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Hyper-G and Harmony: Towards the Next Generation of Networked Information Technology

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ABSTRACT

Current networked information systems on the Internet, whilst extremely successful, run into problems of fragmentation, consistency, scalability, and loss of orientation. The development of "second generation" networked information systems, such as Hyper-G and its Harmony client, can help overcome these limitations. Of particular note are Hyper-G's tightly-coupled structuring, linking, and search facilities, its projection of a seamless information space across server boundaries with respect to each of these facilities, and its support for multiple languages. Harmony utilises two and three-dimensional visualisations of the information space and couples location feedback to search and link browsing operations, in order to reduce the likelihood of disorientation.

KEYWORDS: hypermedia, information retrieval, information visualisation, graphical interaction, Internet.

INTRODUCTION

Whilst traditional services such as electronic mail, remote login, and file transfer still account for the bulk of traffic on the Internet, by far the fastest growth is being experienced by networked information systems like WAIS, Gopher, and above all the World-Wide Web (WWW or W3). These systems, although having transformed the way people perceive and interact with information resources on the net, belong to the first generation of information systems on the Internet [3]. They work well in particular contexts but run into difficulties when applied to hundreds of thousands of documents distributed over many thousands of servers. They provide only a single structuring mechanism, no graphical navigation aids, only rudimentary access control, little support for automatic database maintenance, no scalable document replication mechanisms for popular information, and little or no built-in support for multiple languages. Furthermore, they are "read-only", in the sense that information providers prepare data which information consumers can generally only browse. Hyper-G is a second generation [2] system designed to transcend some of these limitations.

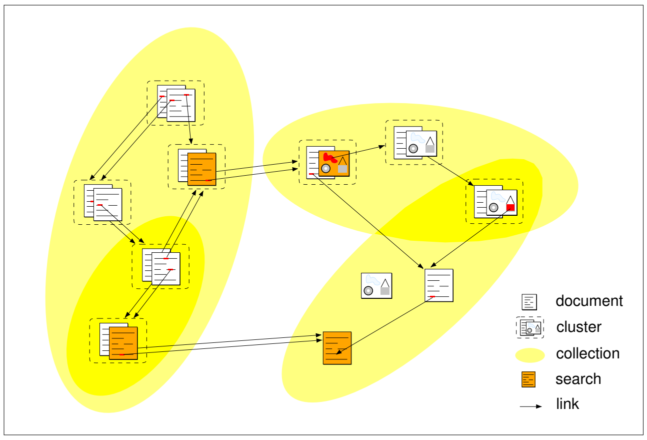

Figure 1: Hyper-G Data Model

HYPER-G

Hyper-G is a large-scale, distributed, multi-user, *structured*, hypermedia information system, which runs as a client-server application on the Internet [1]. Hyper-G is interoperable with both Gopher and W3 clients and servers, but its data model is much richer as can be seen in Figure 1. Documents may be grouped into aggregate *collections*, which may themselves belong to other collections and which may span multiple Hyper-G servers, providing a unified view of distributed resources. A special kind of collection called a *cluster* is used to form multimedia and/or multilingual aggregates.

Hyperlinks in Hyper-G connect a *source anchor* within one document to either a *destination anchor* within an-