサルティング

For Provenance and Tamper Detection of MXF Materials
~ DMS for Identity and Integrity (DMS II) DG aimed at "C2PA over MXF" has started its activity in SMPTE ~

Introduction
With the remarkable advances in imaging and speech processing applications using the generative AI, it is now easier to create digital fake contents, so-called deep fakes, which cannot be distinguished from the original ones, and the spread of such contents has become a major social issue. Now, activities of the C2PA that provides the authentic provenance and the tamper detection technologies for digital contents have attracted a great deal of attention in the media industry.

What is C2PA (Coalition for Content Provenance and Authenticity)?
The C2PA is a standardization organization established in 2021 with an aim of developing technical standards for the technologies and disseminating them to the media industry. Before the C2PA, the CAI (Content Authenticity Initiative) was launched in 2019 by Adobe, the leading company in the desktop publishing (DTP) industry, together with the New York Times and others. Then the C2PA was founded in additionally collaborating with ARM, BBC, Intel, Microsoft, and Truepic to develop technical standards for achieving these goals. More than 200 media-related companies around the world have already participated in this program, including Nikkei, NHK, Dainippon Printing, and Sony.

C2PA has already completed the development of the detailed specifications. It has been tested in collaboration with major media companies, and manufacturers have already started to sell the C2PA compliant products. As a result, major media companies have announced their adoption of the C2PA. In this way, the C2PA is establishing its position as a worldwide de-facto standard in the DTP industry.

Spread to the Broadcast Industry
Large waves of the C2PA have rushed to the broadcast industry this year. More specifically, SMPTE, which specifies technical standards in the media production industry, has established a working group (TC-31FS Drafting Group: Descriptive Metadata Scheme for Identity and Integrity, referred to as "DMS II DG") to consider the C2PA compliant MXF ("C2PA over MXF") and started its activities.

The fact that SMPTE has started the "DMS II DG" project implies that the "C2PA over MXF" ready media production products will be brought to the market shortly after an expected termination period of the project of October next year, which will be the beginning of 2026 at earliest.

Issues to be Addressed
However, there are issues to be addressed in realizing it. First of all, the C2PA has already standardized its support for an MP4 file. Unfortunately, this is not sufficient to meet the detailed requirements from the media production in the broadcasters.

Furthermore, "DMS II DG" is aimed at not only the C2PA but also comprehensive solutions that are consistent with related activities such as IPTC[1], CAWG[2] and similar technologies such as JPEG Trust [3], and for that purpose, extensions of the C2PA specifications need to be carefully considered.

Our Challenge
In order for the broadcast industry to adopt the "C2PA over MXF" without delay, metaFrontier.jp, the MXF and SMPTE metadata professionasls working on the SMPTE standardization activities for more than 20 years, will strongly promote these activities by proactively participating in the "DMS II DG" project and proposing solutions to the above-mentioned issues.

Therefore, we would like to ask all the concerned parties for their guidance and support to us.

1) International Press Telecommunications Council (https://iptc.org/)
2) Creator Assertions Working Group(https://cawg.io/)
3) ISO/IEC JTC 1/SC 29/WG 1 JPEG Coding of digital representations of images

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Profile
Joined Sony in 1991 and moved into the multimedia field after the R&D for the semiconductor. Since 1998, he had been the chief schema designer of the world's first comprehensive multimedia metadata scheme MPEG-7 (ISO/IEC15938). In 2001, he moved to the professional media product biz. division in Sony, where he was in charge of Sony XDCAM metadata-related development based on his experience in MPEG-7, and designed from an entire picture of the metadata system to the detailed specifications of the individual metadata schemes.
Founded metaFrontier.jp, LLC in 2011. With serving technical consulting related to the file-based, set up several metadata-related projects in SMPTE, some of which are still in progress.
Recently, focusing on supporting the creation of international patents for a past decade and having succeeded in creating more than 20 high-quality foreign patents by developing trustworthy patent attorneys not only in Japan but also in Europe, the United States, and China, and by maximizing their potential power via a direct communication with them.