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M5.28 Report on Guidelines to produce publication ready maps

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PU	Public	**X**
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
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M5.28 Report on Guidelines to produce publication ready maps

This report has been compiled by Dominik Mikiewicz (MIZPAN) with contribution made by users of the wp5-geo-edit@mnhn.fr mailing list, especially Andreas Müller (BGBM), Pere Roca (CSIC) and Pablo Sastre Olmos (CSIC)

Introduction

A previous testing of the Edit map viewer by taxonomists from the Royal Museum for Central Africa identified the following requirements for the service in terms of quality map printing:

- *Need for black and white or gray scale maps, not only color maps for paper journals where colored pages are either not allowed or too expensive* - ***print related***
- *to cope with black and white or gray-scale maps more easily distinguishable symbols will be needed* - ***cartographic design related***
- *providing options with 400 dpi minimal resolution* - ***print related***
- *files generated for download can be very large, need options to compress them if high quality images are needed* - ***'print' related***
- *Many journals request Tiff format, would thus be easier to have the option to have the image of the map directly in Tiff to avoid that the end-user has to do the conversion himself locally* - ***'print' related***
- *Provide maps in a size optimized for common page standards (A5, A4 ….)* - ***print related***
- *Have clear and nice background maps going from whole continent level to the level of a small river basin* - ***map design related***

While designing a quality map involves many different aspects, including cartographic design, graphic design, printing, etc., this document deliberately focuses only on the printing aspect of the map production as it was not clear what a quality printing exactly means.

It has been established that the following aspects of printing should be addressed to allow their proper implementation within the map viewer:

1. Colours
2. Resolution
3. Map / graphic size
4. Font issues
5. File formats

1. Colours

- Colour printing is usually done in CMYK (Cyan, Magenta, Yellow, black) but might be extended by additional colours if needed

- Black & White and Greyscale graphics are printed in one colour only and it doesn't have to be black (for example monochrome printing)
- Illustrations for embedding in paper work (RGB is enough for a standard text document; CMYK might be considered if an appropriate printing process is to be employed)
- On screen presentations are viewed using RGB colour model

2. Resolution

Resolution defines the quality of a raster image – the number of pixel per inch (dpi). Basically the higher the resolution the better the quality.

- Usually the resolution @ 300 dpi for both colour and greyscale photographs should be sufficient, although in many cases even 150 dpi might be acceptable.
- Resolution for Black & White graphics should be at around 600 dpi to maintain its sharpness
- Resolution for graphics embedded in text documents can be at 150dpi – this a compromise between the quality and ease of use of a text document with embedded graphics
- Screen resolution is 72 dpi (Mac OS X assumption) and 96 dpi (MS Windows assumption)
- Resolution for line art graphic (maps for example) should be higher than 300dpi to avoid introducing blurriness to the image (600 is perfect, but 450 should be enough).
- If a map shows raster layers only (imagery, etc) 300 dpi should be enough

- Resolution doesn't apply to vector graphic as it doesn't change its quality with size

- User should be able to specify the needed quality of the requested image – dpi or if the image is to be used in presentation, its size in pixels (see 3)

3. Map / graphic size

Most journals use columns (2 or 3) but there are some that don't – so there is need to know what is the maximum width of the graphics that can be published – it has to fit in a column / allowed space.

- User should be able to specify the needed map size in cm / inch – its width and possibly the height too. This would account for generating non-standard size images. Standard page sizes should be included too – A4, A5, A6, etc.
- For on screen presentations a user should be able to specify the needed graphic size in pixels, for example 800 x 600

4. Font issues

While a high quality printing is standard now, there are still journals printing on older machines and therefore in lower resolution. Font size for printing should never be smaller than 5, 5.5 pt

If the pdf (eps and ps) and vector graphics is to be used the file should have the fonts embedded or the text converted to curves so it looks exactly the same on every machine, even if there are no local fonts that were used for the project.

- Not using fonts smaller that 5.5 pt
- Embedding fonts in documents or converting them to curves

5. File formats

The standard these days is pdf, although eps and ps are also widely used. Not to mention jpg / jpeg or tiff. It very much depends on the employed pagination process within a publishing house, so the tool should be flexible.

File formats:

- PDF
- PS
- EPS
- TIFF
- JPG
- PNG