We call by *WebWindows* a multiclient multiserver distributed operating environment, based on evolving World Wide Web technologies, and developed collectively by the Internet community. WebWindows are rendered by Web browsers and served by CGI extended dynamic/computational Web servers.

At NPAC, we developed recently a collection of *WebTools* which we view as initial modules towards WebWindows. The following tools are currently under development and will be published at http://kayak.npac.syr.edu:2005 in April '95:

1. **HyperWorld Navigator:** Document tree on a WebTools enhanced Web server is called World and is implemented in terms of (Node.html, Node/) pairs of files/pages and directories/spaces. HyperWorld is collection of Worlds. Pages offer summaries of the associated spaces. Each page served by WebTools contains a navigation bar (see the poster banner) that supports intraspace navigation (paging) and the interspace (structural) navigation. We are now also implementing the interworld navigation.

   Note: Screendump 1 is the only real/static HTML page on this poster. All other pages are virtual, i.e. constructed dynamically by CGI Perl scripts.

2. **On-Line HTML Editor** is accessible via [Edit] button from each page. This tool supports interactive content editing for pages created by the HyperWorld Manager. The On-Line HTML editor is particularly useful for making long sequences of small updates on individual pages. Interfaces to popular editors (Emacs, HotMetal) will be provided soon as well.

3. **HyperWorld Manager** is accessible via [Edit] button from each page. The document tree forming a World is organized as an open hierarchical database and the Manager offers generic database operations such as creation, destruction and manipulation (copy, move, join etc.) of nodes (pages, spaces, worlds) in the HyperWorld model. Interfaces to commercial databases (Oracle, Sybase) will be provided soon as well.

4. **Current Space Index** is accessible via [Dir] button from each page. This button toggles between page and space modes and it displays hyperindex of the current directory. In the space mode, navigator buttons [<=], [=>] refer to neighboring spaces, not pages.

Manager, Editor and Navigator represent the base generic toolset in the current WebTools. Other tools (accessible indirectly via the [Tool] button) will inherit this navigation paradigm and customize it for domain/application specific needs. For example, in preparation are CASE tools for software space navigation and Perl5/C++ class editors and browsers/navigators. Currently, in the most advanced stage is the implementation of WebMail – a complete Web interface to the MH mailing system.

5. **WebMail: Folder Scan** is the WebMail analog of the Current Space index and is implemented as the hypertext version of MH scan output. In the WebMail subworld, spaces are folders and pages are e-mail messages.

6. **Message Bag** supports message grouping. Bag is a polymorphic tool, accessible directly from the navigation bar. Its generic functionality is to act as a dynamic container that assists the surfer and allows to copy-and–carry interesting objects found in various worlds or spaces. In WebMail, it is implemented as a multi-selectable folder scan.

7. **Folder Cabinet** offers dynamic support for simultaneous multiresolution and multiselectable display of the subfolder content in various folders. This tool is useful for multifolder refiling, especially for executive mail database that often contains rich and complex folder hierarchies.

8. **Message Handler** displays the current message, including sender's photo and logo, and it supports both the static page mode or the dynamic tool mode (toggled via the [Tool] button). In the tool mode, additional controls are provided such as a sequence handler and a message toolbar for message composition, reply, forwarding, distribution and archival.

9. **Message Editor** is accessible from the message toolbar of the message handler and it supports e-mail editing and sending operations. Addresses can be specified either by explicit type-in, or by selecting from the cache menu or from the current alias table. Editor window offers GUI interface for message body composition. Other controls support spell checking, customized header formats, alias table switching, and monitoring mail transport layer activities after the message is sent.

Geoffrey Fox and Wojtek Furmanski, March 22, 1995.