

Why Should GIS Operators Care

Improving Effectiveness of Daily Activities GIS Operators

Most GIS operators don't want to print. When working with their Geographic Information System (GIS), the last thing they want to do is print. Gathering information, combining different data sets, analysing the results, deriving conclusions, defining actions, that is what they find interesting. But printing on paper?

By Adwin Kannekens



The Océ TCS500, see page 35 for more information.

What is the Problem?

Given the fact that GIS operators don't want to print, they don't spend a lot of time on sending their output to the printer. Most of the time, hitting the 'print' button in the application software does the job. And by doing so, a lot of the resources and effort put into GIS are wasted or not used to the maximum. This is like a chef who spends four days preparing and cooking a Christmas meal with the team and then serving it to guests on paper plates with plastic forks. Or like eating a fast-food hamburger from real porcelain with a silver knife & fork.

Imagine that an emergency happens, for example a child is missing or the drinking water system has been contaminated. It might be that a number of sheets from the GIS must be printed to solve this emergency on site. In this situation, the GIS operator is not interested in the availability of the first sheet but in the last one (read: the whole set). That means overall productivity is essential. In this situation it is very unlikely

that he cares about the media used.

Optimising things for one situation might easily lead to unacceptably high costs in another situation (fast food on porcelain) or to lower rewards and credibility (paper plates on Christmas Day). So it is important for GIS operators to care about printing. Or at least their managers. This should result in a printing system hooked up to GIS software that requires hardly any operator intervention to support a variety of printing jobs in the optimum way.

Right Print Mode

Wide format printers that can do colour (and colour is a no-brainer for GIS printing) are all based on inkjet technology, mainly thermal inkjet. The advantages of this technology are clear: good print quality, a big colour gamut and low initial investment. Costs mainly have to do with the ink, so this is totally dependent on actual usage. Furthermore there is a variety of media to choose from.

On the other hand, when working with ther-

mal inkjet one has to take into account that the prints are created in swatches. The print heads are moving from left to right and back again to put the ink on the paper. Those swatches will be visible in the image. To eliminate this, the image can be printed in multiple passes (read: a different print mode). Although this results in a better print quality, it decreases the print speed. And print speed is already one of the weaker points of the current wide format colour printers.

Basically, an operator has to make a trade-off between the printing quality needed and the amount of time he wants to spend on waiting for the print. A decision that is often made incorrectly by GIS operators. It might be that they are not aware of the consequences or where they can do selections (in the driver). Moreover, visibility of the swatches is worse when printing lines than when printing areas. So theoretically, GIS operators have to take into account the contents of the file for selecting the right print mode.

e About Printing?

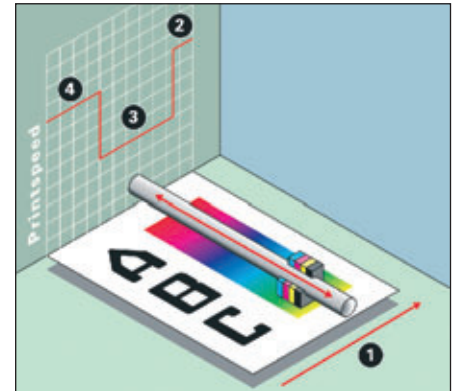
Right Paper Type

Furthermore, one has to realise that most colour printers only support one media roll. This means that whenever you want to print on another media this requires changing rolls. On many colour printers loading a roll is not an easy job. It might also lead to conflicts, especially when multiple operators are using the same printer. Assume that one operator wants to print on high quality (read: expensive) paper for e.g. a presentation to the board while at the same time lower quality (read: cheaper) paper is in the printer. Before submitting the print job the operator will load the high quality media onto the system. However, his colleagues in the room next door are not aware of this and may want to check and discuss their work so far. Without knowing the operator is printing a number of documents that will have a lifetime of only a few minutes on the expensive paper.

When processing the plot file, Dynamic Switching determines which print mode must be applied to print the information. On the fly the printer will, for example, switch from one-pass to four-pass and back, if a part of the plot requires this. This guarantees the optimum trade-off between print speed and print quality. Since this is done automatically the GIS operator does not need to make additional settings to select the number of passes.

Processing Large Files

Printing higher quality prints can take a while. However, the processing of those files can be even more time-consuming. The amount of raster and vector data that can be incorporated in one print from a GIS application can be very large. 100 Mb is common, 500 Mb is no exception and up to 2 GB happens occasionally. The (controller of the) printer has to digest this data and convert it into printable data (bitmaps). Colour printers used for GIS normally print in four colours



Dynamic Switching

- 1 Paper transport
- 2 Maximum print speed for lines and text
- 3 High print speed for area fills
- 4 Back to maximum speed for lines and text

(cyan, magenta, yellow and black). In this case the printer requires 4 bitmaps. Unfortunately, many colour printers do not print when processing those bitmaps. This

The **Océ TDS450** wide format print, copy and scan system is provided with a single high-resolution 600 dpi colour CCD camera and lens. Also contributing to the system's image quality is the lamp used to illuminate the original, which requires no warming-up time. This optical system is in fact a single mirror, thus reducing the number of moving parts to a minimum. In addition, the Océ Image Logic technology -already embedded in black & white systems - has now been extended to colour in the Océ TDS450 scanner. Accurate manual alignment of documents is not necessary: the fully digital automatic width detection is precise to the millimetre. Furthermore the display panel,

inspired by the technology of today's palmtop devices and modern ergonomics, is intuitive and directly accessible to every operator, including wheelchair users. The user interface is fully customisable, using preprogrammed templates that enable users to perform more complex jobs at the touch of a single button. The Océ TDS450 is supported by regularly updated and certified drivers and software applications, The Océ TDS450 is available as standard as a black & white printing system, with the option to expand the system with a full-colour scan-to-file capability.

The Océ TDS450



The **Océ TCS500** wide format colour print, copy and scan system is the successor to the Océ TCS400. It allows printing, copying and scanning of all kinds of wide format originals, both monochrome and colour, from A4 to Ao and up to 36" wide. The scanner, with its Direct Scan technology, is always ready for immediate use, without warming up time. The Océ Power Logic Controller is developed for quickly handling and processing files, and can handle new jobs while printing. The Océ TCS500 prints an Ao colour plot in one minute, while an Ao monochrome plot takes 40 seconds. No trimming is needed, and there is a choice of delivery options. The fully automatic printer calibration enables overnight printing, and media rolls and inks can be changed without interrupting printing. Recurring copy and scan jobs can be done by using predefine templates, allowing complex operations to be performed at the push of a single button. The Advanced Queue Manager gives full control of all pending and running jobs. The Dynamic Switching Technology automatically determines the best print strategy for each part of a plot. Users can choose from 1, 2 or 3 roll units, different processing memory configurations in the controller and a range of delivery options. The copy module is a separate unit.

means that the print times (that already weren't that impressive) are even extended by the amount of time the printer processor needs to process the bitmaps. GIS operators know that this can vary from 30 seconds to an hour or more. What they don't know is how to overcome this.

Optimise Printing from a GIS

Can GIS operators, and their managers, improve the overall performance and presentation of their activities by caring about printing? Possibilities are analysing the workflow, looking at where printing comes into play, using common sense and surfing the Internet for solutions. Provided they can afford the time and enjoy doing this, they can add a lot of value to their organisation. However it is questionable whether these kinds of activities are part of their job description and will be rewarded in the short run (read: when the deadline for the current project is not achieved).

For those who want to outsource this process, there are other possibilities. The GIS operator could contact the supplier of the GIS software. Just like a kind of system integrator most suppliers have customised the software to meet the exact needs of the customer. Therefore, they are fairly involved in the workflow on site and can easily come up with improvements. However, this assumes that they also have knowledge about wide format printing. And often this is not the case. Like GIS operators they are very much interested in things like

mapping, surveying, and analysis, but not in printing. As those system integrators are and must be ahead of the crowd, they tend to focus on the future (paperless office) and suggest hooking up any printer to the network for the time being. Another alternative for GIS operators is to talk to specialised printer companies/resellers. The contact people of professional companies like this are trained in efficiently analysing the workflow of each specific situation. Although they are also trained to sell, the really good ones definitely want to build up a long-term relationship which will be reflected in their advice.

Key Requirements

In order to evaluate the advice of printer companies/resellers, the GIS operator simply needs to have common sense. He must ensure that the following general requirements that can be derived from the above-mentioned situations are met:

- Low number of settings (preferably one) to determine the print quality of the plot;
- Easily accessible settings, for example by means of pre-configured templates;
- Media type selectable in the application, for example in the driver, and proved by the printer before starting to print;
- Colour profiles for commonly used media types available and manageable in the controller;
- Two or three media rolls supported on the printer with automatic selection and easy loading of the media. Ask for a demo;

- Powerful processor to create the bitmaps to facilitate fast print-out times and to productively print sets. Processing of the bitmaps must be done while printing the previous file. This way wasting valuable printing time is avoided.

If those requirements are met, the effectiveness of the daily activities of GIS operators will definitely improve. Though it is understandable that GIS operators don't want to go through these lists with specialised printer resellers/vendors, it is certainly worthwhile. Just imagine that the performance of all GIS operators is improved by 15 minutes, simply because they don't have to wait for prints. They do not waste time sending prints or changing media on the printer. And their presentations are more convincing because of the professional output. This will give all GIS operators one or two weeks per year extra to concentrate on what really concerns them, namely gathering information, combining different data sets, analysing the results, deriving conclusions and defining actions.

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