Microsoft Smart Tags: support, ignore or condemn them ?

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ABSTRACT
This paper describes the latest instantiation of the open hypermedia concept of the generic link as it appears in Microsoft™ Office products – the Smart Tag. We review the background to generic linking and the technology involved in Smart Tags and discuss the reaction to this application in the computing press. Recommendations are made on how the system design could be improved for our purposes.

Keywords
Generic links, Open Hypermedia, Link Services, Context, Adaptation.

1. Open Hypermedia and Implicit Links
The aim of open hypermedia is to provide hypertext (usually *linking*) services to a diverse range of applications and to eliminate the distinction between information sources that can and can't be linked [2]. Integrating a link service with off-the-shelf applications such as word processors and web browsers has for six years already demonstrated the advantages of treating navigation as an adaptable overlay rather than a static part of the document [1][4]. The links provided by such a service can be anchored to particular locations or to particular contents within the documents, depending on the strength of integration between the components of the system [3].

2. Smart Tags
Smart Tags are a facility provided for Microsoft™ Office applications, which allow software plug-ins to identify regions of a document which are suitable for annotation and to control the processing options available when a user activates (*i.e.* click on) the annotation. Effectively these annotations are synonymous with links.

A Smart Tag consists of two components: a recogniser and an action. The former functions like a simple callback routine, and has a simple *Recognise()* method which is invoked by the application with string of text perhaps representing a paragraph, word or cell in the document and flags any interesting parts of the text for annotation. The Office application is then responsible for providing the user interface (here a dotted purple underline with a dropdown information menu) for each annotation. The Action object defines the items which can appear in the menu, and controls what happens when any menu item is chosen. In the example in Figure 1, the recogniser reads a list of terms (from an ontology provided by a networked knowledge service) and has them annotated if it determines that the subject of the document matches the ontology.

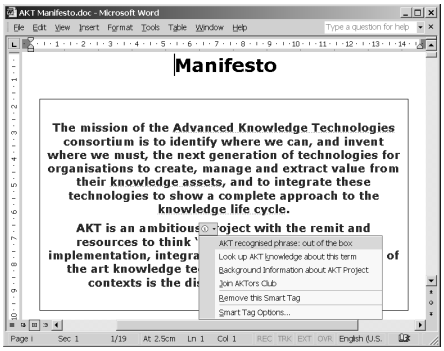

Figure 1: Ontology Driven Smart Tags in a Word document

The action trivially lists the keywords as menu items, and forms an appropriate URL to trigger the knowledge service when the menu item is selected.

Smart Tags are the basis of a useful implementation of open hypermedia linking. It has been especially designed to allow many recognisers to be active in parallel with the word processing features themselves. It also delivers hypermedia "as you type", as the recognisers are invoked each time a new word has been entered. This is a significant innovation, providing instant feedback to the hypermedia author. However, it is impossible to control the order and timing of the processing of text — in an existing document, paragraphs may only be processed once they are clicked on. Consequently, it is not possible to efficiently establish a document context, and links which depend on certain document features (for example the use of triggering keywords or document structures such as a bibliography) may not be immediately apparent. Lastly, the user's interaction with the annotation and the style of its presentation can not be controlled.

3. Socio-Political Reactions
Smart Tags were first announced as a new feature to be included in the release of Windows XP. The reaction of the computing press was far more passionate than that usually associated with

the launch of a hypertext technology. The criticisms were a combination of technical and political [1].

Parsing and linking of Web pages was to have being enabled by default. All pages would be processed and linked unless the page contained a special META tag in the HTML. Critics argued that this policy should have been implemented in reverse and used it as an example of the company changing the operating system or Web browser without user control[2].

The normal passive experience of using a browser to consume content from a remote server is altered by the inclusion of a link service. The only obvious sign of this to the inexperienced would be the change in appearance of some links in a document. Other link services are more visible to the user as Browser plug-ins, proxies or personal agent systems. This informs the user that something more is happening beyond normal Web browsing. In this case there is no obvious third party involved in the delivery and rendering of the Web page.

The *raison d'être* of a link service is to dynamically enhance a document with links the reader would find useful. The original static text is personalised at read time. There is some irony to this mechanism being cited as the primary offence by the critics. The legal issue was raised that original content could be altered by the browser without permission of the author. This has raised copyright issues over the creation of derivative works [3].

The issue of content being 'surreptitiously' altered is magnified by the crucial factor that the Web is a way of earning a living. It is the only hypertext system that functions as a global marketplace. For instance a review site links readers to affiliate vendors who sell the product under review. The review site receives revenue from such a transaction. If the link service recognises the product and adds its own links to a different vendor then there is potential for lost revenue and the review site is directly damaged[4]. Neumüller has described [5] how keywords are now a commercial commodity to be fought over and the use of keywords out of context is already having an adverse affect on Web sites. The Smart Tag system is open to similar problems, especially given the difficult of establishing the correct context to link words.

The lack of objectivity in reviewing this technology is a reaction to a lack of competition. The computer industry is subject to a monopoly in many areas including operating systems, office software and Web browsers. There is a conflict when a company is both content provider and the producer of the means to view the content.

Smart Tags were deactivated in the June 2001 release of Windows XP. Microsoft has stated that it will activate the technology in a future release of Internet Explorer. Smart Tags are implemented in Office XP.

[1] http://web.archive.org/web/*/http://public.wsj.com/sn/y/SB991862595554629527.html
http://www.zdnet.com/anchordesk/stories/story/0,10738,2771967,00.html

[2] http://news.com.com/2100-1001-267992.html?legacy=cnet

[3] http://www.newsbytes.com/news/01/166676.html

[4] http://www.clickz.com/aff_mkt/aff_mkt/article.php/843801

4. Recommendations

To finish we offer recommendations for improving the design for our purposes.

- The key to improving Smart Tags is to introduce support for contextual linking. This requires changes to the parser and a more open implementation for greater customization. Support for more complex link types should be considered.
- The interface needs to explicitly indicate that the delivered page is being processed by a service. Perhaps this should be indicated by extra icons on the browser or a taskbar icon. This mitigates the concern that the service has been introduced by 'stealth' for the wrong reasons.
- This interface would also encourage the user to positively activate the system rather than it running by default.
- Perhaps the system should be shipped without links and prompt users to download their own from an independent catalogue. This will evade charges of Microsoft 'owning the links'. The catalogue could be based upon acknowledged open web service technologies such as WSDL. If there was improved support for contextual linking then the service itself could begin to find appropriate link services.

Smart Tags represent a significant development for the open hypermedia agenda. The implementation delivers new hypermedia functionality to millions of desktops across the world for the first time since the development of the Web. The open hypermedia community should add its experienced and authoritative voice to the debate to balance the hysteria that has clouded a highly charged political argument.

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