Centralised computing with online applications

The pendulum of progress swings steadily back and forth. Thirty years ago, when only the privileged worked at a computer terminal, and the rest of us spent our time hammering away at punch card machines, having a self-contained computer system of your own was something we could only dream of. Now every second schoolchild has their own PC, and the latest trend is back to centralised computing again.

Things are a little different this time around, of course. Instead of a thick cable connecting your terminal to a mainframe computer in the same building, connections are made across the internet to a global computing centre, which can be sited anywhere where power is cheap and technical staff are available. Instead of a tiny black-and-white terminal you have a powerful PC which is doing a lot of computing of its own. But the advantages of centralised computing remain the same – as do some of the problems. In this article I want to look at the role of centralised computing for information scientists, with several examples including Google Docs and Flickr.

The premise of centralised computing is simple: instead of storing data on, and running programs from, your own hard disk, you store data and run programs that are stored externally, somewhere on the internet, via a web browsing program. Some online applications have caught on very rapidly; others are making slow progress. A list of the most popular online applications would include:

- Online collaborative Wikis, which are taking over from clumsy users' manuals that have to be continually reprinted and updated. Now the updates can take place immediately online.

- Online email systems like Hotmail, Google Gmail and Yahoo mail, which are widely used to supplement or replace disk-based systems like Outlook Express or Thunderbird.

- Photo-sharing applications like Flickr, which permit users to store, tag and organize their photos and other images

- File-transmission systems like Senduit, which allows users to store their files on the web for a limited time so they can be downloaded by a target audience, avoiding the size limitations that often occur with email attachments.

- Office applications systems, which duplicate some of the functions of the Microsoft Office programs on your hard disk – word processing, spreadsheets, presentations and database functions. Google Docs is the best-known of these; some others are mentioned below.

- Online library catalogues which allow users to pool their work rather than re-creating records for each new item. These are even finding their way to non-librarian users via sites like LibraryThing.

Why use online applications? The three main advantages that are cited for the online approach are portability, shared access and security, with easy software updates coming a distant fourth.

Portability means that you can access the same documents from any location that has a web connection. Enter a username (or email address) and a password and you are ready to work immediately. The same applies when shifting between computers at home or work, or exchanging a new computer for an old one.

Shared access means that a team of people can work on one or more documents collaboratively, making trackable changes and exchanging comments with each other while the project is going on. Access to those documents can be limited to a specified set of users or opened up to the whole world!

Security: it may sound strange to describe an online document half a world away as being more secure than one on your own hard disk, but most online application systems have stringent hardware and software security procedures in place. Personal computers, on the other hand – especially laptops – can get dropped, lost or stolen, acquire a virus, suffer fire or water damage, or simply break down irreparably. Data stored online is not going to be affected by what happens to your current hardware.

From the point of view of software design and maintenance, centralised computing also makes sense. It may take longer to prepare and launch the software, but once it is up and running, all the upgrades and bug fixes can be done on the one central copy, with no need to distribute patches, release CD-ROMs with new versions, or install a help desk to talk new users through the upgrade process. Financially, too, centralised computing replaces one-off income from software purchases with a steady revenue stream. Much of it, in fact, is free, being supported by advertising or by users who pay to access more powerful versions.

Let's look at a few of these applications in more detail:

Photo and file sharing

Flickr, the photo storage and sharing system, is linked to Yahoo, which gives it a certain advantage: anyone with a Yahoo account automatically has a Flickr account as well. A clean, colourful interface makes it quick to select and upload photos from your own hard disk. These can be given a description and any or all of them can be tagged as 'private', so that only users on your contact list can see them. Each image can be given a title, description and keyword tags. Flickr user can search other users' public images. Flickr is free up to a user limit of 100Mb; then there is a scale of fees depending on how much space you need. Users can invite family and friends to join Flickr and add them to a contact list. There are also special-interest groups: a group called 'Beads Beads Beads', for instance, currently has 685 members and over 5,500 photos. Flickr administrators keep in touch with users via a mailbox and a blog.

Flickr is primarily recreational (commercial use is banned) but it could be used for serious purposes. What about scanning a library's image collection and putting it up on Flickr, either for everybody to see or just for invited subscribers? High-resolution photos of shelf contents could allow remote users to try 'virtual browsing' for books. Friendly photos of a library building and staff could encourage potential users to pay a visit. And if Flickr's terms of use are a problem, software is available to set up a local equivalent of Flickr on an individual's or organisation's own website.

Picture Australia, hosted by the NLA, is currently using Flickr to allow users to submit their own photos for review and possible inclusion.

[IMAGE: Flickr.gif. CAPTION: *A Flickr user's home page*]

File transmission services

By now most of us would have had an email or two 'bounced' back to us because its attachment was too big. Two similar services with similar names – YouSendIt and Senduit – offer a solution. Both systems depend on senders uploading one or more files to their online storage centres, which the desired recipients can then download. YouSentIt notifies the recipients directly by email: Senduit, the simpler of the two, simply provides the sender with a URL which they can then email (or phone) through to the recipient in the usual way. YouSendIt is free for storage of up to 100Mb and costs $US10 per month or more thereafter; Senduit is currently completely free and doesn't require an account, though this may change as it establishes a reputation. Senduit in particular provides a convenient time-controlled way in which files can be distributed to many clients or customers at their own convenience.

Office applications systems

Google Docs

Google offers a free online collaborative word processor, spreadsheet and presentation package. Up to 200 invited collaborators can work on a document – although preferably not all at the same time! When two or more people are working on the same document they can view the others' changes in real time and communicate about them via a built-in chat system. The owners of the document can choose who is entitled to collaborate and who can merely view the document; the contact list for this is integrated with the popular Gmail system. Completed documents can be 'published': that is, they are given a permanent – though rather messy – URL through which anyone can locate them. For widely distributed collaborators – like branch librarians working on a joint submission, say – Google Docs is a convenient way to work.

Document editing is similar to that in Excel, Word and PowerPoint, though with obvious limitations; for instance, the user can't swipe over text with a highlighter tool, but must select the text first and then click the highlighter button. A record is kept of editing changes, and versions can be compared, although the system is not as sophisticated as that in Microsoft Word or OpenOffice.

Documents are stored in an HTML-based format, and can include images and hyperlinks. Access to the source code is available for HTML-savvy users. A Help Center provides comprehensive help in several different languages. There are the usual licensing terms, including a disclaimer of all responsibility on Google's part if the documents are lost or corrupted.

Users can divide their storage area up into folders – but not subfolders – and drag-and-drop documents to move them. Users can choose to see documents by folder, by type, or by whom they are shared with.

Documents can be 'exported' – i.e. downloaded – in a range of formats including Word, HTML, RTF, PDF and OpenOffice. Documents on your own PC or network in any of these formats can be uploaded one at a time to the site, though there are size limits. A new document can also be started via email.

Most users will want to have backup copies of their documents, and for this purpose there is an 'Save as HTML (zipped)' option which can compress HTML versions of all the user's documents into a single download.

The Google Docs spreadsheet application provides most of the basic functions of Excel, including a simple charting module, and the presentation application mimics a cut-down version of PowerPoint. All of them work effectively over a broadband connection, but without the blinding speed of a disk-based application.

[IMAGE: GoogleDocs.gif. CAPTION: *A GoogleDocs user's home page*]

Other providers

Several other companies are offering also online word processing and spreadsheet applications. Among the best known are Ajax Write for word processing, and EditGrid for spreadsheets. Both ThinkFree and Zoho offer the same set of online Office applications as Google Docs. The market will probably consolidate over time and charging patterns may change, but basic accounts with all of these are currently free.

Google doesn't yet offer an online collaborative database system, but several alternative systems are available. Most of these are payment-based, though free trials are available, for instance Trackvia and WebOffice. An exception is Zoho (again), which has two free online database applications – a table-based one called DB & Reports, and a form-based approach called Creator.

[IMAGE: Zoho.gif. CAPTION: *The Zoho website, showing the range of online applications available*]

Pros and cons

Most of the problems with online applications are fairly obvious: the user needs a fast and reliable Internet connection, they need to remember a username and password, and they run the risk of losing or corrupting data if the connection drops out unexpectedly. Other issues relate to the provider company – what happens if they go out of business, start charging exorbitant rates or misuse your material? Users of online applications need to read their contract terms carefully, and ensure that they have reliable backups. Where critical information is concerned it is also important to check that your collaborators are who they claim to be, and to keep careful track of the changes that are made to documents. There may also be difficulties with local IT people being reluctant to put sensitive material on the Internet.

On the plus side, online applications provide a 'level playing field' where dozens or even hundreds of users can access, edit and manage complex documents without hardware difficulties and without the need for anything other than a web browser. Caution is called for, but many users will see an enormous potential in this kind of groupware.