

# \*The Monster Mash-Up

The term 'mash-ups' has come to refer to websites that collate information, presenting it as links on a single page or in a visual form (1). This is achieved by accessing information contained in selected databases via public interfaces, application programming interfaces (APIs), or RSS feeds. Various software is available for building mashups, including some open source (2) and an RSS feed service is already available to provide updates on new mash-ups and rank existing services (3). Mash-ups have so far been deployed to provide content on various topics, including news stories, business directories, and

online shopping. A slightly different concept links a database into Google



iSpecies image search also retrieves mythical mash-ups as well as some more familiar creatures like the elephant.

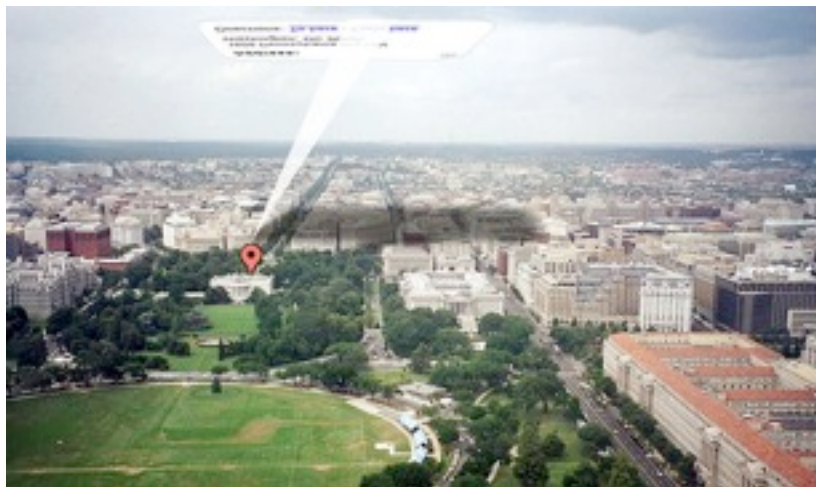
Monster uploaded to <http://www.flickr.com/photos/kokogiak/8648226/#comment24192166>

Elephant from <http://openphoto.net/>

search. Here, it seems that the inclusion of some of other of HubMed's features could be useful; for example those features that allow the user to access the article where they have an agreement with the publisher or to order it from libraries. As some of the links to the articles that are retrieved are already broken, another useful feature would be to include the doi and link to a Crossref search to retrieve those articles that have been moved.

Page runs his own Blog on iSpecies (6) with updates on the site and related technology and links to reviews. His suggestions for further development include using EXIF tags on images to contain metadata, which would certainly be a useful innovation for both those wishing to publish images online and those who wish to make use of them, as copyright information would be easily accessible. Some way of widening the image search and then searching within the results could also be useful, as currently the search returns only five fairly generic images of the animal, which would not be of much use to a researcher looking for specific data such as maps of distribution or cellular-level data. This could lead towards ranking results from different search engines or databases according to user criteria: potentially a more useful tools than simply collating tools, given the difference between the results retrieved by different search engines.

Nature has also developed an experimental service to collate data on the avian flu outbreak using Google Earth. A similar service had been pioneered by the Californian Academy of Sciences for mapping the distribution of different species of ants. Such services certainly provide an interesting new way to retrieve and display data. However, Nature's Declan Butler, who developed the avian flu service also highlights the drawbacks of the system: the data used by Nature to construct the database are not freely



GoogleMaps Satellite View Real-World-Mix

Uploaded to <http://www.flickr.com/photos/kokogiak/8648226/> on April 6, 2005

by kokogiak Google Maps reference:

maps to display the data. Some in the scientific community have also begun to embrace these new ways of displaying information.

iSpecies is an experimental resource developed by Roderic Page of the University of Glasgow intended to explore the application of the concept of 'mash-ups' to science. As a Nature review by Declan Butler (4) points out, this is part of a general movement towards developing interfaces that provide collation services that includes Google's maps database, and in scientific information, GenBank and UniProt. Initiatives to make information more readily available have been begun by the World Health Organisation (WHO) and the Global Biodiversity Information Facility (GBIF).

iSpecies already includes an impressive array of species, searchable on their scientific or common names (as a review in ResearchBuzz! (5) points out, these do retrieve different results, so it is best to try both). The search retrieves sequence data from NCBI, images from Yahoo Images, and articles from Google Scholar. Another interesting feature of iSpecies is that it makes use of the Touchgraph feature developed by HubMed (see our review). This represents related articles as a spider diagram, nodes labelled with the name of the paper, connected to the central query by their descriptive tags. Clicking on a node will expand the graph to reveal more results that share tags with that node. The full text or abstracts of articles can be accessed via a Google Scholar

available, but had to be requested from different sources and then transferred into the avian flu database (4). (In fact this means that, like the other services that use Google Maps it is not strictly a 'mash-up' in the sense of collating more than one service as the sources are collected in the database prior to the user running a search.)

Butler points out that if barriers to accessing data were lifted, the information could be accessed directly by the search functions underpinning the mash-up system and update the map automatically. This is one of the major drawbacks of the mash-up concept, as it is easy to understand the concern of many web operators at their content being presented alongside that of rivals. However, the growing popularity of mash-ups could overcome this: as a Business Week article (7) points out, Yahoo capitulated to the use of their traffic data with Google Maps, a service they had initially blocked, and Amazon has gone further, freeing up access to their data as far as possible. Furthermore, on the technical side, the development of new web mark-up languages and XML databases will render the data held within them more accessible to search engines. The mash-up format certainly has benefits for those who wish their data to be accessed as well as those accessing it and this should allow scope for future expansion.

## References

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