**REWRITABLE DATA EMBEDDING ON MPEG CODED DATA DOMAIN (ThuAmOR3)**

**Author(s):**
- Katsuhiro Nakajima (Faculty of Engineering, Shinshu University, Japan)
- Kiyoshi Tanaka (Faculty of Engineering, Shinshu University, Japan)
- Tetsuya Matsuoka (Research Laboratory, EPSON AVASYS Corp, Japan)
- Yasuyuki Nakajima (KDDI R&D Laboratories Inc, Japan)

**Abstract:**
In this paper, we propose a rewritable data embedding scheme on MPEG coded data domain for content managements including DRM, content controlling and indexing. Data embedding is performed in a block by block basis, where the length of zero run and the value of dummy AC component of quantized DCT coefficients are used as a data carrier. In the detection process, we can reconstruct the MPEG coded data that is very close to the original one, which enables us not only to rewrite embedded data but also retain the original MPEG video quality. In the experiment, we show that up to a few kbits/frame data embedding without any large PSNR penalty and data recovery can be realized using typical MPEG-1 coded stream.