

Title:	GvSIG as a first choice open source GIS tool for archaeological data processing, visualisation and analysis
Developed for:	Oxford Archaeology (North) http://thehumanjourney.net/
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Abstract

As part of a large-scale road-building project undertaken in 2009, Oxford Archaeology North set out on a trial to test whether open source GIS could be employed for the visualisation and processing of digital archaeological survey data. It was hoped that if this trial was successful it would be possible to continue using open source GIS software for our archaeological excavations rather than the traditionally employed CAD, or closed source GIS software. Our approach had often been criticised, and the move away from CAD, declared problematic by a large number of fellow archaeologists. A study undertaken by Simon Cropper in 2010¹ has already shown clearly that gvSIG as an open source GIS package can be considered more than capable of keeping up with its proprietary rivals.

Case Study

In the long run the use of open source GIS software for archaeological projects will allow us a higher degree of flexibility with the software, allowing us to adapt it our needs. Furthermore its regular usage should certainly prove to be more cost-effective for the company.

In 2009 Ben Ducke released the OA Digital Edition of gvSIG, thus supplying Oxford Archaeology with its very own open source GIS package, refined for the use in archaeology. The main additions to the standard package were improvements to the translation from Spanish to English, and a combined installer that included documentation and sample data alongside the software. Consequently, we chose gvSIG on the road scheme selected as our test-bed site. Quantum GIS (QGIS)² was occasionally used, and over time it became more obvious that these two open source GIS packages differed only slightly in functionality. GvSIG, however, with the integrated SEXTANTE toolbox, fulfilled most of our requirements, and, as a pure desktop GIS, was at the time more suitable for us.

We employed gvSIG on a daily basis, adding the previously downloaded survey data to the project, merging, visualising and querying it. Maps (occasionally refined in Inkscape) would be printed on a daily basis, and images georeferenced, both hand-drawn site plans and high-view photographs. Some initial digitising of hand-drawn site plans was also undertaken (this usually being part of the post-excavation process).

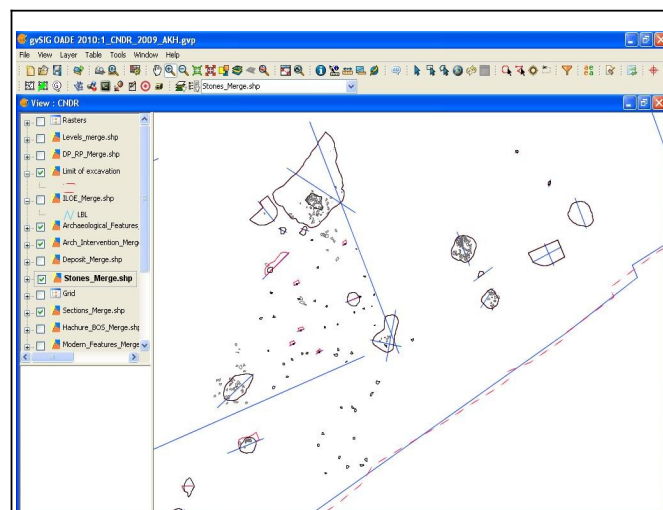


Figure 1: Archaeological survey data in the gvSIG OA Digital Edition

The work-flow was documented in detail and released as an online and downloadable manual³, which was successfully tested on site by members of fieldwork staff. This manual describes each step from setting up the Total Station or GPS (Leica 1200 series), over the downloading of the survey data, to inputting the data into GIS software, digitising and producing of illustrations. This manual has proven a success, not only within commercial archaeology, but has also been known to be of use, for instance in university teaching.

¹ Cropper, Simon 2010, gvSIG is a viable robust alternative to commercially available GIS packages, OSGeo Journal Volume 6, 23-25
<http://www.osgeo.org/ojs/index.php/journal/issue/view/29>

² <http://qgis.org/>

³ <http://openarchaeology.net/project/survey-and-gis-manual/>; On the Oxford Archaeology Library: Survey and GIS Manual:
<http://library.thehumanjourney.net/367/>



Survey and GIS Manual
Leica Series 1200 Robotic Total Station
 Second Edition

Anna Kathrin Hodgkinson



Figure 2: Survey and GIS Manual produced on behalf of OA North

The work-flow has since been extended⁴ further to include additional cartographic techniques that can be adopted in QGIS and Inkscape⁵, a powerful demonstrator of the potentials of Open Source Software and of open methodologies: The map view is exported in PDF format from the GIS⁶ and imported into Inkscape, where the layout can be changed and “final touches” applied to the vector data in order to produce high-quality, publication-standard maps.

⁴ GIS to Inkscape Manual (adaptable for gvSIG)

<http://library.thehumanjourney.net/366/>

⁵ <http://inkscape.org/>

⁶ Both gvSIG and QGIS support PDF export.

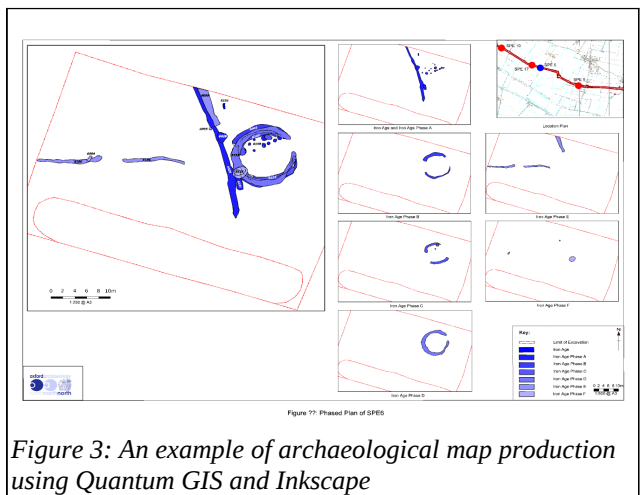


Figure 3: An example of archaeological map production using Quantum GIS and Inkscape

Conclusions

The available documentation on archaeological data processing, visualisation and analysis using open source GIS software has proven extremely valuable. With the documentation being in regular use, especially by fieldwork staff, the need for costly training sessions has been minimised and previously untrained users are able to survey, download and process data, and produce high-quality map layouts.

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