

# IEEE JOURNAL ON EMERGING AND SELECTED TOPICS IN CIRCUITS AND SYSTEMS

## Call For Papers

## Screen Content Video Coding and Applications

### Guest Editors

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### Scope and Purpose

Screen content video has evolved from a niche to a mainstream due to the rapid advances in mobile and cloud technologies. Real-time, low-latency transport of screen visuals between devices in the form of screen content video is becoming prevalent in many applications, e.g. wireless display, screen mirroring, mobile or external display interfacing, screen/desktop virtualization and cloud gaming. Today's commonly-used video coding methods, however, have been developed primarily with camera-captured content in mind. These new applications create an urgent need for efficient coding of screen content video, especially as the support of 4k or even 8k resolution begins to achieve mass market appeal.

Screen content video coding poses numerous challenges. Such content usually features a mix of computer-generated graphics, text, and camera-captured images/video. With their distinct signal characteristics, content-adaptive coding becomes necessary. This is without mentioning the varied level of the human's visual sensitivity to distortion in different types of content; visually or mathematically lossless quality may be required for all or part of the video.

Recognizing the demand for an industry standard for coding of screen content, the ISO/IEC Moving Picture Experts Group and ITU-T Video Coding Experts Group have since January 2014 been developing new extensions for HEVC. The Video Electronics Standards Association also recently completed a Display Stream Compression (DSC) standard for next-generation mobile or TV/Computer display interfaces. The development of these standards introduced many new ideas, which are expected to inspire more future innovations and benefit the varied usage of screen content coding.

Besides coding, there are many other challenging aspects related to screen content video. For instance, in applications like screen mirroring and screen/desktop virtualization, low-latency video processing and transmission are essential to ensure an immediate screen response. In addition to real-time streaming technologies, these applications need a parallel-friendly screen encoding algorithm that can be performed efficiently on modern mobile devices or remote servers in the data center, and require, in certain use cases, the harmony of their computing resources, to keep the processing time to a minimum. At the receiver side, best-effort decoding with consideration for transmission errors, along with visual quality enhancement, is expected. Addressing these constraints requires research from multiple disciplines as is the case for other applications.

The intent of this special issue is to present the latest developments in standards, algorithms, and system implementations related to the coding and processing of screen content video. Original and unpublished research results with topics in any of the following areas or beyond are hereby solicited.

### Topics of interest

- Screen content video coding techniques and standards, e.g. HEVC extensions and DSC
- Visually or mathematically lossless screen content video coding
- Application-specific screen content coding, e.g. display stream or frame memory compression
- Screen-content related pre/post-processing, e.g. resizing and post-filtering
- Visual quality assessment for screen content video
- Parallel-friendly, low-delay encoding optimization
- Robust decoding with error and power control
- Hardware/software/cloud-based screen codec implementations
- Real-time, adaptive screen content transport over Internet or wireless networks
- Design examples of novel screen content video applications, e.g. screen/desktop virtualization and cloud gaming
- System performance analysis and characterization

### **Important dates**

1 Manuscript submissions due	<b>2016-01-22</b>
2 First round of reviews completed	<b>2016-03-25</b>
3 Revised manuscripts due	<b>2016-05-13</b>
4 Second round of reviews completed	<b>2016-07-08</b>
5 Final manuscripts due	<b>2016-07-22</b>

### **Request for information**

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