Image formats in web

There are various types of image extensions utilized in web design.
The first difference between them is the graphics they use, either Raster or Vector. But what are the differences?

Raster images:

Raster files are composed of pixels that come together to form an image. **More pixels** equal to **better quality** which also equals to **larger file sizes.**

Vector graphics:

Vector graphics (or SVGs) are graphics consisting of anchored dots connected by lines and curves. Vector graphics are **not resolution dependent** and so it's possible to **scale Up or Down without a loss in quality..**

Here are the most popular image extension used:

- JPEG, PNG, GIF, TIFF: Raster
- SVG: Vector
- WebP: Can support both

Here are the **pros** and **cons** of each format:

Jpeg

-Lossy compression
-Well-suited for photographs and complex images
-Supports millions of colors

Pros:

-Small file sizes
-Widely supported

Cons:

-Loss of quality with compression
-Not suitable for images with transparency

Best Use Cases:

-Photographs and images with gradients
-Websites with a focus on page loading speed

PNG

-Lossless compression
-Supports transparency
-Suitable for images with sharp edges and text

Pros:

-Lossless quality
-Supports transparency

Cons:

-Larger file sizes than JPEG
-Less suitable for photographs

Best Use Cases:

-Logos, icons, and images with transparency
-Web design elements requiring a transparent background

GIF

-Limited color palette(256 colors)
-Supports simple animations
-Lossless compression

Pros:

-Supports animations
-Suitable for simple graphics and icons

Cons:

-Limited color range
-Not ideal for photographs or complex images

Best Use Cases:

-Simple icons and graphics
-Animated images

TIFF

-Lossless compression
-Supports high-quality images
-Suitable for printing and professional applications

Pros:

-High-quality images
-Supports various color depths

Cons:

-Larger file sizes than other formats
-Limited support in web browsers

Best Use Cases:

-Professional photography and printing
-Situations where maintaining high image quality is crucial

SVG

-Scalable without loss of quality
-XML-based format
-Supports interactivity and animation

Pros:

-Scalable to any size
-Ideal for logos and icons
-Supports interactivity and animation

Cons:

-Not suitable for complex images like photographs

Best Use Cases:

-Logos, icons, and illustrations
-Situations requiring responsiveness and scalability

WebP

-Developed by Google
-Supports both lossy and lossless compression
-Good compression efficiency

Pros:

-Smaller file sizes than JPEG and PNG
-Supports transparency and animation

Cons:

-Limited browser support compared to other formats

Best Use Cases:

-Web images requiring both transparency and animation
-Situations prioritizing file size and performance