

Current Practice

The current practice is to proportionally down-size the first page from a multi-age resource, first image of a multi-image resource or segment of a video file down to a maximum edge of 80 pixels. This decision was established in the R5.1 Thumbnail & JPEG Datastream Specification (http://rucore.libraries.rutgers.edu/collab/ref/spc_sawg_r5_1_thumbnail_jpeg_ds.pdf) in 2009.

Since then search interface design has evolved along with the interactivity expectations of users. The purpose of this specification is to revise current practice to provide more functional and useable thumbnails in the future.

Use Cases for Larger Thumbnails

Thumbnail datastreams are typically used in a brief search results list. When viewing a full record display if a JPEG datastream exists a larger image, 200 pixels, is generated and used in the display. If a JPEG doesn't exist, as in the case of video files, the thumbnail datastream is used. The current size of the thumbnail is suitable in the brief results list, but not very suitable in a full record display when a JPEG datastream doesn't exist.

The User Services group has also requested that a "gallery" brief record result interface be developed. That interface would emphasize the image files and deemphasize the corresponding metadata in the brief results display. This display would greatly benefit from having larger thumbnail datastreams.

A Google sitemap is being explored for video and part of that sitemaps requirement is to make available a thumbnail file. The specifications for that file outlined by Google are the following:

A URL pointing to the video thumbnail image file. Images must be at least 160 x 90 pixels and at most 1920x1080 pixels. We recommend images in .jpg, .png, or .gif formats.

Source: <https://support.google.com/webmasters/answer/80472?hl=en>

Fair Use

The fair use and copyright implications of increase thumbnail sizes need to be considered. We do not restrict access to thumbnails and we do not want to begin to enforce that process on this datastream. A thumbnail size needs to fit the fair use policy and not provide any useable or legible information when the thumbnail is of a restricted/embargoed item.

Marker provided confirmation from the Copyright and Licensing Librarian that thumbnails up to 220 pixels wide or high are acceptable.

If you would be satisfied with the 220 pixel standard, which looks OK to me, we could do that and stay slightly below the AAMD standard.

Source: <http://software.libraries.rutgers.edu/node/2911>

Conversion Tests

A set of 10 objects were selected from the repository, six with source JPEG files and four with source PDF files. A series of thumbnail JPEG generation tests were performed. This test used the installed imageMagick software on the development server. The following command was used for all conversions and was found to generate acceptable quality thumbnails

Command

convert -strip -interlace Plane -gaussian-blur 0.05 -quality 85% -thumbnail {dimensions} {source file} {output file}

The following tables outline the findings from the conversion test. The current file size of the thumbnail is compared to the file size of a resampled thumbnail of the same physical size, but using the command mentioned above. This is provided to offer some context when then creating larger thumbnails using the same command.

Using the above command and generating the same physically sized thumbnails saw an overall decrease of 52% in the sample size of thumbnails.

Thumbnails that were sized at a 200 pixels the file sizes were on average 61% larger than the current thumbnails that are 80 pixels. Finally, 220 pixel images file sizes were 19% larger than 200 pixel images, and 91% larger than 80 pixel images.

rutgers-lib	typeOfResource	Image color	source	current thumbnail file size (kilobytes)	resampled thumbnail (kilobytes)	% difference
3006	text	black & white	JPEG	2.54	2.72	7.00%
3250	text	color	JPEG	3.16	3.29	4.00%
4092	stillimage	black & white	JPEG	9.53	1.97	-79.00%
10923	stillimage	color	JPEG	12	3.27	-73.00%
14941	stillimage	black & white	JPEG	9.12	1.87	-79.00%
24735	text	color	PDF	8.85	9.28	5.00%
29714	stillimage	color	JPEG	19.6	2.54	-87.00%
36240	text	black & white	PDF	1.56	2.72	74.00%
37402	text	color	PDF	1.12	3.36	200.00%
37513	text	black & white	PDF	1.26	2.02	60.00%
Totals				68.74	33.04	n/a
Average				6.874	3.304	-52.00%

rutgers-lib	resized 200 pixels (kilobytes)	% increase from current	resized 220 pixels (kilobytes)	% increase from current	% increase from 200 pixel	Area increase from 200 pixel to 220 pixels
3006	6.22	145.00%	7.72	204.00%	24.00%	21.25%
3250	8.18	159.00%	9.76	209.00%	19.00%	20.64%
4092	9.07	-5.00%	10.8	13.00%	19.00%	21.06%
10923	12.3	3.00%	14.2	18.00%	15.00%	20.60%
14941	9.94	9.00%	12	32.00%	21.00%	20.82%
24735	24.5	177.00%	29.1	229.00%	19.00%	20.64%
29714	10.9	-44.00%	13.1	-33.00%	20.00%	21.00%
36240	8.42	440.00%	10	541.00%	19.00%	20.64%
37402	12.7	1034.00%	15.1	1248.00%	19.00%	21.00%
37513	8.43	569.00%	9.66	667.00%	15.00%	20.64%
Totals	110.66	n/a	131.44	n/a	n/a	
Averages	11.066	61.00%	13.144	91.00%	19.00%	20.83%

Conclusion

Given the current size of the image in the full record display, the need for a gallery view of brief record results and the Google video sitemap requirement it makes sense to create thumbnails that are at least 160 pixels. If we create thumbnails that are 200 pixels we will not have to create images for the full record view on-the-fly. For the classic brief record list we can also use the larger thumbnails and simply rescale them using CSS, so we do not have to retain the current 80 pixel thumbnails. The % increase from 200 pixels to 220 pixels is 19% and the overall image size does increase by 20.83%. Either choice of 200 pixels or 220 pixels seem like acceptable options, with the 220 pixel option providing from more flexibility moving forward at a limited cost.