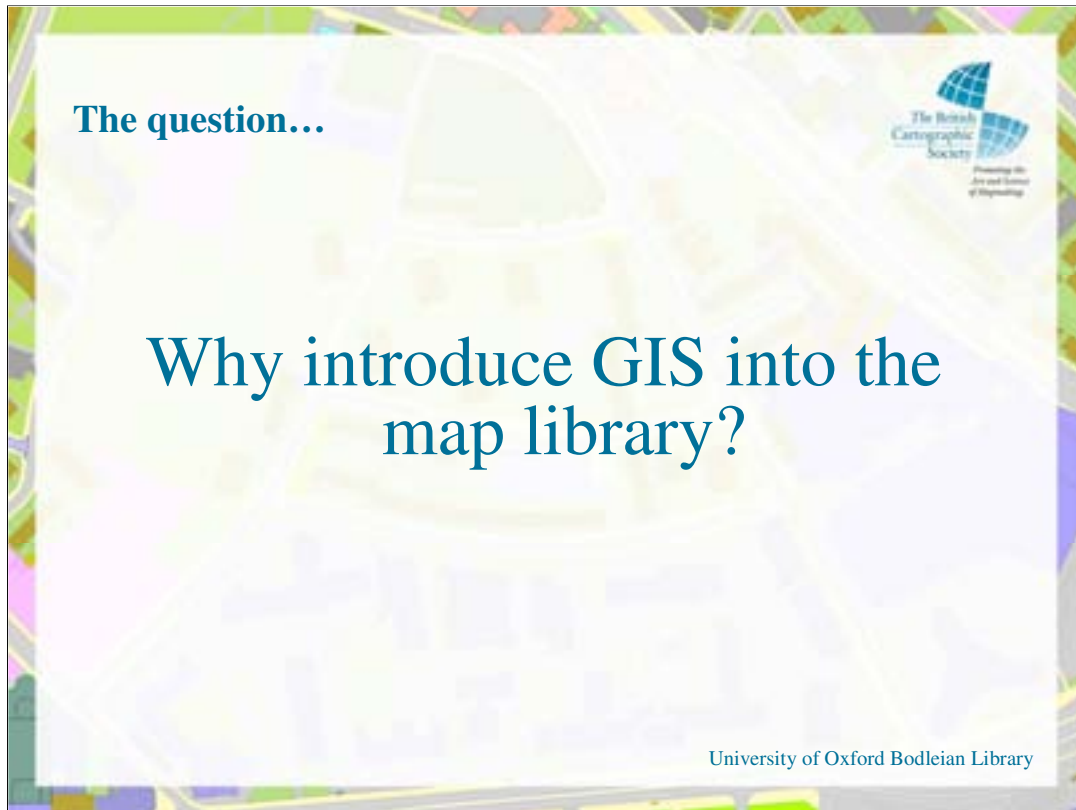


GIS in the Map Library

A presentation by Nigel James, Assistant Map Librarian, Bodleian Library

For the Map Curators Group meeting at the British Cartographic Society 45th Annual Symposium 4th September 2008



The map library may not be the first place to consider for providing GIS and digital mapping, should it not be in the computing facilities or geography department, for example?

In the past the map library was where students and other researchers would come for maps, but now their first stop will be the internet.

This can have a serious impact on the viability of the map library as falling numbers of users will make it a target when cuts are being made.

Providing GIS gives a new direction for the Map Library and is an accessible resource. GIS may be hidden away in departments where it is used solely by those with knowledge and skills and support for new users may not be available.

Users still need to consult conventional mapping when working as internet resources are still limited with respect to large scale topographic mapping in particular.

What about conventional mapping?

- Students and other users need maps for dissertations, reports, essays...
- Copyright prevents the reproduction of most modern mapping
- Mapping from digital spatial datasets can be reproduced under license

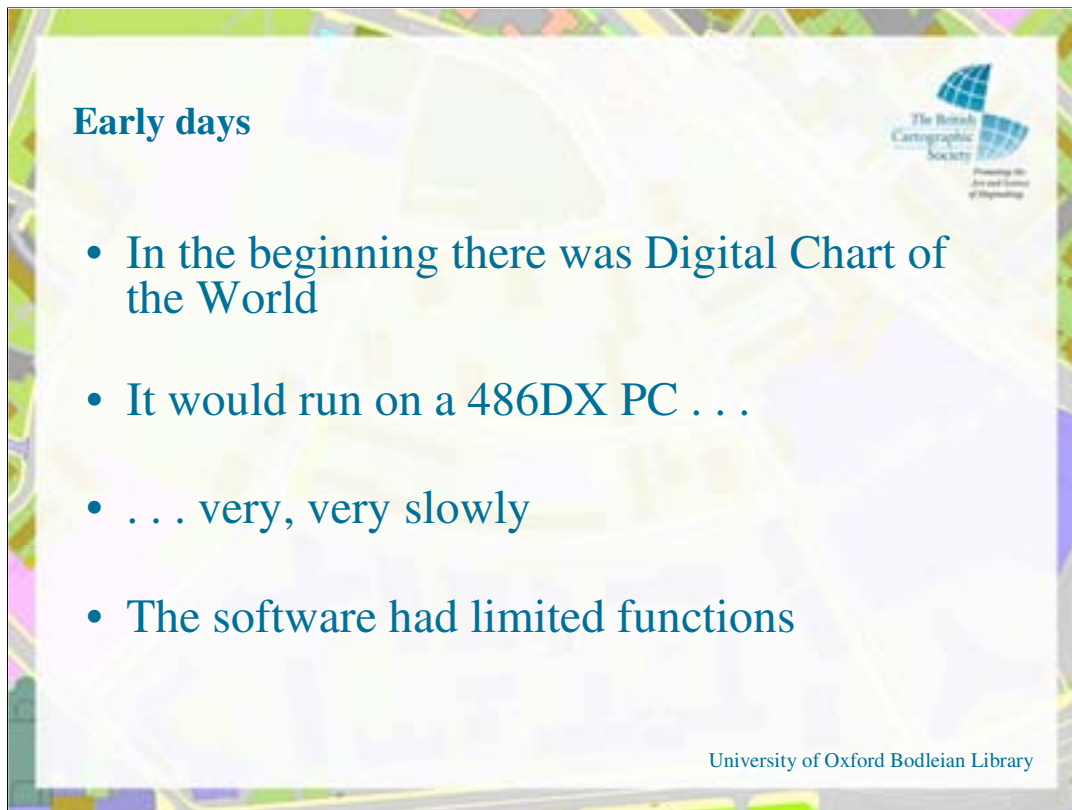
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Students and others need maps not just for reference but to enhance their research work.. Copying maps in copyright is not allowed (with limited exceptions) without permission from the map producer or publisher and obtaining permission can be time-consuming and difficult.

Legal deposit libraries in particular have to enforce copyright strictly, so if users cannot have copies they may not bother to come in at all.

Digital mapping is licensed and in most cases allows unlimited reproduction under specific terms. These normally include all non-profit research and teaching use by individuals and the institution.



Early days

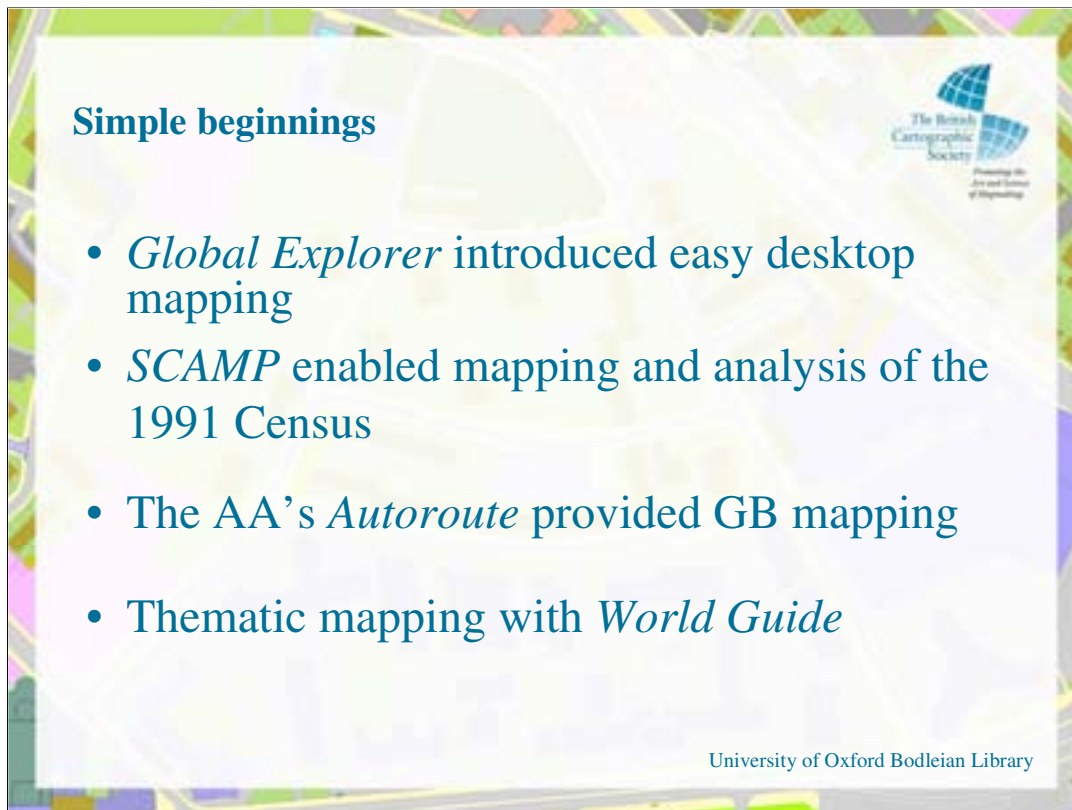
- In the beginning there was Digital Chart of the World
- It would run on a 486DX PC . . .
- . . . very, very slowly
- The software had limited functions

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The first digital mapping product used in the Bodleian was Digital Chart of the World.

It required (for the time) high-specification hardware but even with this it was slow and frustrating to use. Although the end result could be quite impressive, most users found it too slow and it was not popular.

The software used (VPFVIEW) had limited functionality and the output was only in postscript format, so printing was restricted to suitable laser printers and only in black and white as colour printing of postscript files required expensive colour plotters.



A number of individual mapping software packages were now beginning to appear and a selection of these were purchased. Although primitive by modern standards (data could not be imported or exported, for example), *Global Explorer* was a very popular product. Essentially a raster mapping program which could display mapping at a range of fixed scales and levels of detail, it was simple to use and the maps could be saved as bitmaps for easy printing. The images could be edited in a suitable program and users became quite adept at modifying the mapping for their own needs.

The release of the 1991 GB Census was welcomed by students and researchers and *SCAMP* (Schools Census Area Mapping Package) was a user-friendly product which could be used to extract and map census data.

AA Autoroute was the first of the route planning applications and was useful for producing fairly detailed mapping of GB.

World Guide was a statistical database using World Bank and other sources with a thematic mapping capability.

Time to move on

- “*Digital mapping*” no longer a novelty
- Users needed to map their own spatial data
- Current applications lacked compatibility
- Time to look seriously at GIS

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The provision of the fairly basic packages proved very popular and users quickly took to them. However the limitations were becoming obvious, especially the lack of data import/export and compatibility between applications.

The decision was then taken to look at providing professional digital mapping and GIS.

Which GIS?

- *ArcInfo* used in a small number of departments
- Idrisi used for teaching in Geography Dept
- ArcView considered – too limited
- MapInfo – easy to use and good quality printed output

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The choice had now to be made. GIS was already in use in several university departments but there was no sharing of resources and little teaching support.

The version of Arc Info available at the time was considered too challenging for the average beginner unless well supported and licensing costs were prohibitive.

Idrisi was also considered but as this was then a more raster-oriented application it would not be ideal for users wishing to create maps using vector data.

Arc View at the time was also fairly limited (only one map at a time could be created, for example) and again there were licensing issues.

MapInfo was selected as it was fairly easy to use with a good interface, could be used for creating multiple maps and produced high-quality layouts and output in a range of formats. A single academic user licence was then purchased



With the decision made, we had to develop the support and facilities.

The DCW data was now outdated, had missing data and was not directly compatible with MapInfo (VPF import not then supported).

Staff had to rapidly skill-up to be able to provide support to new users.

Documentation had to be created to encourage use and enable new users to quickly acquire basic skills.

Other departments had to be made aware of the new facility so that users could be directed to the library.

GIS needs data...

- Global Insight purchased as core World dataset
- Bartholomew digital datasets acquired under CHEST licence
- GB Census data from CASWEB
- Boundary data from UKBorders
- Digimap Ordnance Survey mapping and data

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A good range of data was essential and a number of products were acquired.

A single-user licence for Global Insight (an updated and improved version of DCW) was obtained at a substantial discount as a non-commercial user.

Bartholomew digital datasets (3 world datasets, Europe, GB and London) were obtained through CHEST (Consortium of Higher Education Software Team).

Users could download GB census data from CASWEB and digital boundary data was available through UKBorders and also obtained from ONS.

The university has had access to digital vector and raster OS data through Digimap since its launch and this is used extensively in research.

Supporting the GIS user ...

- GIS places new demands on map library staff
- The map library can be the user's first contact with GIS
- Users will expect staff to be able and willing to help

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GIS requires new skills from library staff and needs to be encouraged and supported.

As the map library is often the first contact with GIS, users need to feel welcome and encouraged, so staff have to be able to provide at least basic support. It may not be feasible to have a high level of knowledge amongst all staff, but there needs to be at least one person in this role.



Not all GIS data is compatible with software and this was a particular problem with digital OS data in NTF format, which MapInfo does not support.

A data translator was developed to enable users to import this data and this is freely available to download from the Map Room's website. Additional scripts in MapBasic were also developed to handle the easy import tables of data in OS National Grid format for example and these are also available for anyone to download and use.

Sharing resources such as this with others should encourage the development of more supporting applications, as the cost of commercial versions is often prohibitively expensive where multiple users are involved.

Metadata

- Detailed metadata is often scarce
- Web sources are a particular issue
- Metadata will have to be created in the library
- Which system/standards to use?

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Metadata should not be overlooked. Although this is usually easy to obtain for conventional mapping (it's printed in the marginalia), digital data often lacks detailed metadata.

Data downloaded from web sources is a particular problem, but in all cases users need to be able to cite sources of data and it is helpful to know its provenance.

Metadata (however limited) will therefore have to be created and a suitable system selected.

Archiving data

- How will updates be handled?
- Can old versions be retained?
- Long-term storage and future access
- Legacy software

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Most digital data is licensed and can only be retained for the duration of the licence agreement.

Updates are normally provided, but should these simply replace the current data or be kept as supplemental data (if that is even permissible).

Long-term storage of digital products is a general library issue and doesn't just affect digital mapping.

Old software often needs old hardware. The products mentioned earlier no longer run on modern hardware/operating systems. This will be an issue for future researchers when this becomes historic data.

Using GIS to improve access to collections

- Indexing series and individual maps
- Linking to catalogues
- Use GIS software or Google Maps/Earth?

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GIS can also have a role in the access to map library collections.

Traditional printed or hand-annotated indexes could be replaced with digital versions and linked directly to online catalogues.

The question is: do you use GIS and produce graphic indexing or use a generally available system such as Google?



This is an example of using Google Earth to index a collection of maps, in this case 1:250,000 scale geological mapping of Australia. It is a trial version developed in-house.

The index is in KML format and shows the location and coverage of all the available sheets in the collection.

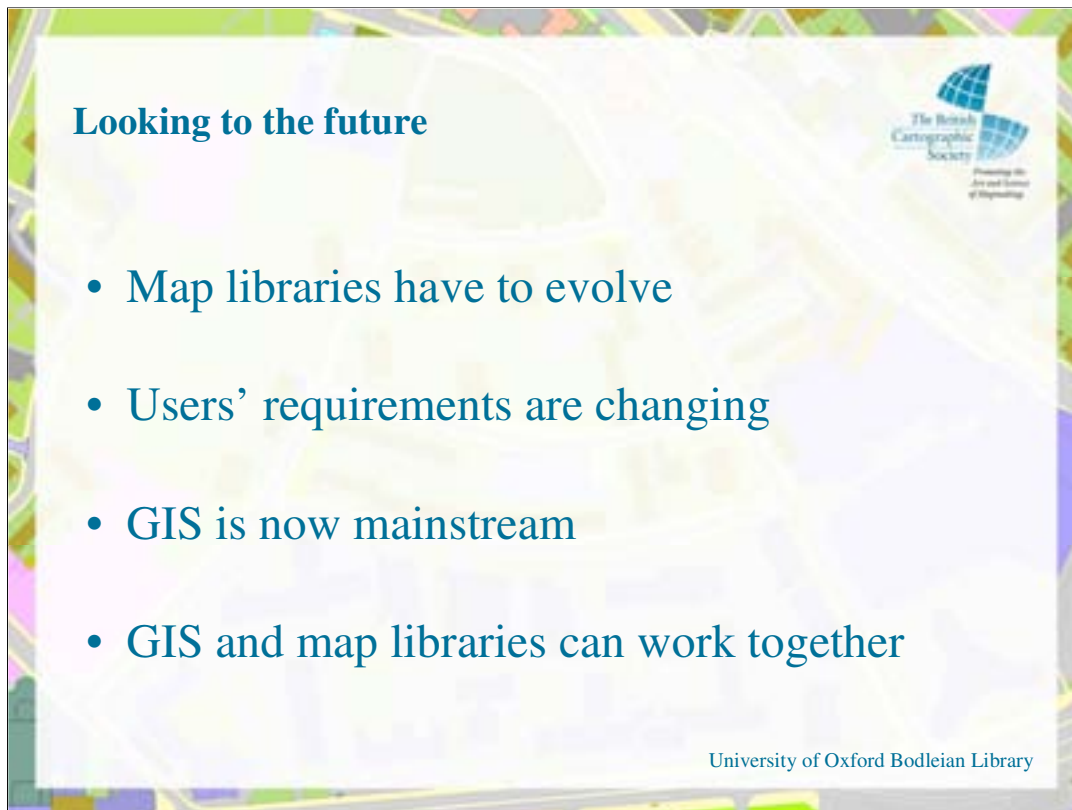
Indexing with Google Earth



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A user clicks on the information icon for a sheet to see the individual sheets details and shelfmark, enabling the sheet to be requested.

The index could be directly linked to an online catalogue, so enabling a user to browse and request material before coming into the map library to view it.



Map libraries have to evolve or they will disappear (this is already evident).

Whereas perhaps ten years ago the map library would be the obvious place to find a map, now the first choice is the internet and if a suitable map is found the map library is not used.

Users now need to work interactively with mapping and spatial analysis is a tool which is becoming increasingly used.

GIS is now well established and the ability to overlay mapping with spatially located data is now widely used (Google Earth for example).

GIS and map libraries are not mutually exclusive – they are both providing access to spatial data and can co-exist to provide a comprehensive service to users.

