



Graphical Abstract Description and Specifications

To enhance the appearance of your paper on IEEE Xplore®, a Graphical Abstract can be displayed along with traditional text. The Graphical Abstract should provide a clear, visual summary of your paper's findings by means of an image, animation, video, or audio clip.

NOTE: The graphical abstract is considered a part of the technical content of the paper, and you **must** provide it for peer review during the paper submission process.

The Graphical Abstract must be a concise, illustrative reflection of the content of your paper. It should:

- Be a visual or audio highlight of the main point of your paper and represent a microcosm of the full paper.
- Include a caption or explanatory note about the visual or audio highlight.
- Follow the requirements for submitting multimedia as provided at:
<http://www.ieee.org/documents/MMdocumentation.pdf>.

When preparing the Graphical Abstract, the following general specifications should be adhered to:

Image Specifications

Dimensions: 660x295

File Types: JPG, TIFF, PNG, GIF, Word, PDF, PS, EPS, and BMP

Recommended File Size: <45 KB

NOTE: All images for the Graphical Abstract will be converted to JPG format.

Video Specifications

Frame Rate: 29.97 FPS (frames per second)

Resolution: 16:9 screen aspect ratio

File Types: MP4 (MOV, WMV, and AVI can be provided and converted to MP4)

Recommended File Size: <100MB

NOTE: Please convert PowerPoint slideshows into a movie (MOV) and set the time for each frame to display from 3 to 5 seconds. A guide for specifically preparing a video graphical abstract is provided at:

http://www.ieee.org/publications_standards/publications/authors/mm_video.pdf

Audio Specifications

File Types: MP3, AIFF, MOV (Quicktime Audio), RA (Real Audio), and WAV (Windows Audio)

Recommended File Size: <3MB